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VISION

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STUDENTS' MOTIVATION AND ACADEMIC ACHIEVEMENT IN BASIC SCIENCE IN RIVERS STATE, NIGERIA

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ABSTRACT

The importance of affective domain in acquisition of scientific knowledge cannot be overemphasized. Hence, the study investigated students' motivation and academic achievement in Basic Science. Quasi experimental research design was adopted for the study and purposive sampling technique was used to select Emohua Local Government Area. Stratified random sampling on basis of school location (urban and rural) was used to select two UBE schools. While simple random sampling by balloting was used to select one hundred (100) JSS2 Basic Science students that participated in the study. Basic Science Achievement Test (BSAT) was used to collect data for the study and the data collected were analyzed by using mean and standard deviation to answer all the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at .05 level of significance. The study found that, students' motivation have significant effect on their achievement mean scores in Basic Science $P < .05$. Gender does not have significant effect on achievement mean scores of motivated students in Basic Science, $P > .05$. School locations have significant effect on mean scores of motivated students in Basic science $P < .05$. The urban motivated students did better than the rural students. Hence, this study recommends that students should often be motivated in order for them to achieve maximally in acquiring Basic Science skills and knowledge. Rural schools should also be well equipped to boost the achievement of students in Basic Science.

KEYWORDS: Acquisition, Equipped, Balloting, Experimental

INTRODUCTION

In Nigeria education system, Basic Science is a core subject in the junior secondary school level as enshrined in the school curriculum. The purpose is to enable students to acquire basic fundamental knowledge in science and develop skills that can help them to offer sciences and science related courses at higher education level (NERC, 2004) [1]. The impact of Basic Science in enhancing scientific literacy of citizens cannot be overemphasized; as it provides a

learner with broad view of science which enlightens the learners' interaction with the environment (Wagbara & Egwanwo, 2017) [2].

Despite, the immense importance of Basic Science as the foundation stone which will be laid for students to achieve better science education future at the higher level. The academic achievement of students in Basic Science is still declining (UBEC, 2009) [3]. Odifa (2009) also noted that irrespective of the several efforts made by science educators to improve science education, the skills acquisition and academic achievement of students in science is still low.

In literature, affective domain is also essential for acquisition of scientific knowledge. That indicates that, motivation, attitude and interest may affect students' achievement in Basic Science. Uzoeshi & Iwundu (2014) [4] stated that without motivation, whether intrinsic or extrinsic effective learning cannot take place. Burns (1980) [5] noted that, motivation consist of internal processes that spur us to satisfy some needs.

Furthermore, according to Maslow (1954) [6] motivation is man's quest for self- actualization centred in man's hierarchy of needs. Therefore, motivation which is a factor that can affect achievement in Basic Science could come up from within an individual, such as interest, intelligence, aptitudes, self-confidence, high esteem and meaningfulness. Also, motivation could come from outside the individual, external or environmental factors like; peers, parents, society, church, school, mass media and many others (Uzoeshi & Iwundu, 2014).

Motivation as a propelling force that could stem from within and outside an individual to enable him achieve a goal or stated objectives, can enhance students' academic achievement in Basic Science. Thus, the idea of individual differences has spurred up the feeling that gender may play a role on motivation of students' academic achievement in Basic Science. From the lone, girl children are subjected by their parents to do certain house chores while the boys are allowed to go out to play games of their choice and sometimes indulge in some creative activities. Hence, the up-bringing of children of difference gender could make them be induced or influenced by different categories of motivation (intrinsic and extrinsic) to achieve academic contents in Basic Science. Hence, Njoku (2001) [7] noted that many socio cultural factors jointly and separately depress female interest, participation and achievement in science at all level of education. Okeke (2001) [8] further buttressed this idea of gender difference in motivation with the assertion that, relatively few women venture into men dominated discipline, such as science, technology, engineering and other science based profession.

Also, the probable feeling that the environment could be manipulated so as to bring about good condition of learning has spurred up the feeling that school location could have influence on motivation of students' academic achievement in Basic Science. In line with this context, Alokun & Anjesuyo (2013) [9] notes that many schools in the field of education seem to have shifted studies from measure of individuals to measure of the environment. the reason is due to the probable feeling that environment could be manipulated to bring about optimal good conditions for learning to take place. Wagbara (2015) [10] supported this opinion as he found that rural students did better than the urban students in Chemistry practical skills due to the fact that their laboratories were equipped by multinational companies like Shell and Agip oil while that of the urban schools were ill-equipped by parents teachers association (PTA).

The concern about potential urban-rural differences is a global issue that is not limited to a particular country (Alokun & Adjesuyo, 2013). Hence, it becomes pertinent to determine how

school location could as well influence students' motivation and academic achievement in Basic Science.

Purpose of the Study

The main purpose of the study was to investigate students' motivation and academic achievement in Basic Science. Specifically, the study sought to determine the:

1. Effect of motivation on students' academic achievement in Basic Science.
2. Gender effect of motivation on students academic achievement in Basic Science.
3. School location effect of motivation on students' academic achievement in Basic Science.

Research Question

1. What are the mean achievement scores of the motivated and the unmotivated students in Basic Science?
2. What are the mean achievement scores of the motivated males and females in Basic Science?
3. What are the mean achievement scores of the motivated urban and rural students in Basic Science?

Hypotheses

The following null hypotheses which were tested at .05 level of significance guided the study.

1. Students' motivation does not have significant effect on their achievement mean scores in Basic Science.
2. Gender does not have significant effect on achievement mean scores of motivated students in Basic Science
3. School location does not have significant effect on achievement mean scores of motivated students in Basic Science.

Methodology

Quasi experimental research design was adopted for this study. The research study was carried out in Emohua Local Government Area in Rivers State central educational zone in Nigeria. A sample size of one hundred (100) JSS 2 Basic Science students, comprising (52) males and (48) females participated in the study. The purposive sampling technique was used to select Emohua Local Government Area out of the twenty three (23) local Government Areas in Rivers

State. Stratified random sampling on basis of school location (urban and rural schools) was used to select two (2) UBE schools out of 24 UBE Junior Secondary Schools in Emohua Local Government Area. Two intact classes of JSS2 Basic Science students were used for each of the groups (to form a total of 4 intact classes) for the study. Simple random sampling by balloting was used to select 100 students that participated in the study. Basic Science Achievement Test (BSAT) was used to collect data for the study. The data collected were analyzed by using mean and standard deviation to answer all the research questions while the Analysis of Covariance (ANCOVA) was used to test the hypotheses at .05 level of significance.

Results

Research Question I

What are the mean achievement scores of the motivated and unmotivated students in Basic Science?

TABLE I: MEAN AND STANDARD DEVIATION SCORES OF MOTIVATED AND UNMOTIVATED STUDENTS IN BASIC SCIENCE

Motivation N	Pretest	Post Test	Mean Gain
Group s	Mean SD	Mean	
Experimental 50	9.14 1.37	17.74 1.04	8.6
Control 50	8.94 1.49	16.52 1.97	7.58
Mean Diff			

Table I shows that, the mean score of the pretest in the experimental group was 9.14 with associated standard deviation of 1.37, while the mean score of the posttest was 17.74 with associated standard deviation of 1.04. In the control group, the pretest had a mean score of 8.94 with associated standard deviation of 1.49 whereas, the mean score of post test was 16.52 with associated standard deviation of 1.97. The mean gain of the experimental group was 8.6 and that of the control group was 7.58. This shows that, the experimental group had a higher mean than the control group with mean difference of 1.04. This indicates that, the motivated students did better than the unmotivated students in Basic Science.

Hypothesis I

Students' motivation do not have significant effect on their academic achievement mean scores in Basic Science

TABLE 2: ANALYSIS OF COVARIANCE (ANCOVA) OF THE EFFECT OF STUDENT'S MOTIVATION ON THEIR ACADEMIC ACHIEVEMENT MEAN SCORE IN BASIC SCIENCE

Source	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	1031.163 ^a	2	22.084	9.033	.000
Intercept	572.381	1	572.381	234.124	.000
Pretest	6.951	1	6.957	2.846	.095
Group	34.801	1	34.801	14.235	.000
Error	237.143	97			

Total 29625.000 100

Corrected total 281.310 99

a. R Squared = 157 (Adjusted R squared = 140)

The result of Table 2 was used to determine whether students' motivation have significant effect on their academic achievement mean scores in Basic Science.

Table 2 shows that an F-ratio of 14.235 with associated probability value of .00 were obtained. The probability value of .00 was compared with .05 and it was found to be significant because .00 was less than .05 ($P < .05$). The null hypothesis one was therefore rejected and inference drawn that, students' motivation have significant effect on their achievement mean scores in Basic Science.

Research Question 2

What are the mean achievement scores of the motivated male and female students in Basic Science?

TABLE 3: MEAN AND STANDARD DEVIATION SCORES OF THE MOTIVATED MALE AND FEMALE STUDENTS IN BASIC SCIENCE

Gender	N	Pretest		Post Test		Mean	
		Mean	SD	Mean	SD	Gain	
Male	52	9.33	1.41	17.17	1.75	7.84	
Female	48	8.70	1.42	17.00	1.75	8.30	
	Mean Diff					0.46	

Table 3 shows that, the mean score of the males in the pretest group was 9.33 with associated standard deviation of 1 whereas, the mean score of the males in the posttest group was 17.17 with associated standard deviation of 1.75

The females of the pretest group had a mean score of 8.70 associated standard deviation of 1.42 while the mean score of the posttest group was 17.00 with associated standard deviation of 1.75. The score gain of the males was 7.84 while that of the females was 8.30. This shows that, the females had a higher score gain than the males with mean difference of 0.46. this indicates that the motivated females did better than the males.

Hypothesis 2

Gender does not have significant effect on achievement mean scores of motivated students in Basic Science.

TABLE 4: ANALYSIS OF COVARIANCE (ANCOVA) OF THE EFFECT OF GENDER ON ACHIEVEMENT MEAN SCORE OF MOTIVATED STUDENTS IN BASIC SCIENCE

Source	Type III sum of squares	DF	Mean square	F	Sig.
Corrected model	8.590 ^a				
Intercept	494.688	1	494.688	162.403	.000
Pretest	7.033	1	7.033	2.309	.132
Gender	1.281	2	3.046	.210	.811
Error	292.410	96			
Total	2542.000	100			
Corrected total	301.000	99			

a. R Squared = 157 (Adjusted R squared = 140)

The Table 4 was used to determine whether gender has effect on academic achievement of motivated students in Basic Science. Table 4 shows that an F-ratio of .210 with associated probability value of .811 were obtained. The probability of .811 was compared with .05 and it was found not to be significant because .118 was greater than .05 ($P > .05$). The null hypothesis two (HO2) was therefore accepted and inference drawn, gender does not have significant effect on academic achievement mean score of motivated students in Basic Science.

Research Question 3

What are the mean achievement scores of the motivated urban and rural students in Basic Science?

TABLE 5: MEAN AND STANDARD DEVIATION SCORES OF THE MOTIVATED URBAN AND RURAL STUDENTS IN BASIC SCIENCE

Location	N	Pretest		Post Test		
Urban	50	Mean	SD	Mean	SD	
		9.14	1.37	17.80	1.08	8.36
Rural	50	8.94	1.50	16.54	2.05	7.6
	Mean Diff					0.7

Table 5 shows that, the mean score of the urban students in the pretest group was 9.14 with associated standard deviation of 1.37 while, the mean score of the urban students in the posttest group was 17.80 with associated standard deviation of 1.08. The rural students of the pretest group had a mean score of 8.94 with associated standard deviation of 1.50 whereas, the mean score of the posttest group was 16.54 with associated standard deviation of 2.05. The result in the Table 5 shows that, the urban students had a higher score gain than the rural students with a mean score gain difference of 0.7.

Hypothesis 3

School location does not have significant effect on achievement mean scores of motivated students in Basic Science.

TABLE 6: ANALYSIS OF COVARIANCE (ANCOVA) OF THE EFFECT OF SCHOOL LOCATION ON ACADEMIC ACHIEVEMENT MEAN SCORES OF MOTIVATED STUDENTS IN BASIC SCIENCE

Source	Type III sum Of squares	df	Mean square	F	Sig.
Corrected model	42.080 ^a	2	21.040	7.789	.001
Intercept	634.730	1	634.730	234.969	.000
Pretest	2.390	1	2.390	.885	.349
Location	38.146	1	38.146	14.121	.000
Error	262.030	97	2.701		
Total	29785.000	100			
Corrected total	304.1110	99			

a. R Squared = 138 (Adjusted R squared = 121)

The result of Table 6 was used to determine whether school location have significant effect on motivated students' academic achievement mean scores in Basic Science.

Table 6 shows that an F-ratio of 14.121 with associated probability value of .00 were obtained. The probability value of .00 was compared with .05 and it was found to be significant because .00 was less than .05 (HO3, was therefore rejected and inference drawn that school location have significant effect on achievement mean score of motivated students in Basic Science.

DISCUSSION

The result of Analysis of Covariance used in testing hypothesis one was shown in Table 2 and yielded an F-ratio of 14.24 with associated probability value of .00. The result showed that $P <$

.05 which indicates that students motivation had significant effect on their academic achievement in Basic Science. Hence, the null hypothesis one (HO₁) which states that, student's motivation do not have significant effect on their academic achievement mean scores in Basic Science was rejected. The findings of this study agree with the findings of Wegbo (2014) [11] and Newlife (2016) [12] as they stated that the students who were motivated performed better than those who were not motivated.

This study have confirmed that motivation have significant effect on students' academic achievement in Basic Science.

Table 4 shows that, an F-ratio of .210 with associated probability value of .811 were obtained. The result of this study in Table 4 shows that, gender does not have significant effect on achievement mean scores of motivated students in Basic Science as $P > .05$. hence, the null hypothesis two (HO₂) was accepted. The findings of this study disagree with the findings of Wegbo (2014) and Newlife (2016) as they stated that, the motivated females performed significantly better than their male counterparts. This study confirmed that gender does not have significant effect on achievement mean scores of motivated students in Basic Science.

In Table 6, it was shown that an F-ratio of 14.12 and associated probability value of .00 were obtained. The result of this study in Table 6 shows that school location have significant effect on motivated students' academic achievement mean scores in Basic Science as $P < .05$. Hence, the null hypothesis three (HO₃) was rejected. The findings of this study did not agree with the findings of Ukah (2013) [13] which stated that, there is no significant difference in the mean ratings of urban and rural teachers on the use of outdoor education in teaching the topics in primary 8 Basic Science and Technology curriculum that requires outdoor activities. However, this study have confirmed that, school location have significant effect on achievement mean scores of motivated students in Basic Science.

CONCLUSION

Firstly, the result of this study has shown that students' motivation have significant effect on their academic achievement mean scores in Basic Science. The motivated students performed better than the unmotivated students in Basic Science. Secondly, the result of the study found that gender does not have significant effect on academic achievement mean scores of motivated students in Basic Science. The males and females had equal mean scores in Basic Science. Hence, no group performed better than the other. Thirdly, the result of this study have shown that school location had significant effect on academic achievement of motivated students in

Basic Science. The mean score of the urban students was higher than that of the rural students which shows that the urban motivated students performed better than the rural motivated students in Basic Science.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The teachers should use motivational approaches like using the principles of reinforcement to encourage effective participation of students in the classrooms. Incentives should be given to Basic Science students as a way of arousing their interest in learning, rewards could be given to the best performed students in Basic Science examinations as a form of motivation for the students.
2. All Basic Science students should be given equal attention and treatment in the teaching and learning of Basic Science irrespective of their gender as this study have confirmed that both males and females learn at equal capacity. The male and female students should be optimally motivated in the teaching and learning of Basic Science.
3. This study found that, the urban schools did better than the rural schools. Hence, treatment like provision of more amenities and teachers should be done on rural schools to improve the students' academic achievement in Basic Science in rural schools.

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SPECIFIC FEATURES OF TERMS IN ARCHITECTURE

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ABSTRACT

The main purpose of this article is to discuss the need to study English by students of architectural and construction universities, about the features of architectural and construction translation and the need for professional knowledge for a deeper understanding and description of technological processes occurring at construction sites, at various stages of project development or at stages production of building materials or structures. Today, in the modern world, the development and expansion of international relations in the field of education, between educational institutions of different countries, science, production of modern energy-efficient building materials, exchange of experience in the field of modern construction technologies that help to reduce labor costs and increase the volume of production in production are relevant or performing work on construction sites. The article will also consider issues related to the implementation of a quality management system in organizations related to the construction industry and the gradual transition of the Republic of Uzbekistan to the international system of standardization, certification and metrology. These aspects require knowledge of a specific English language, to understand the specifics of working with international standards, to exchange experience with foreign countries and participate in international conferences related to explaining changes in standards, since the standards are periodically updated and adjusted to the specifics of modern technologies.

KEYWORDS: *Features Of Architectural And Construction Translation, International Relations, Standardization, Certification, Energy-Efficient Materials.*

I. INTRODUCTION

In the context of globalization, an emphasis is placed on cooperation at the international level, joint events and projects, therefore, in the modern world, the use of English as the main international language in various professional spheres: engineering, cultural, political, is becoming increasingly important. This creates a number of difficulties that must be overcome to ensure effective work and cooperation at all levels of interaction between people. [1]

So, the engineering sphere, in particular, the language of architecture and construction, is distinguished by a large number of terms and terminological phrases, the correct translation of which is necessary for professional communication, both oral and written. In addition to the complexity of the translation, the scientific and technical style also has features that must be taken into account during communication. It is characterized by information content

(meaningfulness), consistency (strict sequence, clear connection between the main idea and details), accuracy and objectivity, as well as clarity and comprehensibility. In order to match the scientific and technical style of a given area of communication, various language means can be used. [2]

When trying to use architectural and construction terminology in communication, one may encounter a number of problems in translation, because:

- ESP (English for Specific Purposes) for builders is different from spoken English;
- The need to select equivalent terms in translation or the invention of new terms (if there are none in the language);
- Difficulties with translation, since one word in different fields of activity has a different translation.

Based on the above, it can be understood that English for architects and builders has its own specifics and complexity, which requires, in addition to language skills, additional knowledge and understanding of the processes and technologies that are performed in the learning or production process. [3]

A term is a word or group of words that denote a certain concept. The terms used in the construction industry can be divided into several groups:

- Construction materials;
- Construction tools;
- Construction machines;
- Components of buildings and structures.

Mastering by students of architectural and construction universities the terms of the above groups will allow them to freely understand the speech of foreign specialists, documentation, drawings, as well as knowledge of construction terminology opens up new horizons for improving the professional qualifications of builders and technologists for the production of building materials. [4]

II. MAIN PART

In the modern world, the production of building materials and testing of building materials in specialized laboratories require qualified personnel with professional knowledge and English. The English language acts as an assistant in international cooperation with various foreign companies that invest in the construction of new factories for the production of modern building materials, participate in the construction of multi-storey buildings in our republic. In order to freely understand project documentation, drawings, organization of technological processes and conduct a dialogue with foreign clients and exchange experience, students studying in the field of construction need to memorize architectural and construction terminology, so that in the future, when working, there will be no problems with understanding what customers want, to increase knowledge in the exchange of experience, to study the instructions for the operation of devices. [5]

Laboratory devices used for testing building materials are most often produced by foreign companies, in order to understand the principle of operation of the device and how to process and analyze the data obtained after testing, it is necessary to have skills in construction terminology. In our country, there are some problems with the verification and calibration of laboratory instruments, because modern instruments require the study of instructions and methods of calibration, which of course is usually given in English, most specialists in our country do not have this knowledge, which complicates the certification of instruments.

Therefore, most instruments are calibrated and verified abroad, in other countries. The training of qualified personnel who speak technical English is now one of the priority tasks of the state, for this, internships are carried out for students, advanced training of workers in other countries, this is all necessary in order to enter the international level, so that building materials or construction services produced or rendered in our country could compete with foreign ones, thereby we secure a place in the world ranking of countries.

The quality management system (QMS) is a part of the overall enterprise management system, which must ensure the stability of the quality of products or services.

In order for the produced building materials and services in the field of construction to comply with international standards and in order to increase the level of production, the organization is introducing a quality management system, which also requires knowledge in the field of technical English, to undergo qualification training and workflow related to QMS. [6]

Most construction specialists, when working with technical documentation, face the following difficulties in understanding architectural and construction texts:

- translation of words that have many meanings that can be used in several areas, and at the same time have different meanings in each of them. For example, several words that have a different translation "face" - "human face" - "facade"; "Item" - "thing" - "detail", "product"; "tolerance" - "forbearance for someone" - "error"; "nut" - "hazelnut" - "internal screw"; "screen" - "screen of mobile phone" - "sieve", so the reader must understand the subject matter of the translated texts, only then can a competent translation be achieved;- the correctness of the translation. The safety, life and health of people will depend on the correct translation of the algorithms for the operation of equipment or devices, safety instructions at the work site or production;
- translation of stable technical phrases. Due to the rapid development of the architectural and construction industry, the number of stable technical phrases is constantly increasing, therefore, in this case, the skill of understanding professional activity is required in order to find a suitable equivalent for the newly emerged phrase; For example, "structural engineering", "technical requirements", "a reinforcing concrete", "fine aggregate", "coarse aggregate", "concrete mix design".
- translation of abbreviations, which are found in large numbers in drawings and technical documentation. For example, CAD (computer-aided design) or DRG./ DRW (drawing), "chipboard and medium-density fiberboard" (MDF), "a glue-laminated section (abbreviated as glulam)", BIM (building intelligence model);
- correct translation and writing of dimensions in the drawing and during measurements. For example: 2 560 km² (two thousand five hundred and sixty square kilometers), 875 m³ (eight hundred and seventy five cubic meters);

- translation and explanation of the meaning of national building materials and technologies used in Uzbekistan, such as "pakhsa", "pardoz", etc., which are not translated into other languages.

To overcome difficulties and ensure a competent translation, students need to understand that translation of technical documentation and architectural and construction texts – laborious a process that requires professional knowledge in the construction industry, and also in areas adjacent to it. In addition to knowledge of English, the student must also be fluent in architectural and construction technical terminology and deeply understand the processes and phenomena described in the material being translated.

III.CONCLUSION

Thus, we can draw conclusions about why today students of architectural and construction universities should pay great attention to learning English in general, but also ESP, which concerns their professional activities. Architectural and construction terminology is constantly at the stage of development and expansion, since with the production and invention of new building materials, raw materials, structures and building technologies, there is a need for special English terminology, which will correctly translate the name from the native language into international - English.

The use of various techniques in the translation of architectural and construction technical documentation and texts on this topic contributes to the provision of correct and adequate translation, helps to exclude cases of incorrect interpretation of drawings and instructions during avoiding harm to the life and health of workers, and facilitate the establishment of international relations for the exchange of new technology and experience.

Knowledge of architectural and construction terminology for students of construction universities, will open up new boundaries for them in the future when working with modern testing equipment, with modern methods of testing building materials and in the ability to work in a team with foreign experts during construction, this will facilitate the exchange of experience between countries and borrowing modern technologies from developed countries.

In order to constantly be aware of changes, or the addition of new architectural and construction terms, it is necessary to create an online platform of vocabulary and terminology for engineers, with an accessible search and translation from English into world languages, and with a description of the meaning of words, which would be periodically updated in case changes in terminology. This platform would facilitate the work of engineers who collaborate with foreign companies, researchers in the field of construction and architecture, and would help develop technical language skills in construction students. It would also be possible to create an online dictionary application for engineers for mobile devices, which would not require an Internet connection for translation, but would be updated periodically in case of new changes. Such an application is very convenient to use and you can translate terms anywhere and anytime, even without an Internet connection, it is very convenient to use. Knowledge of professional English in various fields of activity, not only in construction, is of great practical importance throughout the world.

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DIFFERENTIATED APPROACH TO TREATMENT CONVENIENCE IN EARLY CHILDREN

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ABSTRACT

Rickets is a fairly common pathology in children 1 year of age, against which a secondary infection of the respiratory and gastrointestinal tract easily joins. The simplest method of vitamin D prevention not only contributes to the normal growth and development of a child, but also prevents the development of severe forms of rickets, as well as an unfavorable outcome of somatic diseases. The developed program for the prevention of rickets ensures reliable delivery of the drug to the patient.

KEYWORDS: *Young Children, Rickets, Convulsions.*

INTRODUCTION

Convulsions are one of the main neurological syndromes of the neonatal period. Their frequency ranges from 1.1 to 16 per 1000 newborns [1].

One of the main causes of seizures in children is rickets, in which there is a violation of the formation of cholecalciferol in the skin, the formation of active metabolites of vitamin D in the liver, kidneys, as well as insufficient intake of vitamin D with food [2].

Rickets is a social problem in pediatrics and is a disease of a growing organism. But in modern conditions, a real deficiency of vitamin D, due to insufficient intake or formation of it in the body, is possible only in early childhood, in most cases in the first year of life, which is objectively related to the dietary habits and lifestyle of the child in this age period [3].

Immunity disorders revealed in rickets (decreased synthesis of interleukins 1 and 2, phagocytosis, interferon production) and muscle hypotension predispose to frequent respiratory diseases. Among the serious consequences of rickets are osteoporosis, osteomalacia, poor posture, multiple dental caries, myelofibrosis, anemia, and autonomic dysfunction. As a result of a decrease in the absorption of Ca, P, Mg, the consequences of rickets are impaired motility of the gastrointestinal tract in the form of constipation, dyskinesia of the biliary tract and duodenum [4].

Disorders of phosphorus-calcium metabolism can be observed with recurrent acute respiratory viral, intestinal infections, taking medications (glucocorticoids, anticonvulsants, etc.). [5]

Purpose of the work: to carry out a differentiated approach in the treatment of convulsive conditions in children with signs of rickets.

Materials and research methods. In the city children's hospital No. 1, we examined 65 children who were admitted to the intensive care unit for convulsions. Among them there were 38 boys and 27 girls. The age of the children ranged from 5 months to 10 months. Children underwent a general blood test, determined the level of Ca and P in the blood, as well as EEG.

Research results : 48 children had a Ca decrease to 1.7 mmol / L, and 17 children had an average Ca level of 2.06 mmol / L. Often the first symptoms of rickets in these children were autonomic disorders. Symptoms such as sleep disturbance, irritability, tearfulness, and excessive sweating were noted. Due to the presence of an acidotic shift in the body and the acidic nature of the sweat, skin irritation was noted. The most common complaint was severe sweating of the face, especially the scalp. This, in turn, led to baldness of the occiput in the majority of children. The urine acquired a sour smell, irritated the child's skin, diaper rash, pyoderma appeared. Compliance of the bones forming the edges of the large fontanelle was noted in 18 children, curvature of the legs in 13 children, severe muscular hypotension in 10 children.

From the above, we can conclude that these children did not receive rickets prophylaxis in the pediatric area.

Upon admission to the hospital, all children were treated with vitamin D in a therapeutic dose of 20,000-25,000 IU per day for 30-45 days, which gave a good therapeutic effect.

5 children had repeated convulsions within 2 days. These were children whose blood Ca levels were below 1.5 mmol /, and the EEG showed signs of intracranial hypertension. The inclusion of magnesium sulfate in the complex of treatment contributed to the elimination of seizures in this

contingent of children. The conducted observations showed that in children who received a residual prophylactic dose of vitamin D, even in the presence of intracranial hypertension, convulsions did not recur. All of the above was the basis for revising the methods of preventing rickets.

The staff of the Department of Pediatrics has developed and implemented a new scheme for the prevention of rickets: Vigantol, 6 caps. or Devaron 6 tab. (4000 IU) 1 time per week from one month of age to the end of 1 year of life. Our observations have shown that about 5% of parents have a negative attitude to the introduction of any drugs to healthy children, about the same number of parents are eager to "do something" to improve the growth and development of the child, and the bulk of parents are positive, but do not understand the importance of the principles prevention and often do not clearly follow the recommendations of the pediatrician. Considering that in our republic there is a system of patronage supervision of children of the 1st year of life, we recommend that the drugs prescribed for prophylactic purposes be given to the child with his own hand, once a week in the above dose during patronage.

This technique does not increase the workload of the nursing staff and, along with it, the doctor is convinced that the child will indeed receive these drugs.

The results of recent observations showed that in children hospitalized for somatic diseases, despite the presence of hyperthermia, convulsions were not observed, which was associated with the timely implementation of the specified prophylaxis scheme. Whereas the number of children admitted to the intensive care unit of the GBD No. 1 for convulsions caused by rickets, i. E. those who did not receive vitamin D in the indicated scheme did not tend to decrease.

The results obtained and their discussion. Thus, the problem of convulsive states in children caused by rickets does not lose its relevance at the present time. Timely and correctly carried out prevention of rickets is of particular importance. A big mistake is the refusal to prevent rickets with vitamin D, which leads to the development of the disease and, accordingly, to a deterioration in the quality of life of the child: a decrease in physical activity, a violation of the correct formation of the skeletal system, a decrease in immune defense, and an aggravation of the course of bronchopulmonary diseases. The scheme developed by us guarantees the obligatory receipt of vitamin D by the child and, hence, a significant reduction in the convulsive state in children.

CONCLUSIONS

only comprehensive prevention, including the use of vitamin D and a differentiated approach to the treatment of convulsive conditions, will significantly reduce the number of children suffering from convulsive syndrome.

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FINANCIAL MECHANISM OF TOURIST SERVICES PROVIDING

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ABSTRACT

When conducting research, the purpose of this paper is to determine how to use the financial mechanism for regulating the effectiveness of the use of tourist services. The author suggested that the analysis of the conditions for the use of tourist services will allow tourist enterprises to make a choice of financial decisions in the implementation of their own activities reasonably, based on three interrelated elements: risk, efficiency and quality. The necessity of using a financial mechanism for determining the effectiveness of tourist services is also substantiated, and the structure for determining the cost of a tourist product is shown. The need for an analysis with the priority of dividing costs into variables and constants is noted. The method of calculating the effectiveness of tourist services is shown. Conclusions are made and recommendations for regulating the effectiveness of tourist services are developed.

KEYWORDS: *Efficiency Indicator of Tourism, Tourist Activity, Tourist Services, Efficiency Of Tourist Services, Financial Costs, Regulation Of Efficiency.*

INTRODUCTION

Before the coronavirus pandemic, tourism developed at a particularly accelerated pace, in almost all countries of the world. This was influenced by a variety of factors: an increase in the income of the population in many countries, a large number of tourist routes, a reduction in the cost of travel services, the opening of visa-free entry regimes, the development and dissemination of digital services, both in the economy as a whole, and in the provision of tourist services, the receipt of which has become require much less effort and time because of this. And now, despite the fact that the pandemic is not over, tourism is gaining momentum again, albeit with some restrictions and new requirements both for organizations providing travel services and consumers of these services.

Tourism is not only a tool for promoting world trade, developing the competitiveness of goods and services, but also a structural part of programs to reduce poverty in the regions, increase the gross domestic product of countries, and ensure the financial stability of countries.

This is not just a socio-economic phenomenon, characterized by the civilized development of the population of countries, their movement in space, but also an economic motive, both for business entities and for individuals. According to the experts of the World Tourism Organization (UNWTO), tourism is one of the most dynamically developing segments of the world economy. In order to consume tourist services, the population of the countries of the world is trying to increase their earnings, trying to more carefully distribute their financial resources, changing

their way of life. The governments of different countries pay special attention and respect to the architectural monuments of the country, improve the social and transport infrastructure of the territories, create new tourism products, new routes and services to expand the client base, remove visa restrictions, hold more cultural events and international negotiations.

Therefore, it is necessary to constantly search and update an effective financial mechanism aimed at using tourist services in the context of the developing digital economy. It is the digital economy that contributes to the formation, management and control of vast and reliable statistical databases. At the same time, in order to find an effective mechanism for managing tourist services based on statistical data, they must be fully reliable and adequate. It is in this that digitalization plays a special role, with the correct organization of which the data will be logically comparable and timely, while not requiring a lot of time and effort.

Research methodology

In the process of working on the study, the author based on current trends, legislative and regulatory support, development of the country, approved by legislative and regulatory acts, used a systematic approach, economic and mathematical modeling, grouping and synthesis.

LITERATURE REVIEW

The development of a high-quality management system for enterprises in all spheres of the economy, and, in particular, for tourism enterprises, is one of the main conditions for ensuring economic growth in a given territory, increasing competitiveness, efficiency of optimizing their financial costs and increasing the quality of life of the population. But such a qualitative change can be achieved through the development of innovative activities of enterprises, ensuring their interconnection.

Tourism activity is one of the priority directions of development of Uzbekistan. Therefore, research, both practical and theoretical, has been given a huge impact. Tourism continues to be considered from completely different aspects: social, financial, political, cultural, etc. In particular, the Strategy of Actions for the Further Development of the Republic of Uzbekistan in 2017-2021 “provides and improving the quality of tourist services, expanding the tourist infrastructure” [1]. This is reflected in the implementation of measures aimed at the formation and development of tourism infrastructure, attracting private and public investment in the implementation of the cultural and historical aspect of the development of tourism activities [2]. The formation of tourist products and objects, the preservation of cultural and historical heritage, including contributing to the creation of new jobs, is in line with the poverty reduction program in the Republic of Uzbekistan [3].

This is what testifies to the need to develop an effective financial mechanism aimed at the use of tourist services in the context of the developing digital economy is of direct and high importance for increasing the competitiveness of tourist enterprises and improving the quality of tourist services. The number of studies on this topic is constantly growing, in particular, a large number of scientists have shown a growing interest in this topic in recent years in terms of tourism management, social media, data set analysis, consumer behaviour and tourism development. Some researchers concluded that the analysis of large amounts of data to predict the demand and preferences of tourists using data from web traffic and social networks shows the need to develop strategies aimed, among other things, at smart tourism [4]. Individual researchers have

concluded that the central government plays a leading role in directing rural tourism to desired destinations, while local government plays a supportive role by directly managing tourism practices and coordinating with businesses and residents to provide services and resolve problems. Synergistic interaction between central and local governments in China stimulates the rapid development of rural tourism [5].

The study of this issue showed the presence of unsolved problems in this area. In practice, measures aimed at effective regulation of tourist services are not sufficiently implemented, most of them are of a private nature, aimed at a short-term effect. Domestic scientists also agree with this [6].

A large number of scientists, implementing research in the field of assessing the financial mechanism for regulating tourism services, proceed from the dynamics of achieving high indicators of financial and economic efficiency of the tourism industry with an assessment of the degree of influence of some components on its development as a whole. These components can be analyzed by assessing the economic efficiency of the tourism industry using the available statistical data [7, 8, 9].

Some scientific works of domestic scientists note that behind the financial and resource problem, which occupies a central place in a wide range of problems of organizing the finances of tourism enterprises, it would be illegal to see only the surface question of attracting financial resources to ensure the financial and economic activities of tourism enterprises. The movement of financial resources, their mobilization as part of such a turnover is also a question of the direction and management of spending, of investments that are associated with the general economic and specific financial and credit conditions of the current stage of development of market relations in Uzbekistan [10,11].

Work on the definition of an effective financial mechanism for the management of tourism services is on-going in different countries. In particular, A.P. Gorbunov, L.Kh. Gazgireeva, L.A. Bumyasheva analysed the advantages of cluster policy as a key tool in solving problems necessary for the qualitative development of the tourism industry in the region, innovative potential and the level of economic development of the country as a whole. Having noted, at the same time, the need to determine a set of measures implemented by interested business entities and executive authorities aimed at combining the material, technical, financial, technological and innovative resources of potential participants, there was an increase in interaction between them and the creation of a favourable environment for development [12]. Researchers at the International Institute for Tourism Research, George Washington University noted the need to use indicators that allow destinations to track their progress towards the goal, as well as demonstrate achievements and shortcomings. "The indicator is what helps you understand where you are, where you are going and how far you are from where you want to be." A good indicator proactively signals a problem, ideally before it goes away. Traditional indicators measure economic, social and environmental impacts. Indicators reflect the assumptions of program developers [13].

Thus, the formation of an effective financial mechanism aimed at the use of tourist services is of paramount importance, especially for use in regions with a tourist infrastructure, the development of tourist activities and acquires a special development, contributing to widespread use in the context of a developing digital economy.

Analysis and results

Conducting a practical analysis of the conditions for the use of tourist services will allow tourist enterprises to make a reasonable choice and avoid possible and negative consequences as a result of making random unmotivated financial decisions.

In this regard, we proceed from the following three interrelated main indicators that exist in the field of tourism services: risks, efficiency, quality (REQ). It is the coordination of all the listed elements and obtaining their optimal values that will determine the most probable strategy for financial regulation of financial decisions in favour of tourist services.

In this article, we will consider only the financial mechanism for regulating the effectiveness of these services within the framework of tourism enterprises. However, in order to regulate this process, you must first familiarize yourself with the methods of its determination. Nowadays, several methods are used to calculate the efficiency of tourist services depending on the size of the business (large or small). However, in the context of the current global economic development, when it is almost impossible to predict the change in the discount rate, as well as in order to save costs for calculations using “dynamic” methods, in our opinion, it is advisable to use the well-known traditional method of the rate of return:

$$\Delta PR = \sum NP / \sum E_x I_n S_{er} P_{ro} \quad (1)$$

где: $\sum NP$ — net profit;

$\sum E_x I_n S_{er} P_{ro}$ —expenses for innovative service projects P_{ro} .

It should be noted that the value of the rate of return depends on the period that will be selected to calculate the value of net profit. Therefore, to determine it, it is recommended to choose the most optimal forecasting interval. In addition, we propose a comparative financial and economic assessment from the standpoint of the cost of a tourist product and the cost of travel services (see: Table 1).

TABLE 1 - INITIAL DATA FOR DETERMINING THE COST OF A TOURIST PRODUCT

No	Name of costs for a tourist product	Nature of costs	Assessment from the point of view of maximum load, %	Cost per travel contract period
A	B	C	1	2
1	Wages	Constant / variable	30,5	11000
2	Compensation (in% of the wage bill)	Constant / variable	6,9	2500
3	Social tax (in%)	Constant / variable	4,5	1620
4	Software	Constant	13,9	5000
5	Maintenance, software update	Constant	0,8	300
6	Depreciation	Constant	5,6	2000

7	Rent, utilities, security	Constant	16,7	6000
8	Management, administrative expenses (in% of the wage bill)	Constant	4,4	1590
9	Refresher courses (in% of the wage bill)	Constant	8,3	3000
10	Overheads (in% of the wage bill)	Constant	8,3	3000
11	Net costs of the tourist product (<i>NC</i>)	x	x	
12	Total cost of the tourist product (<i>TC</i>)	x	x	

Methods for evaluating tourism products and services help to assess costs, both direct and indirect. In addition, it is advisable to consider these costs from the perspective of fixed and variable costs. So, as part of the direct costs of travel companies are:

- Equipment and other means;
- Software and other intangible assets;
- Remuneration of personnel involved in serving tourists;
- Administration of the activities of travel companies;
- Other expenses (electricity, heat, office supplies, etc.).

Indirect costs include unplanned, incidental costs, downtime, extraordinary staff training, and so on. As an example, the main indicators for comparing the cost of maintaining a travel company and travel services are given in the table, which is a working option for comparing the costs of travel services and the consumer.

Efficiency of travel services (*ETS*) characterized by the following main parameters:

ETS – efficiency of travel services;

TC – total costs of the tourist product;

NC – net costs of the tourist product.

The efficiency of tourism services is proposed to be calculated as the ratio of the cost of travel services (*TC*) to the cost of maintaining a tourism product (*NC*), namely:

$$ETS = \frac{TC}{NC} \quad (2)$$

This coefficient (*ETS*) can take the values:

$TC > 1$. There is no economic benefit for the consumer of travel services, since the cost of tourism product services is higher than its own internal costs. The decisive moment in this case could be to ensure the quality of work and the operational time frame for their implementation. The latter require special financial relationships.

$TC = 1$. The cost components are equal. Again, the “preponderance” in favour of the travel services of a third-party travel company could be a qualitative component.

$TC < 1$. This option testifies to the clear economic benefits of using the travel services of an intermediary highly specialized tourism enterprise (firm). The motivation for the choice in this case is obvious.

The values of these coefficients, together with indicators of potential financial risks, are comprehensively taken into account when deciding the issue in favour of tourist services.

Efficiency regulation is a set of integrated cyclical processes and analysis of innovative technologies that relate to the financial and operational activities of a tourism enterprise. This allows consumers of tourism products and services to determine strategic goals, and subsequently analyse and evaluate the effectiveness of their activities in accordance with the established goals, as well as respond in a timely manner to the life processes of their enterprise. It should be noted that the business processes of the tourist product consumer are associated with the implementation of his strategy, which include not only financial and operational forecasting and reporting, but also the analysis and monitoring of key performance indicators of the tourist product. This is the most important aspect of studying the effectiveness of tourism services.

The first step towards developing the right key indicators for travel services (*KITC*), i.e. achieving the desired result is the definition of strategic objectives and tourism needs. Organizations can use a variety of ways to identify critical areas of work and metrics for those areas (see:Figure1).

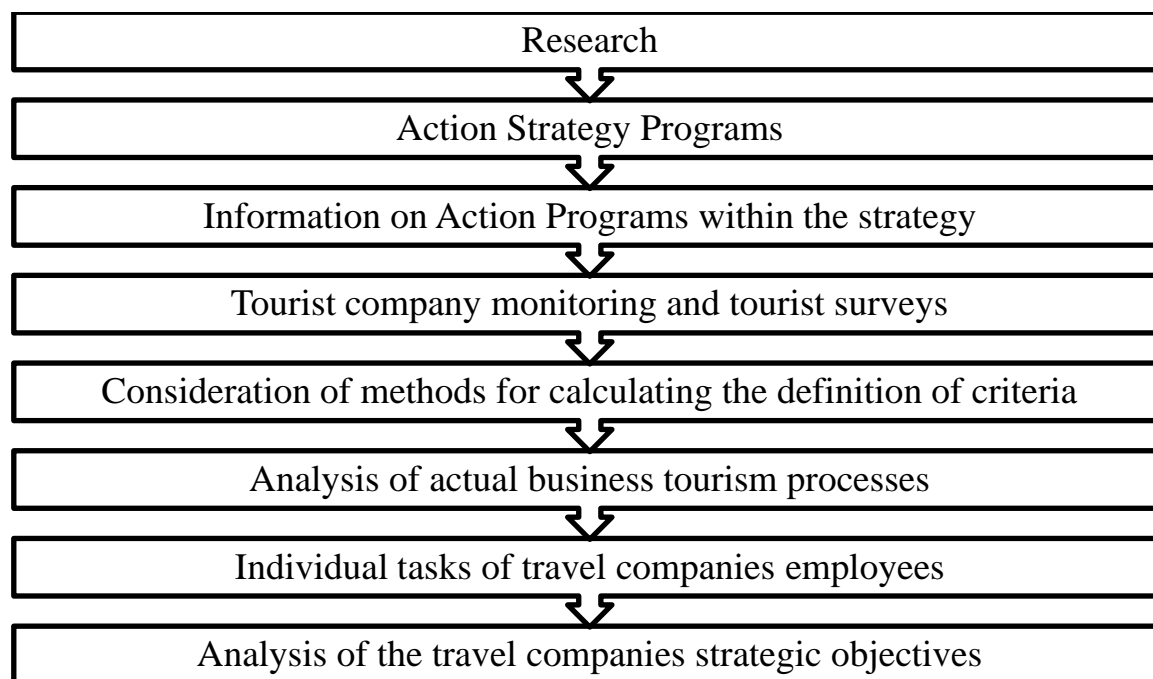


Figure1. Model for determining key performance indicatorstourist products

The *KITC* system is understood as a system of financial and non-financial indicators that affect the quantitative or qualitative change in results in relation to the strategic goal (or expected financial result). The balanced scorecard includes the *KITC* required for each control object and the methodology for their assessment. These systems or methods form the basis for making financial decisions, are based on assessing the effectiveness of a travel company and are aimed at achieving strategic goals.

In tourism industries, performance indicators (*KITC*) must be based on reliable data. If data are not available or they are unreliable, then the management of the tour company must either create a data collection system or revise the developed financial performance indicators so that they are based on existing data.

The concept of key (balanced) indicators is that traditional financial and economic indicators are not always “adequate” for determining the strategic financial result of travel companies and providing feedback. In this regard, in order to solve such problems, it is necessary to have a more “balanced set” of indicators of the activity of tourist enterprises, which would allow in the future to control the factors affecting these parameters. To monitor the process of achieving strategic goals, one should not take into account the assessments of past tourism activities of enterprises. It is necessary to focus precisely on those indicators that will affect the financial results of travel companies in the future. In this regard, it is necessary to limit their number.

CONCLUSIONS

During the study, it was found that, on average, tourism enterprises can use more than 60 indicators, in fact, users work with only 16. At the same time, most travel companies use no more than 20 such indicators. There should be exactly as much information as it is necessary for analysis (assessment of the effectiveness of the activities of travel companies). It should be noted that for its implementation it is extremely important that the initial information is objective, accurate and arrives on time.

In modern conditions of the development of the digital economy, the most common way to calculate efficiency regulation should be to minimize financial costs. However, it should not be considered as the only way to improve the efficiency of travel services, since the achievement of the strategic goals of travel companies depends on many factors. From our point of view, the regulation of the efficiency of tourist services must be inextricably linked with the quality of the provision of tourist services. It is necessary for the consumer of the tourist product and the tourist company to find the best option for joint cooperation, when financial costs are minimized, but the travel services are in fact provided with the proper quality. Only in such a “tandem” is further promising cooperation between consumers of tourism services and tourism enterprises of host countries possible.

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FEEDING ANIMALS OF DIFFERENT BENEFITS

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ABSTRACT

This article discusses the nutritional and nutritional value of young dairy products from milk-smoked and simmental pedigrees to their nutritional needs. Digestible protein is important for fattening animals because the animals also need it to shape their body and gradually increase the weight of muscle tissue. All of the animals in our experiment had adequate amounts of digestible protein in the feed intake. The feeding and care conditions of the animals in the experimental groups were the same. Research results. The full-value ration is determined based on the animals' demand for a variety of nutrients, vitamins, and minerals.

KEYWORDS: Gender, Diet, Nutritional Content, Digestible Protein, Minerals, Seasons.

INTRODUCTION

About 10 cattle breeds are bred in the farms of the Republic of Uzbekistan, including black-and-white, red-desert, Bushiev breeds in the dairy direction, Simmental, Swedish breeds are double-productive, Aberdeen-Angusian, Kazakh-white-headed, Santa-Gertruda breeds Intended for fertilization. [1,2] Among these breeds, the black-and-white breed ranks first among other breeds bred in the country with its head count and milk yield of cows. It must be acknowledged that the meat yield of the Simmental breed is superior to that of many breeds. Increasing beef production is one of the urgent tasks today [3]. The research work being studied and analyzed is important because it focuses on this very problem and determines the need to study it.

The purpose of the study.

Sustainable improvement of beef production in the specific natural-climatic and ecological conditions of Jizzakh region. Materials and methods. The experimental part of the research was carried out in 2018-2020 in the conditions of the farm "Sangzor" Arnasay district of Jizzakh region. Based on the similarity for the experiment, 40 newly born calves of black-and-white and

Simmental breeds of similar genetic origin, sex, age were divided into female calves of group I with 10 heads of black-and-white breed, group II of this breed. 10 male calves were included in group III, 10 female calves of Simmental breed were included in group III, and 10 male calves of this breed were included in group IV. The feeding and care conditions of the animals in the experimental groups were the same. Research results. The full-value ration is determined based on the animals' demand for a variety of nutrients, vitamins, and minerals. Nutrition is designed to ensure growth and development at the norm. Milk, oats, green fodder, alfalfa hay, corn silage, haylage included in the diet of the experimental animals were grown on the farm. The summer ration consisted mainly of green fodder, while the winter ration consisted mainly of corn silage, haylage, alfalfa hay, and straw. At all periods of the experiment and during the seasons, the animals were given strong feeds. The composition of the feed given to the animals during the experiment is given in Table 1 below. From the data in Table 1, it can be seen that there is a difference in the level of consumption of all types of nutrients. In particular, bulls of the Simmental breed of group IV consumed more than their counterparts of groups I, II and III: 5598 kg or 44.2%, 5958 kg or 43.5%, 2548 kg or 18.8% of green alfalfa. It should be noted that in the rations formed when fattening young cattle, the dry matter content should be at the norm. This is because dry matter plays an important role in meeting an animal's need for energy and nutrients. In our experience, the amount of dry matter in the rations was higher in animals belonging to the Simmental breed. In particular, the dry matter content of the feed consumed during the experiment by bulls of Simmental breed of group IV was 6819.8 kg, according to which they were compared to their peers, animals of groups I, II and III, respectively: 1539.7 kg or 29.2%, 1767.9 kg or 27.4%, 856.0 kg or 14.4% were superior. Adequate digestibility of protein in the diet is the basis for the formation of productivity of young animals, because protein is a key component of any living cell. Digestible protein is important for fattening animals because the animals also need it to shape their body and gradually increase the weight of muscle tissue. All of the animals in our experiment had adequate amounts of digestible protein in the feed intake. From the analysis of the table it can be concluded that substances such as crude protein, crude fat, crude kleshatka, AEM, calcium, phosphorus are necessary for animals during all growth periods. Because their absence or lack of quantity adversely affects the growth of animals. If the amount of these substances is increased, it can be eliminated from the body without harming the animal.

TABLE 1. AMOUNT OF FODDER CONSUMED IN THE EXPERIMENTAL ANIMALS (AVERAGE PER HEAD), KG.

Type of food	Groups							
	I		II		III		IV	
	The amount of food	Food unit	The amount of food	Food unit	The amount of food	Food unit	The amount of food	Food unit
Nonfat milk	100	30,0	100	30,0	100	30,0	100	30,0
Buttermilk	120	15,6	120	15,6	120	15,6	120	15,6
Green alfalfa	7582	1668,0	7622	1676,8	11032,8	2427,2	10259	2256,9
Corn silage	2961	592,2	2941	588,2	2877	575,4	2813	562,6
Senage	1501	525,3	1461	511,3	1430	500,5	1440	504,0
Hashaki beets	750	90,0	810	97,2	710	85,2	764	91,7

Beda pichani	854	375,8	881	387,6	850	347,0	867	381,4
Wheat straw	210	46,2	268	58,9	220	48,4	231	50,8
Cotton sheluxasi	176	63,4	249	89,6	160	57,6	198	71,3
Omixta em	1158	1030,6	1171	1042,2	1039	924,7	1164	1035,9
Nutrition of nutrients consumed, feed unit	X	4437,1	X	4497,4	X	5011,6	X	5000,2
Dry matter, kg	5280,1	-	5351,9	-	5963,8	-	6819,8	-
Digestible protein, kg	572,39	-	580,16	-	646,50	-	739,29	-
Alternating energy, MDj	53866,4	-	54598,4	-	60840,8	-	69573,1	-
Crude protein, kg	758,74	-	769,06	-	856,98	-	979,98	-
Crude oil, kg	181,92	-	184,39	-	205,47	-	234,97	-
Raw klechatka, kg	1464,24	-	1484,14	-	1653,83	-	1891,20	-
AEM, kg	2719,94	-	2756,91	-	3072,11	-	3513,04	-
Calcium, kg	70,11	-	71,06	-	79,18	-	90,55	-
Phosphorus, kg	17,30	-	17,54	-	19,54	-	22,35	-



Figure 1. (Ph.D., (PhD) H.A. Mamatov in the process of feeding cattle).

CONCLUSION

Analyzing the data obtained from the experiment, it can be concluded that the animal feed in all experimental groups was nutritious and of good quality. Animals in experimental groups I and II

consumed more food than their counterparts in groups III and IV. However, productivity was higher in animals of groups III and IV. For feeding the animals, mainly farm-grown fodder was used.

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"INFLUENCE OF BIOSTIMULATORS ON THE FERTILITY OF CARACUL SHEEP"

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ABSTRACT

The article provides information on the effect of biostimulants on the fertility of Karakul sheep. For this, special programs are developed and favorable conditions are created for representatives of this industry. This is mainly due to the constant impact of the external environment on the body of Karakul sheep and the resulting negative conditions and environmental degradation. At the same time, the existing possibilities in the field of karakul production are not fully used today. Thus, the use of immunotropic drugs in the treatment of many infectious and non-infectious animal diseases proves its importance and effectiveness.

KEYWORDS: *Microflora, Microfauna, Implantation, FFA, Bacterial Or Microbial Inoculants, ABA, Amino Acids, DZK, Acids, Algae Extracts*

INTRODUCTION

In recent years, in our country, special attention has been paid to the development of agriculture, in particular, the karakul industry, which is one of the most important branches of animal husbandry. For this, special programs are developed and favorable conditions are created for representatives of this industry. [1]

In particular, in order to ensure the implementation of the Resolution of the President of the Republic of Uzbekistan No. PP-3603 dated March 14, 2018 "On measures to accelerate the development of the Karakul industry" and in the Resolution of the President of the Republic of Uzbekistan dated August 16. 2019 PP-4420 "On measures for the comprehensive development of the karakul industry" and economic reforms in the karakul industry in the country for the cultivation of high-quality karakul skins by improving breeding, organization of sown areas for sowing desert forage crops and increasing the productivity of pastures, a number of positive projects have been undertaken to strengthen their material and technical base. At the same time, the existing possibilities in the field of karakul production are not fully used today. [2]

In particular, the situation with the further improvement of breeding, the expansion of the cultivated areas of desert pastures, the cultivation of export-oriented karakul karakul skins, deep

processing of products and the use of raw materials for medicinal purposes does not meet today's requirements.[3]

A lot of work is being done in the republic to implement the Decree of the President of the Republic of Uzbekistan dated February 9, 2021 PQ-4984 "On additional measures for the further development of the karakul industry" [4]

At the same time, despite the increase in the number of small ruminants, as well as their slaughter, the processing of skins and wool, the creation of enterprises for the production of meat and dairy products, semi-finished products and finished products and the use of the experience of developed foreign countries and innovative technologies, a number of systemic problems remain in the implementation of technologies. , construction of new water management structures on rain-fed pastures and modernization of existing ones. [5]

In order to ensure the implementation of the Resolution No. PF-6059 of September 2, 2020 "On measures for the further development of silkworm and karakul in the Republic of Uzbekistan", a number of activities have been carried out and priorities have been identified. In particular, the introduction of a system of incentives for the supply of products grown by karakul breeders working in remote desert areas to processing enterprises and immediate supply of the necessary resources during unfavorable weather conditions, special attention is paid to the development of poultry farming, improving the cultivation, processing and export of products. [6]

Purpose of the research: Study and analysis of scientific literature on the effect of biostimulants on the fertility of Karakul sheep.

Literature review: By origin, biostimulants can be divided into the following categories.

1. Artificial drugs: levamisole, etymizole, isamben, methyluracil, camisole, dimephosphamide and others.
2. Preparations with bacterial properties: pyrogenal, prodigiosan;
3. Preparations of tissues and organs of animals: preparations of thymus, preparations of agar tissue agar, sodium nucleinate, etc.;
4. Substances obtained from plants: eleutherococcus, ginseng, lemongrass, aloe, limannin, erakond, fosprenyl [7,8].

Biostimulants are substances that, under certain conditions, are formed in the tissues of animals and plants and have biological activity. The doctrine of biogenic stimulants was first developed by V.P. Filatov (1875-1956). Biogenic stimulants accelerate body functions. Preparations of biogenic stimulants are made from peat and fungi with residues of microflora and microfauna, under the influence of various factors (oxidation, storage in a dark place, etc.) from plant tissues (aloe vera leaves) and animals. Biogenic stimulants are used in veterinary medicine to treat various diseases (non-healing wounds, inflammation, eczema, bone fractures, endometritis, mastitis, etc.). In this case, liquid preparations are injected intramuscularly. or taken orally. Used preparations for implantation (dry biostimulants from animal embryos, spleen, liver and adrenal glands), antiseptic stimulant Dorogov, horse serum (FFA), canned blood (animal extract) and acidophilic culture from broth (AVK) and others]. Use of biostimulants in veterinary practice began in 1973. This period was the beginning of the development of veterinary immunopharmacology.

Antibodies are the basis of the body's defense against pathogens. In most animals, antibodies make up about 1% of the blood mass. In terms of frequency, with various pathological processes in the body, an increase in the number of T- and B-lymphocytes is observed. As a result of the movement of leukocytes, the activity of neutrophils (phagocytes) decreases, and mediators weaken the immune system [4].

With immunodeficiency in Karakul sheep, an increase in the need for biostimulants is possible. Moreover, they:

- control the body's immune system, increase resistance to adverse effects and at the same time strengthen the immune system during vaccination;
- increase the effectiveness of many drugs, especially antimicrobial and antiviral and parasites, which increase the body's immune system;
- promote rapid wound healing and at the same time stimulate the process of tissue regeneration;
- have the ability to ensure the growth and development of young sheep;
- Stress - reduces these abilities and makes it possible to study karakul sheep on the site [2,3,4].

In foreign countries, modern immunostimulants such as PS-2 (immunoxan), bursin, myelopid, bactoneotim, ribotan, roncoleukin, gamavit, salmozan and glycopin are also used in animal husbandry and give good results.

At present, the interest of researchers and practitioners in the problem of restoring the body's immune system and its treatment has increased significantly. This is mainly due to the constant impact of the external environment on the body of Karakul sheep and the resulting negative conditions and environmental degradation. This is due to the weakening of the protective function of the body of karakul sheep in frequency, nonspecific resistance and the immune system [1,5].

It should be noted that due to the widespread use of antibiotics and other methods of chemical therapeutic agents in veterinary practice, the resistance of microorganisms to such drugs increases, the effectiveness and result of treatment is weakened. Thus, the use of immunotropic drugs in the treatment of many infectious and non-infectious animal diseases proves its importance and effectiveness.

The mechanism of action of biostimulants in Karakul sheep, all changes that occur in the body of sheep as a result of their use, including changes in the development of the embryo during pregnancy, are determined by an increase in live weight and changes in fertility [4,5].

CONCLUSION

It has been shown in the literature that the use of biostimulants in Karakul sheep has a significant effect on weight gain, enhancement of embryonic development of calves and has a positive effect on the fertility of Karakul sheep.

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PROVISION AND UTILIZATION OF PHYSICAL RESOURCES FOR GOAL ATTAINMENT IN PUBLIC UNIVERSITIES IN RIVERS STATE

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ABSTRACT

The study investigated provision and utilization of physical resources for goal attainment in public universities in Rivers State. Three research questions were raised to guide the study and three null hypotheses were postulated and statistically tested at 0.05 level of significance. The study was anchored on the system theory and progressive utilization theory. The design of the study was a descriptive design. The population of the study was 1400 lecturers drawn from some selected departments in the three public universities in Rivers State. The sample size of the study was 420 persons making 30% of the total population. The instrument for data collection was a questionnaire titled Provision and utilization of physical resources for university goal attainment questionnaire (PUPRUGAQ). The reliability index of the instrument was established at 0.73. Mean and standard deviation were used to answer the research questions while z test statistic was used to test the hypotheses of the study. The result of the study shows that physical resources are provided in public universities for goal attainment, physical resources are adequate and they are highly utilized. There is no significant different between federal and state universities in their mean ratings on the provision, adequacy, and utilization of physical resources for goal attainment in public universities in Rivers State. It was concluded that physical resources are important tools that can be used to facilitate teaching and learning in the university and such teaching will result to goal attainment. It recommended among others that management of the universities should provide more resources such as building, chairs, ICT facilities to support teaching and learning. The management of universities should organize periodic training on the utilization of educational resources.

KEYWORDS: Investigated, Building, Chairs, Hypotheses

INTRODUCTION

Education is universally accepted and recognized as an instrument for social, political, scientific and technological development. It is reasonable to state that no society can afford to toy with the education of its citizens as this could result to poor and slow economic development. Education could be seen as an aggregate of all the processes by which a child or young adult

develops abilities, attitudes and other forms of behaviour which are of value to the society in which he lives. It is a conscious training of the young to a life which would be useful to him and to the society to which he belongs Elekwa, Okai and Bright (2004) [1] defines education as a process by which children are born into the society and are made to understand the environment they find themselves. Ohiwerei (2005) [2] considers education as the development of person's head, heart and hands for his self-fulfilment and optimum service to humanity. Education is a process through which a child develop skills that will help him to live in the society. As a corollary, Adeyemi and Adu (2010), stated that it is widely accepted that education is one of the leading instruments for promoting economic development as it encompasses some processes individuals go through to help them develop and utilize their potentials. Further more, Okeke (2007) [3] points out that, through education, individuals acquire knowledge, skills and attitude that are necessary for effective living. This is the reason why in all modern nations, investment in education of the youth is considered most vital. This is the reason that make education to be important and this is why there has been a growing concern on the provision and utilization of physical facilities for quality of education that is offered in the nation's schools, especially in the universities. This is because university education is a prerequisite for the scientific and technological development of the nation. Peretomode and Chukwuma (2007) posited that university education is the facilitator, the bedrock, the power house and the driving force for the strong socio-economic, political, cultural, healthier and industrial development of a nation, as universities are key mechanisms increasingly recognized as wealth and human capital producing industries. These fundamental goals of education can be achieved through the provision and utilization of physical facilities.

It is a well known fact that quality education cannot be achieved without educational resources. Particularly physical facilities which play an important role in the achievement of educational goals and objectives. Adeogun and Ofisila (2008) asserted that educational resources can be categorized into four groups that is human, material, physical and financial resources. Physical facilities according to Usman (2007) are central to the educational process because they play an important role in the achievement of educational goals and accelerate learning on the part of the student. This is in line with the findings of Hallack (1990) wherein he emphasized that the provision and effective utilization of relevant educational resources contribute to academic achievement, he further noted that unattractive school buildings, crowded classrooms poor condition of chairs and chalkboard, non availability of playing grounds and surroundings that have no aesthetic beauty can contribute to poor academic achievement, this will also lead to poor goal attainment, particularly in the university.

Education is the greatest facilitator of positive change. This is why National Policy on Education the Federal Republic of Nigeria (FRN, 2014) identified the goals of university in Nigeria, they include the following: to contribute to national development through high level manpower training, to inculcate proper values for the survival of the individual and society, to develop the intellectual capability of the individuals to understand and appreciate their and external environment, to promote and exchange scholarship and community service, to provide accessible and affordable quality learning opportunities to respond to the needs of the society. Furthermore, in this 21st century, the key goals of the university is to prepare the students for leading roles in an innovation-driven economy and global society, promotion of research and creative work to increase the intellectual, social and economic capital of graduates within and beyond their borders, to developed human and physical resources to achieve different goals. It

must be pointed out that the educational goals can only be achieved through the use of requisite learning physical resources this is because these physical resources are meant to support teaching and learning in the university. It is very important to note that physical resources among other resources need to be provided for the achievement of the goals of university education. More importantly is the effective utilization of these resources for the attainment of goals. Adeogun (1999), posited that educational resources which are physical, human, material and other resources can influence the teaching and learning process. This is

because the more the students hears, sees and touches, the more he would want to hear, see and touch, and the more he is prepared for useful living in life. Physical Resources in this study is referred to as buildings, classrooms, laboratories equipment, reprographic equipment and other physical plants like library, office space, machines, vehicles, computer sets, typewriters, duplicating and photocopying machines. Conducive learning environment, promote true teaching and learning activities, and is a source of motivation to both teachers and students hence it enhances effective teaching and learning. On the other hand, a learning environment that is not conducive for teaching and learning has a negative effect on both teachers and students this is because the motivation to carry out effective teaching and learning activities may not take place. It is imperative to state that physical resources enable the lecturers to accomplish their task as well as helping the student to learn effectively. The provision and utilization of physical resource will contribute to effective teaching and learning in university education while unattractive school buildings, crowded classrooms, non-availability of playground and flowerbeds and surroundings that have no aesthetic beauty will not only frustrate the achievement of educational goals, but can contribute to poor performance.

The provision of physical resources such as chairs, classrooms, administrative blocks, students' hostels, office accommodation, library, laboratory, ICT, football fields, desks, chalkboard, instructional materials among others are pre-requisite for accreditation of universities institutions in Nigeria. The unavailability of these resources to teach the students will likely lead to poor learning outcomes and also affects the lecturers output thereby frustrating the learning process of such institutions in all it will lead to inability to achieve stated goals. However, in most universities, especially in Rivers State, where these resources are provided, there is also the question of level of utilization.

Physical resources are expected to be adequately provided to enhance effective teaching and learning in the universities in Rivers State. It is however not uncommon that physical resources in most institutions across Nigeria are dilapidated and inadequate to provide quality education service delivery. It has been reported by Wali (2018) that the classrooms in most of the universities in Rivers State were inadequate in terms of decency, space, ventilation and insulation from heat; the incinerators and urinal were not conveniently placed, and the school plant was poorly maintained; these combined deficiencies constituted a major gap in the quality of management of these institutions of learning, thus the attendant result of non- attainment of the set standards and goals of these institutions. The provision of most these facilities will only be meaningful if they are well utilized for teaching and learning.

Paterson (2009) [4] viewed utilization of physical resources as the extent of usage of school buildings, laboratories, library, assembly-ground, flower garden, school garden, volleyball field, chairs, desks, chalkboard, and so on contribute meaningfully to the development of the universities and as well students and lecturers live a fulfilled life. This can only be possible

through effective utilization of physical resources. In some institutions, the few physical resources that are provided are old and not properly installed due to lack of fund. There are instances where some of these resources are provided but the lecturers are not able to utilize them in teaching and learning process as a result of lack of skills. Also in some of these universities, some modern equipment such as sophisticated sewing machines, computer machines, wood cutters and others are not used by lectures because of their inability to use them. All these have great consequences on the outcome of the programme. Also, too much pressure on their use could result in over utilization, a situation that could lead to rapid deterioration and breakdown. For instance, when a classroom built to accommodate 40 students is constantly being used for 60 students then the returns from these facilities may not be maximized in terms of teaching and learning. Comfortable learning facilities will not only boost the morale of lecturers and students but will also ensure the realization of the set goals of these universities.

The provision and utilization of resources in education is very important because of its role in the achievement of academic objectives. Suffice it to state that the provision and utilization of resources has to do with planning, controlling and directing a number of other activities in order to achieve efficient utilization of resources that are available for teaching and learning in the university system.

Okai (2008) stated that university organization is one of the agents that shape the destiny of man and that of the nation, this suggest that the university system is a key that opens the door of civilization and development. In fact the role of the university system as the backbone of development has called for adequate planning and adequate provision and utilization of the available resources, this is to ensure effective teaching and learning in the university. Teaching in the context of this study can be defined as the process by which a person or group of persons lead in the act of imparting and acquiring new knowledge or experience. Suffice to say that provision and utilization of resources will lead to university goal attainment. This therefore, implies that the extent to which an organization, the university inclusive, attains her goals is directly proportional to the provision ad use of the resources that are available. Okai (2013) [5] stated that the resources management and utilization is the coordination of human and material resources in the right direction for effective organizational goal attainment. In this regard, resources provision and utilization is the proper coordination of the resources made available to the university for the purpose of producing quality graduates.

The university system is a citadel of learning where the lecturers through research, published articles and papers, proffer solution to the problems that plague the nation. It is pertinent to state that management is a panacea for producing quality graduates in the university system, good educational managers must carefully and effectively handle educational resources particularly money, machines such as computers, teaching technology, internet facilities and other facilities; this is to ensure the effective realization of educational goals. It is against this background that this investigated the provision of physical resources and its utilization in universities with a view to determining the level of provision of physical resources and its utilization, and to proffer a working solution.

Statement of the problem

Contemporary society also relies on universities for their development and sustainability. Indeed, in this regard university organization is one of the agents that shape the destiny of man and that of the nation to this end there is need for provision and effective utilization of resources. It could be seen that students content has increased in the recent times and this has increasingly made university education to become more complex than ever before, hence its utilization is becoming more demanding than ever. With the students explosion in the university and the multiplicity of programmes, universities are required to provide more physical resources to meet the relevant needs of the students. It is therefore not surprising that the provision, management, adequacy and utilization of physical resources will help in teaching, research and overall learning process, however, poor provision of resources inadequacy of resources and mismanagement of available resources, and low utilization of resources could result to inability to achieve the university goals.

Indeed, the performance of the universities traditional role of teaching, research and contribution to community development will substantially diminish. This is because the availability of physical resources, and their utilization is hoped to support teaching, learning and research functions, and eventually result to university goal attainment. Any organization desirous of success must set goals and objectives, and there will be guidelines for the attainment of the set goals. The university is not excluded from setting goals and objectives. A university is only strong as people who populate it and the physical facilities are adequately provided to effectively support teaching and learning for the attainment of university goals.

The crux of the matter is that poor or inadequacy of physical facilities to support teaching and learning and consequent on low utilization of the available facilities will pose a serious threat to university goal attainment. This is because the university traditional role of teaching, research and contribution to community development will substantially diminish. It is not surprising that the goals of the university system cannot be achieved them physical facilities are not adequately provided and the avail physical facilities are not effectively utilized. It is against this backdrop that this study is being carried out with a view to proffering solution to the problem.

Aims and Objectives

The main aim of this study is to examine the provision and utilization of physical resources for university goal attainment in public universities in Rivers State. Specific objectives of the study is to:

1. Examine the provision of physical resources for university goal attainment in Rivers State.
2. Determine the adequacy of physical resources for university goal attainment in Rivers State.
3. Determine the level of utilization of physical resources for university goal attainment in Rivers State.

Research Questions

The following research questions were raised to guide the study:

1. What is the provision of physical resources for goal attainment in public universities in Rivers State?

2. How adequate are the physical resources for goal attainment in public universities in Rivers State?
3. What is the level of utilization of physical resources for goal attainment in public universities in Rivers State?

Hypotheses

The following null hypotheses were postulated and statistically tested at 0.05 level of significance:

H₀₁: There is no significant difference in the mean rating responses of lecturers in federal and state universities on the provision physical resources for goal attainment in public universities in Rivers State.

H₀₂: There is no significant difference in the mean rating response lecturers in federal and state universities on the adequacy of the physical resources for goal attainment in public universities in Rivers State.

H₀₃: There is no significant difference in the mean rating response lecturers in federal and state universities on the level of utilization of physical resources for goal attainment in public universities in Rivers State.

Review of Related Literature

This study is anchored on two theories namely: the System theory by Ludwig Von Bertalanfy (1950) and Progressive utilization theory by Prabhat Sarker in 1959.

System Theory

This study on the assessment of the provision and utilization of physical resources for goal attainment in universities in Rivers State is anchored on two theories namely – the system's theory by Ludwig Von Bertalanfy (1950) but cited by Ukeje, Okorie and Nwagbara (1992) [6]. He sees a system as an assemblage of a set of constituents or elements in active organized interaction as a bounded entity, so as to achieve a common goal or purpose which transcends that of the constituents in isolation. A system is composed of a number of parts and as an organization it is constituted of persons who must know what the others are doing. All systems are subject to use, wear and tear, malfunction and total spoilage. Therefore a system should be able to combat and counteract the systems entropic tendency to enhance its continuing existence. As a system, all parts of the universities require the needed resources to function effectively. This is why this theory is relevant in this study.

It could be seen that the effectiveness of an organizations ability to secure an advantageous bargaining position in its environment and to capitalize on that position to acquire, judiciously distribute, and monitor utilization of scarce resources also depends on the application of system theory. He viewed organizations in which schools is inclusive as open systems which has inputs that engage in transformation process and generate outputs.

Also, universities are systems where the teaching and learning process is observed as a process used to improve students academic life, which enable them graduate with different skills and competence. In universities it is also observed that an interrelation between lecturers, physical resources and students constitute a since quo none condition for the effectiveness of the

teaching/learning process. Realistically, every university has objectives to achieve, and to be able to achieve the objectives it requires to treat all the elements involved in the process (inputs like students, staff and resources; throughput like teaching methods and outputs like graduates with different skills and attitudes) as interdependent.

Progressive Utilization Theory

Progressive Utilization Theory is a socio-economic theory that was propounded by Probhat in 1959 but cited in Wali (2018) [7]. According to Craig (1998) in Wali (2018) progressive utilization theory sees an organization as a social system that uses resources to achieve some specific goals. Among other things, “progressive utilization” would optimize the use of physical and human resources, based on cooperative coordination of the resources towards goal attainment. This theory seeks the welfare and happiness of all and is also concerned with the use of resources to achieve organizational goals. The relevance of the progressive utilization theory (PROUT) in this study is its encouragement to optimize the use of available physical resources as well as other resources that belong to the organization. This theory encourages the lecturers to use all available resources (within and outside) the school to teach students, this is to ensure the effective realization of university goals.

Conceptual Review Physical Resources

Physical resources according to Hornby (2005) are what can be used to help achieve an aim such as equipment and facilities which provide information for the lecturers and students. Proper applications of classroom resources in teaching and learning are useful and advantageous especially on the area of stimulation of interest: The uses of instructional resources bring life in the process of teaching and learning. They provide cognitive ‘bridge’ between abstraction and reality to the students. Classroom as one of the physical resources create impressions that are so vivid and powerful that learners hardly forget. Their use make the task of teaching quite easy, interesting methodical and scientific as the lecturer becomes more equipped with teaching objectives for greater efficiency and productivity. Singh, Sharma and Upadhyay, (2008), noted that instructional materials generate and maintain students interest and provide the teacher with interest-compelling spring-boards which can launch students into a variety of learning activities.

Physical resources are classrooms, library facilities, laboratories workshops, office accommodation, chairs, hostels accommodation, chalkboard, desks, instructional materials, Information and communication technology (ICT). The relevance of physical resources in the attainment of university goal cannot be over emphasized. Anything a lecturer used to achieve instructional objectives is called instructional materials. According to Akande (2005), learning cannot occur without physical resources. As a corollary James (2015), asserted that learning can occur through ones interaction with the environment. Environment here refers to facilities that are available to facilitate students learning outcomes. Olagboye (2014) stated that educational resources consist of instructional resources such as audio and visual aids, graphics, printed materials, display and consumable materials. Facilities and other teaching aids are regarded as resource materials because they provide information and teachings in the teaching and learning

process. Standard facilities and equipment are essential for effective teaching and learning in the university system.

The level of success of most university programme is greatly dependent on the degree of availability of equipment and facilities, this is because their presence will enhance effective teaching and learning. Longman (2003) [8] in Wali (2018) asserted that availability of physical resources is something that is able to be used or can they can easily be found and used. This implies that available resources that are usable upon demand to perform their designated functions as required by the lecturer.

Longman (2006) [9], explained adequacy of resources as a situation in which there are enough resources for a partial as purpose. Paterson (2008) was in support of Longman when he posited that adequacy is a satisfactory condition of resources in an organization. Educational resources are meant to be provided in the right quality and quantity, this is to ensure effective teaching and learning in the university. The net effect of this is positive learning outcome.

Paterson (2008) explain utilization as to make use of the available resources or services at the individual's disposal. The utilization of instructional materials in teaching and learning is a sure way of achieving the objectives of the learning. When real objects are used in teaching, students see, touch and interact with these materials. Interaction with learning materials will help the students not to forget what they learnt easily. In fact, resources utilization has to do with the extent to which facilities are provided to the university and the extent to which they are used. The possibilities are that they are either used effectively or ineffectively or they may remain unused.

Methodology

The design of this study was descriptive survey, this design was used because it permits activities or events to be examined as they appear to be in their usual manner. The population of the study is 1400 lecturers drawn from some selected departments in the three public universities in Rivers State. University of Port Harcourt is 800, Rivers State University 400 lecturers while Ignatius Ajuru University of Education is 200 lecturers, thereby bringing the total population to 1400. The sample of the study was 420 making 30% of the total population. In this regard 240 lecturers were drawn from university of Port Harcourt ,120 lecturers were drawn from Rivers State University, 60 lecturers were drawn from Ignatius Ajuru University of Education , this brings the total simple size to 420. Stratified random sampling technique was used to select the departments while simple random sampling technique was used to select the lecturers. The instrument for data collection was questionnaire that was structured on 4 points Likert scaling pattern. The instrument was as validated by some experts in measurement and evaluation, the reliability of the instrument was ascertained with the use of test-retest method; a reliability index of 0.73 was obtained. Mean and standard deviation were used to answer the research questions while z-test statistic was used to test the hypotheses of the study at 0.05 level of significance.

Results and Discussion

Answers to research questions

Research question one: What is the provision of physical resources for goal attainment in public universities in Rivers State?

TABLE 1: MEAN RESPONSES ON THE PROVISION OF PHYSICAL RESOURCES FOR GOAL ATTAINMENT IN PUBLIC UNIVERSITIES IN RIVERS STATE

S/No	Provision of physical resources	Mean	STD	Remark
1.	Classrooms are provided for teaching and Learning in university.	3.55	0.84	Agreed
2.	There are good desks for both staff and students Are provided in university.		0.81	Agreed
3.	Office accommodation provided for staff	2.88	0.98	Agreed
4.	Hostel accommodations are provided for students.	2.88	1.07	Agreed
5.	Library facilities are provided in university.	3.11	0.95	Agreed
6.	Chairs for teaching and learning are provided in university	2.89	0.92	Agreed
7.	Chalkboards are provided for teaching and learning in the university.	2.97	1.03	Agreed
8.	Laboratory facilities are provided for science students in university	3.26	0.89	Agreed
9.	Computer and internet services are provided for staff and Students access their results and materials.	2.61	0.99	Agreed
10.	Instructional materials provided for teaching, And learning in the university.	2.57	1.13	Agreed
Grand Mean		2.98	0.96	Agreed

The table above showed the respondents agreed that classrooms are provided for teaching and learning in university (Mean=3.55, Std=0.84), there are good desks for both staff and students are provided in university (Mean=3.05, Std=0.81), office accommodation provided for staff (Mean=2.88, Std=0.98), hostel accommodations are provided for students (Mean=2.88, Std=1.07), library facilities are provided in university (Mean=3.11, Std=0.95), chairs for teaching and learning are provided in university (Mean=2.89, Std=0.92), chalkboards are provided for teaching and learning in the university (Mean=2.97, Std=1.03), laboratory facilities are provided for science students in university (Mean=3.26, Std=0.89), computer and internet services are provided for staff and students access their results and materials (Mean=2.61 Std=0.99 and instructional materials provided for teaching and learning in the university (Mean=2.57, Std=1.13).

Research question two: How adequate are the physical resources for goal attainment in public universities in Rivers State?

TABLE 2: MEAN RESPONSES ON THE ADEQUACY OF PHYSICAL RESOURCES FOR GOAL ATTAINMENT IN PUBLIC UNIVERSITIES IN RIVERS STATE

S/NO	Adequacy of the physical resources	Mean	Std	Remark
11.	The classrooms are provided for both lecturers and Students for teaching and learning in the university.	2.79	1.09	Agreed
12.	The students are provided with desks to support Their reading and writing in university	2.86	1.00	Agreed
13.	Office accommodations are provided to enhance effective	2.84	0.94	Agreed

Academic performance of the lecturer in university.

14. The provision of hostel accommodation for Students enhances their academic performance.	2.80	1.00	Agreed
15. The provision of library facilities improves Teaching and learning in the university.	2.96	0.96	Agreed
16. The provision of chairs for staff and Students enhances their comfort in lecture halls.	3.11	2.27	Agreed
17. The provision of chalkboard enhances Effective teaching and learning in university.	3.02	0.96	Agreed
18. The provision of laboratory facilities for Effective teaching and learning in university.	2.96	0.94	Agreed
19. The provision computers and internet services Help the lecturers and students to access information.	2.88	0.94	Agreed
20. The provision of instructional materials enhances effective teaching and learning in university.	2.60	1.08	Agreed
Grand Mean	2.88	1.12	Agreed

The table above showed mean responses of lecturers on the adequacy of physical resources for goal attainment in public universities in Rivers State. The table showed that the respondents agreed that classrooms provided for both lecturers and students (Mean=2.79, Std=1.09), the desks provided for students to support their reading and writing (Mean=2.86, Std=1.00), office accommodations (Mean=2.84, Std= 0.94), hostel accommodations for students (Mean=2.80, Std=1.00), library facilities (Mean=2.96, Std=0.96), chairs for staff and students enhances their comfort in lecture halls (Mean=3.11, Std=2.27), chalkboard (Mean=3.02, Std=0.96), laboratory facilities (Mean=2.96, Std=0.94), computers and internet services to access information (Mean=2.88, Std=0.94), and instructional materials enhances (Mean=2.60, Std=1.08) are adequately provided to enhance teaching and learning in the university.

Research question three: What is the level of utilization of physical resources for goal attainment in public universities in Rivers State?

TABLE 3: MEAN RESPONSES ON THE UTILIZATION OF PHYSICAL RESOURCES FOR GOAL ATTAINMENT IN PUBLIC UNIVERSITIES IN RIVERS STATE

S/No	Level of utilization of physical resources	Mean	Std	Remark
21.	The available classrooms are used for teaching and Learning in university.		0.85	highly utilized
22.	The available desks are used for the comfort of both Staff and students in university.	2.89	0.88	highly utilized
23.	Office accommodation are used by lecturers to enhance their academic performance in university	3.03	0.83	highly utilized
24.	The hostel accommodations are used by lectures to enable them to be comfortable in their learning.	3.02	0.84	highly utilized

25. The available library facilities are used to enhance improvement on students academic performance.	3.04	0.86	highly utilized
26. The university makes enough provision of chairs to both staff and student in university.	3.07	0.75	highly utilized
27. The lecturer's use of chalkboard enhances improvement on teaching and learning in university.	3.02	0.83	highly utilized
28. The available laboratory facilities are used to enhanced effective teaching and learning by science students in university.	3.04	0.81	highly utilized
29. The use of ICT computer enhances lecturers and students improvement to access internet services.	2.95	0.87	highly utilized
30. The use of instructional material enhance improvement on teaching and learning in university.		0.79	highly utilized
Grand Mean	3.02	0.83	Highly utilized

The table above showed mean responses of lecturers on the level of utilization of physical resources for goal attainment in public universities in Rivers State. The table showed that the respondents agreed that classrooms provided for both lecturers and students (Mean=3.06, Std=0.85), the desks provided for students to support their reading and writing (Mean=2.89, Std=0.88), office accommodations (Mean=3.03, Std=0.83), hostel accommodations for students (Mean=3.02, Std=0.84), library facilities (Mean=3.04, Std=0.86), chairs for staff and students (Mean=3.07, Std=0.75), chalkboard (Mean=3.02, Std=0.83), laboratory facilities (Mean=2.96, Std=0.94), computers and internet services to access information (Mean=3.04, Std=0.81), and instructional materials enhances (Mean=2.95, Std=87) are highly utilized to enhance teaching and learning in the university.

Hypotheses

H₀₁: There is no significant difference in the mean rating responses of lecturers in federal and state universities on the provision physical resources for goal attainment in public universities in Rivers State.

TABLE 4: DIFFERENCE IN THE MEAN RATING RESPONSES OF LECTURERS IN FEDERAL AND STATE UNIVERSITIES ON THE PROVISION PHYSICAL RESOURCES FOR GOAL ATTAINMENT IN PUBLIC UNIVERSITIES IN RIVERS STATE

University Type	N	Mean	Std.	df	t-test	Sig
Federal	240	2.95	0.96	418	1.109	0.234
State	180	3.01	0.79			

Table 4.4 showed that the mean rating and standard of lecturers in federal university on the provision physical resources for goal attainment in public universities in Rivers State are 2.95 and 0.96 while the mean rating and standard deviation of lecturers in state universities are 3.01 and 0.79, the t-cal (1.099), $p > 0.05$. Hence the null hypothesis one that states that there is no

significant difference in the mean rating responses of lecturers in federal and state universities on the provision physical resources for goal attainment in public universities in Rivers State is retained and the alternate rejected at 0.05 level of significance of 418 degree of freedom.

H₀₂: There is no significant difference in the mean rating response lecturers in federal and state universities on the adequacy of the physical resources for goal attainment in public universities in Rivers State.

TABLE 5: DIFFERENCE IN THE MEAN RATING RESPONSES OF LECTURERS IN FEDERAL AND STATE UNIVERSITIES ON THE ADEQUACY OF THE PHYSICAL RESOURCES FOR GOAL ATTAINMENT IN PUBLIC UNIVERSITIES IN RIVERS STATE

University Type	N	Mean	Std.	df	t-test	Sig
Federal	240	2.85	1.12	418	1.219	0.160
State	180	2.93	1.01			

Table 4.5 showed that the mean rating and standard of lecturers in federal university on the adequacy of physical resources for goal attainment in public universities in Rivers State are 2.85 and 1.12 while the mean rating and standard deviation of lecturers in state universities are 2.93 and 1.01, the t-cal (1.219), $p > 0.05$. Hence the null hypothesis two that states that is no significant difference in the mean rating response lecturers in federal and state universities on the adequacy of the physical resources for goal attainment in public universities in Rivers State is retained and the alternate rejected at 0.05 level of significance of 418 degree of freedom.

H₀₃: There is no significant difference in the mean rating response lecturers in federal and state universities on the level of utilization of physical resources for goal attainment in public universities in Rivers State.

TABLE 6: DIFFERENCE IN THE MEAN RATING RESPONSES OF LECTURERS IN FEDERAL AND STATE UNIVERSITIES ON THE LEVEL OF UTILIZATION OF PHYSICAL RESOURCES FOR GOAL ATTAINMENT IN PUBLIC UNIVERSITIES IN RIVERS STATE

University Type	N	Mean	Std.	df	t-test	Sig
Federal	240	3.01	0.61	418	1.034	0.911
State	180	3.02	0.83			

Table 4.6 showed that the mean rating and standard of lecturers in federal university on the level of utilization of physical resources for goal attainment in public universities in Rivers State are 3.01 and 0.61 while the mean rating and standard deviation of lecturers in state universities are 3.02 and 0.83, the t-cal (1.034), $p > 0.05$. Hence the null hypothesis three that states is no significant difference in the mean rating response lecturers in federal and state universities on the level of utilization of physical resources for goal attainment in public universities in Rivers State is retained and the alternate rejected at 0.05 level of significance of 418 degree of freedom.

Summary of findings

The following summarizes the findings of the study.

1. Physical resources such as class rooms, chalkboard, desk, chairs, laboratory equipment and instructional materials are available for teaching and learning.
2. Physical resources are utilized by both staff and students for teaching and learning
3. There is no significant difference in the mean rating responses of lecturers in federal and state universities on the provision physical resources for goal attainment in public universities in Rivers State.
4. There is no significant difference in the mean rating responses of lecturers in federal and state universities on the adequacy of the physical resources for goal attainment in public universities in Rivers State.
5. There is no significant difference in the mean rating responses of lecturers in federal and state universities on the adequacy of the physical resources for goal attainment in public universities in Rivers State.

DISCUSSION OF FINDINGS

The objectives of the study are to examine the provision, adequacy and utilization of physical resources for university goal attainment in Rivers State. The findings revealed that classrooms are provided for teaching and learning in university, there are good desks for both staff and students are provided in university, office accommodation provided for staff, hostel accommodations are provided for, library facilities are provided in university, chairs for teaching and learning are provided in university, chalkboards are provided for teaching and learning in the university, laboratory facilities are provided for science students in university, computer and internet services are provided for staff and students access their results and materials and instructional materials provided for teaching and learning in the university. The corresponded hypothesis showed that there is no significant difference in the mean rating responses of lecturers in federal and state universities on the provision physical resources for goal attainment in public universities in Rivers State. This result of the study demonstrated both lecturers from federal and state universities attested to the provision of physical resources for goal attainment in public universities in Rivers State. The findings also showed that the physical resources are adequate and are effectively utilized by the lecturers of the various universities. The findings agreed with the position of Singh, Sharma and Upadhy, (2008) [10], who noted that instructional materials generate and maintain students interest and provide the teacher with interest-compelling spring-boards which can launch students into a variety of learning activities. Physical resources are classrooms, library facilities, laboratories workshops, office accommodation, chairs, hostels accommodation, chalkboard, desks, instructional materials, Information and communication technology (ICT). The relevance of physical resources in the attainment of university goal cannot be over emphasized (see also Longman, 2006; Paterson, 2008).

CONCLUSION

Physical resources are those educational tools that are provided in the school system to support teaching and learning in the school system .Their presence will enhance effective teaching and

learning process in the university system. From the result of the study it is reasonable to conclude that physical resources such as buildings , instructional materials, ICT facilities, chairs and tangible equipment are provided and they utilized.

Recommendation

The following recommendations are made:

1. The management of the university system should provide more buildings to meet the needs of the university
2. The management of the university system should organize periodic training on the use of educational resources
3. The management of the university system should ensure that educational resources are regularly maintained to prolong the life span of the facilities
4. The management of the university system provides more chairs and tables, this is to ensure that both staff and students have adequate chairs and tables.

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EFFICIENCY OF OXIBRAL IN CHILDREN WITH RESPIRATORY DISEASES, SUFFERING MINIMUM BRAIN DYSFUNCTION

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ABSTRACT

The use of oxybral against the background of traditional therapy had a pronounced positive clinical effect, which contributed to the maximum stimulation of natural compensatory mechanisms, neuroregulatory processes and limitation of the drug load. In general, the results of the studies conducted allow us to conclude that complex rehabilitation with the use of the drug oxybral is effective for combined disorders in patients with respiratory diseases suffering from PPPNS and its consequences. The advantages of this method include, first of all, the fact that the stimulation of the regenerative capacity of the brain is achieved by activating natural regulatory mechanisms. Investigating functional changes in the central nervous system, when using the drug oxybral and making a recording echoencephalogram in children, we found that there are positive changes in EEG and contributes to a more rapid normalization of neurological symptoms. The possibility of correcting oxybral neurological disorders opens up the prospect of rehabilitation and contributes to a significant reduction in the percentage of children with residual symptoms of perinatal CNS lesions.

KEYWORDS: *Consequences Of Perinatal Damage To The Nervous System, Respiratory Organs, Childhood*

INTRODUCTION

Existing in real time approach to the treatment of children with respiratory diseases, suffering NCSP combines symptomatic and pathogenetic action. [1] However, against the background of a decrease in the rates of perinatal mortality of newborns, the frequency of neurological disorders in children in the first years of life increased. Therefore, the development of new, affordable and effective rehabilitation methods has not lost its relevance. [2]

One of the modern and most promising methods of treating PPPNS is the use of the drug oxybral. It is the means by which you can easily, "ecologically clean" influence the levers of the psychobiological state. Emotions, the dynamics of which always lead to certain hormonal and biochemical changes, indirectly begin to influence the intensity of metabolic processes, respiratory and cardiovascular systems, brain tone, blood circulation. [3]

Purpose of the study: to study the effectiveness of oxybral in rehabilitation and rehabilitation treatment of children with respiratory diseases suffering from PPPNS.

Material and methods of research: Under our supervision there were 20 children with respiratory diseases suffering from PPPNS at the age from 3 months to 1 year who received courses of the drug oxybral and symptomatic treatment.

The control group consisted of 10 children with respiratory diseases suffering from PPPNS who received only traditional therapy. Traditional therapy consisted in the use of medications of pathogenetic action, such as - improving the energy supply of the brain: cerebroprotectors and nootropics (piracetam, nootropil, encephabol, actovegin, cerebrolysin), improving cerebral blood flow, angioprotectors (cinnarizine, cavinton, and sermion), and liquor production (diacarb) and antibiotic therapy.

Conditionally - a healthy group of 7 children with respiratory diseases, not suffering from PPPNS received traditional therapy for the treatment of respiratory diseases.

The children in the main group were distributed as follows:

- 1 subgroup consisted of 10 children (50%) with neuro-reflex excitability syndrome .
2. Subgroup consisted of 6 children (30%) with autonomic dysfunction syndrome.
3. Subgroup consisted of 4 children (20%) with a syndrome of delayed psychomotor and speech development.

The children included in the control group were distributed:

- 1 subgroup consisted of 3 children (21%) with neuro-reflex excitability syndrome .
2. subgroup consisted of 4 children (28.5%) with autonomic dysfunction syndrome.
3. subgroup consisted of 33 children (21%) with a syndrome of delayed psychomotor and speech development.

All children included in the control, conditionally healthy and the main group were of the same age, with the same severity.

Results of the study: the use of oxybral against the background of traditional therapy had a pronounced positive clinical effect, which contributed to the maximum stimulation of natural compensatory mechanisms, neuroregulatory processes and limitation of the drug load.

Children belonging to the first subgroup - neuro-reflex excitability syndrome due to increased nervous excitability were used oxybral for 20 days (7.5 mg / day orally with meals.)

For children of the second subgroup - autonomic dysfunction syndrome, oxybral was used for 1 month (7.5 mg / day orally with meals)

For children of the third group, the syndrome of delayed psychomotor and speech development, oxybral was used for 6 months. up to 1 year (7.5 mg / day by mouth with meals.)

TABLE 1 DYNAMICS OF SYMPTOMS OF RESPIRATORY DISEASES IN CHILDREN WITH NEURO-REFLEX EXCITABILITY SYNDROME

Symptoms	Traditional therapy	The use of oxybral
1.emotional lability	6-7days (60%)	3-4 days (100%)
2.the disappearance of motor restlessness	9-10days (70%)	5-6 days (100%)
3. the disappearance of the tremor of the chin and hands	14-15 days (61%) 16-17days (72%)	5-6 days (80%) 7-8days (92%)
4.Auscultation against the background of hard breathing dry scattered wheezing	7-8 days (82%)	5-4 days (88%)

As can be seen from table 1, in children receiving oxybral, the disappearance of symptoms of emotional lability occurred on day 3-4 in 100%, and in the group of traditional therapy, this figure was 60%.

At the same time, in children receiving oxybral, motor disturbances disappeared on the 5-6th day (100%), which is two times faster than in the control group. Children became calmer, more sociable, breathing rhythm, pulse, pressure returned to normal. Children fell asleep easily. The tremor of the chin and hands in patients receiving oxybral disappeared on days 5-6 in 80-92%, while in patients with traditional therapy this symptom disappeared on days 14-17 in only 61-72% of patients. Vesicular respiration appeared auscultatory on days 5-4 in 88% of patients.

For children with vegetative-visceral syndrome, oxybral was used for 1 month (7.5 mg / day orally with meals).

TABLE 2 DYNAMICS OF SYMPTOMS OF RESPIRATORY DISEASES IN CHILDREN WITH AUTONOMIC DYSFUNCTION SYNDROME

Symptoms	Traditional therapy	Oxybral
1 disappearance of regurgitation.	4-5 days (54%)	2-3 days (81.6%)
2.the disappearance of oral cyanosis	4-5 days (70%)	2-3 days (95%)
3.the disappearance of muscular dystonia	10-12 days (55-62%)	7-8 days (71-80%)

4.Auscultation against the background of hard breathing, dry scattered wheezing	8-9 days (80%)	5-4 days (88%)
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From table 2. it can be seen that by the end of the course there was a reverse development of the symptoms of the disease.

Symptoms such as regurgitation, oral cyanosis with traditional treatment disappeared on the 5th day in 54-70% of children, in children who received oxybral, the normalization of these symptoms occurred earlier on days 2-3 in 81-95%.

Muscular dystonia of children of the control group disappeared on the 12th day in 55-62%, and in children of the main group on the 8th day in 71-80% of children. The general condition has improved, the vegetative-vascular reactions, appetite have stabilized.

Vesicular respiration appeared auscultatory on days 5-4, in 88% of children.

Children with psychomotor developmental retardation syndrome took oxybral for 6 months (7.5 mg / day by mouth, during meals).

TABLE 3 DYNAMICS OF SYMPTOMS OF RESPIRATORY DISEASES IN CHILDREN WITH PSYCHOMOTOR DEVELOPMENT RETARDATION SYNDROME

Symptoms	Conventional therapy	Oxybral
1 Normalization of muscle tone.	7-9 days (42%)	5-6 days (88%)
2.Improving contact with the environment (analyzing functions)	12-15 days (55%)	9-10 days (72%)
3. trying to pronounce individual syllables	20-25 days (41%)	12-15 days (80%)
4.small handmovements	9-10 days (70%)	6-7 days (86%)
5.Auscultation against the background of hard breathing, dry scattered wheezing	7-8 days (82%)	5-4 days (88%)

As can be seen from table 3., children who received oxybral became easier to get in touch with others, especially with their mother, their mood improved. Normalization of muscle tone occurred on the 5-6th day (88%), and in the group with conventional therapy, this figure was 42%. Children began to show interest in their surroundings, mimically adequate reactions began to develop. An acceleration of the rate of speech development was also observed: active humming, attempts to pronounce individual syllables. On auscultation, vesicular respiration appeared on days 5-4 (88%).

CONCLUSIONS

Our clinical observations indicate a significant effectiveness of the use of oxybral in children with PPPNS during the rehabilitation period. In order to objectify the results obtained, all children, in addition to neurological examination, underwent echoencephalography 2 times, before and after the use of the drug oxybral.

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THE CONSCIOUSNESS OF THE SUBJECT IN A VIRTUALIZED SPACE

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ABSTRACT

The purpose of the study is to reveal the features of the formation of a new social and informational space of our time and the work of consciousness under the influence of information and communication technologies. The author tried to present the work of thinking in the context of the virtualization of modern society. The scientific novelty lies in the interdisciplinary consideration of the issue of virtualization of thinking with the involvement of the works of modern philosophers, sociologists, psychologists.

KEYWORDS: *Virtual Reality, Consciousness, Cyberspace, Information And Communication Technologies, Internet, Virtualization*

INTRODUCTION

The problem of consciousness has always attracted the close attention of philosophers, for the determination of the place and role of man in the world, the specifics of his relationship with the surrounding reality presupposes an elucidation of the nature of human consciousness. For philosophy, this problem is also important because certain approaches to the question of the essence of consciousness, the nature of its relationship to being, affect the initial worldview and methodological guidelines of any philosophical trend. Naturally, these approaches are different, but they all in essence always deal with a single problem: the analysis of consciousness as a specifically human form of regulation and control of human interaction with reality. This form is characterized primarily by the allocation of a person as a kind of reality, as a bearer of special ways of interacting with the surrounding world, including managing it. Numerous problems associated with the study of the subject's consciousness are so little studied or not studied at all that the more we penetrate into them, the more clearly the awareness of our ignorance and understanding of the depth and scope of this issue appears.

This understanding of the nature of consciousness presupposes a very wide range of issues, which becomes the subject of research not only in philosophy, but also in special humanities and natural sciences: sociology, psychology, linguistics, pedagogy, physiology of higher nervous activity, and now also semiotics, cybernetics, informatics. The development of special scientific research stimulates the development and deepening of the actual philosophical problems of consciousness. So, for example, the development of modern informatics, the creation of artificial intelligence, the associated process of computerization of human activity, forced to consider in a new way the issue of the essence of consciousness, specifically human capabilities in the work of

consciousness, the optimal ways of interaction of a person and his consciousness with modern computer technology and generated by virtual reality.

It is consciousness that distinguishes the created world from reality. The process of creating realities is endless. We believe that any educated reality can be called virtual, and such virtual reality, under certain conditions, becomes generative for another. Consciousness is the basis of this process. The processes and phenomena of reality are inconceivable without projection into the virtual world. Consequently, a person is always a person who assimilates virtuality and reality, living his life “here and there”, in the world of reality, in which his body is located and in the world created by his consciousness - the virtual world.

Human thinking in the usual sense of its understanding is the thinking of a person, therefore it is personified, subjective and individual. And although a person's thinking is based on universal principles and laws of evidence, correctness, consistency and semantic meaningfulness, nevertheless it is colored by the peculiarities of a personal worldview, psychotype, character and other personal characteristics. Internet thinking and, if I may say so, network logic have a different specificity. When the physical world of matter fades into the background, the perception of the world changes in a fundamental way. By controlling the degree of connection of consciousness with the surrounding world, a person can significantly expand his perception and even create new objects of reality that did not exist before. The subject of such perception and thinking is no longer just a person, but, according to the philosopher V. Kurbatov, “an actor or agent of global information and communication interaction, which is carried out in an information network through this network and a way of connecting to this network. Moreover, this actor or agent, whose thinking is specific, which is called, by definition, exists only in this information network. Outside this information environment and apart from it, such an agent or actor cannot exist” [1].

MAIN BODY

Today virtual reality is not only a new technology that has no spatial boundaries and time frames. It is also a new information space, and for many it is even a genuine environment of their daily life. Humanity has isolated its existence from the factors of reality, and virtual reality has become one of the most important tools for this isolation. It overcame physical space and time, which means it crossed out the inviolability of nature. It can be argued that virtuality manifests itself not only as a technical means, but appears to us as a socially new phenomenon, where the emergence of new forms of being becomes the center. This plurality appears before a person in various settings of consciousness and forms of activity. Any attempt to find one single space, a reality accepted by all, is doomed to failure. Plurality of realities are the motto of modern society. The answer to the challenge of society is the emergence of the concept of virtual reality, which is thought of as a reality that exists outside of the personally existing. Thus, a modern person can be defined as a virtual network person, a person of the global information network. Information exchange, receipt, assimilation and processing of information - virtual thinking is constantly replenished with new meanings, meanings, feelings. Accordingly, a new type of communication is being formed - virtual communication, a new type of person - virtual person, possessing a specific way of thinking - virtual thinking, and using specific lexical means for this - virtual language.

The world of electronic communication, virtual reality and their influence on consciousness, as a specific object of special scientific research, has a short history. The names of N. Luhmann, M. Castells, M. McLuhan, J. Sempsey, A. Touraine, J. Habermas, W. Eco and many other modern researchers can be named as representatives of this direction. In their works, new information media are becoming one of the most important tools for orienting a person in the world and for people to interact with each other.

One of the most popular typologies of civilizations among various specialists belongs to the Canadian sociologist M. McLuhan [2]. The basis for it is the leading type of semiosis - the process of the generation and functioning of signs. M. McLuhan identifies four types of civilizations:

- 1) The era of preliterate barbarism;
- 2) Millennia of phonetic writing;
- 3) Half a thousand years of book printing;
- 4) Modern electronic civilization.

In his opinion, it was the phonetic alphabet that acted as a means of creating a "civilized man". But, since "any technology is a continuation of a person outside ... external projection, or self-amputation, of our physical bodies" [2], then, being "an intensification and expansion of visual function, the phonetic alphabet reduces the role of other senses in any written culture: hearing, touch and taste" [2]. Regarding the new stage in the development of culture, M. McLuhan is quite optimistic: "The electric era is literally the era of illumination. As light is both energy and information, so electrical automation unites production, consumption and training into a single and indissoluble process" [2]. However, continuing his idea of technology as a kind of psychophysical limitation, it should be noted that electronic technologies are also, first of all, "the expansion of the visual function", and hence the ongoing reduction of other parameters of the psychophysical organization of a person.

Virtual reality as a vivid manifestation of the fourth type of semiosis leads to the transformation of consciousness. We can hardly agree with this thesis unconditionally at the present time. The fact is that now virtual reality is only a product of human consciousness, and therefore it acts not so much as a determining consciousness, but as a phenomenon determined by consciousness. However, it acts as a "developer" of some deep transformations of consciousness or as an "expresser" of those features of consciousness that were previously present, but were hardly noticeable or were undeveloped and occupied a subordinate position. The relation "consciousness - virtual reality" is characterized not by causality, but by the relation of correspondence: virtual reality is a model of consciousness, a means that allows one to explore the features of consciousness specific for a given era.

Virtual reality, in contrast to the constant and stable nature of ordinary reality is variable in nature. For example, it is the parameter of short duration that underlies the distinction between ordinary and virtual particles in modern physics: virtuality here means a relative short duration, instability. But the conceptual content of variability is broader, since here, in addition to the moment of short duration, there is also a moment of dynamism: the variable is not only short-lived, but also more dynamic, rapidly changing (although these two moments are related, since a decrease in the time scale, as usually leads to an increase in the speed of processes). From this

point of view, a virtual world can be called a world that is changing rapidly and has existed for a short time. For example, this is the "world" of a computer game or an Internet session, but not only, since, as mentioned earlier, it is necessary to include any short-term actions, for example, a dream, a game, a performance, etc.

Another important aspect of virtuality is not only its short-lived, but also surreal character. The conceptual basis here is the categorical pair "real - possible". The virtual world is just one of the possible worlds, which differs from the real one in one way or another. In this world, there may be other laws that differ from the laws we are accustomed to (and which requires certain intellectual efforts from us, since we are not adapted to it and our instinctive behavior, which is as a result of adaptation to the ordinary world, no longer helps here). As one of the possible worlds, the real world loses its exclusive status.

Thus, virtual reality, on the one hand, is a direct product of consciousness, and, on the other hand, can have a significant-direct impact on the psyche of an individual and consciousness as a whole. Then virtual consciousness is a reflection of virtual reality, on the one hand, and, on the other hand, is the result of the very properties of human consciousness. That is, virtual consciousness is a part of consciousness that is a reflection of virtual reality, a form of adaptation to it.

The virtual world modifies, first of all, individual consciousness. Interesting changes in the stylistic characteristics of individual consciousness are taking place. Based on the analysis of numerous scattered sources, the following effects of the transformation of consciousness can be distinguished:

1) the effect of polyphonic consciousness. Objective reality is a complex system, each component of which is a process, which means that it develops simultaneously with other processes and is at the same time in an explicitly or implicitly expressed relationship with other components of the system. These characteristics fully correspond to the definition of both a complex dynamic system and polyphony and allow us to recognize that the reality around us is polyphonic. However, at the present stage of the development, can a person cognize it, does he have this opportunity, ability? The establishment of interconnections between the components of one system, as well as communication with other systems (higher and lower) occurs in time and is a process. This means that a person's knowledge of the system should be based on the ability to comprehend two or more simultaneously occurring, different, but interconnected processes. This type of thinking does not fit into the framework of any of the known types of thinking (visual-effective, figurative, logical, etc.). We are talking about the ability of a person to identify connections between two different, simultaneously occurring processes, in some way "split" his consciousness.

In the article "Transformation of ideas about consciousness in the Internet era" Ponomarev A. I. , referring to the concept of splitting consciousness by D. Parfit, writes about the preservation of the integrity of consciousness: "It is obvious that it is difficult to imagine how you can actually be in several places at the same time. Intuitively, it seems obvious that consciousness should be localized in one place. However, according to a fairly widespread concept of D. Parfit, the integrity of consciousness is not necessary to preserve the identity of the individual. You can remain yourself, while being in different places at the same time, if the "psychic connection" is maintained. The Internet is just such a space that can demonstrate the position of D. Parfit. On

the Internet, you can be in different places, present in different capacities and different roles. By connecting to the World Wide Web, each person creates a certain character (the hero of pages on social networks, an account on the forum, etc.). Can you say that my character is me? Yes, you can, despite the fact that we are in different places. However, since we demonstrate similar behavior, there is a psychic connection, then both of these objects - a profile on the Internet and a physical body - are two incarnations of me. The freedom of the Internet is manifested in the fact that there you can create an infinite number of different selves, but in the physical world a person has only one body, and this can be called non-freedom" [3].

Let us disagree with the position of A.I. Ponomarev. In the virtual space, it is not always with the "splitting of the personality" that the "psychic connection" is preserved, which the author of the article speaks about, referring to D. Parfit. When creating an avatar, a "character," a person very often endows him with qualities that are not inherent in himself, and sometimes even the opposite. Such ambivalent behavior often leads to the rupture of the very "psychic connection" and the effect of depersonalization arises, which will be discussed below.

At the present time of nanotechnology and the emergence of nanotechnological reality, human activity should increasingly be subject to his awareness. The tool of this awareness, in our opinion, is polyphonic thinking, the development of which is a condition for a person's existence in this reality. For instance, an example of the polyphonic nature of consciousness in virtual reality can be a certain detachment of participants in Internet discussions and the possibility of a delayed reaction, which allows you to react not so much to a particular message, but immediately to a group of messages, creating a complex response that incorporates various "motives". Polyphony as a new phenomenon of the consciousness of a virtual personality is associated with the multiplicity of interpretations of information content and with the interactivity of the communicative process in the information space.

Doctor of Philosophy V.M. Rozin, contrasting classical and modern thinking, the latter characterizes in "postulates" of generation, context and polyphony. He defines polyphony as a set of "many different thoughts, which are among themselves in different relationships (addition, opposition, independence, kinship, etc.)" [4]. At the same time, V.M. Rozin interprets polyphony not as a special type of thinking that a certain subject can possess, but as a characteristic (postulate) of modern thinking as a whole. At the same time, this view characterizes not only the peculiarity of the modern stage of development of society, scientific thought, but also, in a certain sense, indicates the polyphony of the reality around us.

2) the effect of the distribution of consciousness of a virtual personality is inextricably linked with the effect of polyphonicity. Consciousness in the concept of distributed consciousness is understood as a mosaic composed of separate specialized neurons of consciousness and functions in accordance with a vector spherical model. It is described as a stream of subjective states that includes perceptual, emotional, and thought processes in the human brain.

Modern man has a "distributed" consciousness. This can be easily explained by the example of using any electronic device that has access to the network - in most cases, interaction with the real world does not take place in a single information flow. Most gadget users have several windows or dialog lines open at once when they go online. An interesting fact is that in the process of using the network, consciousness adapts in a specific way to filter out streams of unnecessary information. Also, thanks to anonymity, it becomes possible to simultaneously

occupy different virtually personal positions (the extreme expression of this effect is the “splitting” of the virtual personality, since the Internet makes it possible to simultaneously participate in the discussion under different names). “Consciousness and all mental procedures are distributed between me as a person and different devices to which I transfer part of my cognitive functions. Here an interesting question arises: where, in fact, do I end up as a person?” [5]. Of course, such a distribution may be extremely similar to “schizophrenia with split personality - splitting”, but the ability to quickly switch or perform multiple functions at once is undoubtedly a useful skill.

3) the effect of depersonalization or modification of self-awareness. This effect is a logical consequence of the effect of the distribution of consciousness. Depersonalization in psychiatry is usually defined as a disorder of self-awareness, a feeling of change, loss, alienation, or a split in oneself. Usually accompanied by signs of derealization, manifested by a change in the perception of the surrounding world. Depersonalization can be manifested by the alienation of feelings, thoughts, actions, i.e. alienation of one's own “I”. The main sign of depersonalization is the feeling that a person is losing physical connection with the world around him and his own body. Virtual corporeality appears before us as a self-sufficient formation that develops according to its own laws, not subject to the general definitions of understanding the phenomenon of corporeality, which are characteristic of the real living space of modern society. In the Internet space, as P. Virilio writes: “[...] there is no need to burden yourself with your physical body. “Interchangeable bodies” make attachment to the only and unchanging body unnecessary”[6]. Indeed, in difficult modern conditions, matter becomes a conditional object, information replaces meaning, and the category of time is determined in many respects by the speed of information transmission. The use of virtual reality technologies creates risks associated with the loss of existence, alienation and depersonalization of the inner world of a person. The feeling of the timelessness of communication or action within a social network or virtual reality gives rise to a disregard for the real temporality of existence in real life, which gives rise to a problem in the self-identification of a person who is simultaneously in two different spaces: virtual and real. The newest form of realization of one's own “I” arises. The “I” is experienced by the virtual reality actor as a result of dual education. Initially, the formation of the body as an empirical object, as the origin of coordinates that exists in constant reality, then there is a perception of a certain virtual personality, a network image of a real person, an avatar of a personality, which can differ significantly from the image of a real person. The main characteristic of such an ambivalent behavior of a modern personality, protrusion of oneself in virtual space and the absence of the will and desire to change oneself in reality, is a permanent quality of the society of everyday life and comfort. The effect of modification of self-awareness or depersonalization is that from the moment of “entering” into an avatar or identification with it, a person begins to realize himself not as a physical body, but as this avatar. “Gradually, you, as a real person, will be less and less interested in the world, and the value of your digital avatar, on the contrary, will steadily increase, since he will be able to say a lot about you. Everyone will be interested in your digital copy, which is stored on the clouds, not you. At the same time, it is important to understand that we will all be absolutely transparent for the digital world” [7].

Note that the modification of the user's self-consciousness in virtual reality is far from a harmless effect that requires the most careful study.

4) the effect of modification of consciousness (and, on our own behalf, subconsciousness). The psyche in general and consciousness in particular, as its highest manifestation, constitute a single continuum that does not have quantitative gradations that could be distinguished as separate blocks. A change in the state of a specific system belonging to one of the spheres (physiological or mental) inevitably entails certain shifts in another. Until recently, the main method of such a change was recognized as the method of influencing human consciousness. At the same time, it was postulated that "tangible effects" can be perceived by our consciousness if and only when they can be critically interpreted by our consciousness, pass through the filter of our operative memory, and only then be deposited in our subconsciousness. In this case, direct access to the subconscious is strictly closed. The subconscious was seen rather as something mythical, ephemeral. However, recent studies by neurophysiologists show that our working memory, which forms our common sense, is only a small part of our total memory that a person possesses. Its main reserve is our subconscious. The subconscious contains 70 to 90 percent of our memory (all knowledge). Hence, there is such a huge interest in the disclosure of "reserve" capabilities of a person by direct impact on his subconscious. " In this regard, the opinion of K. Jaspers about the nature of consciousness is of interest: "Our consciousness is based on the unconscious, it constantly grows out of the unconscious and returns to it. However, we can learn something about the unconscious only through consciousness. In every conscious action of our life, especially in every creative act of our spirit, the unconscious present in us helps us. Pure consciousness is not capable of anything. Consciousness is like a crest of a wave, the tip of an iceberg" [8]. Comprehensive communication of sensory information on visual, auditory and tactile modalities in virtual reality allows you to break into the deep layers of the human psyche, replace individual elements of self-image in the right direction. We consider it necessary to dwell here on the issue of manipulating the consciousness of a virtual user.

Manipulation is the process of ideological and socio-psychological influence on people in order to change their behavior contrary to their interests. Today, in connection with the expansion of the influence of the Internet, the topic of manipulation is becoming more relevant, since this virtual environment provides wider, in comparison with radio and television, opportunities for the dissemination of various kinds of discourses, which, in turn, have an impact on human consciousness and, as a consequence, behavior. As G. Le Bon wrote in his work "The Psychology of Peoples and the Masses": "Thousands of individuals, separated from each other, may at certain moments simultaneously fall under the influence of certain strong emotions or some great national event and thus acquire all the features spiritualized crowd. A whole nation under the influence of certain influences sometimes becomes a crowd, without presenting the assembly in the proper sense of the word" [9]. In terms of communication and information transfer, virtual life is in fact not much different from reality. Since people go headlong into the Internet, thanks to its spread and accessibility, it is easy to control them, and it is precisely the invisible nature of such manipulation that is most often the reason for the permissibility of such manipulation. As a result, it is necessary to constantly monitor the incoming flow of information so that further actions are not what is desirable for another, but an adequate reaction of self-realization. It is necessary to think critically and move away from replacing reality with its surrogate.

5) the phenomenon of automated writing. S.L. Katrechko in his article "The Internet and Consciousness: Towards the Concept of a Virtual Human". But in our opinion, automatic writing is not a correct concept, so we are replacing it with an automated one. "Automatic writing (from

the Greek “spontaneous”) is a process (or result) of writing, which is supposedly the product of the unconscious activity of the writer. At the same time, the individual can be in a state of hypnotic, mediumistic or meditative trance, or be in full consciousness and control everything except the movement of his hand” [10]. This concept is not suitable in order to reveal the essence spine of the phenomenon we are considering.

The basis for the effect of automated writing is the need for a sufficiently fast response to Internet messages, that is, it is often necessary to respond to a particular message (or a group of messages) immediately, almost simultaneously. The computerization of typing had a huge impact on the restructuring of the entire process of perception of the surrounding world. Automated writing implies increasing the "productivity" of creating a written product, and, as a result, affects the speed of response to external stimuli in general. One of the first forms of interpersonal Internet communication back in the 1990s was "chat" - an electronic dialogue or polylogue. Today chat has taken on new forms: it has become possible to illustrate communication, video conferencing and audio recording have become the norm. However, the traditional form of chat remains, where the interlocutors exchange text messages. It would seem that in the age of nanotechnology makes a person turn to an almost epistolary genre? "... Waiting for an occasion, the very one that is ready to elevate a fragmentary, stylistically “low” speech to the rank of high experience. In a word, the expectation of affect”.

Of course, there are some users who are only interested in a pragmatic approach - communication in virtuality, which ultimately develops into real communications and relationships in physical reality. However, even more participants in such dialogues do not set such goals, satisfying the momentary need for communication. The words in the chat due to the lack of any other means of expressing feelings for the participants, or due to the stiffness of the everyday language, are accompanied by a standard set of illustrations of emotions - smiley faces, emojis, stickers. These virtual icons are tools for creating a virtual emotional field, which can be radically different from the real mood of the conversation leaders. They, like masks, hide the true motives of the participants.

6) the effect of expanding consciousness outside the body. Being in a real living space, a person senses and touches his body. But the simulation of reality forces the individual to transform, which is expressed in his desire for self-identification, the proper experience for which is not real life situations, but the experience gained in the virtual space. It is he who dictates the rejection of corporeality, creating a certain "virtual corporeality" of modernity. Overcoming spatial limitations, the modern individual overcomes his physical nature and goes beyond its boundaries. M. McLuhan argues that any technology is actually an extension of our bodies and consciousness [2].

In the well-known article "Expanded Consciousness", the English-speaking philosophers E. Clarke and D. Chalmers proposed the hypothesis of expanded consciousness, according to which the cognitive functions of a person can be transferred outside his body. Researchers believe that objects of the surrounding world can constitute a person's mental life on a par with neurophysiological processes in his body. In particular, people can memorize something, plan future actions, count, etc. with the help of technical artifacts external to their body (telephone, computer) and, often, with greater efficiency than without such artifacts. If the attraction of an external artifact occurs regularly and its use has a high degree of reliability, then, according to

the hypothesis of expanded consciousness, such an artifact can be considered a part of the human cognitive system.

Let us emphasize that the hypothesis of expanded consciousness does not simply speak about the use of some artifacts by a person to solve cognitive tasks, the hypothesis insists on considering some of these artifacts as constituent elements of the cognitive system of a person as a whole.

The use of information technologies also leads to more radical shifts in consciousness, which allows us to speak not only about its transformation, but also about the overcoming of individual consciousness by new supra-individual structures. This is evidenced by the following phenomena, which cannot be ignored in connection with the research topic:

7) the phenomenon of semantic resonance. The main idea of this phenomenon is the special connections that allow large-scale consciousness to arise - the result of the general resonance of many small components. It denotes a fundamentally new way of obtaining ultimate knowledge - multipolar work with electronic dialogue. That is, in the process of virtual communication, the final answer or result does not depend on the opinion of a particular person, but is born by the collective mind or as a result of the perception by one particular person of the entire arsenal of opinions and arguments. This leads us to understand such a phenomenon as the phenomenon of virtual collective consciousness.

8) the phenomenon of virtual collective consciousness. It is defined as "inner knowledge catalyzed by social media platforms and shared by many people, driven by the spontaneity, homogeneity and synchronicity of their online activities. The phenomenon occurs when a large group of people connected by a social media platform think and act in a unified way and share collective emotions. Thus, they can effectively coordinate their efforts and quickly disseminate information to a global audience". Since the virtual collective consciousness is the result of the actions of the network, these actions must be timely, sharp, rapid, subject to the subject area and purposeful in order to successfully achieve their goal. Thus, the virtual collective consciousness is an emerging global model of these individual actions. The term "virtual collective consciousness" first appeared in 2011 in connection with the wave of protests and uprisings in the Arab world, named as the "Arab Spring", when there was widespread use of social media for organizing, communicating and informing in attempts at state repression and Internet censorship.

CONCLUSION

Today the phenomenon of collective virtual consciousness acquires an ontological and epistemological status. Throughout history, we have communicated with each other through speech, writing, images on a screen, which is analogous to a dial up connection - an Internet connection that uses telephone lines and is established with minimal infrastructure, including a computer and a modem. However, a fairly advanced neural interface can give our communication the properties of a high-speed network, which will turn "we" into a new "I" that did not exist before. "

Thus, summing up, it should be noted that we tried to investigate the problem of the formation of the consciousness of an individual who thinks in terms of the virtual world - a product of the rapid spread of information networks and technologies. This problem, which has become especially relevant at the beginning of the 21st century, goes beyond the scope of special sciences and becomes a topic that requires philosophical reflection. The virtualization of

consciousness requires the study of modern technologies and principles of influence, not alien to the individual's worldview, but based on the specifics of virtual reality as a new socio-cultural civilization that forms a person as a person, contributing to his adaptation in a complex global world.

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BASIS FOR THE DEVELOPMENT OF THE REGIONAL FOOD MARKET

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ABSTRACT

In the period of deepening economic reforms, it is important to develop a scientific and methodological framework for the formation and development of markets at the regional level, including the food market, and to conduct in-depth analysis. The main purpose of the formation, development and management of the regional food market is to ensure sustainable development of the region to meet the needs of the population. Economists have expressed different views and opinions on the concept of a regional market system. The system of regional markets is a set of entities of different forms interconnected. These entities are actively involved in the process of production, sales and consumption.

KEYWORDS: *Region, Food, Regional Food Market, Agriculture, Development Mechanism, Concept, Economic Methods, Administrative Methods, Prospects.*

INTRODUCTION

In the context of the transition to a market economy, it is necessary to take organizational and economic arrangements by the republican government and local governments to ensure the formation and sustainable development of the regional food market system and its adaptation to changing conditions. [1]

During the transition period, the state will form the structure and management of market processes at the regional level, its forms and methods through national economic policy and regional economic policy, which takes into account the specifics of regional development at different levels. [2]

Main part. In the context of the operation of many economic entities based on different forms of ownership based on their economic interests in the economy, indirect influence on these processes in the field of market trade is the optimal option of government management.

During the transition to a market economy, this management takes into account certain links in the organizational and economic mechanisms of formation and development of the regional food market. The growth of investment and the effective use of the economic potential of the region will lead to an increase in the volume and quality of market services provided to all entities. This is due to the creation of a favorable economic environment in the region. As a result, a two-way result is achieved in the region's economy: on the one hand, to support the development of existing enterprises, on the other hand, to attract new investors. This will lead to an increase in the total volume of investments in the region's economy and stimulate the growth of the region's full economic potential, including the potential of the regional food market and market infrastructure, through the action of the feedback mechanism. Accordingly, there are other links

in the region's economy: the development of existing and new enterprises - the basis for economic growth in the region, employment growth, income growth of the population and enterprises, an increase in the regional budget. As a result, additional financial opportunities will be created for the implementation of regional infrastructure and market development programs. The organization of interregional and foreign economic activity for the openness of the food market in the region will primarily increase the revenue of the regional and national budgets, have a positive impact on attracting investment in the region and serve as an important factor in developing regional food market potential. At the same time, economic growth in manufacturing will create additional demand in the regional food market and stimulate its development. [3]

Ultimately, the organizational and economic mechanism of the regional food market represents key links. It allows investments to have a multiplier effect on the development of existing capacity and the growth of incomes of businesses, the population and the regional budget by creating an optimal economic environment. [4]

Regional governments, on the other hand, will contribute to sustainable economic growth in the region and its individual entities by activating the food market and its economic potential. [5]

This requires regional governments not to invest in the formation and development of food markets at the expense of the budget, but rather to use administrative and economic methods of economic mechanisms, including factors and incentives to attract private investment in the development of regional markets. [6]

It is necessary to use a system of economic and administrative methods to ensure the effective development of regional markets in the context of market reforms and liberalization of the economy. The process of managing food markets at the regional level should be improved, first of all, by gradually adapting them to market principles, namely:

- management of the regional food market, market infrastructure and the socio-economic environment in general should become the main task of regional governments;
- it is necessary to use a wide range of financial and economic methods for the effective management of market processes, which determines the specifics of taxation in the region;
- the regional authorities influence the entities operating in the food market through economic methods. This will allow to use the mechanisms in terms of the needs and requirements of the population without interfering in their production, technological and financial activities.

The purpose of management is to strengthen production, entrepreneurship, social support of the population, increase its welfare. The management system is effective only when it is clear and sufficient for each producer. [7]

In the context of the transition to a market economy, the formation of monitoring the effectiveness of the management system of public functions will be aimed at improving the mechanism of market activity based on its results. The effectiveness of management depends directly on the extent to which it is implemented within the regions, and the development of agriculture, including food markets, which is an integral part of it, largely depends on the effectiveness of the management system at the stage of its formation. In this regard, the study of the experience of foreign countries in the transition to a market economy, theoretically and practically, serves as an important source in the formation of a regional food market.

Management of the regional food market is carried out through economic and administrative methods. [8]

The experience of developed countries shows that a network of small manufacturing enterprises is widely developed in agriculture and industrial processing.

In the United States, for example, small and medium-sized firms produce 80% of agricultural products. They are cooperatives, agro-industrial concerns, which receive great support from the state. Small businesses are also widespread in Denmark and France. Small businesses are a way to achieve high results, using less power and resources, using not only production that uses a small number of people, but also advanced, relatively efficient ways of organizing and managing production. Their advantages are rapid adaptability to changing market conditions, rapid reorganization of production and not being afraid of commercial risk. [9]

In developed countries, the state management of arable land, which is an important link in the food market, is the basis for the production of agricultural products and the level of prices for agricultural products, as well as the formation and operation of scientific advisory centers. Currently, both in the United States and in the member states of the Economic Council of Europe, the transition to legal and economic management of the production of the most important types of agricultural products. [10]

The development and implementation of a system of regular (monthly, quarterly or annual) monitoring plays an important role in the economic mechanisms of regulation and management of the regional food market by state and local (provincial, and district) authorities.

The objectives of food market monitoring within the regions are:

- study the needs and requirements of the population for food products;
- identification of factors and causes of changes in the food market;
- identification of inconsistencies and problems;
- in-depth analysis of internal and external factors affecting the food market, risks and development of measures to prevent them;
- Dissemination of information on the current state of the food market to farmers, companies and dehqan farms, small businesses and private entrepreneurs through the media.

Regular monitoring and diagnostics of the regional food market is important, especially in the prevention of external risks affecting the region. It is necessary to control the import of low-quality products from abroad and the export of food products from the region and to develop preliminary measures against the existing risks based on the analysis of their impact on the food market in the region.

In order to carry out such monitoring and diagnostics, it is expedient to establish a special center for the study of food market conditions in the regional administration.

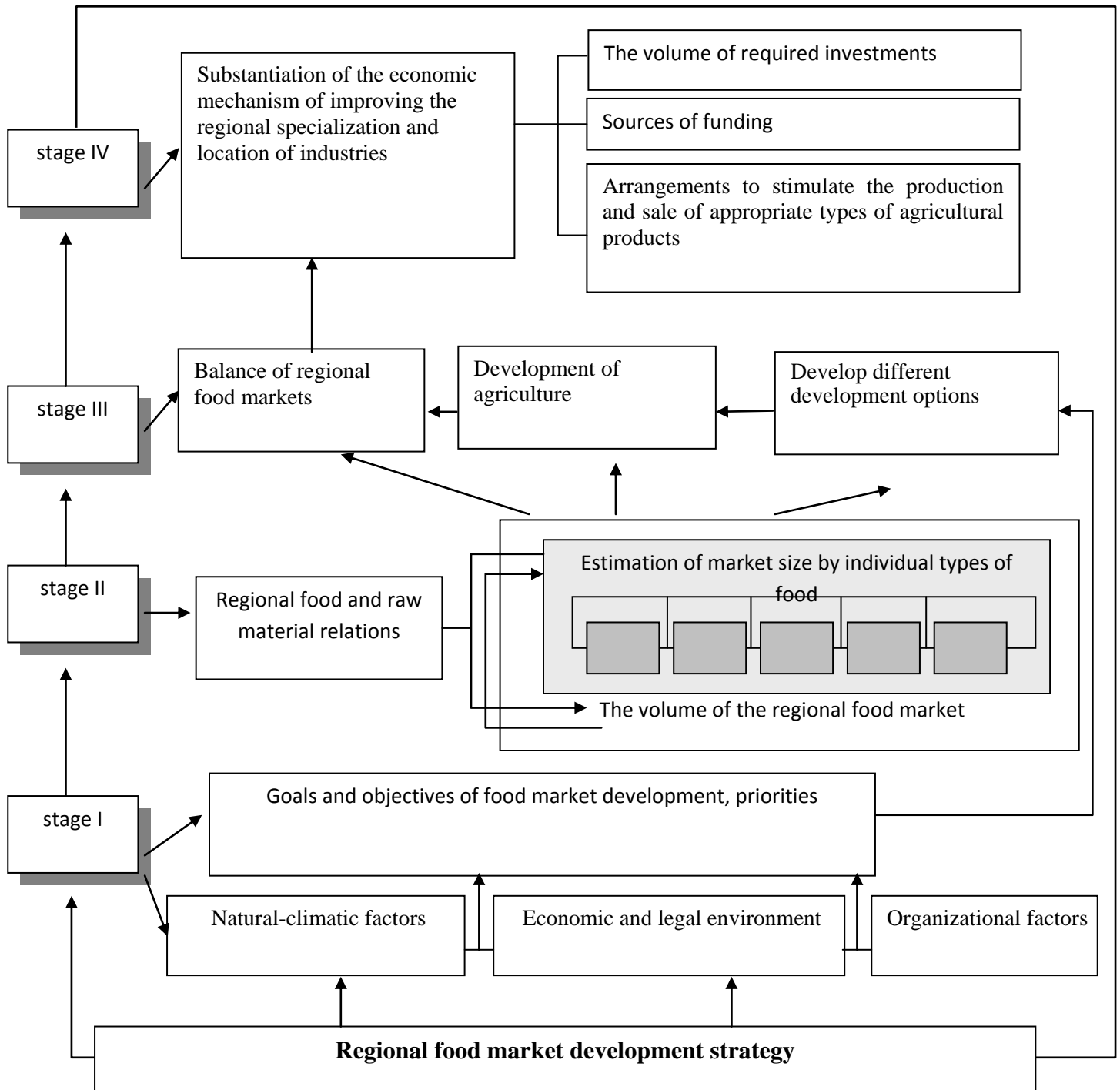
Another proposed management mechanism is to develop a long-term concept for the development of the regional food market.

The concept sets out a strategy to ensure food security for the provincial government and local governments with a clear goal in mind. The concept also outlines future population growth and

changes in food demand, efficient use of limited water and land resources as a factor in sustainable agricultural development, implementation of advanced scientific achievements, key areas of economic integration with neighboring regions and foreign countries.

It is advisable to develop the concept in the following four stages (Figure 1).

Figure 1. The concept of development of the regional food market



In the first stage, the goals, objectives, factors and priorities of the food market development are determined;

The second step is to calculate the size of the region's food market. At this stage, based on the assessment of the prospective size of the market, the directions for improving regional ties will be identified.

In the third stage, alternative options for the long-term development of the regional food market will be based and balance calculations will be made.

In the fourth stage, economic mechanisms for the sustainable development of the regional food market will be developed.

The sequence of these stages covers regional food integration and the formation of regional wholesale markets and modern methods of trade in the consumer market (a network of specialized and universal stores, associations, etc.). As part of the deepening of market relations, it is planned to adequately develop the infrastructure that serves the food market.

The method of making balance sheets on products is widely used in determining future performance. The proposed concept can be developed for the next 10-15 years at the initiative of the regional government in conjunction with research centers, business centers.

Through the introduction and continuous improvement of these economic mechanisms, it will be possible to achieve solutions to the problems of the regional food market in the region and to form a full-fledged market relations in the future.

CONCLUSION

In the context of the transition to a market economy, the development of the food market requires the development of a long-term regional concept through the improvement of its management mechanism. The concept serves as a key resource for local governments in the region in defining a clear food security strategy, efficient use of available limited resources and key areas for economic integration with other regions and foreign countries. The development of this regional concept is expedient in four stages and requires the development of a comprehensive infrastructure package that will ensure the functioning of the regional food market and its integration. Although the formation and development of the regional food market in the transition to a market economy is initially carried out with the priority of state-managed economic mechanisms, it creates ample opportunities for the formation of relations in line with market mechanisms and ultimately serves as an important tool for a full regional food market.

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ELECTRONIC COOPERATION BETWEEN ADMINISTRATIONS IN A UNIFIED SOCIAL PROTECTION SYSTEM

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ABSTRACT

The article examines the use of digital technologies to modernize Uzbekistan's social protection system. The "Single Register" information system's concepts for evaluating low-income people's needs and giving material aid are discussed. It was decided that social protection should not be limited to the payment of benefits and should help those in need to "get back on their feet". The straightforward and clear notion of "the individual's interests above all else" was prioritized as a result. It is now critical to make the notion that people should serve people rather than government entities the cornerstone of daily activity. The formed payment sends the "statement" directly to the bank, and submits the payment order to the treasury. After the treasury finances the payment on the payment order, the money goes directly to the "People's Bank".

KEYWORDS: Social Protection, Digital Economy, Single E-Platform, Low-Income Population, E-Government, Inter-Agency Cooperation.

INTRODUCTION

Uzbekistan has constantly begun on a comprehensive reform of all aspects of state and public life in 2018, as well as resolving structural flaws in each. The straightforward and clear notion of "the individual's interests above all else" was prioritized as a result. It is now critical to make the notion that people should serve people rather than government entities the cornerstone of daily activity. The concept of "public receptions" and "single window" was used to build a system for supplying the population with the most basic public services through a single agency.

The United Nations Children's Fund (UNICEF), the World Bank, and the International Labor Organization convened a seminar on "Assessment of the social protection system in Uzbekistan" on November 9, 2018, at the Ministry of Employment and Labor Relations. 75 percent of low-income households in Uzbekistan do not receive social benefits, according to the results of a nationwide study performed in 2018. [1] During the event, it was noted that the lack of necessary departmental information systems, electronic resources and databases, paperwork, and time to deliver public social services or aid is hampered by the buildup of difficulties in the social protection system.

In 2018, 53.4 % of the state budget was allocated to finance this sector, based on a rigorous examination of the current challenges in Uzbekistan's social sphere. This amounted to 19 trillion

soums, with 65.8% of it going toward monthly compensation. The subject of modifying the order of appointment and payment of pensions and benefits in 2018, radical pension reform, social protection for children with disabilities and their families, and the loss of a breadwinner until the age of sixteen were also discussed. The subject of giving a separate social stipend for mothers who devote their lives to caring for a disabled kid has been broached for the first time. [2] In 2019, the rate of social sector financing was 54 percent, and these monies were used to improve the social protection system, social security for the poor, housing, and living standards. Material transfers and compensation to low-income families, in particular, totaled 5.3 trillion soums. In this area, coverage increased by 1.2 percent, with 507,000 low-income households receiving assistance. [3] The allowance was increased by a factor of two. Working retirees' monthly income were fully preserved.

Uzbekistan's President Shavkat Mirziyoyev at a meeting on social protection reform in 2019: "Reducing poverty means awakening the entrepreneurial spirit in the population, realising people's inner strength and potential to the full, and implementing a comprehensive economic and social policy to create new jobs. That is why we propose a Poverty Reduction Programme, in cooperation with the World Bank, the United Nations Development Programme and other international organisations. [4] At this meeting, our head of state stressed that a large part of the rural population, which does not have an adequate source of income, is poor. According to various estimates, the poor make up about 12-15% of the total population of the country, or 4-5 million people.

Based on these circumstances, it is necessary to create a new methodology in accordance with international standards, covering the concept of poverty, its criteria and assessment methods. It has also become vital to define and introduce a "consumer basket" and a "subsistence minimum", which are important in determining the amount of benefits and pensions, to clarify the indicators and standards of these indices, which underlie the domestic policy of each country. It was decided that social protection should not be limited to the payment of benefits and should help those in need to "get back on their feet". By creating appropriate working conditions, 80% of people with disabilities alone can be provided with socially useful work [5]. Due to the positive trends in the policy and measures taken in the country over the past two years in the field of social support, Uzbekistan has become one of the 24 countries whose applications for funding from the Fund for Sustainable Development have been approved [6]. As a result, the Government of Uzbekistan and the United Nations signed a joint program to strengthen the social protection system in the country. This program serves as a guarantee of quality social protection and social services for the citizens of Uzbekistan.

Consistent measures are being taken in our country to further increase the targeting of social services and assistance to the population, the procedures of social protection are gradually being digitized. In particular, the ongoing coronavirus pandemic in the world requires transparent and effective tools to identify the most vulnerable segments of the population in the short term and provide them with targeted support by the state. On this basis, the Resolution of the President of the Republic of Uzbekistan "On additional measures to automate the procedures for providing public social services and assistance to the population" dated August 4, 2020 PD-4797 was developed and the process of digitization of social protection in our country started [7]. The Regulation on the procedure for assigning and paying social benefits and financial assistance to low-income families through the information system "Single Register of Social Protection" was

approved, and the priority in the appointment of social benefits will be given to relatively low-income families.

At the same time, with the involvement of international experts, the introduction of a unified system of public social services and assistance to the population, the criteria for determining the need for social benefits, services and assistance have been improved. In addition, the electronic system of appointment and payment of social benefits and financial assistance has been widely covered in the media and on the Internet, and has become an innovative system that automatically implements the process of providing social services and assistance to the population through interagency cooperation. In our previous research, it was emphasized that institutional reforms are being carried out in the social protection system based on innovative approaches, with the gradual digitization of the industry. Today, these reforms are being accelerated, and work is underway to form and analyze a socio-economic "portrait" of families receiving social benefits and financial assistance through the information system "Single Register of Social Protection". In parallel, work is under way to further improve the mechanism for planning budget allocations for social benefits and material assistance in terms of regional and district (city) local budgets. If a citizen wishes to receive social assistance without having to collect any information under this system, they can go to their mahalla (it is not necessary to go to the regional offices of the district or central pension fund of the city) and submit copies of their passports (marriage and birth certificates). The mahalla, as the body that receives the application and submits it to the district branch of the pension fund, does not make any decision on whether to approve or reject the application.

The convenience of this system is that the Ministry of Finance and the People's Bank automatically create a "statement" of payment and a payment order for the assigned benefits. The formed payment sends the "statement" directly to the bank, and submits the payment order to the treasury. After the treasury finances the payment on the payment order, the money goes directly to the "People's Bank". Excessive paperwork and hassle are not allowed. The main difference between this system and previous social services is that human involvement and decision-making by actors has been minimised.

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THE ROLE OF "MING BIR KECHA " IN THE DEVELOPMENT OF UZBEK FOLK TALES

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ABSTRACT

This article contains scientific comments on the history of the creation of "Tutinoma", "Kalila and Dimna", "Xazorafsona", "Ming bir kecha ", which played an important role in the development of Uzbek fairy tales. The similarities and commonalities in the plots of the tales of the various peoples living in the East have been explained on the basis of examples that the history of commonalities is very ancient. The names Shahriyor, Shahzamon, Shahrizad, Shopur are Persian names, while David, Suleiman are Jewish, Khatun, Alibaba are Turkish and Sinbad is Hindi. The Uzbek translation of "Tutinoma", "Kalila and Dimna", and especially the collection of Arabic folk tales "Alf layla and layla", ie "Ming bir kecha", which became very popular among the peoples of the East, had a great impact on the tradition of fairy tales.

KEYWORDS: "Tutinoma", "Kalila and Dimna", "Xazorafsona", "Ming bir kecha".

INTRODUCTION

Along with the national traditions of the development of folk prose genres, literary and folklore influences, folklore relations and "traveling plots" played an important role in the development of Central Asian Turkic peoples, including Uzbek fairy tales and the formation of the plot system of fairy tales. Because the formation and development of a series of epic plots reflecting the uniqueness of Uzbek folk tales is directly related to folklore, one of the sources of enrichment of the repertoire of storytellers are "assimilation plots" passed through the oral art of fraternal and non-fraternal peoples. The Uzbek translation of "Tutinoma", "Kalila and Dimna", and especially the collection of Arabic folk tales "Alf layla and layla", ie "Ming bir kecha", which became very popular among the peoples of the East, had a great impact on the tradition of fairy tales. In the history of the epic art of the peoples of the East there is a tradition of classifying folk tales into a certain system, the collection "Xazor afsona" in Persian and the complex "Alf layla and layla", ie "Ming birkecha" composed of Arabic folk tales. is considered. Especially important is the development of artistic thinking of the peoples of the world "Ming birkecha", which has a unique complex compositional structure, a variety of plots, motifs and systems of images, as well as the perfect elaboration of the literary text. Although the study of the history of the creation of the complex "Ming birkecha" in world folklore began in the XVIII century, when this work was first translated into other languages, the debate about the origin and ancient sources of this rare literary monument has not stopped.

"Ming bir kecha" in A. Salkhani, A.K. Gorster [1], A. Krymsky, M.A. Sale, I. Estrup [2], Gerhard [3], I. Scientific views and factual information in the works of such scientists as M. Filshtinsky, V.V. Lebedev, Hasan Shahrizad, Sh. Shomusarov have important scientific value. In their articles and scientific works, these scholars have deeply considered the origin and sources of "Ming bir kecha", and the generalization of scientific views on the analysis of these materials is of great theoretical importance for folklore.

Before thinking about the history and sources of the collection of fairy tales "Ming bir kecha", it is necessary to dwell on its genre. According to Shomusarov, "Ming bir kecha" is a complex composition of medieval Arabic folk literature, which includes several genres of oral art, in particular, fairy tales, parables, anecdotes and short stories. The basis of this complex is the Arabic "literary tales" [4]. In our opinion, Sh. Seems to have defined it as a "literary tale". In our opinion, this scientific view shows that "Ming bir kecha" consists of literary tales, in contrast to the folk tales written or told in direct oral performance.

It is known that "Ming bir kecha" is a monument to the peoples of the Middle East, Central and South Asia. Because it has Iranian, Arab and Indian colors. The names Shahriyor, Shahzamon, Shahrizad, Shopur are Persian names, while David, Suleiman are Jewish, Khatun, Alibaba are Turkish and Sinbad is Hindi. For this reason, scholars who have studied this collection of tales admit that the epic plots in it are divided into three groups according to their area of distribution, ie geographical area and period of formation: a) the first plots belonging to the Indo-Iranian series; b) Medieval plots that make up the Baghdad series; c) plots that later formed in Egypt [5].

Shomusarov, who studied the genre structure and poetics of Arabic folklore, wrote that the collection "Xazorafsona" ("Ming afsona"), based on Persian and Indian folklore, was first translated into Arabic in Iraq in the ninth century. This creative process, which began in Iraq, continued in Syria and Egypt, and over the centuries, this source has been enriched and enriched with Arab folk tales, stories, narrations, and anecdotes. Thus, the first basis of "Ming birkecha" was a fairy tale about a fisherman and a ghost, Qamaruzzaman and Budur, King Badr and Javhara. Later, a similar collection of fairy tales included Iraqi folk tales and romances, exemplary stories about Harun al-Rashid and the adventures of Sinbad, and battles in Syria depicting the heroic journeys of Umar al-Nu'man. The process of formation of "Ming birkecha" was completed in Egypt, including the fairy tales about "Aloviddin and the magic lamp", "Etikdo'z Ma'ruf", as well as life stories about Ali az-Zeybak and the cunning Dalila, many non-fiction and figurative tales. included in this collection at this stage. The fact that the first edition of "Ming birkecha" was published in Egypt also indicates that the process of formation and completion of this series of fairy tales was completed in this region." [6]

According to GM Ostanova and NK Rakhimova, who analyzed the folk tales created in Baghdad and its environs and later included in the work "Ming birkecha", the historical source of these stories is was a real business trip. The result has been a vast collection of stories over the centuries, consisting of countless truths and myths about distant lands in the coastal regions. The authors of "Ming birkecha" have included adventure stories from such collections. From the 12th century onwards, Egyptian stories and tales were added to the collection, and this lasted until the 14th-16th centuries. "Ming birkecha" is slowly beginning to take shape." [7]

V.V. Lebedev, who studied the written sources of medieval Arabic folklore, found that the world's libraries and manuscripts also contain several manuscripts of "Ming birkecha", which are

believed to have been formed outside the Arabian Peninsula. rather than a literary tale, it is distinguished by its closeness to the method of live oral performance [8]. According to F.A. Isaeva, the copy of "Ming birkecha" copied in Calcutta contains many elements of lively speech and dialectal features of the dialect.

Given the place and role of "planetary plots" in the development of fairy-tale traditions, the epic works of fairy tales, short stories, anecdotes and other genres included in the complex "Ming birkecha" originated in the oral tradition and formed directly in the process of live performance we have come to the conclusion that it is also closely connected with the past "assimilation plots". Because the history of similarities and commonalities in the plots of fairy tales of different peoples living in the East is very ancient..

In conclusion, it should be noted that the role of Indian, Iranian and Arabic folklore in the creation of the monumental work "Ming birkecha" is enormous. This raises a controversial question. Perhaps the basis of some of the tales in "Ming birkecha" appeared in the oral traditions of other peoples and later influenced Indian, Iranian, and Arabic folklore? This can be clarified by future research. In any case, the existence of the ancient source "Xazor Afsona" proves that the ancient roots of "Ming birkecha" go back to Indo-Iranian folklore, and under the influence of this source, Arabic folklore developed and the complex "Ming birkecha" was created. As a result of this complex, Uzbek folk tales have developed and hundreds of new folk tales have emerged.

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PARTICIPATORY DEMOCRACY AND THE DYNAMICS OF DEVELOPMENT IN NIGERIA: A PHILOSOPHICAL ANALYSIS

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ABSTRACT

We begin this research with a simple question. "Does Democracy engender Development? Democracy is ordinarily seen as a set of institutions and practices whose intention is to implement a certain kind of equal participation of citizens in the political process. Development on the other hand can be seen as argued by a few philosophers as a process of expanding the real freedoms that people enjoy. Focusing on human freedoms contrasts seriously with narrower age-long views of development, such as identifying developments with growth of gross national product, or with the rise in personal incomes, or with industrialization, or with technological advancement or with social modernization. As we shall see in this article, development goes beyond the physical accomplishments of a state to the ability for citizens to achieve more freedom to achieve their life goals. Specifically, it is stated in this article that it takes the institution of democracy to give citizens more freedom and this can only come through active participation of the citizens in the entire gamut of the democratic process. This is important because democracy as an institution is a product and a tool of the citizens to organise their society to achieve their goal of freedom and to make this happen, they must choose the kind of leaders and kind of ideology presented to them in a free, credible and fair democracy process. This paper reveals that the Nigerian populace is yet to achieve the dividends of democracy owing to the lack of participation by the people beyond coming out to vote on election days.

KEYWORDS: *Engender, Accomplishments, Age-Long*

INTRODUCTION

Background

Before the advent of what is now commonly referred to as the 4th republic, Nigeria's historical development was one replete with coups and counter-coups as the country's elites fought for power via the barrel of the gun. There is an open in the country that every military coup in Nigeria was supported and funded by some civilian billionaire or a foreign power. The first coup in 1966, followed by a counter coup in the same year which eventually ended in a three year bitter civil war was characterizes by misgivings among the elite class and the trend continued till the birth of the 4th republic. What agitates my thoughts is the reason why the

military regimes were seen as forbidden and political anathema when facts have revealed that all the states of Nigeria, 36 of them were created by only the military. The entire major infrastructure in the country including roads and superhighways, railways, major water works and airports to mention a few were all built by the military. To some extent, there was law and order in the country.

The only cry was about freedom and the exercise of fundamental human rights. For this, many activists and academics declared war on the military until they were pushed out of government and into the barracks. Today, with freedom and rights guaranteed, nothing absolutely has changed in the country in terms of governance under civilians. Traditional and social media are

awash with grim realities that democracy has actually not solved any problem in Nigeria. News of massive corruption by government officials, issues of crime and criminality, increase in the poverty index and so forth are daily reported. Observers and commentators would argue that the only probable change that is very conspicuous is that the elite class has been expanded; taking in more members and the local colonization has been perfected, to the point where the common good is now the good of the elite. In fact, all the institutions of the state are now for the protection and welfare of the elites. So what is the gain of becoming a democracy?

So, after a long spell of military beginning in 1966 with a brief civil rule in 1979-1983 therefore, Nigeria returned to civil rule again in 1999 and has remained so till now but political transition does not, however, translate to transition to democracy. The crucial question is, “can there be democracy without addressing the doctrine of basic individual liberties in society”? The diversity of doctrines and pluralities in Nigeria is not just historical reality that will not pass away but is also at the root of the political structure of the state; and people look up to democratic institutions to help the overall structure to ensure national cohesion. Larry Diamond [1] gives this idea some depth when he asserted that even if an authoritarian regime shows some commitment to human rights and collective goals; it does not make it democratic, ‘nor are all democracies, especially unstable democracies good for the people. But certainly, non-democracies are not likely to achieve those social and moral goals that require democratic institutions and freedom’.

He argued in 1998 that ‘...democracy is the only model of government with a broad ideological legitimacy and appeal in the world’. For this reason, the institution represents a very critical one in the social structure of Nigeria, because the idea of justice, which is the ultimate end of politics, cannot make any impact in any society without the existence of democratic structures. Wangari Maathai (2010) [2] also argued strongly that too often the term “democracy” has simply become a bromide, offered during voting rather than a means of enhancing the capacities of governmental and non-governmental institutions, providing basic services to the people and empowering them to be active partners in development. In this vein, one can seriously contend that for politics to be constitutional, it must be democratic and be firm on popular sovereignty and social citizenship. It must have the strong participation of the people in both the selection of candidates and election of leaders, as these underscore the very essence of the institution of democracy and the foundation for development.

From the perspective of political institutions, the structure of the Nigerian society may show that in theory there is a democratic ambience in place but in reality there is none, as the necessary ingredients of democracy such as the rule of law, mass participation, basic liberties

and rights in addition to free and fair elections are lacking. The implication of this is that development which is expected to thrive in a democratic environment and become its concomitant outcome in the long run, is stunted because of the reality of lack of true democracy. Over the years in Nigeria, it has been politics of the few, by the few and for the few; a case where few politicians in the corridors of power sit in a room and determine who gets what and who goes where. It has been argued vigorously that the political class in Nigeria, judged to have failed the people, carry out political activities without democratic fundamentals and necessary elements. True democracy in society will only be realised when the political class and the government involve the people in the political process. In a wider context, thus, the understanding of the concept of democracy itself would reveal the extent to which the social- political structure of the Nigerian society needs to transform to achieve stability and development.

So the situation is such that from 1999 till the current realities, Nigeria has experienced the longest stretch of democracy since independence and ordinarily, this should elicit some kind of literature on development and growth in all spheres of national life. The indices of human development by now should have been looking upward but the contrary is the case. Why are unemployment figures still high? Why is there still so much insecurity and criminality in the country? Why is the poverty level still high? These questions are urgently begging for answers. In the meantime, enormous resources have accrued to the state as usual, with no tangible evidence of them on ground. The question then would be what is the purpose of returning the country to civil rule if the welfare of the people would still remain the same? Another question waiting for answer is, why is Nigeria's democracy not leading to instant development? Are there things in Nigeria's democracy that are missing? Compared to other democratic countries, why is Nigeria's democracy not making the lives of the people better? Are there better freedoms among the people now? What are the people doing with the freedom procured through the change of regime from military to civilians? Has democracy actually made a difference in the lives of Nigerians? These are the issues waiting for deliberation as we draw our link between Democracy and development.

Democracy and moral development of the people

The fundamental issue begging for analysis in this section concerning democracy, good governance, and moral development is how the people and their political leaders are expected to act? The next is what is the right thing to do in any given situation? The corresponding question in classical ethical and political thoughts is what a good life is for a human being and who determines that? A follow up is what is known as good governance or good government? An answer to these variants of questions would depend on the answer to the primary moral question, what is the good life for a human being which is in turn dependent upon an understanding of what a citizen is. The need to have an understanding that cuts across different understandings is very important in making any kind of assessment and without this common understanding, making judgements on the issue of democracy and development would be based on emotive reasoning. This thinking becomes more germane when you note how governments at different levels talk about dividends of democracy in rolling out their accomplishments in office.

Norton (1999, ix) argues that: "a good government is one that affords to the people who populate its constituency, the requisite social conditions for leading the best life possible". This

simply implies that the essence of government in any society is the people and their lives. He goes on to assert that modern progressives erroneously show little interest in the moral life and worthy living among the people but create: “more geographical exploration, emphasize the development of markets, pursue the growth of technology, and its material fruits, all conceived extra morally” (Norton 1999, 15). His argument continues that what should be paramount in governance is that the route to follow in striving for the just and good society is through good governance or put differently, the essence of government lies in the cultivation and the perfection of individuality, not in its suppression or extinction. In cultivating the individuals in society, there must be good governance and the point must be made that from the days of the state of nature transiting to the social contract, society has become a school for the cultivation of human character.

What is therefore, very necessary in any liberal and democratic society is the enthronement of principles that would make the state to deliberately and conscientiously provide the social conditions that would help citizens development their character and be able to live the life they so wish: “What becomes necessary to classical liberalism is the social contract that ends “war of all against all”, by establishing and preserving a social order consisting in protecting individual rights by consensual governments and just resolution of conflicts through impartial judicial decisions” (Norton 1991, 132). The job of government therefore goes beyond that of providing social amenities to that of establishing a just system that can solve problems both at the individual level and at the level of the society. The challenge here has to do with the kind of people that constitute governance and a situation where government is constituted by people who lack this basic understanding portends danger for society.

Downie (1964, 83) [3] contributes to the discourse by noting that it is not the function of any government to create societies that exemplify one idea of the good life to the exclusion of others. Rather government should concern itself with promoting the public good in a manner which encourages the active participation of the citizens, and in so doing create the condition in which a multiplicity of ideas of the good life may flourish side by side: “we judge a government through three criteria. 1. The extent to which it furthers the public intent where that is understood as a matter of protection, social welfare, and independent arbitration. 2. By the extent to which it allows participation by its citizens in the process by which they are governed.

3. By the extent to which it encourages the pursuit of ideas of the good life”. These assertions clearly show that democracy in Nigeria has no intent to involve the people beyond providing amenities and giving them freebies from time to time, an activity the military equally did and even more.

Democracy and Economic Development of the People

The United Nations Development Programme releases a report in 2020 that the Human Development Index of Nigeria dropped three places to 161 in their latest report: “To allow for assessment of progress in HDIs, the 2020 Human development Report includes recalculated HDIs from 1990-2019 using consistent series of date. Nigeria’s HDI value for 2020 is 0.539, which put the country in the low Human Development category – Positioning it at 161 out of 181 countries and territories”. At the same time the report reveals that the HDI of Nigeria grew by 58% between 1990 and 2021. This is definitely a phenomenal growth. With this kind of growth and exploit in a country, poverty reduction would have received a boost but that is not

the case. The concern by World Bank in the own report is why this rapid growth in the economy in Nigeria has not generated greater poverty reduction? The other question is how could an economy of the size and wealth of Nigeria have such a high poverty rate? The answers to these questions are embedded in the argument of participatory democracy.

Poverty reduction in any society has become a more explicit objective of development policies; and economic growth as a measure of progress in society is now seen as more of a means to an end rather than a final objective in itself (Addison 2008). World Bank (2006) reported that there are more than a billion people living in extreme poverty. These are people having less than one dollar per day to survive and the situation in Sub-Saharan Africa is especially desperate as

almost half of the population is poor. It is also reported that 799 million people or 17% of the population in developing countries are undernourished and in sub Saharan Africa, one third of the population is undernourished, the largest of any developing region (World bank 2020, UNDP 2020). World Bank reports that: “recently announced rebased GDP figures that increased the estimated size of the Nigerian economy have again drawn attention to official poverty statistics. Data from the last comprehensive households survey (NHLSS) in 2009/2010 indicate that the official poverty rate remained stubbornly high at 46% of the population. The emphasis now is for effective states to apply the practice of participatory democracy to necessarily achieve development objectives by providing pro-poor services and infrastructure. Human development is taking the front burner as more countries become democratic as against the old idea of physical development at the expense of human welfare.

In the midst of the debate on the mind of most policy makers’ belief in physical development as against human development, Addison (2008) asserts that an ideal society must achieve absolute poverty reduction. On the other hand, some other writers on the subject favour state actions to reduce over-all income inequality as well among others. While Social and Political Philosophers such as Rawls fall into this latter category, others including Nozick (1974) vehemently oppose such egalitarian ideas, citing individual freedom, including the right to accumulate wealth. In a democracy, which Addison referred to when he talked about ideal societies, Public policy is normally based on debate and the decisions taken are always based on agreement. Whether the objective of the state is to create equality or not in any society would depend on the values and moral standards in that society and must all emanate from public participation in the process. Economic development is closely interwoven with democracy as the objective of democracy in the first place is freedom to pursue a desired life style by citizens.

If the advancement of society is measured by the barometer of how it’s poorest and most vulnerable live, then as recent figures released by UNDP (2020) show, Nigeria has a systematic structure of inequality and it is only the strong participation of citizens in policy formulation and implementation that can reverse this trend. This problem in the Nigerian society in spite of years of unbroken democratic rule translates to very limited opportunity for upward social mobility, few decent jobs, poor income and low purchasing power for the employed. Inequality means poor infrastructure and institutional failures in key sectors of the society. UNDP also reported that high inequality adds to conditions that prevent sustained growth by depriving a substantial proportion of the population access to economic opportunities. Inequality in Nigeria gets worse as the years go by in spite of the advent of democracy, ranking the country among the countries with a relatively high inequality in the world. This grim data only affirms our

earlier claim that mere taking the country from the soldiers is not enough to improve the lives of the people.

The tenets of participatory democracy places so much emphasis on the development of the people as they choose the best life style that suits their goals in life and as Ake argued in the writings of Efemini (2002) that development must focus on the people, asserting that it is man-centred or more like citizens-centred. The challenge at this point is how to define what we mean when we say development should be man-centred. Is it to give resources to man to further his growth or to provide the necessary structures and conditions that can create opportunities for the citizens or could it be a combination of both? We must be mindful in this

wise to acknowledge that there are citizens who are not ready to apply themselves to conditions for their growth but are only interested in free rides. Despite this, Ake continues that: “development is not a project but a process. It is the process by which people create and recreate themselves and their life circumstances to realize higher levels of civilization in accordance with their own choices and values” (Ake, 1996, 125).

In line with our argument that the current structure of democratic governance in Nigeria has not really changed from the legacy of the military era simply because the kind of democracy practiced in Nigeria is Elitist in texture. For this, the intent of democracy which is the good of the people is still elusive, a point raised by Ake as he expressed frustration that while other regions in the world have experienced development in one way or another, the problem in Africa is not so much that development failed as that it never really began. That means, for Ake, Africa has not started the challenge of overcoming underdevelopment; and what is responsible for this, when almost the whole of Africa is now practising democracy? The missing link for me is the fact that the brand of democracy introduced to African countries is too much elitist by nature and is programmed to serve only the interest of the elites and until the people are integrated fully into the process, its main purpose would continue to be unattainable.

Public Opinion, Public Reason and Participation of the people

The import of the participation of the people in their democracy cannot be undermined and overemphasized as its absence creates a malicious dichotomy between the elites and the general public and the elites against itself using the masses. In other cases, there is the dichotomy between the masses and itself, as instigated by the elites. Those are the sad outcomes of a democracy devoid of the people’s participation and this participation, it is argued by social scientists goes beyond attending political rallies and voting on election days. Weale (1999, 14) argued that: “important public decisions on questions of law and policy depend directly or indirectly on public opinion formally expressed by citizens of the community, the vast bulk of whom have equal political rights. In this definition, government policy ought to depend on some formal and regular way on the state of public opinion”.

One way citizens take part in a democracy to make it carry the toga of participatory democracy is through Public Opinion as moderated by Public Reason. It has earlier been argued that citizenship can either be direct or indirect. Indirect can be through the election of representatives who ideally ought to hold consultations with them regularly but often times do not do so. Indirect can also be through the media which capture their views through interviews and vox-pops. In the case of direct participation, however, it can be in the form of formal small gatherings in the communities across the country with government officials in attendance to

discuss policy formulations with the people. Research reveals that this is also conspicuously missing in Nigeria's democracy and it is the reason for the lack of impact of democracy in the country. Deliberating on the idea of Public Opinion, we may add carries inherent difficulties though, because of the problem of ignorance of critical issues on the part of most members of the public on the issues in the public domain.

Weale said this much when he asserted that it was precisely the idea or doctrine of dependence by government on Public Opinion that became the fundamental criticism of the Athenian democracy by Plato in the Republic, on the score that knowledge (Episteme), not opinion (doxa) should steer the ship of the state and this to my mind is perfectly in order. It is absolutely dangerous and disastrous to base Public Opinion on mere sentiments or emotions expressed by the public in the name of expressing themselves or adding their voice to an issue. In spite of this inherent contention, Weale (1999, 14) still opines that "if we came across a system of government in which there was no dependence at all in the all-important public choices or public opinion, then we would withhold the name, democracy from that system". For him, therefore, there is absolutely no democracy without the input of Public Opinion.

Weale (1991) goes further to explain his understanding of Public Opinion by asserting that the practice may either be direct or indirect. According him, it is direct when choices of law and policy are made by citizens through such routes as voting in a binding referendum and voting at general elections. Support for indirect public opinion for Weale, would be meaningful only when political representatives can effectively be turned out of office by reasonably regular elections, the political system is a democracy according to the definition that "democracy is a system of government in which the policies and decisions of government on all important range of issues depend to a great extent on Public Opinion as expressed or other forms of aggregating opinion" (Weale 1991, 15). Direct participation in contemporary times is becoming more and more unfashionable in large and complex societies where there is preponderance of multiplicity in tribes, ethnicity and religions and the easiest route is the voting of representatives who must be in regular contact with their constituencies.

Deepening Public Opinion with Rawls' Public Reason

As we examine the virtue of Public Opinion which is seen as the core of participatory democracy and in reaction to some gaps in Weale as it concerns the uninformed opinion of citizens sometimes, our answer should be found in the doctrine of Public Reason in the conceptions of John Rawls [4]. Public Reason for Rawls (1971, 1993) has to do with how citizens of a society explain their political opinions and decisions to one another in reaching a consensus in opinion. In essence, Rawls expects public Reason to require citizens to be able to justify their political decisions to one another using publicly available values and standards. His Public reason can be seen as citizens engaged in certain political activities having a duty of civility to be able to justify their decisions of fundamental political issues by reference only in public values and public standards. This point is very vital in the understanding of public opinions in multi-ethnic, multi-moral, and multi-religious societies where public opinion is tainted with such considerations. What Rawls recommends in aggregating Public Opinion on national values is that it must pass the test of public standards and public values.

In this understanding, Public Reason is not just one political value among others. It is about the other various elements that make up the ideal of a constitutional democracy. As it governs the

political relation in which people ought to stand to one another as citizens. Public Reason cultivates public opinion and for public opinion to be useful, it must be tempered by Reason. Public Reason involves more than just the idea that the principles of political association should be an object of public knowledge. Its concern is the very basis of collective binding decisions of citizens. Public Reason becomes more useful when citizens bring their own reason into accord with the reason of others, espousing a common point of view for setting the terms of political life. The conception of justice by which citizens live then becomes a conception all participants endorse, not for different reason they happen to share but instead for reasons that count for everyone because people can affirm them together. This spirit of reciprocity is the foundation of a democratic society.

Participatory democracy in Nigeria, depending upon the doctrine of Public Opinion must be doused by the Rawlsian doctrine of Public Reason. A democracy that is characterized by Public Opinion based on ethnicity and religion cannot qualify to be participatory at all. For citizens to thus, participate fully in the governance activities in their constituencies, they must develop a Public Opinion that is tempered by Public Reason. This would require citizens to study and know public conceptions of morality, values, laws and policies before expressing their opinions and this must have the intent of the public good and not otherwise. A critical analysis of the idea of Public Opinion shows that if left unchecked, it could lead to wrong outcomes akin to applying an unscientific method to a scientific phenomenon. The opinion of uninformed and uneducated citizens on any issue is nothing but a deadly virus as it is based purely on ignorance and Public Opinion in a democracy must not be based on ignorance.

The imperatives of Citizen's Participation in the Democratic Process

Organizing society in the 21st century is not different from what happened in the social contract and the main essence of extrapolating the Participatory Democracy theory as a way to organise the people, is the need for social and national integration and as social scientists would argue, political integration is relevant due to the existence of selfish and diverse interests in society where each group holds on to its own view and other self-conscious cultural qualities. Political integration is also germane when there is a political system that is composed of formally distinct independent political units that people identify with. In underscoring the process of political integration we can describe it as: 'a process whereby political actors in distinct national settings are persuaded to shift their loyalties, expectations and political activities toward a new centre, whose institutions possess or demand jurisdiction over the pre-existing nation-state. From this accounts, social and political integration through the Participatory Democracy theory should be desirable in Nigeria. Just as Rawls (1993) argued that society is artificial, Maathai (2010, 184) in the same vein but dwelling on the subject within the African context equally argued that "the modern African state is a superficial creation: a loose collection of ethnic communities or micro-nations, brought together in a single entity or macro-nation by the colonial powers". The fact remains that at the inception of colonisation, many African countries such as Nigeria were multi-ethnic and multi-tribal societies. The problem, however, is that nation-states are yet to emerge from these mosaic of people living together in one political nation.

The normal and usual thing to do therefore is for all stakeholders concerned to assemble and agree on some basic principles and institutions and this is where genuine civil society organizations (CSOs) and Non-Governmental organizations (NGOs) in Nigeria have a lot of

work to do. Political and social conflicts in Nigeria as recorded constantly have a direct bearing with failure to do this. For example, Maathai (2010, 216) relating the issues to the Kenyan perspective notes that “if at the outset of independence in Kenya, a conference had been held of the 42 micro-nations and they had all negotiated a constitution under which they agreed to co-exist and work together while honouring a set of agreed-upon rights, the community violence that has periodically wrecked Kenya since then might not have occurred”. The absence of such a practice rightly equates with the idea of state of nature and the need for a social contract of all the micro-nations involved. The idea of ‘state of nature’ which precedes the ‘social contract’ theory can be described as a symbolic representation of a thinking that articulates the myth that human nature before and without the advent of civilisation is predominantly and innately selfish and egoistic (Hobbes 1991) or peaceful but insecure (Locke 1980). The Hobbesian account suggests that man only seeks and protects his own interest resulting in a permanent rivalry among men. The Lockean account on the other hand suggests that man is by nature peaceful but lacked security of life and property.

In practical terms therefore, this condition of man in the social contractarians’ sense irrespective of its historical reality and truth should be interpreted to mean a situation where people live without ground rules or norms guiding their relations, behaviour and conduct. In this respect, it can be argued that a nation can be in a state of nature when the necessary contracts and agreements that would regulate the society of people forming a common union are inexistent due to forced emergence or as a result of conquest. This is made more real by the fact that about 100 years after the colonial experiments of making most African countries nation-states these agreements and contract are yet to be enacted. Based on this argument it can be alluded that Nigeria from the Hobbesian perspective is still in the state of nature so to speak and this is manifested in the ethnic and tribal selfishness and rivalry exhibited daily in the society. In the current democratic ethos, therefore, the application of the theory of Participatory democracy can kick start the process of national integration.

The fact of the country’s history when interpreted from the perspective of social relations and social union reveals that the absence of a social contract between the component parts of the geographical entity called Nigeria in 1914 validates the assertion of many scholars that Nigeria is yet to be a nation-state (Udogu 2005, David-West 2002, 2010 and Awolowo 1947). The literature on this claim can fill a university library as more and more individuals in Nigeria now call for restructuring or a national conference. The country, according to Awolowo (1968), is synonymous with a Hobbesian society as Hobbes in his theory describes this state of affairs as being a state of anarchy. But can this analogy be justified when Nigeria is not in a state of war and has a common political power? Nigeria in its sixty one years of independence fought a bitter war between 1967 and 1971, experiences ethnic and religious crises regularly and some opinions interpret this to be a reflection of the Hobbesian legacy.

It is noted that in the state of nature some fundamental requirements for civility are lacking and they include laws, authority, morality, sense of right and wrong, and justice. Everybody simply pursued the satisfaction of his self-interest and whatever satisfied anybody’s appetite was for him good and he would pursue it; and whatever a person had aversion for was for him bad and he would avoid it (Hobbes 1991). This is the condition of the typical natural man. Only the preservation of the self mattered in this state according to Hobbes. Put in the proper perspective, the analogy captures the social-political heritage and situation of people whose

moral norms and beliefs have been completely eroded by many years of state and institutional injustice. Awolowo (1968) argues that the Hobbesian description rightly fits Nigeria and the reason is not far-fetched, the people lack any national sense of morality after a forced nationalisation by the colonial masters leaving them with no common morality culture, religion, justice and nationality and encouraging private, relative and subjective morality. There is a common penchant most times for Nigerians in public service to think more of what they can amass for themselves than what will benefit society as a whole because their sense of justice revolves around self and tribal interest. This is the reason for the rampant cases of nepotism and tribalism in public service (Achebe 1984).

It is also argued that in the state of nature, man craves for and claims right for something or anything he likes and has no obligation to refrain. Every man has a right to all things and whatever gave man pleasure was pursued in his bid to preserve himself. It was the rule of might in the jungle. The common understanding in Nigeria today is the survival of the fittest and the legacy of institutional injustice has left the people fending for themselves basically because the unjust social-political structure of the society does not favour them. Here all men are equal not in terms of rights but as every man pursued his own liberty for his own sake but had the desire to have authority and dominion over others and this urge is dictated by the innate hunger for self-preservation. The resultant effect of this lack of political integration through the Participatory democracy theory is the full blown insecurity being experienced by different agents in the country, to a point where some have been confined to some tribal locations. This outcome was quite predictable as the people, left out the democratic process would one way or the other look for a way to survive in it.

This situation for self-preservation at all cost in Nigeria has thus given rise to social and political conflicts among the people on both religious and political grounds as these actions and desires are not exclusive to any one part of the country but identified in all parts. In a state of nature there is no property, no justice or injustice, there is only war; and force and fraud are, in war, the only two cardinal virtues. Though it may not be as graphic as it is being portrayed, the Nigerian society is predominantly non-liberal and still presents a situation similar to this and the reality is that where the views of liberalism are down played, this condition is inevitable. It was in the light of this that the US intelligence unit in 2005 predicted that Nigeria would be a failed state in fifteen years but they ignored the fact that Nigeria was already a failed state as it lacked every sense of statehood and had failed since 1914 when the British created a country from abroad (Nicolson 1969, Awolowo 1947).

The consequent implication of the continued state of nature in Nigeria is that in the condition of every man against every man, nothing is unjust and morality becomes personal. The idea of right, wrong, justice, and injustice become unnecessary as it is natural and commonsensical that where there is no common power, there will be no law, hence no injustice. Force and fraud become the two cardinal virtues while justice and injustice are not part of the faculties of the body of the mind (Hobbes, 1991). It is obvious from this exposition by Hobbes of the state of nature that no peace or progress could be achieved and the individual, if left on his own with all his excesses and unchecked insatiable hunger for self-preservation, was a problem to his fellow man. Man became problem to man and to himself. To address these issues therefore, academics and patriots must embark on serious political education many months before elections and

create the necessary ideological platform for choice as a prelude to getting ideological support base.

The People must drive Democracy in Nigeria

Social Scientists from the 19th and 20th Century till contemporary times have argued that the driving principle, idea or philosophy in any organized society is responsible for the direction of that society, akin to the Hegelian Absolute spirit manifesting through different epochs. For instance Marx argued that the Social Condition of a people determines their consciousness and he ended up with the principle of class struggle. The social contractarians led by Locke and Hobbes believe that the idea of a social contract is the only solution to the horrible life in the state of nature. It is in this direction that societies are classified as advanced or backward. Societies that are guided by well-articulated principles of justice are described by Rawls (1970) as well ordered and we can infer therefrom that the opposite are disordered. Well-ordered societies hardly apply social coercion to get cooperation from their citizens and obedience or compliance is voluntary. On the other hand, coercion and force are applied for compliance in disordered societies where policing is more than normal.

Many African societies fall into this category of social organization which makes governance very difficult and ends up leading to weak social structures and ultimately weak governments. The resultant implications include social-political insecurity, crime, social injustice, proliferation of arms and armed groups and many social ills that can easily overwhelm the state. To solve this problem, different ideas, principles and philosophies must be employed to help the people and their governments articulate themselves and live to meet their life goals. For many, the day begins at dawn but to the wise, the day begins before dawn. The cocks in the villages crow at dawn and alert the normal and ordinary that it is time to rise and start the day. Countries that woke up before dawn outplayed and outgrew their contemporaries. For example, in 1960 when Nigeria got independence, countries such as Brazil, India, Singapore, China, Indonesia to name a few were third world countries but categorized as having great potentials. Their early consciousness has paid off with their citizens enjoying the best of the governments. It is not Rocket science to Organize Nigerian people and get them developed.

CONCLUSION

Today, because these countries mentioned above and many more set forth before dawn and set up principles of social interaction and fair principles of association, they are among the most industrialized countries in the world while Nigeria is still groping in the dark, having systems that are at best medieval and building cities that are primitive. Look at Bayelsa and you get the picture. Nigeria stayed behind to sleep some more after dawn and the effect is where we are. With the foregoing, there is need for serious salvation. There is fire on the mountain set by politicians but definitely consuming citizens. Citizens must therefore set forth before dawn to quench the fire. Nigerians must, as matter of urgency set forth before dawn to pull the brakes on the speed to destruction by the ship of state as captained by our Leaders. Our Leaders need help not to take the state into perdition. With the failure of the Elite Class to offer any hope of solution, the people must set forth to outline what are their strategic interests and plans for their future and that of the state. Leaving it for politicians alone cannot help the people. There must be a sharp departure from the past practice and module of being aloof and unconcerned about the issues that affect the state, bearing in mind that sovereignty lies with the people and not the

politicians or the government. Reason being that the Social contract did not involve the government but is done by the people among the people. The people created the government as part of the Social Contract.

Nigerians must expeditiously set forth before dawn to seek and find the leader that has Character, Competence and Capacity urgently and rally round that person with the right and appropriate political structure to aptly apply the theory of Participatory democracy. It must be about Common Interest or the General Good and not the interest of the individual. There is no magic, neither is there any special potent prayer that can redeem the Nigerian state, high-jacked by the elites beyond conscious effort by patriots and lovers of the country who know that they are social and political animals whether they like it or not. People must rise above narrow and personal interests and embrace the bigger interest of the “common good”. Nigerians must set forth before dawn to explain and drum it into the psyche of leadership that the state is bigger than any individual and sacrifices should be the hallmark of leadership. As the people set forth before dawn, they must do what they must do to achieve social justice and political stability even if it means giving the leadership a Piece of Surprise.

After 21 years of democratic rule in Nigeria, the ideals of democracy are yet to manifest in the lives of the people and there is clear frustration among the people as they are unable to meet their life goals and the state is yet to provide the necessary conditions for them to tap into the opportunities that may be provided. What could be the missing link, if we all agree that democracy is about the people? The idea of agitating for the return of the country to a democratic system was based on the assumption that it was better than the military regimes even when it was obvious that the military regimes were providing some form of development. The answer to the puzzle can on be found in the lack of the most important ingredient in the democratic mix-the people. Democracy without the people amounts to pure Feudalism, where a small political and ruling class run the country at their whims and caprices, for their vested interest and dish out favours to the masses as it pleases them.

If therefore, enough people who understand the basic tenets of participatory democracy who are powerful enough and have direct access to power can act in an innovative way, their action may have the consequence of translating the real ideals of democracy into concrete realities and transforming the very structures that gave them the capacity to act. It is no accident that Giddens calls this theory “the theory of structuralism”, indicating by this neologism, that structure must be regarded as a process, not as a steady state. The theory simply implies that in a democracy with full participation of the citizens, the conception of human of citizens’ participation as knowledgeable and enabled people means that those citizens are capable of putting their structurally formed or forged capacities to work in concrete creative and innovative ways. The answer to the puzzle in Nigerian democracy is that the people must create the capacity and knowledge that empowers them to participate fully in the democracy process in the country.

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QUESTIONS OF THE ARTISTRY OF DASTAN "KHAIRAT UL-ABROR"

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ABSTRACT

In this article, the features of the size and rhyme of dastan, the questions of the size and rhyme of dastan, as well as the lexical aspects of dastan, the types of speech used in it, the linguistic beauties of the poet's language, the factors providing artistic and stylistic issues are investigated.

KEYWORDS: *Speech, Language, Rhyme, Style, Lexical Aspects.*

INTRODUCTION

"Khairat ul-abror", unlike other dastans of the pyateritsa, was written in the poetic size of Bahri sari. In "Mesonul-avzon" Alisher Navoi analyzes bahri sari and distinguishes two types [1]:

1) Sariimusaddasimatviyimavkuf; (V V - | - V V - / - V ~)

2) Sariimusaddasimatviyimakshuf. (V V - | - V V - | - V -)

Sari is one of the various original feet and poetic sizes of bahri formed by their parts. Sheikh Ahmad Tarazi lists thirty-two bahris in "Funun ul-baloga" and mentions the following size of bahri sari [2]:

mus-taf-i-lun/mus-taf-i-lun/maf-u-lo-tu

- - v - / - - v - / - - - v

The size given by Sheikh Ahmad Tarozi is a special form of the bahri sari, and literary critic D. Yusupova claims that a special form of the sari is not found in Turkic literature, in our poetry only the forms of sariimusaddasimatviyimakshuf and sariimusaddasimatviyimavkuf are used. In order for a work to win the reader's love, it is important to skillfully express the ideas put forward in it, choose the appropriate size for the work, create a rhythmic musical cycle from the beginning to the end of the work. Alisher Navoi wrote "Khairat ul-abror" in both types of bahri saris, since the feet of bahri saris allow expressing smooth and melodic, immensely rich meanings. For dastan, this poetic size – bahr - was not chosen in vain. Firstly, it was a requirement of tradition. All the previous dastans of "Hamsa" before Navoi were written in certain poetic sizes by sari bahri. Secondly, this traditional poetic size chosen for dastan corresponded to the ideological spirit of the work. And it also helped to convey to the reader the essence of dastan, in the expression of philosophical observations, instructions, complex thoughts and views of the poet [3].

In dastan, beits written in sari musaddasimatviyimavkuf are less common than beits written in sari musaddasimatviyimakshuf. Usually, if at the end of a half-verse there are words with a long

vowel ending in a consonant, or long vowels in a closed syllable, then the following poetic sari size is formed [4]:

Qil-dichuAd-ham xa-la-fitar-kijoh

— v v— | —v v— | — v ~

To-jifa-no bo-shi-g'a qo'y-dii-loh

— vv — | — v v— | — v ~

Muf-ta-i-lun|muf-ta-i-lun|fo-i-lon

Sari'imusaddasimatviyimavkuf

In this beat, in the first and second lines, the first and second stops consist of muftailun, and the last stops of the two lines are formed from foilon. Open syllables ending in short vowels form a short syllable, long syllables ending in a long vowel - o, and closed syllables form a long syllable [5].

In this poetic size, the presence of an almost equal number of long and short syllables in a line is very convenient according to the norms of Uzbek pronunciation [6].

Ber-difa-no e-li-ga mul-kuha-sham

— v v — | — v v — | — v —

Bo-di-ya-ningqat'-i-g'a qo'y-diqa-dam

— v v—|—v v—|— v —

Muf-ta-i-lun|muf-ta-i-lun|fo-i-lun

Sari'i musaddasi matviyi makshuf

It is advisable to study and analyze the rhyming features of dastan in connection with its belonging to the masnavi genre. Sheikh Ahmad Tarazi emphasizes that masnavi consists of two half-verses, these two half-verses rhyme with each other, mostly poetic stories are written in masnavi. Since "Khairat ul-abror" is written in Masnavi, its rhyme is a-a b-b v-v... Rhyming masnavi in this way was very convenient for the poet, since new rhymes were introduced into each new byte to confirm the idea. Due to the wealth of noble universal ideas and meanings in "Khairat ul-abror", there are many types of rhymes in dastan that express deep social, philosophical, moral, educational, enlightening meanings. The author pays special attention to the formal and semantic harmony of rhymes [7]. In addition to the fact that the words and phrases chosen as rhymes are mature and resonant in form, they guarantee that they will become an integral, important aspect of the meaning expressed in the text when interpreting certain events. Based on the work of Jami "Risolaikofiya", the important poetic functions of rhyming movements in the rhymes of dastan, such as ras, ishbo, hazv, tavzhih, mazhro, nafoz, were studied. Also, the types of rhymes used in dastan, such as muzharrad, murdaf, mukayad, moissas were analyzed along with rhymed figures such as zulkofiyatain, zulkavofi, tarsi, the rhyme of tajnis, and thus the poetic skill of the poet was proved. The contribution of words belonging to different parts of speech in the formation of rhymes in beits was revealed, in particular, the effective use of such groups of words as nouns, adjectives, verbs in the formation of rhymes. Rhyme defects such as ikvo, ikfo, synod and iito have been mentioned in the science of classical

rhyme, and these rhyme defects, which are rarely observed in Khairat ul-abror, have been proven by some examples.

It is known that the vocabulary, morphology and paremiology of Alisher Navoi's works are very diverse. The poet's language is not only the language of Navoi, but "the language of an entire period, the literary language of an entire people." In this dastan, Alisher Navoi effectively used the riches of the ancient Turkic language found in the dictionary of Mahmud Kashgari, the treasures of the Arabic language associated with the verses of the Koran and hadith, all dialects and dialects of the languages of the Turkic peoples; the possibilities of the Persian language, proverbs and sayings characteristic of folk poetry; the main significant and polysemantic words, figurative meanings of words and phrases. Also, a good knowledge of the life of the people, the external and internal spiritual world of the people provided an immeasurable wealth of the poet's vocabulary [8].

"Khairat ul-abror" differs from other "Hamsa" dastans in language and style due to the richness of ideas about the philosophical, moral, religious and spiritual values of human life. "Khairat ul-abror" contains the author's speech, monologues, dialogues, prayers, poems, raptures, quotes from narrators, verses of the Koran and hadith, hymns, stories, descriptions, biographies of saints - excerpts from manakibs, examples of satire. The dastan contains entire chapters devoted to the people, the folk language, the followers of tariqa and pandnom, which proves the diversity of styles of dastan, as well as the fact that each of these methods is an important scientific problem requiring separate research. According to Prof. A.Khayitmetov, in the style of "Khairat ul-abror" Navoi skillfully combined poetic and scientific thinking and thereby was able to show unique manifestations of poetic style. Indeed, in every chapter of every conversation and preliminary conversations, art and science appear in a combined state. Elements of philosophy and anthology are also clearly visible. Due to the extremely wide range of themes in dastan, there is a parallel application of different styles, sometimes synthesis. The creation of the universe, the boundless power of God, the highest qualities, the emergence of nature and the cosmos, the prophecies of Muhammad (S.A.V.), the miracles of the human soul, the author's views on verbal art, prose and poetry, his theoretical thoughts about the preferential possibilities of the lyrical genre compared to the epic, passages where the genesis of a particular image in dastan is mentioned, relate not only to the criteria of art, but also to the principles of science, history. This means that "Khairat ul-abror" is not only a reflection of the poet's artistic thinking, but also a product of the author's scientific worldview.

According to the expression of thoughts and ideas in dastan, the following groups can be distinguished: 1) the author's speech; 2) the narrator's speech; 3) monologue; 4) dialogue; 5) verses and hadiths.

Since the personality of the poet is at the center of "Khairat ul-abror", the author's speech plays a key role in this dastan. Prayers, hamd and naats, descriptions of predecessors, hymns to BahauddinNaqshband and Khoja Ahror are read directly by Navoi himself. The style, rhythm and tone of dastan also change depending on the change in the author's attitude to the described reality, to the characters and personalities. In "Khairat ul-abror" the author's emotional reaction to the described reality is very strong. This attitude, in particular, finds special expression in the views of the owners of negative characters.

Speaking about the linguistic features and style of "Khairat ul-abror", it is appropriate to add the following:

- the ninth conversation "Khairat ul-abror" about ardent love is written in a more complex, contradictory style. Navoi illustrates the fact that love brings troubles to a person, but a lover sees happiness for himself in these disasters, and based on the teachings of Sufism, he illuminates this by effectively using poetic figures of truth and metaphors;

– in the third article, he mercilessly exposes, using a humorous style, the empty pastime of the sultans and their entourage, in the fourth article - the greed of false Sufis, and in the fifteenth - addiction to wine, the poet's attitude to this category of people is orderly. First he expresses his reaction to their negative actions, then in turn lists the expected rewards if they leave this occupation, then gives the expected punishments if they do not draw conclusions, and at the end of the chapter he again expresses the hope that they will turn to kindness. So the poet's style sometimes sounds in high tones, sometimes it acquires serenity and sadness, and sometimes it is filled with the spirit of teaching;

- the chapters devoted to the definition of the word reflect the theoretical and aesthetic views of the author on literature, literary genres. These chapters clearly demonstrate elements of scientific style. Thanks to the poet's theoretical views on the balance of content and form in a work of art, the author's attitude to this urgent problem of modern literary criticism is determined:

Nazmkihamsuraterur hush anga,

Zimnidamanidog`idilkashanga.

We can say that Alisher Navoi wrote the dastan "Khairat ul-abror" in the style of masnavi, in the sizes of aruzsariyimusaddamatviyimakshuf (-v v - | - v v - | - v -), as well as sariyimusaddamatviyimavkuf (- v v - | - v v - | - v ~). He strengthened the position of Masnavi in epic poetry, and sari bahri (verse size) He became one of the most developed Bahri in Turkic literature.

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INITIAL PROBLEMS IDENTIFIED IN PRIMARY EDUCATION

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ABSTRACT

The article provides a comparative analysis of the trends in the development of primary education in foreign countries, as well as subjects studied in primary education abroad, the duration of study. Actual problems of primary education in Uzbekistan, including the lack of a material and technical base, a shortage of teachers with higher education, the solution of some problems related to the content of education, as well as scientific hypotheses and recommendations for solving these problems.

KEYWORDS: *Primary Education, Higher Education, Foreign Experience, Material Technologies, Pedagogical Activity.*

INTRODUCTION

Trends in primary education in the world

The fundamental development of economically developed countries begins with education reform. Most developed countries create their own opportunities for new knowledge and skills to improve the quality of education and increase the diversity of education systems, and they conduct research to bring about conceptual changes in education [1].

Over the past 10 years, **Finland's** state education policy and development with fundamental and applied sciences have laid the foundation for the economy.

Today, some European countries are using Finland's positive experience in developing a strategy for modernizing primary education.

Equality and flexibility in the development of the pedagogical complex in primary education in Finland allow the idea of school to be realized. In Finnish schools, teachers are involved in educational work with parents. For the organization and operation of school education in Finland: implementation of the concept of a single state education; continuous allocation of the state budget to ensure the sustainable development of the school system; increase the political culture and confidence in education among citizens; identified as the most important part of the national program to maintain the high social status of school teachers [2].

In Finland, liberal educational activities have been set up for students from primary to secondary education. This helps them to form independent thinking and grow physically healthy without training loads.

A lot of work has been done in the **Russian Federation** to reform primary education. Particular attention was paid to the reading literacy of students. This included the subject of “**Literary Reading**,” which set other goals. At the same time, a mandatory minimum of the content of Russian language and literary reading was developed, the volume of students' speech activities was expanded.

Other trends in the improvement of primary education were also identified: the organization of teaching in the structure of educational activities, increasing the focus on learning outcomes, creating conditions for research activities of young school students.

In Russia a decade ago, primary education was authoritarian, instructive, and it did not create the conditions for the development of the personality of successful schoolchildren [3].

At the same time, the main strategic directions of educational programs, its features are not disclosed, the opportunities of teachers are described very superficially. Many primary education programs are structured with declarative rules. To address these issues, primary education programs have been developed based on the following conditions:

- a) the needs, abilities and general level of development of students;
- b) the requirements of parents for the education of primary school students;
- c) staffing and teaching capacity;
- d) the appropriateness of the textbooks to the program.

Primary education was the development of reading, writing, and arithmetic skills for hundreds of years.

Admittedly, the idea of developing education, which has not been implemented in state documents, has not been widely accepted. “Development of education in the Russian Federation in 2013-2020”, The “Strategy for the Development of Education in the Russian Federation until 2025” clearly outlined the goals for the development of the content of primary education.

Accordingly, the development of the student's personality, the formation of his creative abilities, interest in learning, aspiration and ability to learn, and the formation of the foundations of students' identity and worldview; the formation of the foundations of learning ability and the ability to organize their activities [4].

- b) the requirements of parents for the education of primary school students;
- c) staffing and teaching capacity;
- d) the appropriateness of the textbooks to the program.

Different types of activities have been given a worthy place in the curricula of academic disciplines. Only in some disciplines (surrounding world, fine arts, technology) forms of education based on individual activity (excursions, practical work, modeling) were noted.

Explain the exercises in the authoring programs, draw conclusions, make your decision, think based on the text, ask questions about the text, and so on.

Another aspect of the **Japanese** primary education strategy is the formation of the child as an integral part of the child. “Kokoro” can be translated as heart, soul, mind, mentality, humanism.

All Japanese are convinced that the most important thing in primary education, the objective basis is to enrich kokoro children to a lesser extent with knowledge and skills. The content of the concept of “Kokoro” includes the following issues: respect for people and animals, compassion and generosity to people, the ability to seek truth, the ability to feel beautiful and glorious, self-control, conservation of nature, contribution to the development of society. These principles cover the content of all primary education programs [5].

Children are taught from childhood that the world is built for competition and purpose. The academic year is designed for **240 days**. In primary school, they study for six years (grades 1-6). Most of the primary schools are already paid. The better and more prestigious the school, the more expensive the study and the harder the exams.

Education for the school’s students will begin in April. The academic year consists of 3 periods, between which there are holidays. They study from Monday to Saturday. All classes begin at 8 a.m. and run until 3 p.m. After classes, the club begins its activities.

In **South Korea**, school education is done in three stages. It is divided into primary school, middle and high school.

At the primary level, students must master the following compulsory subjects: Mother tongue (Korean), Foreign language (mainly English), social sciences, mathematics, music lessons, fine arts, physical education.

The modern school in South Korea involves uniting students of both sexes into one class. Until recently, girls studied separately from boys.

In **South Korea**, children come to primary school from the age of six until March 1 of the school year. However, **5-year-olds** are also eligible to enroll, which requires the permission of the person in charge of the school. The academic year begins on **March 2** on the occasion of a national holiday in the **Republic of Korea**. In fact, **7 to 13 year olds** go to primary school. The study period is 6 years compulsory and free [6].

It is therefore possible to observe the density of the classes. **Up to 50** children study in each class. The initial lesson is 40 minutes. Entrance exams to the school are mandatory and tuition is paid. There are 9 subjects taught in the primary school. Special attention is paid to the study of the Korean language, arithmetic and social sciences. **Until the 1980s**, English was taught in secondary schools, and now it is taught from the 3rd grade of primary school.

It is very difficult to learn English because Korean and English grammar are so different. That is why parents send their children to private educational institutions for additional education. In 1996, the South Korean government changed the name to **Gukmin Hakk**. The term means maktcivic school.

In addition to state-run primary schools, there are a number of private schools in Korea.

The curricula of these schools are somewhat similar to the curricula of public schools, but the teaching is done at a high level. For example, the involvement of many teachers in a small number of students, the introduction of additional subjects, generally have high standards of education. This is why many parents seek to send their children to a private school. But the high cost of tuition in such schools makes parents wonder. In South Korea, the numbering of classes starts from 1 at each stage of **education, rather than the usual bottom-up** [7].

For example, **primary school is numbered 1 to 6, secondary school (3 years) is numbered 1 to 3: 1st grade of primary school (2,3,4,5,6 grades)**, 1st grade of secondary school (i.e., Uzbek) 7th grade in schools), 2nd grade of high school (i.e. 2nd year student of Uzbek academic lyceum and vocational college).

In France, the general education system includes public schools, private schools, and intermediate schools. Among the subjects taught, French language and literature, reading and writing are of special importance. It is these disciplines that receive the most attention in primary education. 30% of class time is allocated for these subjects [8].

The average weekly hours are 26 hours, with a course duration of 60 minutes. The academic year is divided into 5 quarters. Reading in the primary classes of French schools is divided into morning and afternoon parts. In the morning, students study in their native language, and in the afternoon, they study mathematics and other subjects.

In primary education, mathematics, mother tongue and literature are basic sciences, while history, geography, labor and physical education are developmental sciences. In France, children between the ages of 6 and 11 are admitted to primary schools. Primary school is free and compulsory. His job is to teach reading, writing, and arithmetic. **Classes last from 9 a.m. to 12 p.m., and from 2 p.m. to 4 p.m., 5 p.m. School meals are paid, but at very low prices.**

Students complete elementary school at age 11 and move on to high school. Secondary education is provided in colleges and lyceums.

Comparative analysis of the experience of foreign countries

No.	Finland	Estonia	Japan	South Korea	France	U.S.A.	Germany
Eating	Meals are free	Free meals are provided at the school	Meals are paid	Meals are paid but at very discounted prices	Meals are paid but at very discounted prices	Meals are paid can be brought from home.	Meals are paid but at very discounted prices.
students in	15 and 25 each	10-20 people	30 to 40 each	40 and 50 each	35 and 40 each	13 to 16	It ranges from 30 to 34
Dressing style	There is no school uniform	School uniform available	Requires wearing a school uniform (seifuku)	School uniform available	School uniform available	There is no school uniform	School uniform available
admission to primary	Actual learning from 6 years 7 years	From 7 years old	From 6 years old	6 to 12 years old	6 to 11 years old	5 to 13 years old	From 6 years old

Examination and assessment system	Students up to 3rd grade will not be assessed.	<i>Assessment is based on the PISA program.</i>	Students do not take the exam until 4th grade	There is an evaluation system. They also take a school entrance exam.	Students up to 3rd grade will not be assessed.	Before the start of the school year, all children take an IQ test. There is no rating system.	<i>Assessment begins after 3rd grade. In Germany, a 6-point grading system has been adopted. Accordingly, 1 - excellent, 2 - good, 3 - satisfactory, 4 - enough, 5 - not enough, 6 - Unsatisfactory.</i>
Teaching methods	Each student is given an individual approach, different assignments depending on the level of the students during the lesson. Grades are shown only to the student himself, as well no obligation to sit at the desk.	Students who do not master well will be given two weeks of additional classes during the summer holidays. If a student still fails to master enough, he or she will be dropped out of class.	Teaching in the country depends on the quality of lessons, not the quantity. Teaching methods are controlled by the government.	Electronic textbooks and robots are used in the teaching process.	More attention is paid to the independent learning of students. It also includes entrepreneurship, business training, and vocational training in a market environment.	The teaching methodology consists of excursions, art projects and playful exercises. The form of lessons is both interactive and game-based.	

Current issues in primary education in Uzbekistan

It is known that today the number of students in schools exceeds the norm established by law.

It is not clear a specific age when enrolling a student in primary grades. In the 2020-2021 academic year, 23.8% of children enrolled in the primary grades of general secondary schools in the public education system are children over 6 years old, **76.2% are children over 7 years old.**¹

The uncertainty of a particular age in admission to primary school is determined by the lack of clear scientific analysis by relevant educators and psychologists and the lack of criteria for admission and how well a child is prepared for school. It should be noted that in most cases, **at the request of parents, children are admitted to school from the age of 6.**

One of the main problems is the inadequacy of the assessment system in monitoring the quality of education and students' knowledge.

Observations and a survey of primary education **educators and psychologists (3208)** indicated that an assessment system was not required for primary school students because it could have a severe impact on a child's psyche.

There is no assessment system in primary education in foreign countries (**Finland, Estonia, Japan, South Korea, France, Germany, USA**), where the education system in the world has a high rate.

It is clear that the psychology and teaching methods of determining the level of knowledge of primary school students have not been sufficiently **fundamentally** studied and no concrete measures have been developed in this regard. This requires regional approaches to directly improve the content of **curricula and programs** and their development.

Ҳозирги кунда ўқув режа ва дастурларни ишлаб чиқиш ХТВ ваколатига given. This leads to the **centralized development** of training documents. In the fourth direction of the action strategy, namely, the vertical management system and decentralization processes in the executive branch are aimed at modernization, but most of the powers remain in the **hands of HTV**. Due to the nature of schools, their independence in curriculum development is limited.²

Another problem is that teachers do not work on themselves and do not use new pedagogical methods in the teaching process, teaching in the traditional way, as well as the fact that the **teacher's teaching methods** are tied only to the curriculum.

Based on the results of the survey (3208), **according to the opinions and comments of teachers, the methodology of teaching them is required only to conduct approved programs. They also stated that it was not possible to deviate from the programs and textbooks.**

Because educators are not given **independence** in the current legislation on program development.

In addition, there are no special programs for teachers to develop their teaching methods, and the existing programs do not meet the requirements of international assessment. There are no **clear**

¹Data from the Department for Coordination of General Secondary Education of the Ministry of Public Education

²<https://review.uz/post/decentralizaciya-obrazovaniya>

mechanisms for creating a competitive environment for the development of teaching methods for teachers. At the same time, most schools in the country are not connected to the Internet.

The monitoring of the school principal on the development of teaching methods for teachers is not properly established. The main functional responsibilities of the school principal **remained related to organizational work.**

It should be noted that one of the factors influencing the above is the involvement of teachers in additional work by local authorities, which is not related to their work. This prevents them from developing professionally and working on themselves.

Another problem in primary education is that there is no mechanism for working individually with each student.

The number of schools in the country (as of September 1, 2020) is 10008, capacity (student places) is 5061562, **the number of students is 6236751**, the coefficient is 1.2.

For example: **Tashkent city 312 schools 312652 capacity (student place) 449044 number of students 1.4** coefficient results show that there are 46 students in one class. It is not possible to work individually with the student.

Also, educators do not have sufficient skills to work individually with the student.

To this end, effective **mechanisms of individual work** with the student have not been developed and fundamental research has not been conducted. The lack of a free food system in schools, according to social media and public opinion, is also a problem.

Foreign countries with the highest rates of education in the world have free meals in **Finland, Estonia, Japan, South Korea, France, Germany, the United States.** Because, according to many foreign experts, the correctness of the nutrition system as a factor influencing the education of students and the healthy lifestyle of the younger generation.³

The republican budget does not provide for free meals for primary school students. In addition, the regional, district, city deputies do not pay attention to the allocation of funds for schools for free meals in the local budget.

It should be noted that the **Department of Healthy Eating and Coordination** of Medical Services of the Ministry of Public Education has not taken appropriate measures.

The inefficiency of break time and vacation time for primary education is also one of the current problems today.

According to the requirements set out in Chapter 4 of the Resolution of the Cabinet of Ministers No. 140 of March 15, 2017, breaks and vacation times are not properly designed for primary classes. Because **very little time is devoted to the mental and physical formation of children in the primary class. In addition, internal and external factors in determining vacation and break periods have not been studied.**

According to a comparative analysis of foreign countries (**Finland, Estonia, Japan, South Korea, France, Germany, USA**), which have the highest rates of education in the world, breaks

³<https://www.kp.ru/putevoditel/obrazovanie/besplatnoe-pitanie-v-shkole/>

and holidays are carried out independently by educational institutions. In doing so, they take into account changes in nature and climate, changes in the seasons, and other factors that affect students' mastery in determining breaks and vacation times.

No research work has been carried out in our country and no clear mechanism has been developed for the establishment of breaks and vacations with the study of foreign experience in practice.

According to the Regulation on General Secondary Education, approved by the Resolution of the Cabinet of Ministers No. 140 of March 15, 2017, the determination of break times and vacation times is delegated to HTV. This leads to complex processes in the application of processes in a **centralized manner**.

No clear procedures have been developed for schools to **independently determine** break times and vacation times themselves.

Teachers' salaries are high in proportion to their workload and disproportionate to their workload, and this is also one of the main problems.

The average monthly salary of school teachers (as of September 1, 2021) is 1,954,033 soums for secondary special education, 2,090,399 soums for specialists, 2,340,317 soums for 2nd category, 2,607,826 soums for 1st category, and 2,881,828 soums for higher category. It can be seen that the mechanisms of increase of salaries at the base rate are defined only in categories.

However, according to the **current legislation**, the number of students is not taken into account at all in determining the salaries.

In particular, in some classes, regardless of the number of students, the basic rates are set for teachers by category. At the same time, the number of students is not taken into account at all when setting the base rates per month, which in turn has a **direct negative impact** on the quality of work.

The ranking of the highest paid teachers in the world has been announced, but Uzbekistan is not ranked in the world in this regard.

At present, as a result of teachers' self-study and assessment of the level of knowledge of the students they teach, no clear **mechanisms have been developed** for stratification of salaries based on criteria based on the volume of work.

In addition, according to **Article 24 of the Law "On local government"**, the main powers of the regional, district, city Council of People's Deputies include the approval of long-term development programs, district, city master plan and rules of its construction. However, the regional, district and city people's deputies do not allocate additional funds to encourage teachers in the local budget.

This situation also shows the indifference of regional, district and city people's deputies to the development of education in the region, as well as the lack of responsibility, which leads to a decline in the quality of education as a result of neglect of education.

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AREA OF MORPHOLOGICAL PERSONS BELONGING TO THE RHYME GROUP IN UZBEK DIALECTS

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ABSTRACT

In addition to increasing the lexical richness of the Uzbek language, dialects also played an important role in the formation of its grammatical structure, phonetic and grammatical standardization of the literary language. Uzbek dialects have their own semantic, phonetic and grammatical features. In this article, the rhyming words found in Navoi regional and Kipchak dialects are compared with other Uzbek dialects and materials of the Uzbek literary language and analyzed in lingvoareal, comparative-historical, descriptive methods.

KEYWORDS: *Sheva, Dialect, Pronoun, Lingvoareal Method, Dictionary, Semantics*

INTRODUCTION

There are also peculiarities in the use of rhymes in Uzbek folk dialects, including the dialects of Navoi region. Pronouns differ semantically from other word groups in terms of their forms from the Uzbek literary language.

There are also peculiarities in the use of the personal pronoun in the dialects of the region under study. In the dialects of the Qarluq dialect, the singular and plural forms of the [мән, сән, у, бѣз, съз // сълә, үлә // үләр], personal pronouns are pronounced in style in the dialects of the [мен, сен, у, бѣзәр, съләр, үләр // воләр] Kipchak dialect.

Demonstration pronouns [у, ул, бу, бул, шу, вол, во] are used in the dialect being tested. From show pronouns [ул, бул] pronouns are used in most dialects. [во // вол] variants of this pronoun are found in Kumrabad, Barak, Kadok, Kizilcha, Yangibino dialects of the Kipchak dialect. From the pronouns of the show [мана бу, ана у] the pronouns are also used in the dialects under study *манэви, анави. Бунѣ, бундай* is replaced by a [б] component [м] in the pronoun *мунь, мундэи* like. The transition of the consonant [б] to regression assimilation under the influence of the sonor sound [н] and to [м] is also found in other dialects of the Uzbek language. Comparison: Bukh, *бунь* > *мунь*, *бунча* > *мунча* [1], *мунан жоғары Байсын* [2].

In the Kipchak, Khatirchi dialects *мана бу, ана у* pronouns are also found in the form of *манэв, анэв*. [Ана у] pronouns are also used in dialects instead of *ҳэйлэ // хэйлэ* pronouns. Including occurs in the Karluk type dialects of the studied area *ҳэйлэ* in the Kipchak type dialects, *ҳэйлэ, хийла*. In Kipchak-type dialects, the words *хийла* and *ҳэйлэ* are semantically *хийла* near, and the word *ҳэйлэ* is used to indicate something far away. These pronouns are also typical of Uzbek dialects in Tajikistan and Kazakhstan [3,4,5]. In Kipchak dialects *Қипчоқ типли энэ, мәнэ* and

everything and the meaning of the accent are expressed. This situation is also found in the dialects of Karshi, Parkent, Surkhandarya region [6].

“What” interrogative pronoun occurs in different forms in the dialects of a region. Including Konimex, Ijand, Kizilcha, Ajrim, Choya is also found in the dialects of the Kipchak dialects in the forms *не, нэв. Не, нэв* pronouns are also characteristic of Uzbek dialects in Kazakhstan and Korakalpoستان. In the dialects of Navai region *неча* interrogative pronouns are used in the forms *неччъ, неччэ*.

For example: *Сэвэт неччъ бөллэ? (ад. орф. Соат неча бўлди?)* Comparison: Жиззах: *неча* // *неччъ*; Тошкент: *неччъ*; Кўкон: *нъччъ*; Ўғуз: *нъччэ* [6].

In the dialects of the region under study who, what, how, how much, when the interrogative pronouns are added to the interrogative pronouns, they do not express the meaning of the interrogative, but form a meaning close to the content of independent word groups does. 1. *Кимнималар* деб ўтирибди (*алақандай ёқимсиз гаплар*). 2. Уни *кимқанай* зўр деб ўйловдим (*жуда, ниҳоятда маъносида*). 3. *Мазаси кимқанақа* экан (*ёмон маъносида*). 4. *Отанг кимқанча* хурсанд бўлгандир (*кўп маъносида*). 5. *Кимқачон* эшитувдим (*анча илгари маъносида*). Examples show that such dialectal conjunctions occur not in dialects as “ичи бўш сўзлар” but as semantically close to groups of words expressing independent lexical meaning, as words that can be used in speech as their synonyms. It is also not difficult to understand the negative attitude of the speaker from the rhymes in sentences 1 and 3.

As in the Uzbek literary language, in the Uzbek dialects, including the Uzbek dialects of Navoi region, the words *йэвлэх // йавлэх* Кизилтепа: *Томарқани йавлиқ савзи экаман*. In the dialects of the Kipchak dialect, the word occurs in the form *жэвлэк*. Khatirchi: *Теракларди жавлик сотивордим*.

Pronouns used in the dialects to express the negative meaning of something, an event, or an event the pronouns are also formed by the addition of a word to something. The dialects under study have different phonetic manifestations of indivisible pronouns: As karluk. *ҳеиштэмэ, ҳъчбэлэ, ҳъччъ*; kipchak. *ҳеиштэмэ*.

K. Muhammadjonov *ҳеиштэмэ* is not unique to the Karluk-type dialects of South Kazakhstan, but can also be found in the Kipchak and Oguz-type Karabulak, Tulkibash Uzbek dialects [2]. These forms can also be found in other Uzbek dialects. Comparison: Kukon: *ҳеиштэмэ*; Tashkent: *ҳъштэмэ*; Andijan, Namangan, Jizzakh, Surxandarya: *ҳъштэмэ* [6]. It should be noted that the analysis of dialect materials collected as a result of the study confirms that the Uzbek dialects have phonetic, lexical, morphological features of the rhyme. Helps to draw scientific conclusions.

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THE ROLE OF CAPITALIZATION IN THE EXPANSION OF THE PARTICIPATION OF COMMERCIAL BANKS IN FINANCING INVESTMENT PROJECTS

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ABSTRACT

The article examines the constant problem facing commercial banks, its level of capitalization and the factors affecting it in order to maintain its high efficiency, solvency, liquidity in the conditions of market relations. The impact of the level of capitalization of commercial banks on the investment activity of the bank is analyzed in the integration relationship. Conclusions have been drawn that the organization of investment lending on an economic basis helps to ensure that capital expenditures are inextricably linked with the end results of activities, increasing the interest in choosing the most cost-effective options to increase efficiency. Capital debt obligations, which motivate the active search for opportunities to increase profits from investment activities, studied as a source of repayment of the principal amount of the debt and its interest. The current level of capitalization of commercial banks in Uzbekistan is studied. Scientific proposals and practical recommendations for expanding the participation of commercial banks in financing investment projects by increasing the level of capitalization are given.

KEYWORDS: *Capitalization Level, Deposit Base, Issue Income, Capital Adequacy, Investment Market, Devaluation Reserve, Bank Charter Capital, Capital Structure Of Commercial Banks.*

INTRODUCTION

During the years of independence, Uzbekistan has carried out large-scale reforms to increase the competitiveness of commercial banks through the development of modern banking services. In the framework of the third priority area of the Action Strategy for the five priority areas of development of the Republic of Uzbekistan for 2017-2021: strengthening, promising investment projects and further expansion of lending to small businesses and private entrepreneurship, as well as expanding the volume of financial services through the introduction of new types and improving their quality, as well as attracting capital and enterprise,

In ensuring the implementation of the above two priorities, the Board of Banks of the Republic has implemented such important areas as the introduction of modern management methods and increasing the activity of banks in the stock market, the provision of brand new investment banking services through proper organization of market-making functions. the development of effective mechanisms of increase is required.

PD-4720 of the President of the Republic of Uzbekistan dated April 24, 2015 "On measures to introduce modern methods of corporate governance in joint stock companies", PD-4947 of February 7, 2017 "On further development of the Republic of Uzbekistan" Decrees "On the Action Strategy", No. PP-3270 of September 12, 2017 "On measures to further develop and increase the stability of the banking system of the Republic" and PP-3620 of March 23, 2018 Resolutions on "Additional measures to increase the popularity of banking services" and justify the implementation of research to improve the practical implementation of the tasks set out in other regulations, determine the relevance of this topic.

LITERATURE REVIEW

Studies on the role of the level of capitalization in expanding the participation of commercial banks in financing investment projects have been studied in detail by foreign economists A. Epifanov, N. Maslak, I.V.Salo [1]. O. Vovchak conducted research aimed at highlighting the specifics of credit activities of commercial banks, theoretical and methodological aspects of regulation and management of investment banks [2]. The basis of H.Davis's research is the development of scientific proposals and practical recommendations aimed at improving the development of financing opportunities for investment projects by commercial banks [3]. O.D. Zhilan [5], MR Danilova studied the theoretical foundations of financing investment projects by commercial banks, based on the role of commercial banks in the system of financing investment projects. The process of assessing the use of funds raised by commercial banks in expanding the financing of investment projects, analyzing the dynamics of financing investment projects, evaluating the effectiveness of commercial banks in financing investment projects is of particular importance in K.M.Zunnunova's research [6]. The process of assessing the use of funds raised by commercial banks in expanding the financing of investment projects, analyzing the dynamics of financing investment projects, evaluating the effectiveness of commercial banks in financing investment projects is of particular importance in K.M.Zunnunova's research (Zunnunova K.M, 2008). , 2017). The process of assessing the use of funds raised by commercial banks in expanding the financing of investment projects, analyzing the dynamics of financing investment projects, assessing the effectiveness of commercial banks in financing investment projects is of particular importance in K.M.Zunnunova's research (Zunnunova K.M, 2008).

M.RKulmetov's research examines the sectoral and regional problems of financing investment projects by commercial banks in the light of the competitive environment between commercial banks [7].

The above research does not substantiate ways to expand the participation of commercial banks in financing, systemic directions that serve to form the direction of effective use of resources of commercial banks in financing investment projects.

RESEARCH METHODOLOGY

Research methods such as scientific abstraction, logical substantiation, comparative analysis, comparative analysis, induction and deduction, structural analysis were widely used in the research work.

ANALYSIS AND DISCUSSION OF THE RESULTS

The Action Strategy for the further development of the Republic of Uzbekistan identifies the issue of increasing the level of capitalization and deposit base of banks, strengthening their financial stability and reliability as one of the priorities. In order to fulfill these tasks in a timely and effective manner, the charter capital of the President of Uzbekistan dated September 12, 2017 PP-3270 "On measures to further develop and enhance the stability of the banking system of the Republic" from October 1, 2017 (fund) minimum amount of newly established: to commercial banks - 100.0 billion soums; microcredit organizations - 2.0 billion soums sum; to pawnshops - 500 million soums.

It is known from international banking practice that the primary means of ensuring the solvency and liquidity of commercial banks is to strengthen their capital base. In turn, it is important to strengthen the capital base of commercial banks at the expense of a number of financial sources, in particular, at the expense of the bank's profits.

At present, there are a number of issues that need to be addressed to ensure the stability of the capital of commercial banks of the country. In particular, the presence of unstable sources of capital, the fact that some banks are below the minimum level of capital, and others. The following table provides general information on the capital and share of banks in the country.

TABLE 1 CAPITAL AND SHARE OF COMMERCIAL BANKS OF UZBEKISTAN (AS OF JANUARY 1, 2020) [8]

№	Name of banks	billion soums	Share, in percent
	<i>Banks with state share</i>	<i>16 672</i>	<i>81%</i>
1.	O'zmilliybank	4 807	23,2%
2.	Asaka bank	3 083	14,9%
3.	O'zsanoatqurilishbank	2 241	10,8%
4.	Ipoteka bank	1 258	6,1%
5.	Qishloqqurilish bank	1 168	5,7%
6.	Xalq banki	1 351	6,5%
7.	Agrobank	1 374	6,6%
8.	Aloqa bank	398	1,9%
9.	Mikrokredit bank	546	2,6%
10.	Turon bank	369	1,8%
11.	O'zagroeksportbank	76	0,4%
	<i>Other banks</i>	<i>4 005</i>	<i>19%</i>
12.	O'zKDB bank	528	2,6%
13.	Hamkor bank	573	2,8%
14.	Orient Finans bank	474	2,3%
15.	Kapital bank	339	1,6%
16.	Ipakyo'li bank	366	1,8%

17.	Trast bank	220	1,1%
18.	Invest Finans bank	333	1,6%
19.	Aziya Alyans bank	243	1,2%
20.	Savdogar bank	168	0,8%
21.	Davr bank	93	0,4%
22.	Ziraat bank	216	1,0%
23.	Turkiston bank	40	0,2%
24.	EronSoderot bank	273	1,3%
25.	Universal bank	34	0,2%
26.	Ravnaq bank	37	0,2%
27.	Xay-Tek bank	47	0,2%
28.	Madadinvest bank	22	0,1%
	All	20 676	100%

From the table we can see that the total capital of commercial banks amounted to 20.7 trillion soums, of which 16.7 trillion soums or 81% fell to the share of state-owned banks. It is noteworthy that as of January 1, 2019, the number of state-owned banks amounted to 11, of which the main share of capital, ie 48.9% fell to the shares of the NBU, Asaka Bank and Uzpromstroybank. According to the data, a number of banks (Davr Bank, Turkistonbank, Universal Bank, Ravnaq Bank, Hay-Tek Bank, Madad Invest Bank) will increase their authorized capital by 100.0 billion soums by January 1, 2020. take appropriate measures,

The results of financial analysis show that in recent years, the participation of commercial banks as an active financial institution in lending to the real sector of the country, attracting investment remains one of the most pressing issues. One of the main reasons for this is that their total assets, total capital and total deposits remain very low relative to the country's GDP, as can be seen from the figure below.

Although the ratio of total assets and deposits of commercial banks to GDP in 2016 tends to increase compared to 2020, the total capital in 2020 amounted to about 4.5% of GDP.

In our opinion, such a low level of total assets, capital and deposits of commercial banks relative to the country's GDP can not only reduce their ability to lend to the real sector of the national economy, but also reduce the confidence of the population, investors, customers and other bank partners. It is usually advisable to do this by evaluating any situation or comparing it to formulate appropriate conclusions. In this regard, if we analyze the ratio of key indicators of banks to the country's GDP, the ratio of assets, loans and capital to GDP is 100-350, 80-200 and 10-12%, respectively.

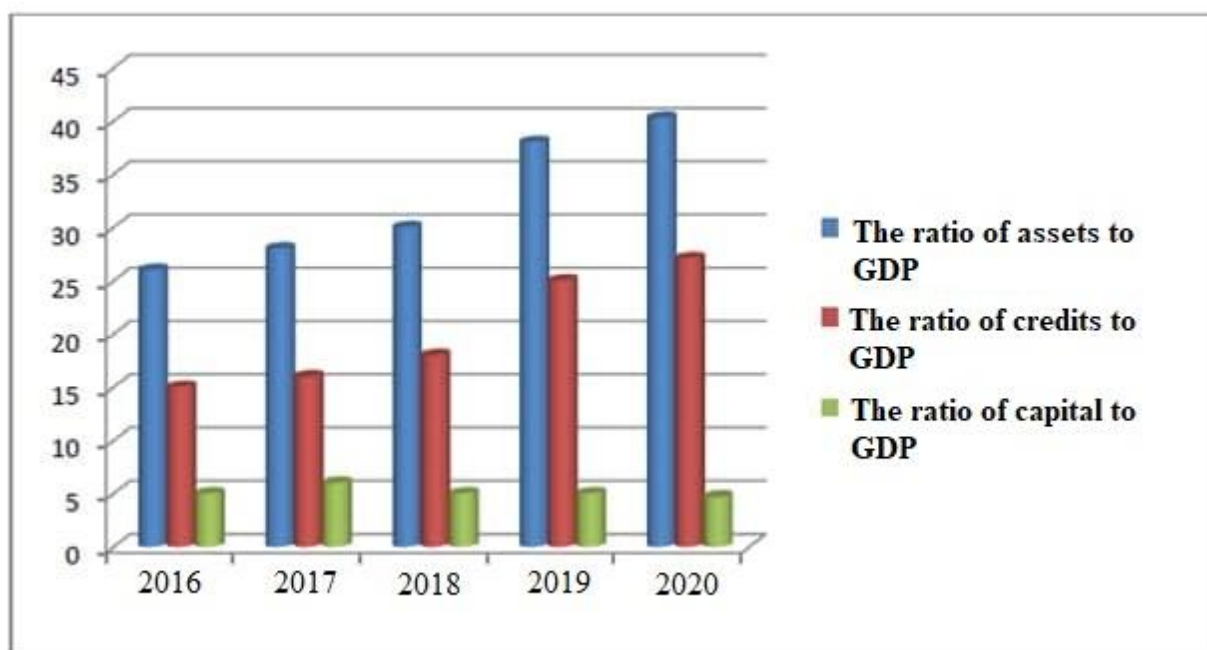


Figure 1. 2016-2020 the ratio of gross assets, loans and capital of banks to the country's GDP (in percent) [8].

We know that the capital of commercial banks is formed from the funds of the bank's shareholders and other sources, the role and importance of profit in these sources play an important role, because the bank's profit is stable, relatively cheap and a source of short-term capital growth. is calculated. However, the issue of extensive use of the bank's profit potential in the formation of the capital of commercial banks of the country remains relevant, on the contrary, the share of unstable sources in some large commercial banks remains significant. In particular, the devaluation reserve is one of them.

According to the Regulations of the Central Bank on the requirements for the capital adequacy of commercial banks (UzR.AV No. 2693 of 06.07.2015), devaluation reserves are included in the fixed capital of commercial banks and is not considered a stable source. As Chris Bartrop, an expert at the World Bank for Reconstruction and Development, puts it: "Bank capital is a reliable and relatively expensive form of financing banking activities". Despite the fact that this issue is controversial among economists of our country, today it remains unresolved. Therefore, it is expedient to include the amount generated by the devaluation reserve in the balance sheet of a commercial bank in the additional capital structure.

The lack of issue income in the capital of commercial banks of the country indicates that the secondary market for securities issued by commercial banks is underdeveloped and is not considered as an object of regular trading. However, in the capital of commercial banks in many foreign countries, the amount of issue income occupies a significant share. For example, it ranks second only to the government in terms of the volume of securities issued by commercial banks in the United States, the United Kingdom, and Japan, and their participation in trading in financial markets.

It can be observed that the share of cash assets in the largest commercial banks of the country is significantly higher. In our opinion, this is a positive situation in terms of meeting the demand of commercial banks for cash from their customers. However, the efficiency of commercial banks is assessed as a negative situation in terms of profitability. This is because the relatively small share of high-risk assets in the assets of a commercial bank leads to a relatively high level of total capital adequacy. The higher the level of risk of the assets, the higher their rate of return. Therefore, a high level of total capital adequacy may indicate a low level of return on bank assets.

It should be noted that the adoption of the Decree of the President of the Republic of Uzbekistan dated September 2, 2017 PD-5177 "On priority measures to liberalize foreign exchange policy" provides an opportunity to address a number of problems in this area. In particular, we believe that the current attraction of cash to banks, the easing of control over the issuance of cash to customers, the almost abolition will serve to solve future problems in this area. In addition, in international banking practice, cashless settlements play an important role in increasing their profitability. In particular, the documented letter of credit is one of them, however, the level of use of this form of cashless payment in commercial banks of the country remains low.

CONCLUSIONS AND SUGGESTIONS

Given the fact that banks in Uzbekistan are allowed to conduct operations with securities, it is expedient to require them to be active in the investment market. Large banks are cautious about investing their assets in the medium to long term, even though they have issued their own securities. Each bank could have different reserves in the Central Bank depending on its strategy and its policy on medium and long-term lending. In this regard, we believe that the Central Bank of the Republic of Uzbekistan should take a differentiated approach to setting reserve rates for commercial banks. By multiplying the reserve rate by the adjustment factor based on the share of medium and long-term loans in the bank's loan portfolio, changes can be made. Re-equipment of state-owned enterprises on the basis of new advanced technologies will be carried out within the framework of centralized public investment. Certain regulatory decisions are required for non-state actors in the economy. Given that significant technological changes are associated with higher costs for consumers of new technologies, in our view, the role of bank lending will have to be strengthened. It would be expedient to divide into innovation and investment loans with appropriate concessions on terms, volumes and interest rates of loans. Lending at reduced interest rates includes tax rates on income of commercial banks,

Based on the above analysis and research, we were able to develop the following recommendations in order to increase the importance of profits in ensuring the capital stability of banks:

- It is expedient to gradually increase the ratio of assets, deposits and capital of commercial banks to the country's GDP;
- It is expedient to increase the profitability of banks by increasing the volume of risky assets and to ensure the stability of the bank's capital at the expense of profits;
- Taking into account that the liquid assets of banks do not bring income (profit) to banks, they should be reduced to a safe level, which, in turn, will increase the ability of banks to lend to the real sector, as well as their profitability;

- In order to ensure the stability of the capital of banks, it is necessary to transfer the devaluation reserves in the composition of their sources from the structure of tier I fixed capital to tier I additional capital;

- In order to increase the profitability of banks, it is necessary to make more extensive use of effective forms of cashless payments, in particular, unsecured letters of credit, factoring.

Conclusion in other words, the role of profit in ensuring the stability of the capital of commercial banks is very important, and its increase in banks will serve to increase the investment potential of banks.

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CALCULATION OF THE RESERVE COEFFICIENT OF LOCAL STABILITY OF THE SLOPES OF THE ROADBED REINFORCED WITH A VOLUMETRIC GEOGRID

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ABSTRACT

The article gives a calculated estimate of the slope of the embankment of the railway roadbed reinforced with a three-dimensional geogrid. Calculations are made to determine the coefficient of the reserve of local stability of the slopes of the roadbed when laying a volumetric geogrid on geosynthetic material.

KEYWORDS: *Calculation, The Slope, The Stock Of Local Stability, Three-Dimensional Geocell, Roadbed*

INTRODUCTION

In the modern conditions of construction and operation of railways in Uzbekistan, the introduction of resource-saving structures in earthworks projects is becoming increasingly relevant. The choice of design is an urgent and complex task in the complex construction of communication routes, in which at each stage of design and especially in the production of works, the engineering-geological and climatic characteristics continuously change. The methodology for solving this problem is based on constant monitoring of the characteristics in order to determine their joint impact on the resulting indicators [1-3].

The situation is complicated by the fact that a significant part of the roads under construction are located in areas with difficult climatic and geological conditions, including in places where sand dunes, saline soils, and weak foundations are distributed.

When designing and building embankments on sand dunes, it is necessary to solve problems related to their insufficient load-bearing capacity, the possibility of large sediments that flow for a long time.

The strategic objectives of the development of JSC "Uzbekiston Temir yollari" at the present stage are to increase the capacity and carrying capacity of railway lines, the development of high-speed and high-speed passenger services. The solution of these problems requires the strengthening of the existing roadbed of railway.

The main tasks of strengthening the existing roadbed are:

- estimated slope estimation of railway embankment embankment with reinforced geogrid;
- Calculation of the coefficient of local stability reserve (*K_{res}*) of the soil filled in the geogrid.

Basic calculation methods and their application conditions

Spatial (volumetric) geogrid or geocell material (hereinafter referred to as geogrid): geosynthetic material of a spatial "honeycomb" or similar cellular structure according to Figure 1, which is formed from interconnected geofields, produced in the form of a folding module and delivered in the form of packages in the folded state (international designation – in accordance with ISO 10318 – GCE, designation in accordance with ODM 218.5.005-2010 – GST) [5].

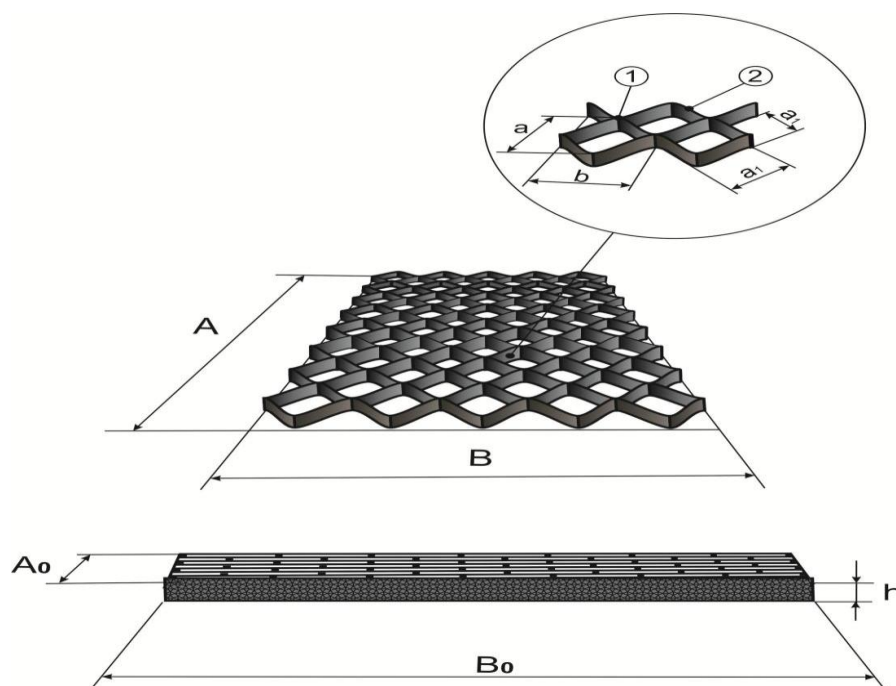


Figure 1. General scheme of geogrids in working (stretched) condition (a) and transport (folded) state (b)

1 – welded seams; 2 – geopoly; and the length and width of the module (A – direction tensile); A_0 and B_0 is the length and width of the package; a and b are the size of a cell diagonally in the direction of length and width; a_1 is the width of the cell; h – height of the geogrid (width geopoly)

The slopes of the railway trackbed are one of the most vulnerable elements in the event of water and wind impacts. In the general structure of methods for improving the operational reliability and durability of roads of all categories, the primary importance should be given to methods for ensuring the stability of the slopes of the roadbed [2].

As practice shows, as well as the studies carried out confirm that in cases where the issues of choosing the type and ensuring the stability of anti-deflationary and anti-deformation (ADAD) strengthening of slopes are not given due importance, deformations occur within the entire roadbed (roadsides, main site, slopes), as well as beyond it (drainage ditches), the elimination of which requires significant costs. At the same time, the choice of the type, assessment and ensuring the stability of the (ADAD) for strengthening the slopes of the roadbed is relevant and requires an integrated approach.[2]

Currently, there are the following types of ensuring the stability of the slopes of the earth bed of railways [4]:

- regulation of surface runoff and protection of the roadbed from its harmful effects;
- lowering or interception of groundwater;
- heat protection devices and coatings;
- supporting structures;
- soil reclamation.

Modern world experience shows that in recent years, when strengthening the slopes of the earth bed of railways in foreign countries geosynthetic materials are widely used. One of these materials is a three-dimensional geogrid.

It is known that there are several methods for calculating the stability of the roadbed of railways. These methods are calculated under different conditions, i.e., when calculating stability in free slopes(slopes), seismic areas, and the influence of water in the ground.

The coefficient of local stability reserve (K_{res}) of the soil filled into the geogrid is determined by the following formula:

$$K_{res} = \frac{\Sigma T_{hol}}{\Sigma T_{weight}} > 1,25$$

where ΣT_{hol} - is the sum of the forces holding the structure of the reinforcement on the slope in the calculation of the required number of modules for the height of the slope and one module of the geogrid for the length of the roadbed.

ΣT_{weight} - the shear force from the weight of the reinforcement structure based on the required number of modules for the height of the slope and one module of the geogrid for the length of the roadbed.

In order to strengthen the earth bed of the railway on sandy soils, experimental studies were conducted on the Bukhara – Miskin railway section using geosynthetic materials. The geometric dimensions of the roadbed and the characteristics of the soil are taken from engineering and geological reports JSC “BOSHTRANSLOYIHA” the removal of an “Existing railway station, Tunguluk -Burgutli-Miskin with the flood zone Shurbulak reservoir”:

- embankment height $H_e = 5.0$ m;
- width of the main platform $B_{mp} = 7.6$ m;
- laying of the slope $m = 2$
- slope laying angle $\beta_0 = 27^\circ$
- fine dune sand of medium density
- volumetric weight of the soil $\gamma_e = 15,9$ kN/m³;
- the adhesion of soil $C_e = 2$ kPa;
- angle of internal friction of soil $\varphi = 28^\circ$.

Characteristics of the filler:

- volumetric weight of the soil $\gamma_f = 15,9 \text{ kN/m}^3$;
- the adhesion of soil $C_f = 2 \text{ kPa}$;
- angle of internal friction of soil $\varphi = 28^\circ$.

Characteristics of a three-dimensional geogrid ARMACELL:

- length of a module A - 5400 mm
- module width, B - 3137 mm
- module height, h=100 mm
- joint strength $R_s=8 \text{ kN/m}$.

The calculation sequence:

We accept a geogrid with a height of h=100 mm. Then, taking into account the excess thickness of the aggregate over the geogrid, $h'=h+30=130 \text{ mm}$

The required number of grid modules for the height of the reinforced slope is determined by the following formula:

$$N = \frac{L}{A} = \frac{11.2 \cdot 1000}{5400} = 2.07 \text{ pc.}$$

The minimum number of mounting anchors on the upper and lower faces of the module, provided that the anchor is installed in the end cell, is

$$n_{nod1}^{anch} = \frac{2 \cdot B}{a} = \frac{2 \cdot 3137}{200} = 32 \text{ pc.}$$

on the side faces of the module, provided that the anchor is installed through the cell

$$n_{nod2}^{anch} = \frac{A}{2 \cdot a} = \frac{5400}{2 \cdot 200} = 14 \text{ pc.}$$

taking into account the device of the adjacent module, inside the module with a step between the anchors of 0.8 m

$$n_{nod3}^{anch} = \frac{A \cdot B}{80^2} = \frac{5400 \cdot 3137}{800^2} = 26 \text{ pc.}$$

The total required number of mounting anchors per module is

$$n_{nod}^{anch} = n_{nod1}^{anch} + n_{nod2}^{anch} + n_{nod3}^{anch} = 32 + 14 + 26 = 72 \text{ pc.}$$

The value of the shear force from the weight of the structure of the reinforced slope is determined by the following formula:

$$T_{weight} = N \cdot n_{cell} \cdot a^2 \cdot h' \cdot \gamma_f \cdot \sin \beta_0$$

$$T_{weight} = \frac{2,07 \cdot 300 \cdot 200^2 \cdot 130}{1000^2} \cdot 15,9 \cdot \sin 27^\circ = 2.3 \text{ t/m} = 23 \text{ kN/m}$$

We determine the holding force created by the forces of friction and adhesion on the sliding surface. By $\varphi_{rb} = \varphi_f = 28^\circ$ we accept $tg \varphi' = tg \varphi_f = tg 28^\circ$

By $C_{rb}=C_f=0,2 \text{ t/m}^2$ we accept $C'=C=0,2\text{t/m}^2$

When laying a geogrid on a geosynthetic material, the reduced values of the strength parameters for the sliding surface are taken according to the formulas:

$$\text{tg}\varphi''=0,6\cdot\text{tg}\varphi'=0,6\cdot\text{tg}28$$

$$C''=0,1\cdot C'=0,1\cdot 0,2=0,02$$

Then:

$$T_{fr}=N\cdot n_{\text{cell}}\cdot a\cdot b\cdot[h'\cdot\gamma_f\cdot\cos\beta_0\cdot\text{tg}\varphi''+C'']=2.07\cdot 300\cdot \frac{200^2}{1000^2}\cdot \left[\frac{130}{1000}\cdot 1.59\cdot \cos 27\cdot 0.6\cdot \text{tg}28 + 0.02\right] = 1.98 \text{ m/M} = 19,8 \text{ kN/M}$$

Additional resistance force that occurs in anchored nodes with a coefficient for damage during construction and the duration of the impact of loads $K_s=4$;

$$T_{nod}^{anch} = N\cdot n_{nod}^{anch} \cdot \frac{h\cdot R_s}{K_s} = 2.07\cdot 72\cdot \frac{10}{100}\cdot \frac{8}{4} = 29,8 \text{ kN/m}$$

In the absence of a stop at the base of the roadbed, we determine the value of the passive pressure of the natural base:

$$T_{bas} = \frac{\gamma_{bas}\cdot(h')^2}{2}\cdot \text{tg}^2(45^\circ + \frac{\varphi_{bas}}{2}) = \frac{1,59\cdot(\frac{130}{1000})^2}{2}\cdot \text{tg}^2(45^\circ + \frac{28}{2}) = 0,372 \text{ m/M} = 3,72 \text{ kN/m}$$

The total force holding the reinforcement structure on the slope:

$$\Sigma T_{hol} = T_{fr} + T_{nod}^{anch} + T_{bas} + T_{anch} = 19,8 + 29,8 + 3,72 = 53,32 \text{ kN/m}$$

The total shear force is:

$$\Sigma T_{sh} = T_{weight} = 23 \text{ kH/M}$$

We determine the calculated coefficient of the local stability margin:

$$K_{res}^{cal} = \frac{\Sigma T_{hol}}{\Sigma T_{sh}} = \frac{53,32}{23} = 2,31 > K_{res} = 1,25$$

CONCLUSION

1. Volumetric geogrids are successfully used in the construction of railways in many countries of the world. They are mainly used to strengthen the slopes of embankments, recesses and cones of railway bridges. Protection of slopes and embankment slopes is a serious problem in railway construction.
2. The problem of ensuring the stability of the roadbed is especially important for lines where the introduction of high-speed and high-speed traffic is envisaged. In this problem, the main attention of domestic and foreign scientists is paid to improving the design for strengthening the slopes of the railway roadbed, ensuring its stability and stability.
3. Geogrids are designed for volumetric reinforcement of soil or aggregate material in order to form a composite layer "soil (material) plus geogrids", which has improved performance properties in relation to the aggregate.
4. The performed theoretical calculations show that the coefficient of local stability reserve (K_{rez}) of the soil filled into the geogrid increases by 60-80 %. Based on this, it can be seen that

the use of three-dimensional geogrids in strengthening the slopes and slopes of the embankment of the earthen bed of railways gives a decent effect.

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EVIDENCE-BASED TRAFFIC ENGINEERING MEASURES TO REDUCE PEDESTRIAN MOTOR VEHICLE COLLISIONS: A REVIEW

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ABSTRACT

We offer a short critical analysis and assessment of engineering changes to the built environment that may decrease pedestrian injury risk. We conducted our research using the Transportation Research Information Services database to look for studies on engineering countermeasures that had been published in the scientific literature. We divided countermeasures into three categories: speed regulation, pedestrian separation from vehicles, and methods to improve pedestrian visibility and conspicuity. We identified the methods and settings that have the highest potential for preventing crashes. Our evaluation found that altering the built environment may significantly decrease the probability of pedestrian–vehicle collisions, with an emphasis on research with acceptable methodological methods.

KEYWORDS: *Controlled Intersection, Roadways, Traffic Engineering, Vehicle Collision, Vehicle Accident.*

1. INTRODUCTION

Pedestrian collision injuries continue to be a significant public health issue, despite declining rates of pedestrian deaths most notably among youngsters and the elderly. Each year, 80000 to 120 000 pedestrians are wounded in motor vehicle accidents in the United States, with 4600 to 4900 pedestrians dying [1]. Pedestrians account for 11% of all motor vehicle fatalities, and they account for approximately 35% of fatalities in cities with populations over 1 million. The greatest population-based injury rate is among children aged 5 to 9, and the highest population-based mortality rate is among individuals over 80 years old. At junctions, people over the age of 65 are more likely to be hit than younger pedestrians [2]. Alcohol consumption among pedestrians who have been harmed has been widely established. Modifications to the built environment, enforcement of traffic safety regulations, motor vehicle design modifications, and pedestrian education are all major methods to creating a framework for preventing pedestrian injuries.

In Europe, where pedestrians and cyclists account for roughly 20% of all fatalities on the road, modifying car fronts and other vehicle features to reduce the severity of injuries to pedestrians is a priority; however, despite research showing potential benefits, this approach has not been prioritized in the United States [3]. Pedestrian education is a popular strategy, although there is little evidence that it works, save for youngsters. The modification of the built environment is a common and successful strategy. We conducted a comprehensive assessment of traffic engineering remedies that have been shown successful in decreasing the probability of pedestrian

accidents in the scientific literature. The Transportation Research Information Services (TRIS) database of the National Academy of Sciences served as the main search engine. TRIS is the biggest and most complete bibliographic database on transportation information in the world. Many studies of traffic engineering measures have methodological problems, including as failing to account for regression to the mean when treating high-crash sites and relying on simple before–after data without adequate controls [4].

We included papers in our evaluation to the degree feasible based on appropriate scientific criteria, such as the use of comparator sites to account for confounding variables. Only limited assessments with less trustworthy methods were available for a number of potential remedies. Failure to account for regression to the mean is a frequent flaw in many crash-based before-and-after assessments of traffic engineering countermeasures, which may lead to overestimation of the benefits of an intervention when treatment locations are chosen because they have had a large number of accidents [5]. Regression to the mean may be partly addressed by selecting comparison sites with comparable features, but not entirely. We included some papers in our evaluation that had methodological flaws; in these instances, we noted the limitations.

Because accidents are uncommon occurrences and conflict studies offer information about possible crash causes, some researchers performing observational road safety studies analyze pedestrian–motor vehicle disputes instead of crash data to assess roadway countermeasures. Conflicts are “near-miss” situations in which a vehicle must suddenly stop or swerve to avoid hitting a pedestrian, or a pedestrian must take rapid evasive action to prevent being struck. The accuracy of utilizing conflicts to predict accidents. On the basis of empirical data, statistical techniques to assess the validity of traffic conflicts [6]. If the anticipated number of crashes is fewer than, it can be demonstrated that a 1-day conflict count gives a more accurate estimate of the expected number of crashes than a 1-year crash history. Regression to the mean associated with remediation of high accident sites is not a factor in conflict studies or other short-term before–after assessments of road user behavior. The following is a list of the most important engineering methods for reducing vehicle speeds. Speed control seems to have the most promise for injury prevention in residential settings with a high number of youngsters.

The majority of pedestrian accidents involving children are caused by the child's mistake. Slower speeds allow drivers more time to respond and may reduce injuries in the event of a collision. Slower speeds are preferable in pedestrian-heavy regions since many young children fail to stop before crossing the street. It is estimated that 69 percent of child pedestrian accidents occur in the middle of the block, when youngsters dash into the roadway. Vehicle distance and velocity are difficult for young toddlers to judge. In this post, we'll take a look at some of the technical changes that may be made to the built environment to lower the likelihood and severity of pedestrian injuries [7]. Pedestrians have been mostly neglected or given just a passing thought in the construction of much of the country's highway infrastructure. It may be difficult for cars and pedestrians to properly use the road when the built environment places a low emphasis on pedestrians. Vehicle pedestrian collisions may be reduced by modifying the built environment. Separation of pedestrians from vehicles by time or distance, steps to improve pedestrian visibility and conspicuity, and decreases in vehicle speeds are the three main types of engineering changes. Pedestrian separation tactics minimize the risk of injury to pedestrians on the roadside as well as while crossing roadways [8].

Because many pedestrian accidents are claimed to occur because the vehicle did not notice the pedestrian before the collision, pedestrian visibility and conspicuity must be improved. Higher vehicle speeds are linked to a higher risk of pedestrian collisions and more severe pedestrian injuries [9]. The most successful speed control intervention found in terms of accident reduction was the construction of contemporary roundabouts in lieu of traditional junctions. Roundabouts have two operational and design principles: yield at entrance, which compels incoming traffic to give way to cars in the circle, and deflection of entering traffic, which causes vehicles to enter at a low speed [10].

2. DISCUSSION

Modification of the built environment, enforcement of traffic safety regulations, motor vehicle design modifications, and pedestrian education are all major methods to creating a framework for preventing pedestrian injuries. In Europe, automobile fronts and other vehicle characteristics are being modified to minimize the severity of pedestrian injuries. Pedestrians have been largely disregarded or given little thought in the construction of most of the country's highway infrastructure. When pedestrians are given low priority in the built environment, it may be difficult for cars and pedestrians to properly use the road. Vehicle–pedestrian collisions may be reduced by making changes to the built environment. Separation of pedestrians from vehicles by time or space, methods to enhance pedestrian visibility and conspicuity, and vehicle speed reductions are the three main types of engineering changes. Pedestrian separation tactics minimize pedestrian exposure to possible injury on the roadside and while crossing roadways.

Because many pedestrian accidents are claimed to occur because the motorist did not notice the pedestrian before the collision, efforts to improve pedestrian visibility and conspicuity are required. Higher vehicle speeds are significantly linked to an increased risk of pedestrian collisions as well as more severe pedestrian injuries. We conducted a comprehensive assessment of traffic engineering remedies that have been shown successful in decreasing the probability of pedestrian accidents in the scientific literature. The Transportation Research Information Services (TRIS) database of the National Academy of Sciences served as the main search engine. Many studies of traffic engineering measures have methodological problems, including as failing to account for regression to the mean when treating high-crash sites and relying on simple before–after data without adequate controls. We included papers in our evaluation to the degree feasible based on appropriate scientific criteria, such as the use of comparator sites to account for confounding variables. Only limited assessments with less trustworthy methods were available for a number of potential remedies. Failure to account for regression to the mean is a frequent flaw in many crash-based before-and-after assessments of traffic engineering countermeasures, which may lead to overestimation of the benefits of an intervention when treatment locations are chosen because they have had a large number of accidents.

Regression to the mean may be partly addressed by selecting comparison sites with comparable features, but not entirely. We included some papers in our evaluation that had methodological flaws; in these instances, we noted the limitations. Because accidents are uncommon occurrences and conflict studies offer information about possible crash causes, some researchers performing observational road safety studies analyze pedestrian–motor vehicle disputes instead of crash data to assess roadway countermeasures. Conflicts are “near-miss” situations in which a vehicle must suddenly stop or swerve to avoid hitting a pedestrian, or a pedestrian must take rapid evasive action to prevent being struck. According to European research, changing traditional junctions to

roundabouts may decrease pedestrian accidents by approximately 75 percent on average. Single-lane roundabouts, in particular, have been shown to have much lower pedestrian accident rates than similar traffic-light junctions. Traffic calming and multiway stop sign control are two more methods for reducing speed. Lane narrowing, changes in highway curvature, pedestrian refuge islands, and speed humps are all examples of traffic calming methods. Despite the fact that traffic calming techniques are demonstrably successful in reducing traffic speeds. The impact on pedestrian-vehicle collisions is less clear. According to one research of “extensive” area-wide traffic calming measures that used a before–after design without controls, pedestrian–vehicle accidents reduced by 25% after these measures were implemented.

A recent assessment of controlled before–after studies of area-wide traffic slowing, on the other hand, found no overall impact on pedestrian–vehicle accidents. Pedestrian collisions were reduced by 25% when multiway stop signs were installed in place of traffic signals at low-traffic volume urban intersections, according to an investigation focusing on multiway stop sign control, which produces low vehicle speeds near intersections compared to traffic signal control or conventional 2-way stop signs. The following is a summary of engineering methods designed to segregate people and automobiles based on time. These treatments have mostly been studied for their impact on road user behavior and pedestrian–vehicle interactions, rather than accidents, and their use is rather site dependant. According to one research, the installation of traffic signals significantly decreased confrontations at high-speed junctions where there were previously no signals and people had difficulties crossing. Exclusive traffic signal phasings, which halt all vehicle traffic for part or all of the pedestrian crossing signal, have been proven to decrease conflicts at junctions with traffic lights. According to a study comparing junctions with and without exclusive pedestrian signal phasings, the probability of pedestrian vehicle collisions at intersections with exclusive timing was about half that of intersections with conventional pedestrian signals.

At traffic lights, properly timed yellow and all-red clearing signals are required to guarantee that vehicles have enough time to clear the junction before pedestrian walk signals are shown. According to one research, changing the length of yellow and all-red signal timing together decreased the incidence of pedestrian and bicycle accidents at crossings by 37% when compared to control locations. Automatic pedestrian detection, which may be used at traffic lights instead of pedestrian push buttons to identify pedestrians and display a walk signal, has been shown to decrease confrontations substantially. This technology may also prolong crossing times to enable slower pedestrians to complete their journey. A walking pace of 1.0 m/s second is suggested at junctions with traffic lights and large numbers of senior walkers. At junctions with traffic lights, traffic signs and pavement markings that urge pedestrians to check for possible conflicts have also been proven to be beneficial.

Furthermore, studies have shown that in-pavement flashing lights that were triggered automatically by the presence of pedestrians and designed to encourage vehicles to yield to pedestrians decreased vehicle speeds and confrontations at uncontrolled crossings. The following is a list of engineering methods that are used to separate people and automobiles in terms of space. There were a number of very successful treatments discovered. Overpasses and underpasses may significantly decrease pedestrian conflicts and accidents. However, because to the expensive expense of such facilities, they can only be placed in a few places for example, at extremely broad crossings with high traffic speeds. When pedestrians are hesitant to utilize such

facilities due to security concerns or difficult entry locations, the safety benefits may be restricted. In residential areas, sidewalks may help to decrease the danger of pedestrian collisions. Pedestrians may cross in two phases on refuge islands in the medians of two-way roadways, making the crossing process easier. This is particularly beneficial for pedestrians who stroll at a slower pace. Refuge islands reduce conflict, and multilane highways with elevated medians have substantially lower pedestrian accident rates than roads without such medians. Curb extensions of the sidewalk toward the street at the crosswalk, roughly the width of a parked car may also be utilized to shorten crossing distances.

Barriers and fences, which direct pedestrians to safe crossing locations and prevent them from rushing into traffic, have been shown to lower midblock crossings and accident rates significantly. Relocating stop lines farther back from crosswalks is a low-cost solution at signal-controlled junctions. As a consequence, cars pull back farther from crosswalks, increasing the distance between pedestrians and automobiles. The following is a list of engineering measures intended to improve pedestrian visibility and conspicuity. Increased roadway illumination intensity may help walkers see better at night, when more than half of all fatal pedestrian collisions occur. Increased highway illumination intensity at pedestrian crossings has been linked to a substantial decrease in nighttime pedestrian collisions.

Parking restrictions may be effective because parked cars block the view of pedestrians and drivers. On residential streets, the number of parked cars was the greatest risk factor in a case control study of child pedestrian injuries. Removal of on-street parking and adoption of diagonal parking, which forces cars to park at an angle to the curb usually approximately 30 degrees in the direction of traffic flow, are examples of parking limitations. Diagonal parking places pedestrians in the roadway at an angle that forces them to gaze in the direction of vehicles. Diagonal parking has been proven to decrease the amount of pedestrians accessing the roadway in front of a parked car when compared to parallel parking. Furthermore, by reducing the number of people that join the highway in front of a stopped bus, moving bus stops from the near side to the far side of junctions may improve pedestrian visibility and conspicuity. At signal controlled intersections, bus stop relocation has been found to substantially reduce the proportion of pedestrians who join the traffic in front of a stopped bus. Although crosswalk pavement markings are frequently employed in the hopes of decreasing pedestrian accidents, research shows that they are generally useless and, in some cases, even detrimental.

3. CONCLUSION

Pedestrian collisions are complicated occurrences that vary greatly in terms of the age of the pedestrians involved and the circumstances surrounding the collision. Modification of the built environment may significantly decrease the incidence of pedestrian vehicle collisions, according to our assessment of existing research, highlighting those with acceptable methodological approaches. Given the limited resources available for road engineering and the vast number of roads, the particular countermeasures and settings with the highest potential for accident avoidance must be prioritized. Single-lane roundabouts, sidewalks, exclusive pedestrian signal phasing, pedestrian refuge islands, and enhanced highway illumination intensity are all very effective remedies. Other countermeasures, including as advance stop lines, in-pavement flashing lights, and automated pedestrian identification at walk signals, have been tested on a smaller scale but have shown promise. Many traffic engineering solutions need more conclusive study to determine their impact on pedestrian vehicle accident hazards.

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BIM TECHNOLOGIES IN EDUCATION

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ABSTRACT

By implementing the national digital school project, the state will have a chance to catch up with the advanced countries in terms of the quality of education and human capital as the main engine of socio-economic development. The ability to work with information is one of the priority areas of modern society. Information education contributes to the formation of the student's ability to think critically starting from school: analysis and assessment of the information received, knowledge and comprehension. The project provides for the creation on the territory of a modern specialized IT school of a sports zone with a football and basketball field, tennis court, gymnastics grounds, as well as educational buildings for additional optional classes.

KEYWORDS: *Information Technology, Education System, School Education Digital School.*

INTRODUCTION

In the modern world, the importance of information technology is undeniable. In recent years, all sectors of society have been using computer programs. Technologies make it possible to translate into reality any wishes, apply new directions in any industry, including architecture, design, landscape design.

Information technologies are of great importance in the life of society, as they are increasingly used in industry and management, as well as contribute to the development of the socio-cultural sphere.

A special role is assigned to the education system in the informatization of the learning process itself and the acquisition of the necessary skills in the preparation and training of qualified graduates of schools and institutes at different stages of the educational process. The ability to work with information is one of the priority areas of modern society. Information education

contributes to the formation of the student's ability to think critically starting from school: analysis and assessment of the information received, knowledge and comprehension. The ability to navigate a huge flow of information helps a prepared person throughout his life. These skills are valuable for a developing society. Therefore, the informatization of education is one of the priority directions of informatization of society.

School education is also of great importance because the involvement of students in the learning process of informatization allows you to effectively master new technologies and software products for modeling, design and design, carry out individual and group projects, prepare for technical Olympiads and competitions, and easily integrate into innovative approaches. to learning. The informatization process actualizes the development of approaches to using the capabilities of IT (information technology) for the development of the personality of schoolchildren and increases the level of activity and reactivity of students.

Today's schoolchildren in the future will have to make scientific discoveries, create works of art, achieve sports victories, transform the world, make it better, cleaner and kinder, strengthening the glory of their native land.

One of the serious problems of the modern school is the growing lag behind the digitalization requirements of the main spheres of public life. Schools do not use effective digital tools that are already actively used by children and adults in many other areas of activity. Schools do not use the possibilities of digital technologies for individual learning (choice of direction, variety of educational materials, assistance with educational difficulties), increasing the motivation of schoolchildren (interactive teaching materials, educational games), facilitating the routine activities of teachers. New digital technologies make it possible to solve key educational problems that cannot be solved or poorly solved by a modern school based on traditional technologies.

In his address to the Oliy Majlis on January 24, 2020, the President of the Republic of Uzbekistan Shavkat Mirziyoyev paid special attention to digitalization issues in all areas, including education. In order to train highly qualified specialists in the field of information technology, the project "1 million programmers" was launched jointly with foreign partners. The President noted that modern information technologies must be introduced at all stages of the education system.

And in the presidential decree, adopted on 06.10.2020, No. PP-4851 "On measures to further improve the education system in the field of information technology, a phased construction and the main directions of activity in schools: creation of specialized schools on the basis of existing schools in the republic with in-depth study of computer science and information technologies. [1]

In this regard, it was determined:

- Creation of conditions for the creative development of schoolchildren, the organization of in-depth training of students in information technology and the basics of computer programming;
- Introduction of modern teaching methods and assessment of students' knowledge using digital means and distance learning;
- ensuring the adaptation of curricula to modern requirements for the preparation of graduates for admission to specialized higher educational institutions;

- Development of cooperation with educational and research institutions, government agencies and industry enterprises.

The resolution also approved:

The list of basic specialized schools to be created in 2020, as well as higher educational institutions, scientific and innovation centers, industrial enterprises assigned to them;

Phased construction schedule for 2021–2023. in the republic of specialized schools.

The document was published in the National Legislation Database and entered into force on October 7, 2020.

The relevance of the reconstruction and construction of specialized IT schools in the country determined the choice of the topic of the diploma project by M. Bositkhanova, bachelor of the Department of Interior and Landscape Design of the Tashkent Institute of Architecture and Civil Engineering, and the protection in 2021 of the project of the IT school in the city of Tashkent

The project provides for the construction of a school in the Yunusabad district of Tashkent city at 4 Moikurgon Street, where residential buildings, a preschool educational institution and a cinema are located.

The architecture of the school is designed as an abstract one with an internal developmental space that meets the national traditions of construction. Everything in this area is also adapted for extracurricular learning and for recreation.



Explication

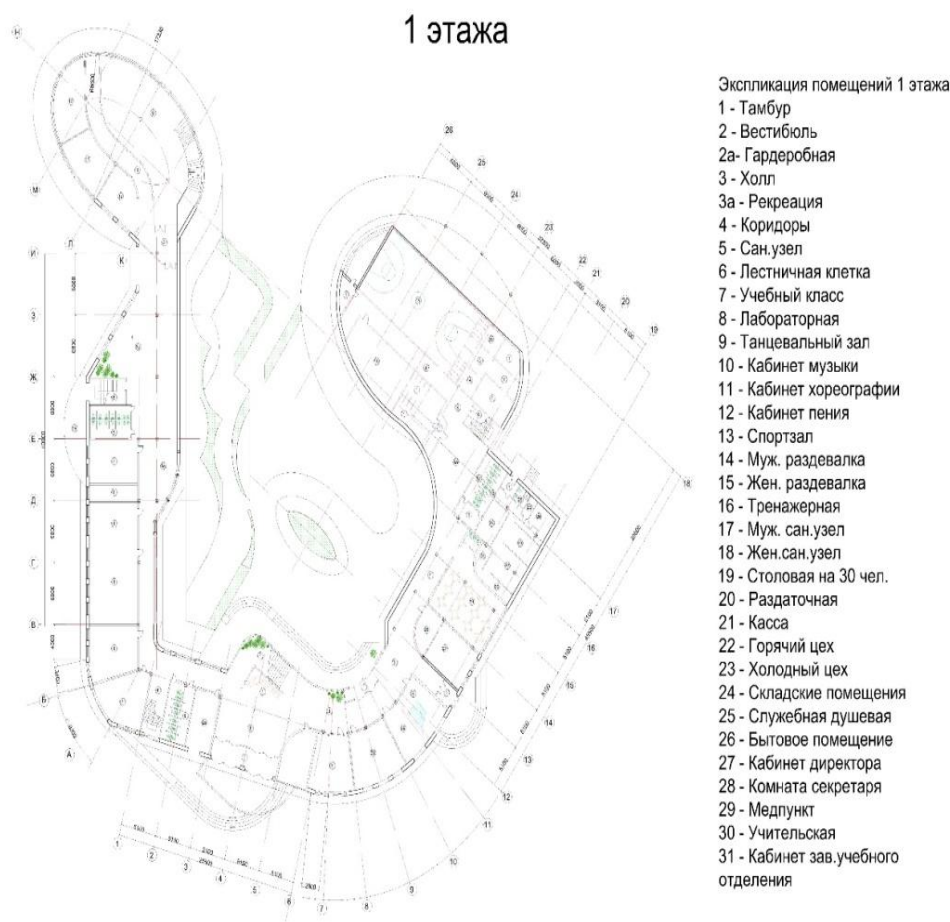
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|------------------|------------------|
| 1- School | 6- Assembly hall |
| 2- Entrance zone | 7 - Amphitheater |

- 3- Football field 8 - Buffet
- 4 - Basketball field 9 - Library
- 5 - Tennis court 10 - Educational buildings for additional classes

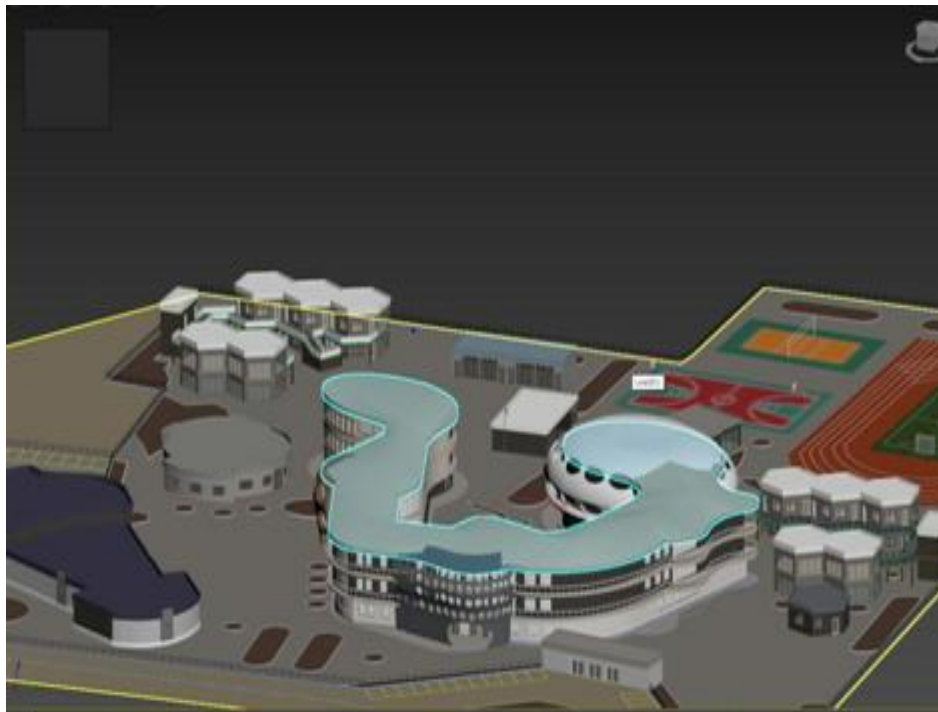
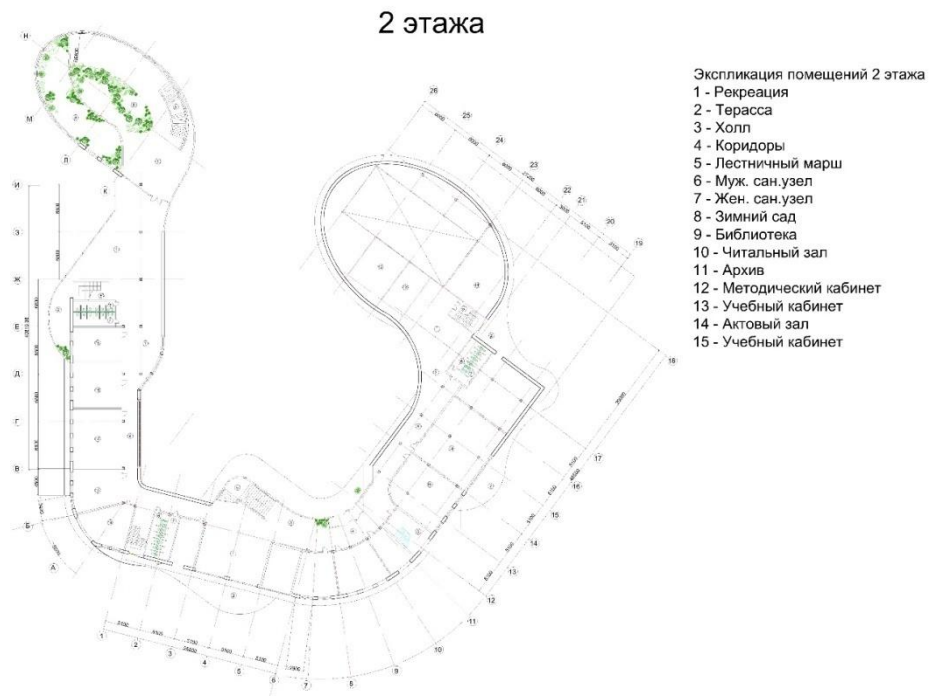
The school building is designed for 1100 students and has 4 floors. On the ground floor of the building there are administrative premises (office of the director, accountant, teacher's office), a dining room, and several classrooms. On the second floor there is a large library with a reading room, an assembly hall and a winter garden, the third and fourth floors are completely reserved for specialized training classes and computer science rooms.

The project provides for the creation on the territory of a modern specialized IT school of a sports zone with a football and basketball field, tennis court, gymnastics grounds, as well as educational buildings for additional optional classes. Comprehensive education and physical training are necessary for schoolchildren at the present time, since in the future they will, having physical activity and a broad outlook, make discoveries in various fields, create unique works of art, transforming the world, making it better and better.

Plan



Plan





The construction of a specialized IT school sets a new standard for educational institutions in the country. By implementing the national digital school project, the state will have a chance to catch up with the advanced countries in terms of the quality of education and human capital as the main engine of socio-economic development.

In the 21st century, new requirements are imposed on school graduates. So, for example, according to the forecast of analysts in Moscow by 2035, the share of highly qualified jobs will increase from 30 to 50%, the number of people working with information technology skills will be required for 45% of new professions. [2]

To ensure the re-equipment of production with new equipment and highly qualified personnel, a program has been developed in Uzbekistan to improve the quality of continuous education in the field of information technology in 2020–2023. and a plan for the phased creation in 2021–2023. in the republic of specialized schools. Starting from the 2020/2021 academic year, the compulsory inclusion of the subject "Informatics and Information Technologies" in specialized and other general education schools is envisaged. This need arose in connection with the request of a developing society, the needs of the economy. The school of the future must prepare students for life and work in the rapidly changing world of the 21st century.

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RISK FACTORS, CLINICAL AND LABORATORY FEATURES AND PREVENTION OF OXALATE NEPHROPATHIA IN CHILDREN

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ABSTRACT

In recent years, the frequency of kidney diseases in children, including dysmetabolic nephropathy, has increased, which is associated both with improving the quality of diagnosis and the deterioration of the ecological situation. In this regard, the problem of early diagnosis, the appointment of adequate diet and drug therapy is relevant. The article deals with the problem of etiology, pathogenesis, as well as criteria for the diagnosis of dysmetabolic nephropathy in children. Attention is paid to the clinical manifestations of this pathology and the basic principles of treatment and prevention.

KEYWORDS: *Children, Dysmetabolic Nephropathy, Crystalluria, Oxalaturia.*

INTRODUCTION

Urinary tract diseases are one of the most pressing problems in paediatrics today. Epidemiological studies carried out at the turn of the twentieth to the twenty-first century showed that the incidence of uI diseases varies from 60: 1000 to 187: 1000 children in the child population, depending on the ecological situation in the child's area of residence [1,7,8]. At the same time in the structure of OMC pathology prevail congenital and hereditary genesis diseases with latent onset and torpid course, among which a large proportion are metabolic, dysmetabolic nephropathies (DN).

Dysmetabolic nephropathies are understood as a large group of nephropathies with different etiology and pathogenesis, but united by the fact that their development is associated with metabolic disorders. Metabolic pathology leads to changes in the functional state of the kidneys or to structural shifts at the level of various elements of the nephron. Dysmetabolic nephropathies in a broad sense are diseases associated with severe disorders of water-salt metabolism, which develop in gastrointestinal diseases with toxic syndrome and haemodynamic disorders. They may include renal damage occurring against a background of impaired phosphorus-calcium metabolism in hyperparathyroidism, hypervitaminosis D and other diseases. The term "dysmetabolic nephropathy", used in a narrow sense, refers to a polygenic inherited (multifactorially evolving) nephropathy that is associated with impaired oxalic acid metabolism and manifests itself in a familial cytomembrane instability.

Healthy children excrete single small salt crystals (most commonly oxalates and tripelphosphates) of 0.03-0.055 μm in the urine, which do not cause renal tissue damage. It is believed that the damaging effect on the urinary system organs is possible in the presence of crystals in the urine sediment more than 10 in the field of view and when their size is more than 12 microns. Three fundamental factors play a role in the process of crystal formation: oversaturation of the tubular fluid beyond its stability limits, reduced activity of oversaturation inhibitors, and the presence of precipitation activators.

Crystalluria is a variant of urinary syndrome in which the laboratory test shows increased salt crystals in the urine. In everyday practice, almost one in three children has this symptom. The proportion of crystalluria in paediatricnephrological pathology exceeds 60% (1). Oxalate and calcium oxalate crystalluria are the most common, accounting for 75.0%-80.0% [1,2,13].

For crystal formation, an ionic pair - an anion and a cation (e.g. a calcium ion and an oxalate ion) - must be present. The oversaturation of urine with different kinds of ions eventually leads to their precipitation in the form of crystals and their subsequent growth. The dehydration of the urine plays a major role, which leads to an increase in the concentration of ions in the urine even when they are normally produced. In addition to the degree of saturation, ionic strength, complexing ability, urine flow rate and urine pH influence ion solubility [14,17].

The problem of sporadic dysmetabolic nephropathies is highly topical in paediatrics and paediatric nephrology. This is due to the high incidence of the disease in the population and the possibility of its progression up to the development of urolithiasis and/or interstitial nephritis.

Intermittent oxalate-calcium crystalluria in childhood and adolescence has been shown to progress to tubulointerstitial disorders in adults and to increase the incidence of mixed urinary syndrome, characterized by marked proteinuria, haematuria, signs of renal tubular epithelial membranolysis, and functional and structural changes in the kidneys and bladder [5].

Among DN associated with disorders of water-salt, carbohydrate, phosphorus-calcium and other types of metabolism, oxalic acid metabolism disorders, the so-called dysmetabolic nephropathies with oxalate-calcium crystalluria (DN with OCC) are the most common, reaching 20% of all OMC pathology, receive special attention [1,2,5]. Variability in the prevalence of DN with AAC according to different authors is due to differences in the environmental situation in the area where children live and can reach 31.4% in preschool children [1,3,5].

Progression of oxalate nephropathy often leads to abacterial interstitial nephritis (IN), and pyelonephritis develops as a result of secondary infection. Maximum dysmetabolic disorders can cause urolithiasis (urolithiasis), even in the early years of life [3,12,15].

Currently, the prevalence of crystalluria in children in non-endemic areas is 32%, and in environmentally unfriendly areas it reaches 47%, with oxalate crystalluria accounting for 68-71%, uratecrystalluria for 9-15%, phosphaturia for 9-10% and others ranging from 3 to 5% [9].

A clinical and genetic analysis carried out by Ignatova M.S. et al. showed that cases of oxalate nephropathy in an ICD-endemic region can be classified as multifactorial pathology, in which the proportion of hereditary factors is about 60%, environmental - 40% [10].

One of the most important scientific and practical areas of social pediatrics and health care organization is the regional approach to the study of children's health. Its formation is influenced

by climatic, geographical, environmental and economic conditions of residence, the degree of population migration, ethnic and socio-cultural characteristics, as well as significant differences in the material and technical base of treatment and preventive care institutions in the regions

According to some experts, dysmetabolic nephropathy with oxalate-calcium crystalluria is considered as a model of eco-dependent disease [11].

Pushkareva E. Yu. in studying the clinical and pathogenetic features of the formation and mechanisms of progression of dysmetabolic nephropathies in children depending on age, found that living in areas with high anthropogenic load increases the chance of developing DN with AAC by 2-fold. The author proved that consumption of filtered drinking water can be considered as a preventive measure for the development of oxalate-calcium crystalluria in children living in industrial areas [12].

The variability in the prevalence of dysmetabolic nephropathy with oxalate-calcium crystalluria according to different authors is due to differences in the environmental conditions in the area where children live and can reach 31.4% [7,8]. The average prevalence of dysmetabolic nephropathy in Russia is 1.4 in 1,000 children and tends to increase due to the deteriorating ecological environment [10].

The most studied factor in the development of dysmetabolic nephropathies in children is the impact of exogenous toxicants: heavy metals, pesticides, components of cement production, which enter the body of children living in environmentally unfriendly regions, as well as in climatically unfavourable seasons of the year during adaptation. Such variants of dysmetabolic nephropathies are called eco-nephropathies [7].

There are endogenous and exogenous causes of oxalate dysmetabolic nephropathy in children. Endogenous causes include increased oxalate biosynthesis, hyperuricemia, cystine metabolism disorders, phosphaturia, diabetes mellitus, vitamin metabolism disorders, ischaemic nephropathy, electrolyte disorders, hyperparathyroidism. Exogenous causes include dietary habits, drinking habits, ecopathogens (cadmium, lead, uranium, organic solvents, etc.), medications, climatic features of the region of residence. Persistent crystalluria should be considered a specific sign of impaired calcium metabolism at the cellular level, its presence is usually combined with salt diathesis [1,2].

Calcium oxalate crystallisation in the tubulointerstitium, due to its local toxicity and poor solubility, is a trigger mechanism in tubulointerstitial damage [18]. Damaged cells of the renal epithelium actively bind to the crystals, inducing regeneration and repair processes. Proliferating urothelial cells express "crystal-binding molecules" on their surface, which act as stimulators of crystal adhesion to the surface of epithelial cells [19,20].

There are two etiopathogenetic variants of hyperoxaluria - primary and secondary. Primary hyperoxaluria is an inherited disorder involving three rare types of genetically determined disorders of glyoxylic acid metabolism, characterised by increased oxalate excretion, recurrent oxalate-calcium urolithiasis and/or nephrocalcinosis and a progressive decline in glomerular filtration rate with the development of chronic renal failure (2). Oxalate-calcium crystals are deposited in all body tissues, leading to oxalosis at the age of 10-30 years. The disease is inherited by autosomal recessive type, but there are known cases of dominant inheritance. These forms are diagnosed by biochemical methods and their clinical manifestations are identical.

In paediatric practice, the most common is secondary or spontaneous hyperoxaluria, which can be transient (with a monotonous diet, acute respiratory infections, intercurrent diseases) or permanent. There are several mechanisms of its development. Alimentary hyperoxaluria is associated with excessive consumption of products containing oxalic and ascorbic acids [13].

Risk factors for secondary hyperoxaluria include a hereditary predisposition, which occurs in 70% of children with hyperoxaluria. This is manifested not only by abnormal oxalate metabolism, but also by but also a predisposition to cytomembrane instability [13]. In the genesis of membrane destabilizing processes an important role belongs to the processes of intensification of lipid peroxidation, activation of endogenous phospholipases and oxidative metabolism of granulocytes. Oxalate precursors are formed when acid phospholipids of cell membranes are broken down.

The stages of development of oxalate nephropathy in the progression of renal damage in the age aspect: from oxalate diathesis at an early age to the development of chronic tubulointerstitial nephritis and urolithiasis in adults is shown in the works of M.S. Ignatova et al. (2000, 2006); N.V. Voronina et al. (2000, 2009). In the works of N.V. Voronina it is emphasized that in therapeutic practice this pathology is detected more often in persons of working age, which is latent in childhood and adolescence [5,6].

In recent years, the literature has considered oxalate nephropathies as a heterogeneous group of polygenic inherited and multifactorial nephropathies associated with impaired oxalic acid metabolism. The pathology is based on a membranopathological process, usually of a familial nature [5,6].

Recently, local oxalate formation in the kidneys has been discussed due to the destruction of cell membrane phospholipids, resulting in oxalate precursors (serine) as well as phosphates, with which calcium forms insoluble salts [16].

The first manifestations of hyperoxaluria in children can be as early as the first year of life. Hyperoxaluria is most common during the periods of intensive growth of the child - 7- 8 and 10-14 years of age. In most cases oxalate crystalluria is detected accidentally, sometimes against the background of acute respiratory infections and intercurrent diseases.

Often parents notice that the child has a decrease in urine volume during the day, precipitation of large amounts of salts. When children are interviewed, recurrent abdominal pain is detected. Sometimes genital inflammation develops due to constant irritation of the skin and mucosa, burning sensation or other dysuric disorders may occur during urination. A urinary infection often develops against the background of crystalluria. The urine is visually assessed for saturation, and spontaneous sludge formation may occur. Hyperstenuria (relative urine density above 1030) in the absence of glucosuria should be suspected of hyperoxaluria. Subsequently, minor microhaematuria and/or proteinuria, abacterial leukocyturia appear against a background of crystalluria, suggesting renal damage and termed "dysmetabolic nephropathy" [4].

Biochemical examination of daily urine (salt transport) clarifies the presence of hyperoxaluria and hypercalciuria. Normal levels of oxalate are less than 0.57 mg/kg/day and calcium is less than 4 mg/kg/day. The calcium/creatinine and oxalate/creatinine ratios can also be used to diagnose hyperoxaluria and hypercalciuria [4].

In children with hyperoxaluria in nephrological hospitals, urine anti-crystalline calcium oxalate capacity is tested for calcium oxalate, which is reduced. A urine peroxide test assesses the activity of cytomembrane lipid peroxidation processes.

Renal ultrasound reveals echopositive inclusions in the pelvis and calyx in some children.

To prevent DNOCC and calcium nephrolithiasis it is recommended to monitor children from families with hereditary predisposition to urolithiasis, with regular preventive treatment including diet therapy, drinking regime, vitamin therapy (A, E, B6) and other treatments, especially phytotherapy.

The authors Dlin V.V., Ignatova M.S., Osmanov I.M., Yurieva E.A., Morozov S.L. (2015) prove that 5-year follow-up of 130 children showed the effectiveness of this rehabilitation scheme both in the treatment and prevention of relapses of pyelonephritis and in reducing the severity of metabolic disorders in children.

Despite recent advances in the treatment of dysmetabolic nephropathies, the problem of improving treatment methods, preventing the most severe outcomes of the disease, the introduction of effective preventive measures is still one of the most important in modern paediatric nephrology.

The versatility of pathogenetic mechanisms of damage to the urinary system, the severity of consequences caused by metabolic disorders, such as urolithiasis, pyelonephritis, etc., focus scientists to search for new modern technologies of treatment and prevention of these diseases.

Thus, study of risk factors and basic etiopathogenetic mechanisms of dysmetabolic nephropathy formation in children is of particular importance because of their high prevalence and severe prognosis.

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ETHNOGRAPHIC INTERPRETATION OF KARAKALPAK FOLK EXPLANATIONS

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ABSTRACT

Karakalpak folk prose encompasses a wide range of genres and is one of the values that has enhanced the people's spiritual world for thousands of years. Without a doubt, their emergence, methods of creation, rich aesthetic value, unique reflection of the history of people's lives in the content of genres, artistic factors, providing various aspects of national identity and tradition, thinking, minds, and narratives are all of particular scientific interest. The folklore of Turkic peoples, who were acknowledged as fraternal peoples, created as a separate country and complemented each other in the developed time, and this process is still ongoing today, is also differentiated by its national identity. The folktale «Сизың өлиўиңиз, бизлердиң көмиўимиз биледи» in Karakalpak folklore is examined in this article. The plot of this novel was detailed, as well as scientific perspectives on the Karakalpak people's mourning ceremony. The characters and images depicted in the Karakalpak folk stories were researched, and required conclusions were reached.

KEYWORDS: Karakalpak Folklore, Genre Of Folktale, Term, Ceremony, Funeral, Blue Shirt, Mourning, Plot.

INTRODUCTION

Folkloral art has a long and illustrious history. Folktales, myths, and legends cited in historical literary, historical, and religious sources play an important part in the study of the formation and historical development of folk writing genre composition. These materials, on the other hand, form the foundation for a large-scale investigation into the genetic roots and sources of narrative storytelling in written literature.

In the study of their historical beliefs and worldviews, in the imagination and understanding of universal values, and the advanced concepts put forward in folklore genres, samples of artistic production serve as a true source.

The plot conflict in folktales develops from a clash of opposing forces and is represented clearly and succinctly. In the framework of the dispute, various issues are reflected. A face-to-face struggle between the participants or the surroundings in which the protagonist surrounds himself, a mental conflict with himself, and a confrontation are all part of it. A face-to-face struggle between the participants or the surroundings in which the protagonist surrounds himself, a mental conflict with himself, and a confrontation are all part of it.

The «Сизың өлиўиңиз, бизлердиң көмиўимиз биледи (Your death, most of us know)»[6] storyline exposition begins with the following event. “Бир күни бир бай өзи өлгенде қалай көмиў жөниндеги балаларының, қызларының пикирин билейин деп кемпирин, үш баласын, еки қызын шақырып, өз ошағы басында масләхәт жасайды (One day a rich man called an old woman, his three sons and two daughters to consult with his sons and daughters about how to bury him when he died). The folktale exposition appears to be very simple and concise, telling the story of the scene, the protagonists involved, their profession and their position in the family. The node begins with the following event: «Бай: – Кемпирим, енди мен бир күн болмаса, бир күн өлемен. Мен өлген ўақытта мени қалай жайғастырарсаң? – деп кемпиринен сорайды (The rich man said: How will you place me when I die? He asked the old woman)». Laying the knot in this way paves the way for the development of subsequent events.

The course of events continues as follows: «Кемпири: – «Жаман айтпай, жақсы жоқ», деген, егер сен өлеғойсаң, шүкир қолда етемен. Қараңа қос өгиз, жүзиңе, жылыңа жақсы, жүдә семиз еки өгиз сояман. Сүйегиңе пүткіл кийимлеринди саламан. Жақсылап жайғастыраман. Басыңа ықлымда жоқ жай салдыраман. Гүмбезиңе алтын жалаттыраман, кепининди ақ жипектен тиктиремен. Қырқ күнге шекем басыңа қырқ моллаға қуран шықтыраман, жылыңа шекем қара кийемен, аза тутаман, – дейди (The old woman said, "Don't say bad, it's not good." I will kill two black bulls, two fat bulls that are good for your face and year. I will put all your clothes on your bones. I will arrange it well. I'll just put it on your head. I will make your dome gilded with gold, and your shroud of white silk. For forty days I will recite the Qur'an to forty mullahs, and for a year I will mourn in black clothes)».

Folklore works are the mirror of the spirituality of the people, the psyche of the nation. The genre of any folklore comes from the psyche of that people and deals with their self-education.

As in other genres of folklore, the folktale is dominated by the national spirit. In Karakalpak folklore, national identity is also expressed through patterns related to lifestyle, dress code, various dishes, and customs. At this point, it should be clarified that the old woman's speech mentions the traditions of the Karakalpak people. We know that Karakalpaks have different traditions and customs from Uzbek people. In particular, among the people of Karakalpakstan, the funeral was more luxurious. They considered it a tribute to the deceased. Large cattle were slaughtered at the funerals, and snuff was made from sacks of flour. In large pans, pilav and beshbarmaks are prepared. If there are older people, they distribute rags (жыртыс) as holy. At these ceremonies, guests were given to many neighboring houses, close relatives, acquaintances' houses.

At this point in the folktale, information is given about the conduct of the funeral. We know that in Khorezm and southern Karakalpakstan no food is prepared before the funeral. But, interestingly, “in these areas a sheep is slaughtered when the coffin of the deceased is taken out of the house. According to popular belief, at that time the spirit of the deceased and the spirit of the sheep merged and went to the afterlife.[4] In the Karakalpak people, we can see in this example that this process is carried out in a completely different way.

Қараңа қос өгиз – two oxen to the funeral;

Жүзиңе, жылыңа жақсы, жүдә семиз еки өгиз сояман – For a hundred years of charity, I slaughter a very good fat sheep;

Сүйегиңе пүткил кийимлериңди саламан – I will put all your clothes on your bones;

Жақсылап жайғастыраман – I will place it well;

Гүмбезиңе алтын жалаттыраман – I decorate the dome patterns with golden water, i.e. I make lick them;

Кепиниңди ақ жипектен тиктиремен – I will sew your shroud from white silk;

Қырқ күнге шекем басыңа қырқ моллаға қуран шықтыраман – I will recite the Qur'an to forty mullahs at the grave for forty days;

жылыңа шекем қара кийемен, аза тутаман – I will wear black and mourn until the year of charity.

In the narratives, as in other genres, there are many artistic details that reflect the life, culture and national identity of the people. It is known that according to the tradition of our people, mourning families wear special clothes until the first anniversary of the death of the deceased or the anniversary of his death. Wearing blue is often a sign of mourning.

During the mourning period, Uzbek people mostly wear blue. However, according to some historical sources, Karakalpak people also wear blue shirts, which are not embroidered during mourning. «Mourning dress is blue shirt (*көк көйлек*) –without embroidery»[2].

In the data of ethnographer K. Nasreddinov, it is indicated that in Kashkadarya nitrogen clothes are mainly blue and white, and when interviewing informants about this, they stated that "this is due to the spirit of the deceased directed to the sky (blue), so blue is a sign of mourning." [3].

The properties of blue as the color of mourning clothes have long been known to our people. This is probably why there is a curse among the people to “wear a blue thing” which also refers to the death of the person to whom the curse is addressed. [5].

The rich man then turns to his eldest son with this question. The eldest son: – Мен пүткил адамды жыйнайман, молла бар ма, ийшан бар ма, ахун бар ма, қазы бар ма, бай бар ма, беглер беги бар ма, басқа да хәмелдарлар бар ма – бәри менен ойласаман. Солар қалай жайғастыр деп ақыл берсе, солардың айтқаны бойынша жайғастыраман (I gather the whole person, whether there is a mullah, an ishan, an akhun, a kazy, a rich man, a begler, or any other pregnant woman - I think about it. I will arrange them according to what they say). The rich man is not satisfied with this answer either. He then turns to his middle son. Middle son: – Ойда барма, қырда барма, дүньяның жүзінде ким әкесин жақсы етип деп еситсем, соның жайғастырғанын сорап алып, тап сондай етип жайғастыраман, – дейди. (Don't think about it, don't go to the steppe, if I hear in the world who has done well to his father, I will ask him to do it, and I will do it.)

The rich man turned to his little boy and was not satisfied with his answer either. He answers as follows: Аға, өзиң атам өлгенде жайғастырдың ғой, тап сондай етип жайғастыраман, – дейди. ("Well, you put it in when my grandfather died, that's how I put it in," he said). The rich man asks his daughters the same question. Interestingly, her daughters, like her mother, count the cost of the funeral:

Үлкен қызы «сен өлген соң үйде үш жылдан бери бағып қойған қошқар бар, соның менен он батпан гүрш, он батпан бийдай, он батпан гүнжи әкелемен, – дейди. (The eldest daughter said, "After you die, I have a ram that I have kept in the house for three years).

Кишкене қызы: – Бизің үйде бір өгіз бар, соны алып келемен. Соның менен бирге қолымнан келген хызметимди истеймен, – дейди (Little girl: - We have a bull in the house, I will bring it. At the same time, I want to do my best). The ungrateful rich got angry: Сизлер мени жайғастыра алмайды екенсизлер. Мен хорланып өледі екенмен, көміўсиз қалады екенмен, «Жақсы жарлыдан шығады» деген сөз бар еді. Дийқанларды, шопанларды шақырып кел, мүмкін мениң саўалыма олар жуўап берер, – дейди (You can't accommodate me. Although I was humiliated and died, I was left without a burial, but there was a saying, "A good man out of poverty." Call the farmers and shepherds, and maybe they will answer my question). The culmination of the folktale is shown in the conversation with the shepherd. The youngest son calls the farmers and shepherds who are the servants of the rich man. The rich man tells his servants about his pain.

Мен өле қойсам қалай жайғастырасызлар, – деп кемпиримнен баслап ең кишкене перзентіме шекем сорап едим, хеш биреўи дурыс жуўап бере алмады. Сизлер де онлаған жылдан бери қолымнан тамақ жеп, өзімнің балаларымның бириндей болып қалып едіңдер. Мен өле қойсам сизлер қалай жайғастырасызлар, – дейди (How do you put me when I die, - I asked my grandmother, starting with my youngest child, and no one could answer correctly. You, too, have been eating from my hands for decades and have become like one of my own children. How will you arrange me when I die?).

Дийқан, шопан, падашылыр көп ойласып, биреў-биреўіне қарайды. биреў-биреўіне сен айт, сен айт дейди. Сол ўақытта шопанлардың ишинен бир жас бала орнынан түргелип: – Баярым, сол саўалыңа маған жуўап бериўге рухсат етиңіз, – дейди. Бай рухсат береді. – Баярым, өлім деген хәммениң де басында бар, биреў ерте, биреў кеш өледі, әйтеўір өледі. Бул саўал күтә аўыр саўал. Бул саўалға жуўап бериў күтә қыйын. Солай да болса жуўап берсем, сизің өліўиңіз, бизлердің көміўиміз биледи, – дейди. Бай ашыўланып (Farmers, shepherds, and kings think a lot and look at each other. you say to someone, you say, you say. At that moment, a young boy got up from the work of the shepherds and said, "Holiday, let me answer that question." The rich man gave permission. - Holiday, death is in everyone's head, someone dies early, someone dies late, someone dies. This is a difficult question to answer. It is difficult to wait for an answer to this question. Even so, if I answer, your death and our burial will be known. The rich are furious).

– Сизлердің кәйерлерізде ақыл жүреді, ақылыңыз жоқ, сизлер қалай жуўап бере аласыз. Сизлерге саўал беріп жуўген мен. Менде сонша бақ-дәўлет, дүнья-мал, абырой бар екенін көріп отырып, сениң өліўиң, бизлердің көміўиміз биледи дейсизлер, жуўапларыңыз дурыс емес. Турың шығып жоқ болың! – дейди (Somewhere in your mind, you have no mind, how can you answer. I asked you a question. Seeing that I have so much wealth, wealth, and prestige, you say that your death, our burial, knows, and your answers are incorrect. Don't go out! He said).

Бала: – Баярым, байман деп байлығыңа исенбе! «Әміў дарья ағысыңа куўанба, күнің питсе қара жердей боласаң» деген сөз бар. Онда биз билмедік, өлеғойсаң майданда қалмайсаң, кейін көрермиз, – дейди де, бәрі шығып кетеді (The boy said: - Don't believe in

your wealth! There is a saying: "Do not rejoice in the flow of the river Amu Darya, if the sun is like a pizza." Then we didn't know, if you die, if you don't stay on the front, we'll see later, - he said, and everyone left).

In the end, the bottom line is this.

Арадан бир неше жыл өтеди. Байдың балалары, кемпири өледі, ақырында қақайып жалғыз басы қалады. Барлық дәулеттен, дүнья маллардан, хәули хәрем, бағы-бақшалардан айрылады. Күйигине шыдамай бай қаңғырып кетіп, қула майданда көміўсиз қалады. Кейинде баяғы шопанның айтқаны дурыс келеді: «Сениң өлиўиңиз, бизлердиң көмиўимиз биледи» деген нақыл соннан қалыпты, – дейди (Several years passed. The rich man's children, the old woman, die, and he is left alone. He will lose all the state, the world, the cattle, the harem, the gardens. The rich man lost his temper and was left unburied on the battlefield. Then the old shepherd was right when he said, "Your death is known to us, to our graves). The following conclusion is drawn from the folktale: «Сизың өлиўиңиз, бизлердиң көмиўимиз биледи» (Your death, our burial knows).

The plot events, the behavior of the protagonists are narrated in a consistent manner. As a result of the rich man's ungratefulness and arrogance over his wealth, he eventually falls into the predicament as said shepherd boy, i.e: «Әмиў дарья ағысыңа қуўанба, қуниң питсе қара жердей боласаң ("Don't rejoice in the river Amu, if your pizza is like black earth)». Allah says: « There are so many creatures that cannot bear their own sustenance. God provides for them and for you. He is the hearer, the knower»[7].

Let there be piety in the heart, let there be purity of heart. On the day when the deeds are counted, the face of the pure in heart will be bright [1.50]. If he gives thanks to Allah, he will increase his provision. Remember that « I swear, if you are thankful, I will surely increase you. If you disbelieve, then surely my punishment is severe » [7]. The rich are given to pride, arrogance and will eventually be punished. In this narrative, the spirit of example is paramount and contributes to the story. The idea of precepts is leading. In this parable, the main characters are rich, exemplary shepherd images that reveal themselves.

The folklore of the Turkic peoples contains the most beautiful examples of the genre of folktale. Because the historical and genetic roots, language, religion, customs and traditions, cultural values of these peoples are common. However, over time, certain peculiarities have emerged. It should be noted that the analysis and study of certain types of folktale also clarifies the genesis of the genre, its distribution area and the traditions associated with its survival.

In conclusion, the analysis of the artistic features of Karakalpak folktales allows to determine the interpretations and local features of the essence of the expression of national and universal views on environmental phenomena, human nature. In addition, the Karakalpak folktale differed from other genres in its specific plot construction and domestic significance, general and specific aspects in terms of structural construction, description of the event. Admittedly, in Karakalpak narrations, the folktale is clarified, based on evidence, and the names of the characters are clearly indicated.

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THE INTRODUCTION OF DIGITAL TECHNOLOGIES IN LIFELONG LEARNING AND DIGITAL LEARNING OF MOTHER TONGUES

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ABSTRACT

The advantages of adopting modern information technology in secondary and higher education classes are discussed in this article. This has increased the deep interest of pupils and students in the virtual world and digital tools and increased their interest in various programs and electronic applications in learning their mother tongue. It is important to provide all educational institutions with high-speed Internet access. Improved wireless connectivity (Wi-Fi) allows a large number of computer devices, storage devices (e.g. eCloud) to be connected.

KEYWORDS: Continuing Education Information Technology, Computer, Lessons.

INTRODUCTION

Everyone has the right to education. Article 41 of the Constitution of the Republic of Uzbekistan.

Scientific and technological advancements are increasingly being introduced in our country, which contribute directly to the growth of human civilization by providing all of the required circumstances for the development of natural, precise, and social sciences.

The issuing of Presidential Decree PD-4884 on November 6, 2020, "On further measures for the ongoing improvement of the education system," provided a significant boost to the system's development.

Developing a separate electronic platform to give new educational resources and remote access to educational programs, teaching materials, and other teaching aids, as well as strengthening methodological support for teachers working in vocational education.[1]

The role of education in the Republic of Uzbekistan's social, economic, and cultural growth, as well as its consolidation in the developed world, is given special consideration. It also highlighted the school system's qualitative modernisation, as well as another important reform in the school curriculum, the addition of new topics including modeling and graphics, information and communication technology, and inventive technology. [2]

It goes without saying that in order to promote digital education, instructors, specialists, and educators who work in the field of education must first be computer literate. As a result, the task at hand is to increase teacher training in the use of current technical tools and databases. It is critical that our country's educational institutions be equipped with cutting-edge innovative

technologies, and that teachers continue to improve their computer literacy. Currently, work is underway to implement the "Concept for the development of digital education in Uzbekistan." At the first stage of its introduction, digital educational portals were developed by specialists, professors and students of higher educational institutions of the country, as well as students. The Digital Education Portal includes sections such as e-mail, distance learning, research, teaching aids, competitions, Olympiads, conferences, forums, textbooks and dictionaries. [3]

For example, distance learning differs from traditional education in the following characteristics:

- Flexibility is the ability of a learner to learn at a time, place and speed that suits him or her.
- modularity - the ability to create an individual or group curriculum from an independent set of independent training courses - modules. [4]
- parallelism - the ability to carry out educational activities in parallel with work, that is, inseparably from production.
- comprehensiveness - the ability of a large number of students to access large educational resources (electronic library, database and knowledge base, etc.) at the same time. It is an opportunity for a large number of students to communicate with each other and with the teacher through the medium of communication. [5]

In addition, due to the widespread introduction of digital technology and high-speed Internet in educational institutions, distance learning between higher and secondary schools in the country, including foreign universities, research and training centres collaborating in education, classes and videoconferences are organised regularly.

This is related to the intensification of international cooperation in higher education institutions in our country, the use of digital education in education, science, sport, culture and public affairs, and the possibilities of nationwide reform and development in our country.

By introducing digital learning technologies. E-textbooks, textbooks, manuals, video-audio materials, interactive-multimedia programs, teaching aids, information books are being created in all educational institutions.

Informatization of education management systems also plays an important role in the development of digital education. In this regard, the purpose of informing the education management system is to provide e-learning services to all participants, especially students and their parents. It is planned to organize the necessary electronic services (electronic journal, electronic diary, electronic record, etc.).

The Nukus State Pedagogical Institute named after Ajiniyaz is working hard to implement this concept. The Institute's digital library collection is constantly being enlarged, and the modern e-learning packages developed in the curricula are being expanded. The original electronic database is being updated with new data. Textbooks and books prepared by the Institute's professors will be made available electronically in our Institute's digital library. [6]

The introduction of digital technologies in the education system, the development of various curricula for the study of native languages in digital form have created great benefits, very favorable conditions and opportunities for teachers and students. This has increased the deep interest of pupils and students in the virtual world and digital tools and increased their interest in

various programs and electronic applications in learning their mother tongue. A mother tongue learned through a digital system will always be remembered by the reader.

To be able to manage digital technology, every student must learn their native language.

We can now divide the features of digital tools designed for mother tongue teaching and learning into 6 categories.

1. Language teaching and learning program. This program is a digital curriculum designed to teach any language and improve language proficiency and includes a variety of self-development work programs.

2. Game programs for language teaching and learning. This program is a game tool (2D, 3D) with serious language learning features in addition to simple game elements.

3. Vocabulary teaching and learning program. The program consists only of digital tools that include word teaching, word tests and word learning techniques.

4. Skills development programs: The program includes a number of tools to help one develop reading, listening, writing and speaking skills. For example, a student learning a native language will be able to speak fluently across languages by taking full advantage of this program.

5. Virtual reality program: this program is a digital tool that uses technologies such as mixed reality in language teaching.

6. Language translation programs: This program is designed to test a native learner's ability to translate from their own language.

A reliable guide for learners to learn their mother tongue digitally, these six programmes help improve and enhance every learner's skills.

Although the traditional method of teaching the mother tongue is widely used today, some teachers and students learning and teaching languages use different tools (online courses, language learning programmes, electronic dictionaries, video lessons, etc.). That is, a production specialist or school pupil can learn his or her desired native language through the digital system without having to visit a language centre. This is because online language teachers have video lessons. It is very easy to learn a native language through video. This is because students with low memory in language learning schools ask the teacher once, twice or three times what they do not understand, and are often ashamed to ask the teacher about the same topic because this is called “nonsense”. However, it remains unexplored. As learners learn their mother tongue through video, they can look back and learn by watching and listening to what they do not understand. This method of language learning helps the student to learn a language very quickly and to learn a native language quickly. [7]

In short, the Digital Education Adaptation Programme requires a comprehensive approach that allows technology to be used everywhere and to continue learning in higher education through the implementation of an innovative digital network infrastructure. Above all, a secure information and telecommunication infrastructure must be established and managed to provide access to information and educational resources and services. It is important to provide all educational institutions with high-speed Internet access. Improved wireless connectivity (Wi-Fi) allows a large number of computer devices, storage devices (e.g. eCloud) to be connected. Thus, access to quality technology accelerates the development of innovative knowledge. [8]

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CONSENSUS ALGORITHMS IN BLOCKCHAIN: A COMPARATIVE STUDY

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ABSTRACT

Blockchain is a distributed ledger that has garnered widespread interest in a variety of fields. Many sectors have begun to use blockchain technology in their products and services. To comprehend blockchain's effect and applicability to different applications, it is necessary to grasp its main components, functional features, and architecture. Bitcoin, a cryptocurrency, is the most well-known use of blockchain. Because a blockchain network is a distributed ledger, it requires a consensus mechanism among peer nodes to guarantee that it functions properly. In the literature, a variety of consensus algorithms have been suggested, each with its unique set of performance and security features. Every application's needs cannot be met by a single consensus method. It is critical to evaluate the various consensus algorithms on a technical level in order to identify their strengths, limitations, and applications. We have discussed metrics that are relevant to blockchain consensus performance and security. In terms of these factors, the consensus methods are evaluated and contrasted. A research need is identified in terms of developing an efficient consensus method and assessing current techniques. This review paper will serve as a reference for developers and academics who are evaluating and designing a consensus method.

KEYWORDS: *Bitcoin, Block chain, Consensus, Distributed ledger, Security.*

1. INTRODUCTION

Blockchain technology was created to address the risks and inefficiencies associated with commercial transactions. It has changed the way sectors and companies are structured. A distributed ledger shared across the nodes of a business network is known as blockchain [1], [2]. Transactional data is kept in blocks that are connected together to create a chain. It allows a company's assets to be tracked more easily. Any valuable item, physical or intangible, may be considered an asset. Cars, land, houses, and cash are examples of physical assets. Intellectual property, such as copyrights, properties, patents, and trademarks, are examples of intangible assets. The block size determines how transactions are clustered together in a block. A timestamp is used by Block to validate the order of transactions. Each block keeps a hash of the preceding block, which aids in backtracking while verifying new blocks. Because no one can insert a malicious or corrupted block between legitimate blocks, the whole blockchain is more secure. Immutability refers to the fact that no existing block may be changed. When a transaction

happens, each node updates the ledger. Each complete node keeps a copy of the whole ledger (blockchain). The blockchain architecture is shown in Figure 1.

When compared to conventional distributed databases, blockchain offers major benefits such as lower costs and faster processing times, no dependence on a third party, and asset protection. Each node in a distributed database system maintains its own ledger of records and depends on an intermediate to complete transactions. This approach is wasteful due to delays in agreement implementation and extra fees imposed by middlemen. This architecture is susceptible to security threats since a central middleman might be hacked, putting the whole company at risk. Blockchain transactions are both verifiable and safe. These problems have been addressed by the blockchain design. It validates information via a consensus method among network nodes, obviating the necessity for intermediaries. The consensus mechanism is a fundamental idea in blockchain that guarantees a tamper-proof ecosystem in which all nodes agree on just one version of the truth. In a decentralized network, all nodes must agree on the current state of the blockchain. An attacker will have a hard time inserting a modified block into the blockchain as a result of this. When it comes to establishing a blockchain system, choosing the appropriate consensus algorithm is critical. Furthermore, while developing a consensus method, certain important factors must be taken into account.

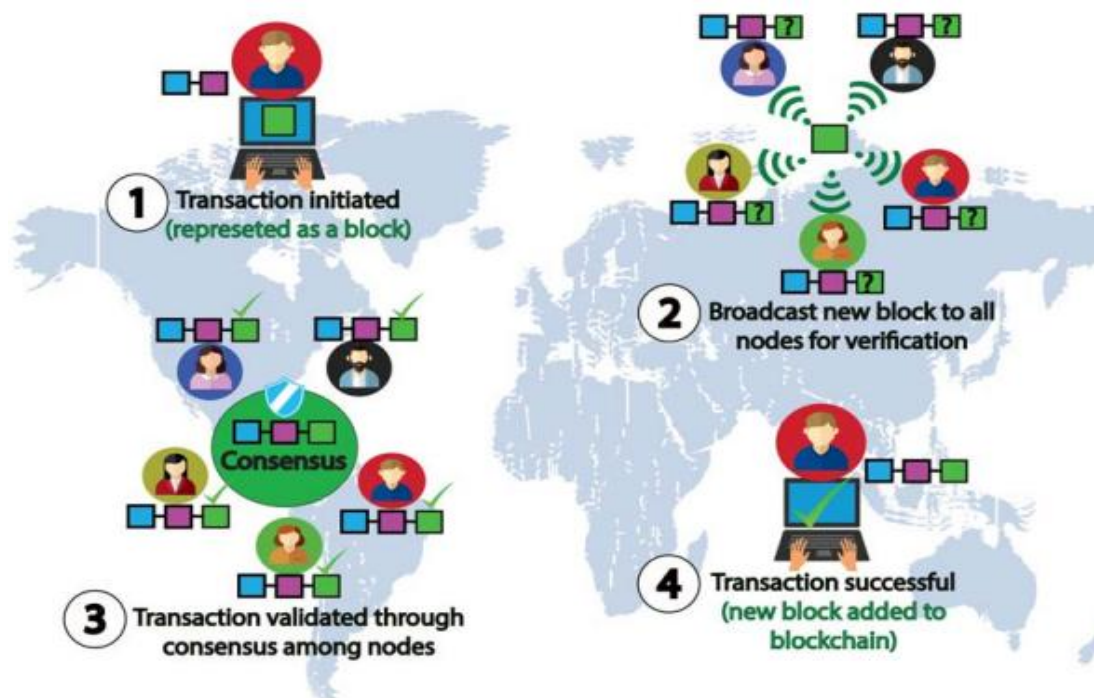


Figure 1: Blockchain architecture.

The importance of consensus methods in distributed systems is discussed in this paper. Various consensus methods for distributed environments in general and blockchain in particular are examined. The developers will be aided in assessing and developing a new consensus algorithm by identifying and discussing parameters important to consensus algorithms.

1.1. Blockchain Technology and Cryptocurrencies:

A distributed system in which a common ledger of transactions is maintained and shared among network members is known as blockchain. Transactions are stored in the form of a chain of blocks, each of which uses a hash value to refer to the preceding block. A list of transactions must be agreed upon by the parties. Divergence will occur in either scenario, resulting in forks. Each miner has a unique blockchain state that varies from miner to miner. When two or more miners mine two distinct blocks at the same time, the local states will be different. Two blocks will then point to the same preceding block. The global state of a blockchain is created by adding all local states together. The moment at which distinct blocks share the same preceding block in a global state is referred to as a fork. Various blockchain implementations, such as Bitcoin and Ethereum, utilize different methods to identify the main branch of the blockchain in order to resolve forks [3], [4]. Bitcoin resolves forks by using the deepest branch of the blockchain as the primary branch. For this, it employs Nakamoto's consensus mechanism. The branch with the greatest number of nodes is chosen as the main branch. Greedy Heaviest Observed Subtree (GHOST), on the other hand, is an Ethereum consensus method that chooses the heaviest subtree as the primary branch.

2. DISCUSSION

2.1. Various Algorithms:

This section covers the different blockchain consensus algorithms that have recently been suggested. There are also reviews of researches that compare consensus methods in blockchain.

2.1.1. Secure Sharding Algorithm for Open Blockchain:

ELASTICO is a permission-less blockchain agreement mechanism that is claimed to be scalable [5]. The transaction rate grows linearly with the amount of computing required throughout the mining process. In other words, as computing power increases, more transaction blocks are handled. This method can deal with opponents with a quarter of the overall computing capacity. The basic concept is to break down a network into tiny groups called committees. Each committee deals with a separate set of transactions, and the whole process is parallelized. The agreement requirement is implemented in a probabilistic manner, which distinguishes this method from the traditional byzantine algorithm. Each honest process uses a constraint function to match its agreed-upon value and validates it. Only if the constraint function is satisfied is the solution approved. A typical byzantine consensus is used by all committees. The outcomes (shards) of all committees are combined in the final committee. Some security characteristics are specified, and the algorithm is tested against each of them, highlighting its security strength. Experiments with up to 1600 nodes are performed on Amazon EC2. Additional code is added to the publicly accessible Bitcoin source in order to implement this algorithm.

2.1.2. SCP: A Computationally-Scalable Byzantine Consensus Algorithm for Blockchain:

SCP is a novel byzantine-based blockchain consensus method that is computationally scalable. The term "computationally scalable" refers to an algorithm's ability to modify bandwidth usage by changing computational factors such as the degree of difficulty in the proof of work (PoW) method [6]. Increased computing power is anticipated to result in increased throughput. Miners with less computing capacity are able to join the committee and participate in the voting process in SCP. Furthermore, transactions are distributed evenly across data blocks, resulting in network decentralization. There is no need for a central certificate, which eliminates the danger of a

single point of failure. The SCP algorithm has been translated to SCoin, a scalable crypto currency. Additionally, the Merkel tree is utilized to prevent the issue of duplicate spending. Locally, double spending is avoided by determining if a transaction has just one output. SCP has been shown to grow linearly with increased computing capacity rather than quadratically with increased bandwidth. To test computational scalability, experiments are performed on Amazon EC2 with 80, 40, 20, and 10 cores.

2.1.3. Leader-Free Byzantine Consensus Algorithm:

For a partly synchronous system, the Byzantine-based consensus issue is addressed by Borran et al [7]. A partly synchronous system is an asynchronous system that gradually transitions to synchronous mode. It's difficult to come up with a deterministic leader-free method for a partly synchronous system. A leader-free algorithm, on the other hand, is made up of rounds in which all nodes communicate with each other. To establish consensus in a partly synchronous system, their paper presented a leader-free method. For partly synchronous systems, the consensus leader free method for synchronous systems is extended. This 's consensus method for synchronous systems is based on the interactive consistency issue [7]. Each process generates a collection of values, each of which represents a process element. Correct procedures provide the same set of results. There are two ways in which this algorithm may be improved. One method is to use a parameterized consensus algorithm, which allows various failure models to agree. The paper also proposes making the consensus optimum with rigorous validation.

2.1.4. Proof of Work Consensus Algorithm:

With regard to different network and consensus related characteristics, a quantitative methodology is presented by Asgaonkaret al. to evaluate the security and performance of PoW consensus based blockchains [8]. The majority of current blockchains use the PoW consensus. In terms of security evaluation, the variations of PoW have received little attention in the literature. The connection between PoW blockchain performance and security has not been thoroughly investigated. This connection was investigated using a simulator that simulated a blockchain's network and consensus process. The effect of changing the block size and block interval on selfish mining and double spending is investigated. It has been discovered that a large block reward for blockchain will reduce the likelihood of a double-spending assault. The security is unaffected by the block size of 1 MB and the block interval duration of 1 minute.

2.1.5. Implicit Consensus:

A form of implicit consensus is suggested by Ren et al. in which each node has its own blockchain [9]. The main advantage is that the throughput is unlimited. BFT's termination property is replaced with a self-interest property. For every transaction, consensus is not assured. As a result, given linear message complexity, this method is scalable. Instead of transaction blocks, a specific kind of block called as check point blocks is explored. Theoretically, the performance and other factors are examined.

2.1.6. Proof-of-Stake Consensus Algorithm:

One of the most hotly debated features of Bitcoin is the Proof of Work (PoW). It's a method of choosing a block signer based on miners' computational effort in solving a difficult mathematical problem. Proof of Stake (PoS) was developed to address the problem of energy waste [10]. The fundamental concept is that nodes with a higher stake will be able to contribute blocks to the

network more often. A fresh block signer is chosen based on a random criterion depending on the amount of stake held by a miner. When compared to brute-force computing in PoW, the power required to mine a block will be considerably reduced. The two most well-known PoS-based consensus methods are Ouroboros and Casper. By using a safe coin flipping algorithm and effective time slots synchronization, Ouroboros selects the stakeholder at random. Casper offers a shakier assurance as to how much stake the attacker has in order to create disruption.

2.2. Analysis of the Comparative Study:

This section covers the factors that should be considered while assessing blockchain consensus methods. The following parameters are identified as critical parameters for comparing the various consensus algorithms for blockchain: blockchain category, transaction rate, extensibility, adversary tolerance prototype, experimental setting up, latency, bandwidth, throughput, communication model, communication complexity, threats, power usage, mining, consensus category, and consensus finality. The following algorithms are compared: ELASTICO, leader-free Byzantine consensus, implicit consensus, blockchain with unbounded throughput, Proof of trust (PoT), DBFT consensus, PoPF, and Proof of Work. The discovered parameters are listed below, along with a comparison of the consensus methods with regard to them.

2.2.1. Blockchain type:

Public, private, and consortium blockchains are the three kinds of blockchain. The membership control in the consensus algorithm is determined by the blockchain type. This must be taken into account when assessing consensus algorithms to determine the kind of membership anticipated in the design. The blockchain type should be determined by the nature of the business application.

2.2.2. Scalability:

In today's world, scalability is a must when dealing with large data. When the number of nodes is increased, more transaction blocks are handled, resulting in scalability. ELASTICO and proof of trust are both scalable. Implicit consensus and proof-of-work aren't scalable. Other methods that are used in comparisons have not yet been verified for scalability.

2.2.3. Adversary Tolerance Model:

The adversary model determines the percentage of the blockchain network that can survive failure or assault without compromising consensus. The suggested method for blockchain consensus includes a threshold value for this attacker scenario. A higher enemy threshold value is preferable. ELASTICO outperforms the other algorithms in terms of adversary control.

2.2.4. Performance Related Parameters:

Some current consensus methods have not been tested in the lab. Only theoretically, using soundness proofs, are they compared. However, a quantitative study of the performance and security of these consensus methods is also required. For each of the consensus methods, the three main performance factors that must be focused on are latency, throughput, and bandwidth. Other algorithms, with the exception of ELASTICO, are not empirically tested in terms of these performance characteristics.

2.2.5. Communication Model and Complexity:

The sender waits for the receiver to acknowledge the request in synchronous communication. Asynchronous communication eliminates the requirement for the sender to wait for a response from the receiver before continuing the conversation. PoW, PoT, Ripple, and implicit consensus may be explored for real-time applications that cannot afford delays. If an application is going to have a lot of read operations, the synchronous model should be used since it responds quickly. In the design of the ELASTICO and leader-free consensus algorithms, a synchronous communication model is assumed. In comparison to ELASTICO and PoT, the leader-free consensus method has a linear and lower communication cost. The remainder of the algorithms' communication costs are yet to be studied in the literature.

3. CONCLUSION

Many apps and companies are adopting blockchain-based solutions as a result of the current blockchain boom. As a result, a thorough examination of blockchain's performance and security features was required. Recently, considerable study has been conducted with the goal of comparing current blockchain consensus algorithms and proposing a new one. In this paper, we go through the many types of consensus mechanisms, as well as their significance in a distributed context. Consensus methods for distributed systems in general and blockchain in particular are explored. We evaluated the number of factors that have a substantial effect on the consensus algorithm of several newly suggested consensus algorithms. Both security and performance issues are covered by the criteria chosen for comparison. The methods, as well as each of the discovered parameters, are then explained. Aside from this, a number of additional factors must be taken into account. Topology of the network (e.g., fully linked graph), transaction rate, consensus solution consistency, concurrency check, transaction verification time, and round complexity (if the consensus algorithm involved multiple rounds or phases).

These characteristics may be used in future study to create a more comprehensive comparison. The comparative perspective presented in this paper has emphasized the factors that need to be evaluated and analyzed for certain current algorithms. It is possible to conduct a thorough qualitative and quantitative comparison that will fill in the gaps in the comparison provided in this paper. Experiments in a cluster setting are required to fully assess the strengths and drawbacks of consensus algorithms in relation to big data requirements.

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COSMOPOLITANISM THROUGH INTERTEXTUAL DEVICES IN THE POSTMODERN BIOGRAPHICAL NOVEL

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ABSTRACT

The article investigates the problem of cosmopolitanism in the postmodern biographical novel through the analysis of "The Moor's Account" (2015) by Layla Lalami. The theoretical framework of the essay provides a definition of the term "cosmopolitanism" touching upon Stefano Evangelista's (2021) observations on the globalization and diversity through putting into binary opposition the notions of nationalism and cosmopolitanism as well as Valentin Khalizev's (2011) views on intertextuality. The essay concludes by highlighting the fact that, in spite of cosmopolitanism and globalization in the world process, postmodern biofiction allows writers to fuse versatile cultural values into one context and through this blend create the kaleidoscope of philosophies in the biographical novel. The most common form of reminiscence is quotation, accurate or imprecise; "quoted" or remaining implicit. Reminiscences can be included in works consciously or arise independently of the will of the author ("literary reminiscences"). A skillful reader can feel that subtle cultural features interconnected into one orbit/scope/frame of the literary text. Authors try to skim the cultural-aesthetic latitudes from different texts and develop their own unique text with emerging versatility.

KEYWORDS: *Cosmopolitanism, Postmodernism, Intertextuality, Reminiscences and Quotes.*

INTRODUCTION

"Cosmopolitanism as a liberal ideology that celebrates human diversity and as a social identity linked to worldliness; it investigates its effect on gender, ethics, and the emotions. It presents the literature of the fin de siècle as a dynamic space of exchange and mediation, and argues that our own approach to literary studies should become less national in focus." [1,2,3]

Contemporary literature is characterized as a cosmopolitan, fragmentary, and eclectic, which combines diverse nations and ethnicities. The writers touch various themes and one work can include the glimpses from various cultures. A skillful reader can feel that subtle cultural features interconnected into one orbit/scope/frame of the literary text. Authors try to skim the cultural-aesthetic latitudes from different texts and develop their own unique text with emerging versatility. Technically they can be named as literary reminiscences or quotes from different literary texts hitched together to convey one central idea in the work. This process can be regarded as cosmopolitanism and contemporary reader strongly aware of globalization and multiple viewpoints and mindsets tries to integrate all his experience to catch that subtle information to understand the message. [4,5]

Analysis: Layla Lalami's novel "The Moor's Account" (2015) can be a suitable example to demonstrate that literary cosmopolitanism through which she was able to draw a truthful biographical account of the first African-American who stepped on the shores of the American continent. Estebanico/Mustafa Al-Zamori is a truthful literary personage (who has his historical prototype) with national identity and who is described through techniques of cosmopolitanism.

	<i>Fragment from or recollection of other text</i>	<i>Type</i>
1	"The elders teach us: a living dog is better than a dead lion"	Ecclesiastes Hebrew and Christian religious book (quote)
2	The elders teach us: let my friends remember me; let all others forget about me. = "If you remember me, then I don't care if everyone else forgets." - Haruki Murakami, "Kafka on the Shore"	Japanese writer Haruki Murakami (reminiscence)
3	The elders teach us: be a trickster , and you will survive.	Afro-American literature archetype (reminiscence)

This can be seen in the first quote, "**The elders teach us: a living dog is better than a dead lion**". [6,7,8] The given text has an intertextual character, as the phrase was inserted from a long known text to the verbal layer of "The Moor's Account". The quote is from the book Ecclesiastes, which is considered sacred to the Jews and authored by their fourth king, Solomon. The original source states:

"The most despicable living man's state is preferable to that of the most noble who have died impenitent. Thus, it is better to be a live coward than a dead hero." [9]

If we look at the context in which this aphorism is used by LaylaLalami, it reflects the thoughts of the slave Estebanico in the first chapter of the novel. The reason is the event described in the first episode. In the exposition of the work, the Spaniards landing on the shore captured four indigenous and tortured them in order to find gold-mines. Although the leader of the expedition, Senor Narvaez, did not understand the local language, he ordered to torture using various methods to obtain information from them. After that, the groans of the locals heard throughout the camp caused other noble members of the expedition react to the incident. While the protagonist, slave Estebanico, silently listened to a conversation between Dorantes and his brother Diego, who were discussing whether Narvaez understands the indigenous language, Estebanico thought that Narvaez was aware of the ways to torture, not the language. As even his master Dorantes, knowing the danger of the situation, did not want the leader of the expedition, Narvaez, to be doubted for his knowledge of the language, Estebanico restrained his tongue and thought that it would be better to be a living dog than a dead lion.

However, it would be natural that this interpretation of the aphorism would imply Estebanico's slavish self-preservation. After all, the silence, the inability to express own thoughts and attitudes are the signs of slavery, an eternal feature of the slave's fate. But at the same time, the meaning of this aphorism can also be interpreted from another perspective. It is understood that there is a philosophical observation that it is better to understand the truth and know the secret of longevity than to be proud in life and be deprived of the true essence and the gifts of life. It will not be

difficult to understand this once you get acquainted with the events depicted in the work. The protagonist of the work – Mustafa al-Zamori – in the most cases is characterized by composure, silence, rather than pride. He always acts with the obedience and intelligence typical to Muslims. It is not secret that the etymology of the word “Islam” means “submission (to God)”. And the philosophy of Muslim is reaching high through submission to Allah. Even though Mustafa (Estebanico) is characterized with silence, his inner reflections show that he approaches any situation consciously and sagely. He makes a voice in a conflict situation and helps to find a solution, to move events to the next stage. In particular, the eleventh chapter, entitled **“The story of the rafts”**, can be the greatest example of the Estebanico’s ingenuity. In a moment of difficulty, Estebanico puts forward the idea that “a ship must be built”, and despite of that he is only a slave, the rest members of crew approve this plan. The other episodes of the novel also eventually serve to define the character of the protagonist. For example, in the chapter entitled **“The Story of the Avavares”**, it was Mustafa who with his Arabic background gradually becomes a physician, and even the fair aristocracy follows the inferior Estebanico to avoid starvation and death. Apparently, the analyzed quote served as an important tool in revealing the protagonist’s character and human qualities as it bears deep and broad meaning.

“Reminiscence. This term denotes the “references” present in literary texts to previous works or their groups, recalling them. Reminiscences, in other words, are images of literature in literature. The most common form of reminiscence is quotation, accurate or imprecise; “quoted” or remaining implicit. Reminiscences can be included in works consciously or arise independently of the will of the author (“literary reminiscences”).” [7-16]. It is clear from the definition of reminiscence by the Russian scholar V. E. Khalizev that the literary term is broad and refers mainly to the inclusion of a phrase, subtext, explicit or abstract images reminiscent of another text in the literary work. The following phrase from Layla Lalami’s biographical novel “The Moor’s Account” is an example of reminiscence as it structurally resembles the aphorism first appeared in Haruki Murakami’s novel “Kafka on the Shore” (2002) and later on various websites.

“The elders teach us: let my friends remember me; let all others forget about me.”[6] = “If you remember me, then I don’t care if everyone else forgets”. (Haruki Murakami. “Kafka on the Shore”.)

These two quotations are similar not only in structure and meaning, but also in the presence of the antonyms “remember” and “forget”. The antonyms in the quotations indicate that the reminiscence was formed on the basis of an antithesis specific to the syntactic stylistic devices. At the core of the semantic link between the two quotations lies the meaning that “there is nothing in the world more than being in the heart of a friend, a loved one.” The first quote, found in the novel “Kafka on the Shore” by Japanese writer Haruki Murakami, is used in the context of farewell of two beloved heroes. However, Lalami linked the quotation to the work modifying it lightly. To be more precise, the words of the slave Estebanico “let my friends remember me; let all others forget about me”, which can be interpreted as “I need nothing more than to live in the hearts of people who know me as a friend”, is the generalization of the idea that “blacks need nothing more (attitude / reward / happiness) than to be in the hearts of friends who can see them as equals as all people”. It is also essential to realize that this quote bears a deep message to readers “that the slave Estebanico needs nothing but the described ideas, reality, images, characters, whether they are true or false, explicit or implicit, real or fabricated to be kindly

accepted by his friends regardless of the place where they come from and despite of their race, religion and age. Indeed, in modern American postcolonial literature, there is a clear tendency to present historical evidence in a new way, in terms of ethnic groups who have been treated as slaves for centuries, who had low social status, and were unable to express their views freely.

However, In “The Moor’s Account”, a narrower interpretation of this reminiscence can be found. The quote describes Mustafa and his white fellows, who were in a state of crisis in the fourteenth chapter, “**The Story of the Carancahuas**”, when they met a new tribe of indigenous. Mustafa and the rest whites surviving from famine made not only on the American islands, but also multiplied their enemies, as they were involved in a whirlpool of misunderstandings and contradictions in the process of studying the nature of the local population, developing the concept of the local traditions. Some tribes treated them as enemies, with the intention of killing them, while others were friendly. The following Mustafa’s inner monologue perfectly describes the his state and his friends when they encountered new tribes people, not knowing whether they were friends or foe:

“But what had he heard? Was it only the surprising news of our shipwreck on the Island of Misfortune a few months earlier? Or was it a bitter complaint that we had brought with us a disease that had killed most of the Han and the Capoques over the course of one short winter? Perhaps he had heard a tale that combined all of these details, and maybe even exaggerated them. Whatever it was, I hoped it was not an account of the cannibals among us – disease could always be excused, but eating human flesh would never be forgiven. *The elders teach us: let my friends remember me; let all others forget about me*”. [6]

In this text, question-in-the-narrative predominates as a syntactic stylistic tool, and a monologue is formed that summarizes the tragic events through the protagonist asking himself a question. The fear leads the protagonist to the thought about what the locals have heard about them. “*What had they heard? Did they hear about the shipwreck on the Island of Misfortune a few months earlier? Did they know about the illness which they brought with themselves?*”[6] All these questions dismayed newcomers. At the end of these interrogations, the only hope to survival was on the man who introduced strangers (the expedition and its members), on his attitude towards them whether it was friendly or hostile. This quote is given at the peak of gradation and serves as a summary of the episode in the work.

“**The elders teach us: be a trickster, and you will survive**” [6].This quote is used in the formation of the episodes in Chapter 24 of the work, entitled “**The Story of the Return**”, and can be identified as an aphorism created by the author. This quote has a very complex intertextual character, as the archetype of the “trickster” at the heart of the quote is a phenomenon that can be found in the literature of all nations. In literature, especially in folklore, the motive of rescuing the poor from the oppressors through deception is common. Heroes such as “Mullah Nasriddin”, “Shum bola” in Uzbek literature, “Kolobok”, “Ivanushka Durachok” in Russian literature, “Aldarkosa” in Kazakh literature and “Robin Hood” in English literature survived because of their wit and intelligence. They are the characters who saved the oppressed from tyranny. “*Modern African-American literary criticism has turned the trickster figure into an example of how it is possible to overcome a system of oppression from within*”. [8]

Apparently, the archetype of the trickster is universal and can be classified as an intertextual methodological device. In the aphorism, the motive of survival using trickery is generalized,

allowing it to be widely and effectively applied. For this reason, Layla Lalami elevated it to the level of a paremiological compound and put it into the structure “The elders teach us:...”. A contextual analysis reveals that this aphorism helped to conclude the series of events in the novel and to find a solution. For example, Mustafa is forced to use a trick to escape from his master, as Senor Dorantes despite of his words to let the Estebanico free, did not keep his word, deceiving Estebanico, as an excuse every time. Therefore, the slave joined amigos (group of Native Americans from different tribes, sold to the whites; cooks, two priests and many others) in the new land expedition of Spaniards. He worked out a very careful plan, first intimidating the priests with his taunts about “human-eating indigenous people”. Later, when Father Marco and Father Onorato’s (the priests) desire to survive overcame their goal of finding gold. Estebanico leaves them behind and continues the way himself and with his pregnant wife and a few “amigos”. However, as previously agreed, Estebanico sent a message to the priests each time when he explores a new tribe (a palm-sized cross - a city with almost no gold, hand-sized cross - a city with moderate amount of gold, and man-sized cross - a city with an abundant amount of gold). As Mustafa led the expedition inland, each time he reached a new tribe, he sent a man of the ten-member expedition to report to the priests. When he arrives in the town of Hawikuh, he sends the last member, the priest Marco (Father Marco) with a palm-sized cross, and then asks the chief of that tribe to spread the rumor of his death. The best teller from the Native Americans spreads the news of Estebanico’s death everywhere. With the help of such a trick, Mustafa frees himself from his white master, Senor Dorantes, the colonizers; and continues his life in new lands, with new family. Thus, in the pages of history, the name of Mustafa al-Zamori is sealed as the first black man to set foot on the American land. [17-20]

CONCLUSION

The analysis shows how contemporary postmodernist biographer interweaves the texts and literary reminiscences to hitch the diverse national archetypes and aesthetic views into one literary text to reflect cosmopolitanism of contemporary world. Historical facts are remolded/sculpted into present values through postmodern language and this transformation reminds molecular cohesion of identical nations into one multicultural universe.

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SPEECH DEVELOPMENT OF PRIMARY SCHOOL STUDENTS

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ABSTRACT

Pupils' speech development is also linked to other subjects. In mother tongue classes, students learn about nature and human life through language: they learn to observe, think, and describe correctly what they see, hear, and read. Mother tongue lessons help to enrich children's vocabulary and teach them to compose speech correctly. It is clear that without learning the language itself, without mastering literacy - reading and writing, a child's speech cannot fulfill the task of knowing reality in a systematic and comprehensive way. The requirements of the state educational standard are aimed at improving students' ability to fully understand the opinions of others, the content of the text, to express their opinions clearly and fluently in writing and orally, and not only in the native language.

KEYWORDS: *Student, Speech, Subjects, Pedagogy, Speech Defects.*

INTRODUCTION

Creating curricula and textbooks based on the latest technology and meeting world standards is a requirement of the times. A specific function of a person in the process of social work, which emerged as a means of communication between people. Man perceives objects and events in the external world through the senses and through speech. Word signaling, that is, speech, allows a person to perceive being in general. Speech organs are the various parts of the human body that are involved in the production of speech sounds. Active speech organs include the tongue, lips, soft palate, and passive speech organs include teeth, hard palate, and nasal cavity. Is calculated. Therefore, the main task of mother tongue lessons is to teach them to use every word, compound and sentence correctly and appropriately in all its aspects, to form a sense of caution in their speech. Speech is the act of thinking based on the type of activity, the means of the title (word, phrase, and sentence). Speech serves as a communication and message function, expressing ideas emotionally and influencing others. Well-developed speech serves as one of the important means of one's active activity in society. For the student, speech is a tool for successful learning in school. [1]

Human speech develops slowly; the process of speech development consists of several stages.

In the first year of a child's life, anatomical, physiological, and psychological conditions are created for the mastery of speech. This stage of speech development is preparation, pre-speech.

In the second year of life, the child practically masters human speech. But this speech is agrammatic in nature - although the child is already building sentences, there are no declensions, conjugations, prepositions, and connections. [2]

Grammatically correct oral speech is formed in the third year of a child's life, but at this stage the child makes many mistakes in both morphology and word formation.

Further development of speech occurs in middle and older preschoolers, and by the age of seven, when a child enters school, he or she has mastered his or her native language system sufficiently and is fluent in spoken language.

Education in school leads to major changes in a child's speech development. These shifts are related to the fact that a child's speech is subject to new demands related to the learning of many new learning subjects.

For children of school age speech is a means of practical communication with other people, in the process of its formation, and later in school-age children, as well as speech is also a means of mastering the knowledge system. It is clear that without learning the language itself, without mastering literacy - reading and writing, a child's speech cannot fulfill the task of knowing reality in a systematic and comprehensive way. Therefore, in a learning environment, the language spoken by the child becomes his or her specific learning topic. The student learns three aspects of language: phonetic, lexical, and grammatical. [3]

Speech - what is growth? Speech development refers to the active practical mastery of a language in all its aspects (pronunciation, vocabulary, syntactic structure, connected speech), if the student and his / her work on the language are considered. If the teacher is involved, speech development refers to the use of methods and techniques that help students actively master the pronunciation, vocabulary, syntactic structure, and related speech of a language. There are a number of conditions that must be met for a speech activity to develop students' speech:

1. A person must have a requirement for speech to occur. The methodological requirement for developing students' speech is to create a situation in which the student can express his or her thoughts, verbal and written expressions, and need.
2. Every speech should have content and material. The more complete, rich, and valuable this material is, the more meaningful its description will be.
3. An idea is intelligible only if it is expressed in words, phrases, sentences, speech conversations that the listener understands. Therefore, the third condition for successful speech development is to equip speech with language tools.

Pupils' speech development is also integrated with other subjects. In mother tongue classes, students learn about nature and human life through language: they learn to observe, think, and describe correctly what they see, hear, and read. Mother tongue lessons help to enrich children's vocabulary and teach them to compose speech correctly.

The requirements of the state educational standard are aimed at improving students' ability to fully understand the opinions of others, the content of the text, to express their opinions clearly and fluently in writing and orally, and not only in the native language. Education is an important process in the whole education system, and the need to pay special attention to this process is emphasized. We all know that speech is a means of expressing thoughts, through which a person expresses his thoughts and views. In addition, we evaluate a person's inner world and level of knowledge based on his speech. Therefore, special attention should be paid to the development

of speech at an early age, which is considered effective in the acquisition of knowledge, information about nature and existence. [4]

Not only do elementary school students use methods such as memorizing, explaining the meaning of words, or retelling in speech development, but they also use games that are fun activities for them, especially when the goal is to help a lot in achieving high results. Because play plays a key role in the activities of primary school students. Given the age and psychological characteristics of children, play is a key tool in understanding the world and identity, and in developing coherent speech. Here are some examples of games that students can take part in with great interest.

The idea of liberalizing our society is directly reflected in the educational process, and it is based on the reorganization and transformation of its content, further humanization, socialization and democratization.

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TEACHING AND ORGANIZING LESSON PROCESSES IN PRIMARY SCHOOLS WITH THE CURRICULUM

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ABSTRACT

The Cluster method is one of the interactive methods used to learn word groups in elementary school mother tongue classes. The word cluster means a link. Clusters can be used in the motivational, awareness, and reflection stages of a lesson. This method is a structure that allows you to think about the relationship between different ideas. This method allows students to master the topic. The cluster system unites the entities, each of which operates separately, around a common goal, and at the same time, each entity operates on the basis of a private interest based on a common goal. One of the interactive methods used to learn vocabulary in elementary school mother tongue classes is the cluster method. The word cluster means a link. Clusters can be used in the motivational, awareness, and reflection stages of a lesson.

KEYWORDS: *Primary School, Teacher, Clusters, Training.*

INTRODUCTION

In independent Uzbekistan, on the basis of the "National Training Program" and the Law "On Education" comprehensive training of primary school teachers and their continuous improvement in accordance with modern requirements is an integral part of the reform of the education system. and is a priority of the state as an integral part. Indeed, the sharp increase in the volume of information due to the rapid development of science and technology has led to a high level of pedagogical and professional skills for the primary education system, which is the main foundation of continuing education. Requires the training of creative teachers. [1]

The ongoing educational reforms in our country, in contrast to traditional forms of education, have developed effective forms and methods of organizing the educational process in the primary education system, which serves to ensure the formation and development of young people as harmoniously developed individuals. Output allows the creation of scientific views, pedagogical theories and didactic materials that lead to the optimization of the pedagogical and psychological foundations of education for children of primary school age. [2]

The Concept of Higher Education of the Republic of Uzbekistan defines the responsibilities of a specialist as follows: they must be able to clearly imagine their social and cultural aspects. ” These ideas apply to teachers as well. Because the radical changes taking place in our society, our entry into the market requires not only professional knowledge, but also economic, legal and technical knowledge of the teacher. It is also important to focus on the primary school teacher.

Textbooks, manuals, methodical recommendations, methods and mechanisms of organization of the educational process, created on the basis of the ideas recognized in the concept of primary education, the effectiveness of education in primary school, depends on innovative ideas and tools of teaching, of course. However, it should be noted that in this pedagogical process, the role of an elementary school teacher with high pedagogical skills and professional knowledge, who can create problem situations during the lesson and suggest solutions, is of particular importance. If the primary school teacher focuses more on the fundamental foundations and general laws of the natural and social sciences, their role and importance in human society, the differential aspects of education, the primary school teacher - a set of psychological knowledge, armed with methods, factors and tools to increase the effectiveness of education, with a thorough knowledge of the scientific and theoretical foundations of mathematics, mother tongue, nature, human and social education, based on the age (physiological and psychological) characteristics of the child focuses on teaching general aspects, i.e., integrative learning. In addition, the primary school teacher is able to control the child's orientation of the elements of play activities to educational activities, to feel responsible, to make the right decisions in some problematic situations, to plan time, to teach students he is also an educator responsible for the formation of the qualities of attention to the wishes, as well as the vision of a promising future, appreciating goodness. Another important quality of an elementary school teacher is that he organizes educational activities on the basis of the interdependence of primary and secondary education and the principles of interdependence of primary education. [3]

One of the interactive methods used to learn vocabulary in elementary school mother tongue classes is the cluster method. The word cluster means a link. Clusters can be used in the motivational, awareness, and reflection stages of a lesson. This method is a structure that allows you to think about the relationship between different ideas. This method allows students to master the topic. The cluster method can be used to work with students individually and in groups.

These techniques play a key role in filling the gaps in student learning. In a cluster, keywords, phrases, or sentences are written on a class board or large sheet of paper, and the keywords are linked according to the relevance of the language event. All students must be involved in creating a cluster, if it is done with the class on a board or large sheet of paper.

A cluster is a combination of homogeneous elements that can be considered as independent units with specific properties. [4]

The cluster system unites the entities, each of which operates separately, around a common goal, and at the same time, each entity operates on the basis of a private interest based on a common goal. The subjects of the cluster system support and control each other, each of which creates the spiritual and intellectual space of a separate cluster, expanding its social influence and importance.

An education cluster is a system of educational institutions aimed at improving the quality of the educational process in the interests of the development of priority socio-economic sectors of the region and municipalities, the intellectual development of the younger generation. Including the education cluster, as a rule, helps to integrate and solve problems in the field of fundamental scientific and scientific-practical developments, educational projects, new technologies and techniques, design and production of scientific products.

The innovative cluster of pedagogical education is based on the principles of relevance, membership, consistency, succession, modernity, focus, interest.

Pedagogical education is the cluster infrastructure of technological and infrastructure facilities, educational institutions and other organizations that ensure the development of the cluster and the implementation of its development program. The structure includes the regional department of public education, district and city departments of public education, as well as other institutions, enterprises and organizations. At the same time, professors and students of the institute organize training seminars and roundtables in all regions on the online platform.

Today, modern information technology is one of the most important factors influencing the development of all industries. Therefore, in order to introduce and develop an innovative cluster of pedagogical education in the region, it is necessary to effectively use modern information technologies in the process, especially the Internet.

It should be noted that the members of the cluster get acquainted with the information of other members through the exchange of data, enrichment of resources on a platform organized for the same purpose through the global network, resulting in the formation of a chain between the cluster object and subjects will come.

In Grade IV, the Zig-Zag method was also effective in the generalization review lesson on the Word Groups section. We divided the class into small groups. There were 6 students in each team, and a leader was assigned to each group. He completes and systematizes the ideas expressed by his team.

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FACTORS OF CORRECTIONAL DEVELOPMENT OF PRIMARY SCHOOL STUDENTS

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ABSTRACT

Corrective pedagogy (defectology) deals with the correctional education and upbringing of students with various developmental disabilities. Correctional (special) pedagogy (defectology - Greek defectus - defect, deficiency, logos - science, education) - the development of individuality and personality of a child with disabilities, based on special, individual methods of upbringing and education, with physical or mental disabilities The essence of process management is the study of its laws.

KEYWORDS: Pedagogy, Correction, Method, Defectology, Shortcomings.

INTRODUCTION

In today's society, culture and education, the need for teacher innovation is measured by: socio-economic modernization requires a radical renewal of the education system, methodology and technology of the educational process. In such conditions, the innovative activity of the teacher consists in the creation, mastering and use of pedagogical innovations; humanization of the content of education requires constant search for new organizational forms of teaching, modern technologies; change of the teacher's attitude, character to mastering and application of pedagogical innovation. [1]

The analysis of teacher innovation activity requires the use of certain criteria that determine the effectiveness of innovation. Such criteria include novelty, acceptability, high efficiency, and the ability to creatively apply innovation in mass experiments.

Novelty as a norm of pedagogical novelty reflects the essence of the novelty, the level of novelty, which is offered in itself. Pedagogical scholars distinguish between absolute, limited, absolute, conditional, and subjective levels of innovation, which vary according to the level and scope of popularity of the application.

The criterion of acceptance refers to the effort and means expended by the teacher and the student to achieve the result. Effectiveness refers to certain normatively significant positive outcomes in a teacher's performance. [2]

Corrective pedagogy (defectology) deals with the correctional education and upbringing of students with various developmental disabilities. Corrective pedagogy (defectology - Greek defectus - defect, deficiency, logos - science. Doctrine) - has a physical or mental defect in development. It is a science based on special methods of individual upbringing and teaching,

which studies the essence and laws of the management of the process of individuality and personal development of a child with disabilities.

The structure of correctional pedagogy (defectology) includes the following areas:

The pedagogical dictionary emphasizes that the concept of "correction" (Greek "korrektio" correction) is understood as the correction (partial or complete) of mental and physical developmental defects of abnormal children using a special system of pedagogical methods and measures. It is in this dictionary that the essence of managing the process of individual and personality development of a child with physical disabilities, who needs special, individual methods of upbringing and education, who is physically or mentally retarded, is studied. is noted to be a science. [3]

The main goal of correctional pedagogy is to eliminate or reduce the discrepancy between the established (normal) and (existing deficiency) activities.

Correctional and pedagogical activity is a pedagogical system that covers the whole educational process and provides for the implementation of complex psychophysiological and socio-pedagogical measures.

Correctional pedagogy (defectology) deals with the correctional education and upbringing of students with various developmental disabilities. Correctional (special) pedagogy (defectology - Greek defectus - defect, deficiency, logos - science, education) - the development of individuality and personality of a child with physical or mental disabilities, based on special, individual methods of education and training The essence of process management is the science that studies the laws. It has not been long since correctional pedagogy as a scientific concept was officially recognized in modern pedagogy. The concept of "defectology" has long been used in pedagogy. [4]

Corrective and educational work as a category consists of a system of measures of general pedagogical influence on the characteristics of the anomalous development of the individual. All types and forms of classroom and extracurricular activities are used in correctional and educational issues. Corrective and educational work is carried out in the process of educating abnormal children and creates great opportunities for the effective organization of labor education. In the process of on-the-job training, not only professional skills, but also the skills of planning their work, the ability to follow verbal instructions, critically evaluate the quality of work and other skills are developed. It is important to create conditions for abnormal children to interact with normally developed children in order to correct their shortcomings. In some cases, it is necessary to organize treatment and correctional measures for abnormal children (therapeutic exercise, problem, articular and respiratory gymnastics, medication, etc.).

Correctional pedagogy (defectology) includes the following areas: In the pedagogical dictionary, the concept of "correction" (Greek "correctio" - correction) as a correction (partial or complete) of mental and physical developmental defects of abnormal children using a special system of pedagogical methods and measures understanding is emphasized. It is in this dictionary that the essence of managing the process of individual and personality development of a child with physical disabilities, who needs special, individual methods of upbringing and education, who is physically or mentally retarded, is studied. is noted to be a science.

The main goal of correctional pedagogy is to eliminate or reduce the inconsistency between defined (normal) and (existing deficiency) activities. Correctional and pedagogical activity is a pedagogical system that covers the whole educational process and provides for the implementation of complex psychophysiological and socio-pedagogical measures. Diagnostics provides correctional, correctional-developmental, correctional-prophylactic activities, as well as educational and correctional-educational, psycho-correctional activities. Corrective pedagogical activity is an integrated process aimed at teaching, educating and developing anomalous students with the help of specialists in accordance with the special education program.

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COMMERCIAL DRONE USE IN THE CONTEXT OF GOVERNANCE, ETHICS, AND PRIVACY: A TECHNO ETHICAL REVIEW

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ABSTRACT

Surveillance unmanned aerial vehicles (UAVs), sometimes known as drones, have long been employed in Iraq, Pakistan, and Afghanistan by armies from the United States, the United Kingdom, and Australia. Apart from military and recreational purposes, the usage of drones in business applications has increased significantly in the previous five years. The rise in home usage has sparked public concern and controversy, primarily around questions of safety and privacy. A comprehensive analysis of commercial drone literature from 2010 to 2015 was done to analyze social, governance, privacy, and ethical elements of commercial drone usage, guided by a technoethical lens (the study of technology's influence on ethics). The study identified the following significant areas of social and ethical concern associated with commercial drones based on research, magazine, and newspaper articles: The study adds to the field of technology studies and media ethics research by revealing the current status of public understanding of commercial drones from an ethical standpoint. The findings of the techno ethical review imply that, although commercial drone usage may enhance lifestyle and efficiency, greater attention should be paid to potential negative and unknown repercussions in order to promote ethical commercial drone use.

KEYWORDS: Drone, Emerging Technologies, Ethics, Privacy, Techno Ethics.

1. INTRODUCTION

Within the commercial drone literature, this study focuses on the social and ethical dimensions of drone usage and highlights important areas of social and ethical concern associated with commercial drone use [1]. Commercial drone use has grown in popularity over the last five years, providing a new means of obtaining and sharing information, as well as delivering goods and services, as detailed in the Background, Findings, and Discussions sections. The US Federal Aviation Administration (FAA) has only given 78 certifications to domestic drones in 2010, according to the Electronic Privacy Information Center (EPIC), and there were only 273 active permits in 2010 [2]. According to a 2012 FAA study, the number of permits has risen for over 300. The popularity of domestic drones has grown as the number of domestic drone permits granted in the United States has increased, according to a study of domestic drone usage between 2010 and 2015. Ethical behavior and social responsibility are crucial components in maintaining respect and peace in today's society [3].

As part of his techno ethical approach to new media and communication, the author demonstrates that commercially deploying drones has ethical worth from the perspectives of technology studies, information sciences, and communications. Techno ethics, according, is an interdisciplinary study of technology implications on a society's morality and ethics [4]. Because of public safety and privacy concerns, when drones are utilized commercially in a society, a number of distinct ethical and technological considerations must be addressed. Explains this with the story of an Australian lady sunbathing topless in her garden, which was captured by a drone and exploited by a real estate business to advertise a property [5]. The unintentional photography of the lady raised a slew of ethical concerns regarding drone usage. The following research question prompted this study to address the present gap in research concentrating on ethical considerations related to commercial drone use: What is the current level of ethical understanding when it comes to commercial drones? When commercial drones fly in residential areas, clear negative repercussions, such as safety and privacy violation, are immediately recognized after an event [6]. The enforced intervention may not be particularly successful if control and preventative measures are implemented based on clear bad effects. Grounding all commercial drones, for example, owing to safety concerns might stymie drone development for law enforcement purposes. Communication is essential for delivering information between people, whether they're conversing face to face or across a long distance. Verbal, analogue, and digital communication mediums are all options [7].

Telegraphs, radios, telephones, and TVs are examples of analogue media, whereas computers and mobile devices are examples of digital media. Landline telephones have been supplanted by digital wireless transmission devices, or mobile devices, as a result of technological advancements. As a consequence, information, including all photos recorded by drone cameras, may be sent between persons at any time and from anywhere [8]. As a result, society is transformed into a communication system. When society is seen as a system mediated by electronic communication, it suggests that communication between society members is different than it was in previous civilizations. Domestic drones, the subject of this research, are an example of a new developing communication technology that has sparked public concern and controversy about acquired photos that are readily obtained by a person. Journalists benefit from mass media broadcasting straight from drones since it allows for real-time reporting on a scenario. Meanwhile, in the military, communication is critical for gaining and maintaining situational control.

Because there is no danger of losing human pilots, the notion of utilizing a pilotless aircraft to recover information in hostile territory is appealing. Surveillance unmanned aerial vehicles (UAVs), sometimes known as drones, are increasingly being utilized by forces in Iraq, including those of the United States, the United Kingdom, and Australia. Despite their success in combating terrorist threats, the military's use of drones has sparked public outrage and ethical debate over their unintended repercussions. The development of public concern and ethical discussion over military drone usage is reflected in non-military drone uses, as will be discussed further in this article. In current society, drones are now employed for mapmaking, advertising, distribution, law enforcement, environmental research, and agricultural. Although the military considers civilian fatalities to be collateral damage, when it comes to commercial drone usage, this approach presents serious ethical difficulties [9]. According to Berger, the sole consideration made prior to the selling of these drones throughout the world was safety. For example, more than 40 states in the United States are considering legislation that would enable commercial

drones to fly by the end of 2015. Commercial drone usage is an excellent illustration of how public discussion and ethical concerns can stymie progress. In the case of commercial drones, the Federal Aviation Administration (FAA), the United States' national aviation authority, has barred their usage until new norms and regulations are fully implemented.

On December 21, 2015, the FAA started implementing a drone registration law. The FAA claimed that approximately 300,000 unmanned aircraft owners had registered by January 22, 2016. The rapid increase in drone registrations in the United States reveals that the implications of the good and bad repercussions of operating drones go beyond registration, and this research covers the majority of the other elements. Safety and privacy are key concerns, which are also big concerns in other nations such as Canada and the European Union. It's critical to comprehend the social and ethical implications of commercial drone deployment [10]. A systematic review is used in the research to find literature on commercial drone use from a social and ethical standpoint. The research is confined to commercial drone usage in North America during the previous five years. This assessment excludes military and non-military drones used for non-commercial public and personal purposes. Because academic literature on the use of new emergent communication technologies, such as commercial drones, is still in its infancy, the systematic review scope encompasses both scholarly and non-scholarly commercial drone literature. Non-scholarly papers are included to offer a more complete picture of the present state of knowledge on commercial drones. After eliminating duplicates detected when the three database searches were combined, 36 articles were chosen for examination, and irrelevant articles were identified by perusing the abstracts and then discarded. The articles about commercial drone usage come from a variety of subjects and industries, and they come from newsletters, newspapers, and magazines. To concentrate on current innovations in commercial drone usage, the search period has been confined to the last five years. Multiple social and ethical challenges were discovered, including safety, ethics and morality, legality, privacy, air space, informational integrity, people against robots, and business considerations. From the systematic literature study, the constructions connected to the usage of commercial drones, their occurrence frequencies in numbers, and the percentages are shown below. Because the constructions are interconnected, several of them may be found in the same article.

2. DISCUSSION

The most often expressed worries about commercial drone usage. When drones provide the impression that lives are in danger when they operate inside a society, the first worry is drone safety. The majority of the literature on drone safety was found in secondary sources (professional publications, scientific reviews, and media) and academic research, demonstrating that it is a significant problem. When people's lives are on the line, authorities concentrate their efforts on solving problems and implementing stronger rules and regulations to prohibit the use of commercial drones without suitable processes and standards. "Giving authorization to commercially fly a drone to everyone who can afford to acquire one would be a license to murder," he said in a Wall Street Journal essay. Furthermore, in an article for Aviation Week & Space Technology, writes that the FAA is concerned about the same safety problem since the agency lacks a clear distinct decision on flying the same aircraft recreationally and professionally. While recreational flying is permissible, commercial flight is not. "In the meanwhile, eager users are becoming impatient, and 'illegal' flying is on the increase, taking advantage of the fact that model airplanes are unregulated."

The drone "technology is helping farmers, police enforcement, and state authorities, among others, execute their jobs more efficiently and, in some circumstances, more successfully," according to the article. Commercial drones have a number of advantages in terms of efficiency and effectiveness, as the articles below demonstrate. The authors present a framework for evaluating the effectiveness of a regulatory regime, such as air safety regulation, in the context of threats to public safety posed by "pilots, operators of facilities carried by drones, employers of pilots and facilities operators, and legal persons contracting for or otherwise encouraging the use of drone-based services". These articles, taken together, show how a concerted effort has been made in recent years to improve rules and regulations to limit the use of commercial drones without suitable processes and standards. The following structures were mentioned the most in the articles that were chosen.

They're also seen as visible negative outcomes of politicians using commercial drones for surveillance or private corporations or people using them for espionage. "But when drones come to perch in numbers over American communities, they will drive fresh debates about the boundaries of privacy," Finn of The Washington Post reported in 2011 about the use of a drone for a high-risk operation by Texas police executing a search warrant on private property: "But when drones come to perch in numbers over American communities, they will drive fresh debates about the boundaries of privacy." The significance of proactively addressing the invasion of privacy caused by drone usage as soon as feasible in the context of US law by expressing. While being proactive is crucial, it's also important to remember that anticipating every conceivable application is impossible. This concept of considering all possibilities while developing policy seems to be crucial. "There are also issues about people' privacy," writes the author, "picture a UAV floating over your area with a camera." cautioned in an interview with an insurance review magazine, understanding the dangers and responsibilities of utilizing commercial drones might put the UAV sector on the back burner. The human vs machine argument is on how drones are utilized as a deadly weapon in the military and as a business tool.

The focus of this research is on the latter. Commercial drone usage denotes an activity carried out by a UAV rather than a person. Drone pilots operate the devices and carry out duties from a safe distance. depicts the beginnings of commercial drones as they evolved from military drones. Although the author focuses on military drones rather than commercial drones, this article sparks discussion on how to accomplish the same goal (in the military and in business) of "maximizing the chance for the unit [company] to return to a higher level of performance." When a person drives a machine, such as a drone or a vehicle, there is always an incentive to get sufficient training in order to prevent risky maneuvers. The results of commercial drone operations (in respect to the constructions) are plainly seen. Secondary sources, such as reviews and newspapers, are used more often in the chosen articles than scientific research on commercial drones. Although there are numerous possible good applications of commercial drones, as the chosen articles illustrate, the most discussed subjects are the negative consequences of safety breaches and intrusions of privacy that lead to the formation of new rules and regulations.

Because they may not be simple notions that can be comprehended from observations or event results, the following constructions (ethics and morality) need a higher degree of philosophical debate. As a result, these structures are treated in a smaller number of articles. Drone shooting raises concerns about unlawful weapon discharge in residential areas, and the air space above private property becomes a contested topic. How much airspace may one claim as their own?

Another problem is how to secure one's property against intrusions into one's privacy. This has already been mentioned as a construct. Another aspect of the integrity and authenticity of data collected by drones is controversial due to the source: photos, dates, and timings may all be digitally manipulated. Margot Kaminski, executive director of the Information Society Project, research researcher, and professor in law at Yale Law School, argued that regulations limiting the use of civilian drones might limit the capacity of private persons to obtain legal information in the same setting.

The following constructs are organized into three categories for further in-depth examination based on the overall findings: Commercial drone safety, ethical considerations, and ubiquitous privacy are all factors to consider. Commercial drone usage has grown in popularity in recent years, until ethical principles began to be violated, such as by unlawful or legal (law enforcement) monitoring by drones. Drones are used in both sorts of surveillance, but the goals are distinct. The absence of ethical guidelines for commercial drone usage is one of the most notable findings highlighted by the researchers in the chosen publications. A techno ethical lens presents a synthesis of typical ethical difficulties that occur when seeking to manage ethical considerations in commercial drone usage, which helps to expand knowledge of commercial drones from an ethical viewpoint.

Because ethics is based on diverse moral principles that regulate an individual's, group's, or culture's behavior, such ethical concerns are lacking. This research employs a techno ethics approach, which is a branch of study that examines the ethical elements of technology and how technology changes society by evaluating ethical applications of technology in order to influence technological growth and enhance everyday living in a society. Commercial drone regulators might also benefit from the aforementioned comment. To put it another way, Hansson claims that new legislation will be ineffective if legislators rely just on known numerical probabilities rather than a well-designed ethical analysis to cope with probabilities. Furthermore, according to Hansson, "many varieties of uncertainty have no realistic probabilistic representation." The introduction of commercial drones, as well as innovative inspiration, are characterized as the degrees of impact of commercial drones.

Then there's research and development, license to operate in a society, achievements, and widespread acceptability on par with manned aerial vehicles. Commercial drone operations are still in their early stages. Commercial drone operation is pending in several urban regions in North America and Europe, as previously mentioned. The above-mentioned infringement of private air space must also be addressed, and an appropriate remedy must be found. Regrettably, the commercial drone sector seems to be launching the project without first seeking approval from the appropriate authorities. What are the goals of using commercial drones? Commercial drone utilization can optimize earnings with little effort and resources in the business world. Amazon, for example, may use drones to transport products in order to meet its same-day delivery contract. A real estate agent may take an aerial snapshot of a property to be sold, and farmers can spray pesticides on their crops. Many more beneficial results (planned ends) have been achieved in the past, according to this research. In terms of safety, drones may help rescuers find missing persons in hazardous settings by reducing the physical risk they face. Regrettably, the desired goals have not yet justified the methods. Constant law enforcement monitoring, for example, may reduce crime rates but at the cost of privacy. In this investigation, the comparable side effects were also seen.

3. CONCLUSION

The commercial usage of drones presents safety, privacy, and ethical problems, according to this research. Commercial drone usage is still in its early stages, and rules and regulations aren't yet in place to allay those fears. Other unfavorable repercussions are listed in the Findings section and must be addressed right once. Because transmission signals may be manipulated or blocked, editors for media sources may not be trained to control material acquired by drones in terms of the integrity and authenticity of the information supplied by them. Nonetheless, this case study may serve as a springboard for additional in-depth academic research on commercial drone usage in a variety of sectors. Drone technology is a novel tool, and further study is needed to see whether it has any beneficial societal implications in our everyday lives. Instead of limiting physical usage due to safety concerns, new regulations should embrace the social viewpoint more. There are a few research constraints to think about, the most important of which is the source selection for analysis. It should be emphasized that scientific studies on commercial drone usage were difficult to come by at this early stage since the industry is still in its infancy, and it will take time to establish a firm foundation of scholarly study on the subject. Given the growing popularity of commercial drones, additional academic work is expected to emerge in the coming years, particularly as the FAA develops new rules for drone usage. Economic optimism is one basis for optimism. In addition, the study's drone coverage is restricted, and it does not give in-depth examination of certain application areas. However, the ethical insights gained from this study should be applicable to specific drone uses in a variety of fields where drones are increasingly being used, such as mapmaking, agriculture monitoring, movie and television filming, environmental research, real estate marketing, news reporting, and hobbyist recreation.

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ARTISTIC IMAGES IN THE PROSE OF M. NIZONOV TYPOLOGY

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ABSTRACT

This article describes the representatives of Karakalpak literature of the independence period, the talented writer M. Nizonov's story "Seven days in a foreign land" and the novel "Who is not in love" in a number of works. Art in image creation. Thoughts on the plot, composition, theme and idea of the work are discussed. The issue of the author's artistic imagination and artistic image is captured. Typological relationships in the author's descriptive style are analyzed.

KEYWORDS: *Writer, Art Image, Plot, Composition, Art, Story, Narrative, Novel, Typology.*

INTRODUCTION

M.Nizonov is a master of satirical conversations in prose. The author's "It's like that", "I'm laughing", "Target", "You can't", "Seven days in a foreign land", Humorous and satirical works such as "Silem katti menin", "Irasin aytsang uradi", as well as "A qshagul", "Haya kemesindegi ekevi", "Eki qanxor", "Akiret uykisi", "Ashiq bolmagan kim bar", "Enemy", "Daughter of two mothers", "Spoon of love", "Songgi tilek", "Karakalpaks" and others a number of novels became popular. [1].

In the author's story "We elected the director" there will be a meeting to elect the director of the state farm in the village. District and state farm leaders recommend Turdiev, who is similar to Aytbay in the village, and his supporters choose Berdimuratov, a village engineer. The debate lasted for two days. The protagonist of the story, Ziyatdin, has no opinion of his own. Many will vote for the praiseworthy Turdiev even if they do not recognize him. This is the short plot of the story. The margins of this single episode reveal that the author called the practice of elections in a totalitarian society "democratic" and that there were elections with limited regulatory rights "from above" [2].

In the story "The Guardian of Time", the journalist goes to the seminar. In this seminar, professors will give a one-day lecture on the superiority of America, Italy, and Switzerland over us. The lecturer who came on the second day praised Japan and on the third day praised Germany. The protagonist returns from a 15-day seminar after a 15-day unbearable study. In this story, the author tells about the disadvantages of meaningless, useless reading, and describes them in a humorous way [3].

In the story of the Cast Iron Pipe, the city's Infectious Diseases Hospital will need an 800-meter cast iron pipe. This issue has been piled on top of each other for 5 years and has not been resolved under various pretexts. Eventually, the hospital's chief physician collects his salary, organizes a Saturday, finds a cast iron pipe, and connects it to the central sewer line. In this story, some city leaders laugh at the characteristics of the barracks [4].

The story of "Lost Seven Soums" is about a whole Jetkerbay, whose country measures seven measures, one cup, fourteen times. One day he loses seven rupees. The author created the image of a small, stingy man - a slave to money. The lost five and the two are constantly on the lookout for each other. He called the director of the bus station and tried to go to the GAI, looking for the number of the KaMAZ and the name of the driver. He calls the driver's house. His roommate, seeing that he was so hot, threw 7 rubles out of his pocket at the table. Jetkerbay will not be satisfied with this money. The driver of the car took seven rubles and left. In the end, Jetkerbay's lost money is found in his house. The satirist describes the image in two words: "he was so happy that he lost consciousness" [5]. M. Nyzanov's stories are short, based on a small episode of life. However, in the form of a small conversation, huge social issues and social types appeared.

In his short stories, M. Nizanov describes funny situations in a figurative, hidden sense, or in a non-violent way. Take, for example, the story "On the side of people close to someone," which is written in the form of a fairy tale. Participating heroes: King of Clouds Thunder, Clouds and Earthlings. The idea of the story is that people close to someone cannot be defeated, and that every structure in people close to someone is in natural living harmony. The King of the Clouds Thunder becomes a former friend of the earth. When he saw that most of the earth was covered with salt, he called out twelve of the freshest clouds. He instructs them to wash the bitter salts on the ground from now until morning. A small cloud of people planted the crop and wondered what would happen if it rained. To this Thunder, the people themselves were seriously on the ground to look good to their leaders. In its present state, nothing grows on the earth. So it is better to have a mass planting. People on earth send a tiny cloud to listen to how people close to this person have received. On the airwaves, the brave grain growers were telling the news. Then Thunder advises the clouds that the clouds must be excused. Months pass. There will come a time when the stalks will sit on the stalks. And at the same time, people are praising themselves on the radio. In the fall, Thunder wants to hear people with his own ears. The third time, and people were slandering people close to someone and talking about his evil. Now the Thunder commands the clouds to pass through without falling to the ground. "Even though we are a group of people close to someone on the radio," [6].

Although the story does not describe a society or a character, the attitude of some leaders towards people close to someone close to them, overcoming people close to someone who is ingrained in people's minds, is ridiculous.

In the works of M. Nizanov there is a translation of works of art by authors who write in the genre of comedy. There are translations from Sergey Zuev, Oziz Nimas, G. Gabibov, Nimamat Aminov, Khisrav Shakhani, Farkhad Musajanov, Said Akhmat, Nahsir Fozil.

Muratbay Nizanov's prose is divided into humor and comedy. Some of his comic works also contain elements of imaginative fantasy depiction. Such works of art as "Seven Days in a Foreign Land", "Honest Slaves", "The Edge of People Close to Someone" have such fantastic forms. His works, which are written in the form of symbolic irony, include "Seven soms", "Where can I be", "We also elected a director", "The guard of time", "Cast iron pipe" and others. b. comic stories can be cited as examples.

The difference between M. Nyzanov's comic prose is that he describes the typical conditions in the masterful use of comic techniques in an interesting way with a humorous sharp language. The types he created were alcoholics, merchants, bribe-takers, bed-eaters, and t. b.

The author has selected the funny episodes that occur in a skillful marriage. These are natural contradictions in the hardships of life. In the story "Seven Days in a Foreign Country", the author uses a fantastic description, depicting the rough situations, funny things, generalized typical situations in the life of the Karakalpak population in the twentieth century in a fantastic environment.

In the author's work, humor, irony, grotesque, hyperbole, sarcasm are skillfully used. The author's idea of peace, preservation of ecology, raising the living standards of the people economically was evident in the works of comedy and science fiction. The method of comparing the lives of the people of the earth with other planetary fantasy images reveals the main idea of satire. At the same time, in Muratbay Nizanov's comic prose, the principles of humorous typification are highlighted, and in his stories the satirist focuses on the negative moments and useless aspects of life. The biography of the characters reveals their thoughts and feelings. The images created in many of his stories are ironic, sometimes with strong sarcasm.

M. Nizanov is the author of one-line novels and short stories. The author's skill is determined by the interest of his works to readers. The composition of his novel Who Is Not Transparent begins with a prologue and ends with an epilogue.

The course of events begins with a dialogue between the visiting author and an unknown woman. The events described in the novel begin with the arrival of the protagonist Nursulu in the bride's homeland and her accidental death. The compositional composition in this work of the author attracts the reader of the book. The reader is interested in what the work ends with. Typological relations show the stages of development of the literary direction in world literature. The authors of a work of art may not be aware of each other's work, but the plot structure, the writing style, are close, similar.

The events in this novel by M. Nizatov are told on the basis of Nursulu's diary. In world literature, the disclosure of the content of a work based on the diaries of the heroes is found in the work of many authors.

The main characters of the novel, such as Nursuluv, Ismail, Qirolicha, Tilavkhan, Ifor, are generalized from the life based on the writer's artistic imagination and have their own uniqueness.

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METHODS OF FORMING READING COMPREHENSION SKILLS OF PRIMARY SCHOOL STUDENTS

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ABSTRACT

The range of works studied in the reading lessons of primary school is much wider, they include Mother Nature, seasons, folklore, love of work, major holidays, national independence and spirituality. Combined within common themes such as. Through reading, a person acquires knowledge about existence and society, and a person who does not know how to read is no different from a blind person. Elementary school activities are taught in all subject areas.

KEYWORDS: Pedagogy, Reading, Student, Psychology, Primary School, Continuing Education.

INTRODUCTION

One of the leading tasks of the National Program of Personnel Training of the Republic of Uzbekistan is to develop a new model of continuing education aimed at improving the quality of education, updating the content of education, ensuring the intellectual development of the younger generation. is constantly improving with pedagogical support.

The President of the Republic of Uzbekistan Sh.M.Mirziyoyev in his report at the meeting of the Cabinet of Ministers on the results of socio-economic development of the country in 2016 and the most important priorities of the economic program for 2017, education and science , the implementation of state youth policy, the introduction of new, modern methods of education, including the introduction of information and communication technologies, are of strategic importance for the future of our youth, society and our country. [1]

The student is confronted in the first reading lessons by reading the text correctly, quickly, comprehensibly, and mastering the content. Reading lessons allow students to acquire the learning skills and knowledge required to master the requirements of the State Education Standard (SES). It is in the teaching of reading that a person's motivation to understand himself, as well as the world, is stimulated.

To this end, the textbooks include a variety of topics such as Mother Nature, the world around us, the history and present of our country, the lives of adults and children, hard work, independence and national-spiritual values, friendship and peace. artistic, ethical-educational, scientific-popular works are intended to give a comprehensive understanding of the topics.

If reading lessons are organized in the form of introducing students to syllables, words and phrases during reading literacy and reading them, storytelling based on pictures, reading after

mastering the technique of reading is specific. on the basis of selected artistic, scientific and popular texts on the topics. [2]

Certain topics included in the Primary Textbooks are defined as the introduction of students into the magical world of fiction, the correct formation of their worldview on the basis of the ideology of national independence. Feature is aimed at educating students in the spirit of high moral values on the basis of national ideology, while ensuring the literacy of students.

The range of works studied in the primary school reading classes is much wider, they are common to all, such as Mother Nature, the seasons, folklore, love of work, major holidays, national independence and spirituality. Combined within themes.

The topics chosen for the reading lessons are intended to provide students with knowledge and education on daily life, strengthening independence, and human relationships as well. Themes of independence, homeland, spirituality and nature stand out. Their goal is to awaken feelings of identity, independence, homeland and nature.

Unlike other stages of continuing education, the formation of students' reading skills in reading lessons of primary grades, working on the text of the work is the didactic purpose of education. It is closely connected with spiritual-moral, literary-memorable education by working on texts on various topics.

Through reading, a person acquires knowledge about existence and society, and a person who does not know how to read is no different from a blind person. Elementary school activities are taught in all subject areas. But it does develop a method of reading instruction. Achievements in the field of general development of young students, psychology, special methods of teaching methods are formed on the basis of the achievements of all disciplines.

Schools are now taught in a descriptive way. We will focus on reading in the next lectures. In reading classes, students gain knowledge about nature, society, people living in it, their past, present lifestyle, celebrities, nature, climate, wealth, wildlife and more. Attitudes toward them are aroused in the process of learning. Through education, the student's personality is nurtured.

The effectiveness of reading lessons largely depends on the correct choice of teaching methods. Consequently, teaching methods, like science itself, are constantly evolving. For example, in the old schools, reading was taught on the basis of dry memorization, but now it is based on interpretive reading. The method of memorization does not pay much attention to interpreting the words in the text, explaining their meaning, retelling what has been read, and, in general, making reading conscious. They include more correct pronunciation, reading with reading, expressive reading.

Professor Askar Zunnunov thinks about the content and methods of teaching, noting that the focus on students' acquisition of knowledge, and then memorization is called explanatory reading in the educational process. [3]

So, it is said to be a commentary reading, a reading that leads to thinking, feeling, understanding the work, mastering the content of what is read. Annotated reading provides an understanding of the content of the work, the important idea in the work, the idea put forward by the writer.

It should be noted that what method to use in each lesson, what methods to use in the lesson should be determined in advance by the teacher and carefully developed.

Reading skills and ways to improve them. In order to fully meet and implement the requirements of the program, first of all, it is necessary to master and improve reading skills correctly and thoroughly. Reading skills are formed in the process of literacy teaching, improving in the later stages of teaching.

Acquisition of reading skills is an important condition for successful mastering of all subjects taught in school. Reading is the main type of activity and provides a great opportunity for students to develop ideologically, politically, mentally, aesthetically and verbally. This process requires systematic and purposeful work on the development and improvement of reading skills.

Acquiring reading skills is more complex and takes a long time to form. Psychologist TGYegorov in his work "Essays on the psychology of teaching children to read" divides the process of formation of reading skills into three stages: the analytical stage, the synthetic stage and the automated stage. The analytical stage corresponds to the period of literacy training. the teacher develops the skills of word-by-letter analysis and syllable reading. , teaching students aloud together gives good results. [4]

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ORGANIZING DIDACTIC GAMES FOR PRIMARY SCHOOL STUDENTS USING METHODS IN THE CLASSROOM

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ABSTRACT

Unlike other stages of continuing education, the formation of students' reading skills in the reading lessons of primary grades, working on the text of the work is the didactic purpose of education. It is closely connected with spiritual-moral, literary-memorable education by working on texts on various topics.

KEYWORDS: *Pedagogy, Elementary School, Methods, Didactic Games, Modern Lesson Technologies.*

INTRODUCTION

Mother tongue, mathematics, reading, etiquette, science lessons in primary school have a special place in the education system due to their nature, goals and objectives. Because they are based on literacy and moral education. Therefore, special attention should be paid to increasing the interest of students in primary education. Because children should not be tired of the sacred word "lesson" from primary school. Today, experienced teachers use a variety of didactic games to increase students' interest in the lesson. The interactive method is aimed at ensuring the development of personal qualities, ensuring the acquisition of knowledge under the influence of their interaction by increasing the activity between teachers and students in the educational process. The use of these methods increases the quality and effectiveness of lessons. helps to increase. Its main criteria are informal debates, free expression of educational material, independent reading, study, seminars, opportunities for students to take the initiative, small group, large group, assignments, assignments, written assignments, etc. to work as a class team.

Interactivity is the interaction of two people, that is, the learning process takes place in the form of dialogue (computer communication) or on the basis of interaction between the teacher and students. Interactivity - interaction, movement, sensitivity, occurs in student-teacher, student-student conversations. The main purpose of interactive methods is to create the most favorable environment and situation for the learning process, to create an environment for active, free, creative thinking of the student, to use his needs, interests, inner potential. Such lessons are held in such a way that in the process, no student is left out, and has the opportunity to openly express their views on what they have heard, read and seen. There is a process of mutual exchange of views. Children develop an interest in learning, and friendly relations are formed. [1]

Interactive learning is characterized by heuristic (thinking, searching, finding) conversations through didactic games - the creation of creative problem-solving through the design of the

lesson process and the creation of solutions to problems using information and communication technologies. includes z.

Interactive game methods are based on the activation and acceleration of student activity. They play an important role in identifying and implementing practical solutions for the realization and development of creative potential of the student.

The main types of interactive games are: intellectual (smart) and action and mixed games. They help students to develop mental, physical, moral, spiritual, educational, psychological, aesthetic, artistic, entrepreneurial, creative, labor, professional skills.

This method leads the student to use his inner potential, to think, to think freely, to communicate, to be creative. In particular, it increases the interest in learning about the environment, life, the difficulties encountered, how to overcome obstacles and develop critical thinking skills.

Unlike other stages of continuing education, the formation of students' reading skills in reading lessons of primary grades, working on the text of the work is the didactic purpose of education. It is closely connected with spiritual-moral, literary-memorable education by working on texts on various topics.

Schools are now taught in a descriptive way. We will focus on reading in the next lectures. In reading classes, students gain knowledge about nature, society, people living in it, their past, present lifestyle, celebrities, nature, climate, wealth, wildlife and more. Attitudes toward them are aroused in the process of learning. Through education, the student's personality is nurtured.

V.A.Sukhomlinsky says: "Children should become more and more aware of the world and themselves, as well as their responsibility for the material and spiritual wealth created by the older generations. ... The child should be given the opportunity to see right from wrong. Goodness creates in him joy, pleasure, excitement, a desire to pursue spiritual beauty; evil awakens anger, intolerance, and fills the spiritual power that calls for the struggle for truth and justice. (Grades 1-4 are illustrated with examples from the Reading Book.) [2]

Methods used in reading lessons. The National Program of Personnel Training emphasizes that the creation of advanced pedagogical technologies, modern teaching materials is one of the main tasks of general secondary education.

The use of advanced pedagogical technology methods clearly defines the scope of teacher and student activities.

Learning activities that are important in human life are carried out in all subject classes. But it develops a reading methodology that teaches reading instruction. Reading methods will be improved on the basis of achievements in the field of general development of young students, psychology, special methods. [3]

The use of modern pedagogical technology methods such as "Brainstorming", "Networking", "Working with groups", "Bliss technology" in primary school reading lessons also gives good results.

It should be noted that what method to use in each lesson, what methods to use in the lesson should be determined in advance by the teacher and carefully developed.

Particular attention is paid to the genre diversity, poetic perfection of the selected texts for each topic in the textbooks, the level of knowledge of students and their age characteristics.

One of the most important tasks for teachers is to help students understand that the knowledge, skills and competencies they will acquire with the help of textbooks will be needed in the future.

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DEVELOP IMITATION SKILLS FOR FUTURE ELEMENTARY SCHOOL TEACHERS

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ABSTRACT

In modern conditions, it is advisable to use innovative forms of education in order to strengthen the learning activities of students, improve the quality and effectiveness of teaching. Today, practical games, problem-based learning, interactive learning, modular credit system, distance learning, blended learning and master classes are recognized as innovative forms of education.

KEYWORDS: *Teacher, Imitation, Skill, Modern Methods.*

INTRODUCTION

During the years of independence, the country has been carrying out radical reforms in the field of education in order to bring up a well-rounded, well-rounded, well-thought-out, well-rounded generation. The development of education, the search for ways to increase its effectiveness, the introduction of new information and pedagogical technologies are at the heart of these reforms. The main goal is to teach students to think independently, to engage them in creativity. Because today, the employer is also interested in hiring an employee who is independent-minded, able to apply their knowledge in solving problems, able to think critically, rich in language resources.

The socio-political and economic changes taking place in the country are also affecting the theory and practice of education. The modern education system also has global tasks, such as the full development of human abilities, ensuring the maximum display of abilities, the formation of a creatively mature, self-expressing person. The huge changes that have taken place in the education system during the independence of our country have radically changed the attitude to gifted students. In modern conditions, it is advisable to use innovative forms of education in order to strengthen the learning activities of students, improve the quality and effectiveness of teaching. Today, practical games, problem-based learning, interactive learning, modular credit system, distance learning, blended learning and master classes are recognized as innovative forms of education. [1]

The need to eliminate the existing discrepancy between the current level of development of science, engineering and technology and the process of improving the professional training of future teachers is becoming increasingly important due to insufficient introduction of modern pedagogical and information technologies in higher education.

Existing innovations in science and technology require their rapid inclusion in the curriculum and textbooks, thereby creating the basis for the formation of modern knowledge of students. The introduction of modern teaching technologies and various methodological approaches, in

turn, create favorable conditions for students to form many fundamental grips relatively easily and firmly.

It is well known that today, with the rapid development of science and technology, the amount of scientific knowledge, understanding, imagination and information is growing rapidly. This, on the one hand, provides for the formation of new branches and fields of science and technology, and, on the other hand, requires the acceleration of the integration process, breaking the prevailing boundaries between the sciences. [2]

I. Practical games. Understand the concept of "game" first required to obtain.

Practical games are the organization of certain practical actions games that allow you to simulate maturity

Practical-innovative in educational practice in modern conditions character games are used effectively.

Simulation games are games that effectively prepare students for a particular practical or professional activity based on imitation (imitation, copying) of activities performed by employees in manufacturing enterprises, workplaces, firms, organizations. In addition to the plot, the scenario of this type of game is modeled in order to fully reveal the imitation process, the structure and significance of the objects. In the process of simulation games, students will be able to master certain operations, problem solving, a certain method. Practical games used in educational practice have a didactic nature, that is, because they are often referred to as "didactic games".

New pedagogical and information technologies cannot be separated, because the widespread introduction of new pedagogical technologies will change the educational paradigm and only modern information technologies will be able to effectively use the opportunities of new pedagogical technologies.

A comparison of key indicators of pedagogical education in the environment of traditional and modern information technologies has clearly shown the prospects of information-based pedagogical education. This can also be confirmed on the basis of the following points. Traditional didactics aims to form a teaching theory aimed at accelerating the intellectual development of the student, the creation of methodological approaches that optimize the skills and abilities of the learning process, the process of learning. [3]

In information pedagogical education, didactics and information have a pedagogical effect aimed at ensuring the achievement of educational goals that determine the need to accelerate the intellectual development of a member of society, to demonstrate and develop the intellectual potential of the individual. achieves its goal. This goal can be achieved only through the introduction of modern information technologies.

Traditional didactics offers a visual-explanatory approach, with little emphasis on student independent work. Some aspects of developing students' creative potential and activating independent activity are reflected in theories of problem-based learning, teaching algorithms.

Throughout all periods of human historical development, play has been recognized as the first and most important type of subject activity.

In the teaching of modern literary education, the younger generation is taught to master the culture that was created hundreds of years ago in the history of mankind, to prepare the child for real life, to make a conscious choice of profession, to connect students with others. demands to be taught to behave in a civilized manner. To do this, it is necessary to set the basic goals of school literary education at each stage of teaching, taking into account the capabilities and main activities of students.

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AN OVERVIEW OF ACCELERATED CARBONATION OF COAL COMBUSTION FLY ASH FOR ATMOSPHERIC CO₂ SEQUESTRATION AND SOIL AMENDMENT

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ABSTRACT

Fly ash is one of the most common solid by-products of coal combustion for electricity production. Currently, the majority of fly ash produced throughout the globe is discarded as trash with no practical use. Only a tiny percentage of overall fly ash output is utilized in cement manufacture, mineral wool manufacturing, metal recovery, road sub-base construction, mine reclamation, and agriculture. Furthermore, fly ash is a substance that may be utilized to collect and store CO₂ in the atmosphere via mineral carbonation, both in situ and ex situ of the source of CO₂. Accelerated carbonation has recently been investigated by scientists as a method of boosting the pace of mineral carbonation. In addition to attaining the advantages of carbon sequestration, rapid carbonation may render fly ash chemically stable, which can help overcome issues with hazardous element leaching when used as a soil supplement. As a result, this solid waste material may be effectively handled via rapid carbonation followed by addition to soil. The mineralization process's effectiveness is determined by the mineralogy, physical and chemical characteristics of fly ash, and reaction circumstances such as CO₂ partial pressure, temperature, relative humidity, and gas-to-material contact time. It is critical to choose material with the necessary characteristics and to provide it with the optimal reaction conditions in order to achieve greater CO₂ sequestration efficiency. The major problems surrounding the accelerated carbonation of coal combustion fly ash under various reaction circumstances and its impact on CO₂ sequestration efficiency are discussed in this article. It also highlights the possibility of using carbonated fly ash to enhance the physical and chemical characteristics of soil.

KEYWORDS: Carbonation, CO₂Sequestration, Coal Fly Ash, Metal Leachability, Soil Amendment.

4. INTRODUCTION

The other two main fossil fuel resources that are combusted for energy are oil and natural gas. Coal is one of the three primary fossil fuel resources in the world that are combusted for energy. Due to growing demand for power and the availability of coal deposits in many areas of the globe, coal combustion alone provides up to 40% of total global energy, and these numbers are steadily rising [1]. When coal is burned, two kinds of ashes are produced: fly ash and bottom ash,

which have approximate mass percentages of 90% and 10%, respectively. The electrostatic or mechanical precipitation of dust-like particles from the flue gas stream produces fly ash (FA). By the year 2000, the world's total coal FA output had reached approximately 600 million tonnes, with only 20% of it being beneficially used, mostly in the cement sector [2]. FA is a fast accumulating solid waste substance that poses significant disposal challenges until a large-scale solution can be discovered.

Simultaneously, the danger of global warming brought on by increased amounts of carbon dioxide (CO₂) in the atmosphere is prompting scientists to look at greenhouse gas mitigation methods [3]. As a result, a lot of research is being done on different methods of capturing and storing (sequestration) atmospheric CO₂. The injection of super-critical CO₂ into geological media such as deep seas, underground coal formations, salty aquifers, and depleted oil/gas reservoirs is a popular technique of CO₂ sequestration used all over the globe. Furthermore, the conversion of marginal land to forest results in the storage of atmospheric carbon in above-ground plant biomass and its contribution to the soil organic carbon pool. The use of alkaline materials for CO₂ sequestration through mineral carbonation has piqued the scientific community's attention as a novel idea. CO₂ reacts with minerals to produce solid carbonates in mineral carbonation [4]. Because the mineral carbonates are stable throughout geological time periods of millions of years, rather than the hundreds to thousands of years anticipated for other types of sequestration, this technique is really permanent. Carbonation of alkaline solid waste materials (e.g., coal fly ash/bottom ash, municipal solid waste incinerator fly ash/bottom ash, oil shale ash, steel slag, and cement kiln dust) for permanent CO₂ sequestration provides additional environmental benefits by assisting in the environmentally sound management of these solid wastes. Furthermore, if mineral carbonation is added as a last step to incinerator facilities, it opens up the potential of selling carbon credits for incineration businesses.

Apart from its uses in the cement and geopolymer sectors, coal combustion FA is gaining popularity as a material with the potential to improve soil characteristics [5]. Researchers have discovered that by using FA's self-cementing characteristics, it may be used to design soils and improve soil stability. FA has also been found to enhance agronomic characteristics of soil, including as moisture-holding capacity and hydraulic conductivity, soil structure and texture, pH buffering capacity, and macro- and micronutrient availability. FA, on the other hand, is not sold as a fertilizer or a soil ameliorant because of the risk of dangerous trace elements contaminating soil and ground water at large doses, as well as the unfavorable pH changes produced by the addition of certain FAs.

As a result, pre-treatments are often suggested before applying FA to soils in order to remove harmful materials and correct the pH. After the addition of FA to soil, weathering helps to decrease the leachability of hazardous elements, particularly boron (B), according to Pandey and Singh. Nonetheless, it has the potential to pollute groundwater at disposal sites. Because the carbonation reaction has been shown to change the chemical stability of ashes and enhance their leaching behavior, adding carbonated FA to soil may be a preferable choice. Furthermore, carbonation lowers the alkaline pH of the ashes to a level that is acceptable for use in soil. Mineral carbonation of FAs happens spontaneously in collecting ponds when they are exposed to ambient CO₂ and moisture [6]. This spontaneous carbonation process, which resembles rock weathering, does, however, require geological time to complete. As a result, achieving FA carbonation and ambient CO₂ removal rates equal to emission rates requires significantly slower

CO₂ absorption efficiency under natural carbonation. Accelerated carbonation with improved reaction conditions has the potential to cut carbonation time in half or even days. As a result, it seems to be a feasible method for capturing and storing atmospheric CO₂ in a stable state.

5. DISCUSSION

5.1. Properties of Coal Combustion FA:

FA refers to the amount of ash generated by coal combustion that is tiny enough to be transported away from the boiler in the flue gas. It's a heterogeneous material having a complicated amorphous (glassy) structure and perhaps some crystalline phases. Silica (SiO₂), alumina (Al₂O₃), and iron oxides are the main components of the FA matrix (Fe₂O₃). As significant mineral phases, it also includes minor amounts of quartz, mullite, hematite, and magnetite. FA has different mineralogical, physical, and chemical characteristics according on the kind of coal burnt, boiler type, collector set-up, and collector efficiency. As a result, the compositions of the ashes generated by the burning of bituminous, anthracite, and lignite coals vary. Depending on the quantities of calcium, silica, alumina, and iron in ash from the parental coal, two classes of FA may be identified: (a) Class F and (b) Class C. Class C FA is made from the combustion of lignite or sub-bituminous coal and often includes more than 20% lime (CaO) [7]. The pozzolonic activity of these ashes, which is mainly controlled by the CaO concentration, is a self-cementing action. When harder and older anthracite and bituminous coals are burned, Class F FA is produced, which contains less than 10% lime.

The texture of FA particles is extremely fine, with a grain size range ranging from sandy silt to silty loam. Particle diameters vary from 0.01 to 100 μ m, although the majority of particles in a sample are 2–20 μ m in diameter, which falls within the silt size range. FA is generally described as spherical non-opaque having a surface area of approximately 1 m²/g morphologically. Solid spheres, hollow spheres, irregularly shaped spheres, and spheres filled with smaller spheres are all possibilities. A scanning electron micrograph (SEM) of an FA sample, exhibiting its characteristic spherical shape and size range, is shown in Figure 1.

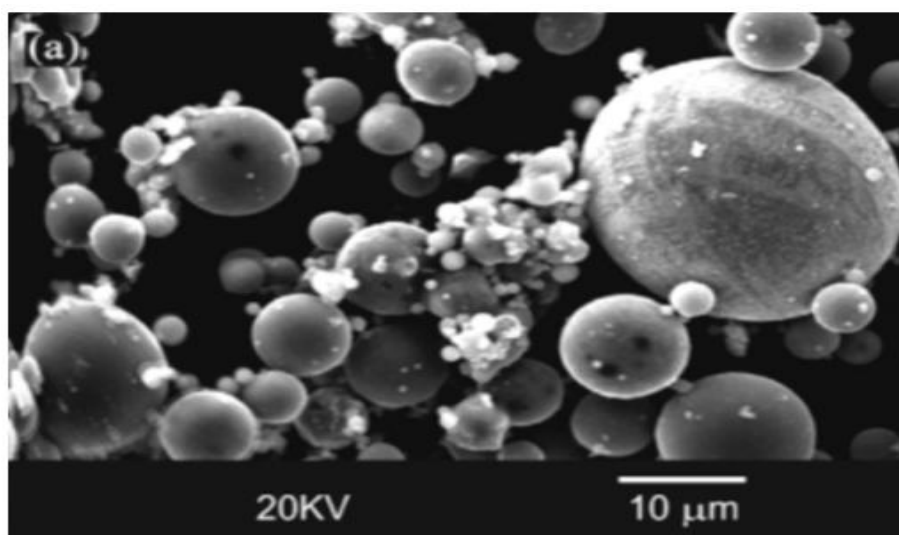
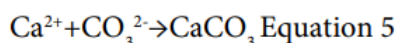
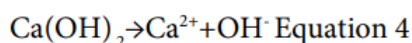
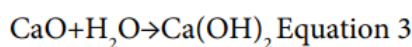
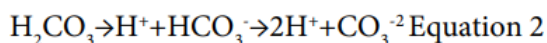
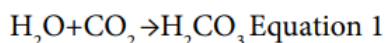


Figure 1: SEM image of FA

5.2. Mineral Carbonation of FA for Carbon Sequestration:

Mineral carbonation is the process of alkaline oxides and hydroxides in suitable materials absorbing ambient CO₂ and converting it to thermodynamically stable carbonates. It is a complicated sequence of chemical and mineralogical changes that occurs during natural rock weathering. It's essentially an acid-base process in which a solid base neutralizes an acid produced by CO₂ dissolving in water (H₂CO₃) (alkaline mineral). Ca and Mg-bearing silicate minerals are carbonated to produce Ca and Mg carbonates under natural ambient conditions. Carbonic acid (H₂CO₃) formed by the reaction of atmospheric CO₂ with rainwater transforms alkaline earth elements to carbonate minerals in this process. The following is a list of the reactions involved in the carbonation mechanism:



5.3. Reaction Temperature:

At ambient temperature, the carbonation reaction with gaseous CO₂ is sluggish, but it speeds up as the temperature rises, since the leaching of Ca from the matrix increases quicker as the temperature rises. At temperatures over 550°C, CaO, for example, has been shown to carbonate on a one-minute time scale. When the temperature is increased too high, however, the solubility of CO₂ in water is reduced because the greater kinetic energy induces more motion in molecules, which breaks the intermolecular bonds between CO₂ and water, allowing CO₂ to leave the solution. The chemical balance is altered in this manner, favoring free CO₂ over the bound version. As a result, bicarbonate activity is reduced at higher temperatures.

5.4. CO₂ partial pressure inside the reactor:

The study results on the impact of CO₂ pressure on the mineralization response seem to be inconsistent, making any trend difficult to discern. However, it is critical to recognize that mineral conversion efficiency and conversion rate are two distinct factors that have been studied. When the partial pressure of CO₂ within the reactor was raised from 2 to 17 bars, the time needed for full carbonation was reduced from nearly 2 days to 3.5 hours, according to Rendek et al [8]. Huijgen et al., on the other hand, discovered that CO₂ partial pressure within the reactor had no impact on the pace of mineralization, indicating that it is the leaching of Ca to the solution, not CO₂ mass transfer, that determines the rate of mineralization [9].

5.5. Solid to Liquid Ratio:

Water is required to enhance the carbonation process, as indicated in the equations for the mechanism (Equations 1-5). Direct gas solid carbonation may occur without water, although at a much slower pace than aqueous carbonation. The overall reaction in aqueous carbonation is a three-step process: Ca is leached from the solid matrix, CO₂ is dissolved in water to produce bicarbonates, and then carbonates are formed. The first of them is thought to be the rate-limiting phase. Moisture availability affects the availability of Ca and other alkaline cations for the reaction by allowing them to leach out of the solid matrix and form hydroxides in the solution.

However, too much water may stymie the process by obstructing CO₂ passage via the pores in the particles. As a result, there is an optimal water level that provides the best rate and efficiency of carbonation.

5.6. FA as a Soil Amendment:

FA incorporation in soil alters the physico-chemical, biological, and nutritional quality of the soil, according to the study literature. FA may change the texture of both sandy and sandy clay soils to loamy, which is better for agricultural usage, thanks to its dominating silt-sized particles. FA's low bulk density also makes it a good additive for increasing the bulk density of soils in a combination. Through cation bridging, the Ca²⁺ from FA promotes flocculation between soil particles and helps to maintain a healthy degree of soil aggregation, especially in clay soils. FA increases water retention capacity in sandy soils and hydraulic conductivity in clay soils due to structural and textural changes in the soil. FA may be used as a soil buffering agent to address excessive acidity or alkalinity in problem soils, depending on its pH. Except for N, FA includes nearly all of the necessary plant nutrients. Furthermore, bringing the pH of problematic soils towards the neutral zone aids in increasing the availability of nutrients in the soil. Researchers that applied FA to agricultural soils saw a rise in plant growth and crop output, which they attribute to improved nutrient availability in the soils and increased accessible water capacity.

5.7. Effect of Accelerated Carbonation on Metal Leach Ability Characteristics Of FA:

Carbonation has been discovered as a method of turning FA into a solid waste material that may be disposed of in landfills. In accelerated carbonation, the ash is treated with CO₂ under enhanced reaction circumstances to create new mineral phases that cause chemical and mineralogical changes that aid in improving the ash's leaching characteristics following the reaction. One of the main modifications influencing better leaching behavior is the formation of carbonate. Metal carbonates, in general, are less soluble than metal oxides and/or hydroxides. As a result, heavy metal immobilization is favored by the conversion of oxides to carbonates. During rapid carbonation, the production of insoluble oxides promotes the immobilization of some inorganic pollutants of concern, such as Pb and Zn. Furthermore, the carbonation process alters the pH of the ash, which helps to minimize the risk of heavy metal leaching. FA has a high alkalinity and metal leachability due to the presence of lime. Accelerated carbonation reduces hazardous metal levels in ash leachate by lowering the pH of alkaline ashes to values matching to the lowest solubility levels of heavy metals, which are usually believed to be pH 7-10, due to its mineralogical modifications. Another reason for metal retention in carbonated ash is metal affinity for newly produced minerals, primarily calcite (CaCO₃). Toxic metals may be absorbed and/or co-precipitated into new minerals, reducing their potential for leaching.

The impact of rapid carbonation on metal leachability of various ashes (fly ash, bottom ash, air pollution control residues) produced by municipal solid waste incineration has received a lot of attention. The impact of pH variations during carbonation on metal mobility has been found by several studies. Metal leachability is mainly determined by the pH of the solution, whether the FA is fresh or carbonated. There are specific metal release curves for several trace elements that are pH dependent. In order to produce ashes with the least metal leachability, a pH of 9-10.5 has been determined as the optimum pH for the carbonation process based on the trend. In most solution pH ranges, however, carbonated FA has a lower potential for metal leaching than fresh FA for the majority of the elements of concern.

5.8. *Effect of Accelerated Carbonation on Alteration of pH And EC of Combustion Residues:*

The addition of FA to soil results in substantial increases in pH and EC values. The dissolution of Ca, Mg, and OH ions from FA is responsible for the first rise in pH. The hydration and carbonation processes in FA convert CaO and MgO to more stable secondary mineralogical products (carbonates) over time, stabilizing pH and EC. This stabilization, however, takes many years under typical storage conditions. The fast adsorption of CO₂ into alkaline materials is facilitated by accelerated carbonation, resulting in a pH drop and calcite precipitation. Fernandez Bertos et al. found similar findings when they examined the changes in the pH of MSWI FA before and after carbonation [10]. They discovered that following carbonation reactions, the pH of ashes drops to 8 (near neutral), despite the fact that it was as high as 12 before carbonation. The production of calcites and the reduction of free oxides and hydroxides during rapid carbonation increase the ash's acid neutralization ability, making it more useful for recovering damaged soils. MSWI FA exhibited a considerable buffering capacity between neutral and alkaline values at pH about 7-8 following carbonation treatment, according to Cappai et al [11].

6. CONCLUSION

Coal FA is a hazardous waste that cannot be disposed of in regular landfills. It can be converted to a non-hazardous waste that can be utilized on agricultural land while lowering carbon dioxide levels in the atmosphere via rapid carbonation. Because natural carbonation of alkaline minerals takes geologically long periods, it is necessary to speed up this process by manipulating operating parameters to achieve a successful rate of CO₂ collection and storage. However, there are just a few study results on coal FA carbonation, which makes determining its potential application in CO₂ sequestration difficult. Based on the findings from MSWI ash, optimizing operational parameters such as providing the proper temperature and CO₂ pressure combination, mixing with the water to achieve the best water to solid ratio, and preceding the reaction for a sufficient time period will allow any type of FA to take advantage of the maximum CO₂ sequestration benefit. FA's chemical and mineralogical characteristics are altered after carbonation, making it a good option for soil application. Carbonation aids in the reduction of hazardous metals contained in FA, namely Pb and Zn, leachability. The conversion of alkaline oxides/hydroxides to carbonates lowers the pH of highly alkaline FA to a neutral-slightly alkaline range, which is suitable for soil application. As a result, rapid carbonation of FA followed by its application to agricultural land may be a good way to manage this solid waste. However, owing to a paucity of study data, exact judgments on the potential addition of coal FA to soil are difficult. This highlights the need for further coal FA study in order to determine its potential for CO₂ sequestration and soil addition.

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TYPES OF PERSON-CENTERED LEARNING TECHNOLOGIES AND INNOVATIVE FORMS, METHODS AND TOOLS

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ABSTRACT

Article written about types of person-centered learning technologies and Innovative forms of education. Also in this article mentioned about Innovative methods and Innovative tools used in the educational process. Webinar technologies and their application in the educational process and Development of training projects.

KEYWORDS: *Person, Education, Person-Centered Education And Its Types, Innovative Forms Of Education, Innovative Methods, Innovative Tools, Educational Projects, Portfolio, Student Portfolio.*

INTRODUCTION

Types of person-centered learning technologies. In the context of globalization, education plays an important role in the full development of the individual, in the formation of perfection and the qualities of a qualified specialist. Today's fast-paced period requires equipping students with both short-term and sound information, creating the necessary conditions for them to master the basics of various disciplines. In modern conditions, the educational process needs to focus on the development, socialization of the individual and the development of independent, critical and creative thinking skills. Education that is able to demonstrate these capabilities is called person-centered education. [1]

Person-centered education is education aimed at developing the student's personality, characteristics and abilities, taking into account the strategy of thinking and action.

This means that the learning environment is adapted to the student's abilities. According to him, the educational environment, pedagogical conditions, the whole process of education and upbringing means the realization of the student's personal potential, the development of abilities, ensuring personal development, enrichment of thinking and worldview.

This type of education serves to develop in students such qualities as independence, initiative, responsibility, as well as the ability to think independently, creatively and critically. In

organizing this type of education, teachers are required to treat each student as individually as possible, to respect and trust him. On the other hand, the participants of the person-centered learning process express the need to create a favorable pedagogical environment for mutual learning in the form of teacher-student or student-student, student group, student community, personal development. The educator must strictly adhere to a number of conditions when using person-centered learning in the learning process. [2] These requirements include:

- be able to see each student as an individual;
- Respect for the student;
- Accurate assessment of the student's mental state;
- take into account the wishes and interests of the student;
- be tolerant of each student;
- Confidence in the student's strengths, abilities and aspirations;
- creating a comfortable learning environment for each student;
- creating opportunities for students to work independently or in small groups;
- To teach students to independently monitor their activities, to determine the effectiveness of their activities, to analyze the factors of success and the consequences of mistakes;
- not to put pressure on any student in the educational process;
- not to highlight the shortcomings of the individual student;
- If the student is not able to acquire knowledge, if there is a case of misbehavior in the learning process, then without making a firm conclusion, to determine the reasons for this;
- Eliminate situations such as inability to assimilate knowledge of the student, without damaging the dignity and pride of the student, based on the identified reasons;
- create an "environment of success" for each student in the learning process;
- to help each student to succeed in education;
- To develop the student's abilities, to help him develop as a person.

Person-centered education does not adapt to the student's education system - the ability of each student to earn the respect and trust of a teacher, but, on the contrary, takes into account his individual characteristics and creates the necessary conditions for his full development and personal development. This type of education should create the necessary conditions for students to develop themselves, to learn independently, to fully express their inner potential and abilities, to increase their cognitive activity. Students will be able to take a creative, critical approach to the learning process in the process of person-centered learning, to promote new ideas, to justify them, to defend their ideas, to find effective solutions to problematic situations, to acquire skills. The use of various active methods by the teacher in the educational process, which have an innovative character, serves to develop students, to further develop their abilities. [3] In particular:

- Problem research;

- Carrying out small researches;
- Debate; - debate;
- Heuristic conversation;
- work in small groups, etc.

In organizing their lessons, teachers should pay special attention to ensuring that educational information is based on the knowledge, skills, abilities and experience of students, so that they have the opportunity to be interested, to think, to be creative. [4] In the educational process, teachers:

- Effective, purposeful use of various forms, methods, tools and technologies;
- giving students the opportunity to independently choose methods for completing homework;
- Ensuring that students work in pairs, small groups and in groups;
- Focusing on the design of lessons not only improves the quality of teaching, but also increases its effectiveness.

In conclusion, the most important thing is that educators should pay attention to the fact that the lessons are not only informative, but also developmental. It is also important to allow students to express themselves independently (albeit incorrectly) on a topic that is being discussed, in any case, to teach them to think.

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SOME COMMENTS ON COMPLETE GRAMMAR

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ABSTRACT

The article is devoted to identifying aspects of the grammaticalization process that arise when converting lexical units into elements of grammatical meaning. It is being studied how and at what stage this phenomenon manifests itself in the Uzbek language, which belongs to the Turkic language family. Visible differences in the description at the side stage. The last stage is the reasons for the emergence of a complete grammar, which is practically confirmed by examples. The third stage ends with the appearance of grammatical units. There are comments about which language levels are closely related to the stages of grammaticalization. It is concluded that the stages of grammaticalization will produce different levels of syntactic, phonetic, morphological and lexical-semantic layers of the language.

KEYWORDS: *Grammaticalization Process, Stages Of Grammarization, Language Level, Grammatical Level, Lexical Level, Phonetic Level, Additional Learning.*

INTRODUCTION

Issues related to the origin, gradual development and specific grammatical features of analytical and synthetic morphological elements in the Uzbek language have been in the focus of linguists for a long time. Linguistic syllables, highlighting tilinativist auxiliary elements at its phonetic, lexical-semantic and syntactic level. This process is a transition of lexemes, which is important for the frequency of the writing system, the morphological level with phonetic, semantic and grammatical changes, the grammaticalization of many lexical units associated with a new level of the grammatical level of the problem. represents the transfer of linguistic materials into speech and a special aspect of the linguistic phenomenon that arises in this process. In the middle of the 19th century, analyzing the origin of languages, J. Grimm put forward the idea that affixal morphemes and auxiliary syllables historically originated from independent words. He served as the impetus for a deeper approach to the problem in linguistics. New scientific and theoretical approaches to synthetic and analytical elements associated with the morphological level of the language, prepared for the introduction of a new term into scientific circulation in modern linguistics, are called "Grammaticalization phenomenon". In part, in 1912, the French linguist A. May was the first to introduce this end into scientific circulation, deeply analyzing the issues associated with the transition of lexemes into the grammatical process. A large-scale scientific study of the phenomenon of grammar began in the second half of the 20th century. [1]

In the Uzbek language, which belongs to the family of Turkic languages, the grammatization process takes place in three stages:

I. The process of initial grammaticalization takes place under the influence of abstract lexical units and grammatical conditions. At this stage, it takes the form of grammatical relations. There is no doubt that lexical meaning plays a decisive role in grammatical meaning and grammatical relations. In Slovak, required at the starting point of the grammaticalization process, the grammatical meaning appears only in the text. [2]

The fact that significant words perform the function of a lexical-grammatical unit, and not a lexical one, as a result of desemantization and weakening of meaning, abstraction plays a role at this stage of the preparation of grammar. For abstraction, such a figurative meaning is important. Figurative meaning, in its turn, requires any necessary communication. It is this connection that creates the blizzard between the object and the events. For example, the word "head" actually refers to a person's upper limb. As a result of the development of human thinking, this feature in it serves for the manifestation of today's, similar qualities in various other objects, for instance: the head of a man - the head of a stream - the head of a mountain. [3]

Therefore, abstraction in grammaticalization, grammatical situation also plays an important role. Grammatization always requires the coexistence of the etixdvux concept. They complement the other's drug. In general, initial grammaticalization is a weak manifestation of a complex process, such as the transformation of lexical units into grammatical elements, in which case the grammatical environment (situation of abstraction) is clear.

II. The second stage is that with incomplete grammar, grammatical meaning is active as a means of communication. Grammatical connection is the loss of lexical meaning in a word due to grammatical relation, the discovery of homonyms, a strong role of grammatical meaning in relation to the previous stage. Creates various relationships between sentences, complements ix. At this stage, the abstraction of the Vedic meanings of grammatical x lexical units becomes more intense, the grammatical (logical) meaning increases and becomes active as a grammatical connection. [4]

At this stage, the lexical meaning of grammatical units is felt very weakly: the predominance of grammatical meaning means that the lexical meaning, which is on the verge of extinction, serves as the basis of grammatical meaning. Grammatized words have features characteristic of the first and third degrees. For example, the presence of a more or less lexical meaning is the first stage, the process of converting independent lexical units into adjectives includes the characteristics of the third stage.

III. A complete grammar, which ends with the creation of pure grammatical units and appears as a continuation of the previous stages, also requires a certain set of phonetic, morphological, semantic and grammatical characteristics. Because of this diversity, this process has different methods from the previous ones.

Phonetic changes, abstracting the position of phonetic and morphological factors, also play an important role in the transformation of lexical units into grammatical ones. A well-known independent word cannot be fully grammatized without phonetic factors. In the process of complete grammatization, it is observed that the complete predominance of the grammatical meaning in the word while maintaining the lexical meaning also serves the advantage of the grammatical meaning.

With the creation of grammatical units, grammaticalization ends and gives way to other, new processes. This stage, completing the process of converting independent words into auxiliary words or suffixes, is the complete disappearance of the lexical meaning of a particular word and its grammatical semantic element. As a result, the speech phenomenon becomes a linguistic phenomenon, and grammaticalization gives way to new changes. The final stage of grammaticalization takes place in the following stages:

I. Independent word → Auxiliary word → additional

II. Independent word → auxiliary word

III. Independent word → add.

A complete grammar is a step that shows the process of translating a lexical element into a grammatical unit. In the course of this phenomenon, the word undergoes phonetic, morphological and lexico-semantic changes. For example, the verb *space + ir* is now considered a horse verb. In our opinion, grammaticalization took place here. In fact, the verb *ur*, which means "to bring the conversation to a climax," in the course of historical development has completely lost its lexical meaning and has become a grammatical unit. Independent word *-ur* for a certain period of time went to the app. As proof, we can say that the verb *ur* in the words *tup + ur*, *pat + ir* (*pat + ur*) has retained its meaning to a certain extent. They are distinguished by the fact that the verb *ur* has many meanings. This is because, unlike the verb "speak," the verb *ur*, which is added to the words *tup* and *pat*, is used in its proper sense, meaning to strike with the instrument. A similar situation is observed for the example of the complete grammar of a foreign language verb: *boriapti*, *bo-ra-yap-ti*: ... *yatipti* - *yapti* - the affix *yap* is born. One of the possibilities for enriching a language is additional mastery of a word or word-builder from other languages. This method is also one of the most productive ways in the Uzbek language. [5]

If you pay attention to the derivational affixes of the Uzbek language, then the number contained in the six affixal morphemes is mainly lexemes, and it is easy to see that the on sessions have undergone procedures.

These include morphemes that have entered the Uzbek language in the form of adjectives that form adjectives from the Tajik language, but are verbs with an independent lexical meaning from the point of view of their language. In particular, from our language *-boz* (from the Tajik *boz* - to play), *-parast* (from the Tajik *parast* - "bow down"), *-parvar* (from the Tajik *parvardon* - "take care, educate").), *-khan* (from the Tajik *khan* - Examples include reading, singing), *xo'rdan* (from the Tajik *xo'rdan* - eat, drink), *-shunos* (from the Tajik *shinoxstan* - know, understand). The peculiarity of this process is that the aforementioned affixes are grammaticalized only within the framework of the Uzbek language: they retain their independent meaning in their native language.

The process of grammar is inextricably linked with the development of the language. Although some groups of words have become completely grammatical, the predominance of grammatical meaning in an independent lexeme at the second stage or intermediate grammaticalization is obvious. In the process of initial grammaticalization, the semantic link between polysemantic words is broken, and lexical and grammatical homonyms are formed. Naturally, this paves the way for complete grammar. A certain lexeme is used in the grammatical sense not only in the syntagmatic line, but also in the paradigmatic line. As a result, the role of the grammatical

connection in the word, the role of the grammatical instrument decreases, and the grammatical connection begins to play a key role. However, the grammarization of this stage unites the following processes. With intermediate grammaticalization, along with the syntactic layer, changes occur in the phonetic, lexical-semantic morphological layers. This happens by lexical or lexical-morphological, syntactic methods. In the process of the third, full or last stage of grammaticalization, a lexeme, which is considered an independent meaning in a certain chain of the history of the language, becomes an auxiliary word or suffix. In this case, an event occurs that consists of two or three stages. If an independent word becomes a direct auxiliary word or suffix, then a two-stage process occurs, first the auxiliary, and then the suffix "ladi". In both cases, only the element of grammatical meaning is constructed at the language level. [6]

Grammarization is manifested at different levels in the syntactic, phonetic, morphological and lexical-semantic layers of language:

Phonetic grammaticalization is associated with the reduction, decrease, exchange of sounds: birlan>bilan>ila> la; yot> yap; turur>tur>ti // di.

The influence of the above phonetic changes is great in the case of the loss, weakening of an independent meaning in a lexical unit, or the occurrence of absolute breaks between it and the grammatical element.

Undoubtedly, one of the most important factors contributing to the occurrence of the phenomenon of grammarization is the morphological process. Because it is in this case that the grammatical meaning of words becomes apparent. It cannot be denied that phonetic and morphological differences in speech have a special place in the process that takes place with the strengthening of grammatical meanings in lexical units. However, this phenomenon occurs primarily in the syntactic layer. The lexical element must be transferred to the speech for grammarization. Because the first root of grammaticalization goes back to a change in the syntactic function of a word. Frequent repetition of such usage leads to changes in phonetic, morphological, and lexical-semantic layers over time. Thus, the phenomenon of grammaticalization is a complex process consisting of three stages that take place in the phonetic, morphological, syntactic, lexical-semantic layers.

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INTERACTIVE EDUCATION AND ITS DIDACTIC OPPORTUNITIES

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ABSTRACT

The article talks about the interactive learning system. However, some information on didactics is also provided. Interactive education and its didactic potential play an important role in the psychological impact of students on the proper development of education. The acquisition of knowledge promotes responsibility and curiosity. This makes it possible to introduce a learning mechanism in separate groups depending on their interests and ability to communicate freely. The teacher uses interactive learning to develop students' abilities, independence, self-control, effective communication, working with peers, listening to and understanding their opinions, independent and critical thinking. They are able to shape such qualities as thinking, putting forward their proposals, overcoming a difficult situation.

KEYWORDS: *Interact, Lexical Terms, Brainstorming, Round Table, BBB, Fish Cycle, Who Is Faster, Mysterious Bag, Boomerang, Cluster.*

INTRODUCTION

The term "interactive" is expressed in English as "interact", and in lexical terms, "mutual" is mutual, bilateral, "act" it means to act, to act. Interactive learning is the ability of participants to organize a joint movement based on the acquisition of knowledge, skills, competencies and certain moral qualities. It is logical that interactivity refers primarily to the behavior of social actors. The teacher uses interactive learning to develop students' abilities, independence, self-control, effective communication, working with peers, listening to and understanding their opinions, independent and critical thinking. They are able to shape such qualities as thinking, putting forward their proposals, overcoming a difficult situation. Through the use of interactive methods, the teacher has the opportunity to objectively evaluate students by organizing, directing, managing, monitoring and analyzing their joint efforts to achieve a specific educational goal. [1]

Interactive education and its didactic potential play an important role in the psychological impact of students on the proper development of educational education. Since the quality and content of education is one of the main factors determining the level of socio-economic development of any country, a simple way of teaching using didactic games is used in elementary school. According to Willis "Distance Education is really related by the discovery of truth for gaining antithesis sides of the thoughts to get the exact knowledge". That means online learning teaches students to be more autonomous in gaining knowledge in any sphere, being just lead by their teachers. They get needed information from computer assisted programmes, interactive multimedia, and internet

discussions rather than from lectures and classroom methods of instruction [Willis, 2002]. It opens lot of ways of making self research and develops critical thinking and analyzing skills of learners. In order to motivate students and make online learning effective the following rules of designing online courses should be followed [Moore, Kearsley, 1996]:

- 1) Course should be well organized and have a good structure;
- 2) Objectives of the course should be as clear as possible ;
- 3) Units to be discussed should contain small units (big topics should be chunked);
- 4) Participants attendance and participation should be planned beforehand;
- 5) Completeness of the course design and materials are another essential rule to consider;
- 6) Repetition is the key success! It should be a golden rule of teaching and learning;
- 7) All materials to be set on the online course should be synthesised by the teacher and reviewers;
- 8) Variety of sources and materials of education can lead to success in teaching /learning process;
- 9) Tasks and questions to be asked should be more open-ended. It makes learners to think more independently and make learning more student –centred;
- 10) Giving appropriate feedbacks on time to students can motivate them to learn their mistakes and make corrections in the future;
- 11) The last rule is setting continuous evaluation for students to check their knowledge and see the results of learning process.

Since didactic games depend on the simultaneous improvement of the three main directions of improving the quality of primary education, they represent the development of the material and technical base of secondary schools, providing it with educational and methodological references, teaching the introduction of modern pedagogical and information technologies in the process. The use of modern pedagogical and information technologies in primary education includes pedagogical teaching materials, lesson plans, etc. Currently, according to the experience of primary school teachers, “Wheel”, “Brainstorming”, “Round Table”, “BBB”, “Fish Cycle”, “Who is Faster”, “Mysterious Bag” is completely new in content and organization. “Boomerang”, “Cluster” and methods of work in small groups. [2]

The use of these methods in the classroom increases the effectiveness of training, forms the process of independent thinking of students, motivates students to study topics and increases interest, enhances the acquisition of knowledge, develops skills and competencies for using them in practice. For example: the BBB method (I know, I want to know, I learned) encourages students to think independently. The acquisition of knowledge promotes responsibility and curiosity. This makes it possible to introduce a learning mechanism in separate groups depending on their interests and ability to communicate freely. All knowledge and information provided to students must be accurate and consistent with modern science. It is believed that the best way to increase the effectiveness of training in modern conditions is to organize classes using didactic games. With the help of interactive didactic games, the introduction of private forms of secondary education in our lives creates a healthy competitive environment in education. It is

well known that today in the world of education, interactive learning is carried out in the following forms.

The structure of didactic games is based on educational issues, game actions and rules. The main goal of the rules of the game is the movement of the child's behavior. Thanks to didactic games the attention and vigilance of students increases. This affects all aspects of development. Interactive learning and its didactic potential. Changes in general secondary education are also accelerating. New programs and textbooks are introduced into the curriculum, teachers' skills are improved, and this process continues continuously. we need to consciously organize on the basis of pedagogical technologies, on the basis of didactic games.

The more we teachers pay attention to today's education, the more the new generation will reach new heights, so we all need to unite and focus all our energy and energy on education.

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HOTEL ARCHITECTURE IN HISTORICAL CITIES

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ABSTRACT

This article discusses in detail the main factors of hotel architecture improvement in historic cities, the diversity of architectural solutions of the complexes and the architectural design of the hotel. Today, some modern building systems and trends are reflected in the architecture of hotels. In addition to the traditional security and attractive features, the hotel allows all the economic considerations and memorable image of the hotel. High-rise hotels in historic cities are the availability of very high quality amenities, high level of services, improved infrastructure. Basically, these hotels have a long history, and these hotels attract people, tourists in every way.

KEYWORDS: *Architecture, Buildings, Innovative Architecture, Traditional Architecture, Advanced Infrastructure, Urban Planning, Visual Factor.*

INTRODUCTION

The building architecture of any hotel complex, whether it is a hotel or not, is a high-sided and perfect word, which means the internal appearance of these buildings, the external layout, the landscape application of the territory and the exterior and interior design of the building or complexes. [1] Includes ornaments. Architectural buildings, like other causes of historical and traditional culture, find it difficult to access the same range of different methods or processes. These are largely on the verge of being a messy mix of different artistic and innovative architectural technologies. Therefore, the different colors of hotels in historic cities are conditionally divided into different groups according to their specific location and method of construction. Each group has all the architectural features. High-rise hotels in historic cities are the availability of very high quality amenities, high level of services, improved infrastructure. Basically, these hotels have a long history, and these hotels attract people, tourists in every way. To be more precise, the hotels in these historic cities have some sort of historical and some kind

of attractiveness. The convenience of hotels is very important for tourists serving and traveling in historic cities. It is also a source of income for the budget. or the value of a hotel complex is difficult to assess at a rapid pace, and this is not just a coincidence, because our future should be a comfortable and very comfortable place for travelers who want the hotel to come back. For many researchers, which defines the important foundations of hotel architecture in the project system. [2] The organization is very important, only integrated, basically a single harmony, they have become an artistic system that fits all the ideas of the hotel. In addition, the architectural appearance gives the person a first and very strong impression. Has become a visual factor. Today, some modern building systems and trends are reflected in the architecture of hotels. In addition to the traditional security and attractive features, the hotel allows all the economic considerations and memorable image of the hotel. First of all, architects use many national planning methods and construction for this system. Combined with casual innovative ideas, the architects provide a sleek and attractive image of the hotel cabinet. visual representation of international and national architecture. Construction, that is, architecture is a highly functional and national construction equipment, historical or modern construction design. [3,4]

The construction of hotels in Europe, where many historical monuments have been preserved and historical and cultural traditions are strong, clearly shows the tendency to respect history as ancient buildings enter a new way of life. In countries with rich traditional traditions and historic cities, these hotels are usually located close to many attractions. at a high level, because in the system of renovation and reconstruction they are equipped with all national engineering equipment. In addition, the interior and exterior of the building was restored to its original appearance, the real, original atmosphere of the last century was restored. All the decorations and interiors of these hotels are designed in a certain historical complex in accordance with the style and traditions. We must not forget that the interior and exterior are always taken into account on all fronts, and always retain the system of creating a completely new interior in a normative style and a unique tradition. [5,6]

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VISUALIZING POLLUTION FREE RIVERS: A REVIEW OF ETHIOPIAN CITY

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ABSTRACT

Despite the fact that Addis Ababa, Ethiopia, is pursuing sustainable development (SD), the city's waterways are heavily polluted, resulting in severe ecological and socioeconomic consequences. The primary causes of the city's waterways pollution are industrialization, fast urbanization, population development, and informal settlements, which have led to the production of a large volume of industrial and residential effluents. Other anthropogenic activities, such as agricultural activities, unplanned and judicious disposal of municipal, hospital, and garage wastes, poor sanitation facilities, poor wastewater treatment, and environmental degradation both within the city and in the surrounding countryside, all contribute to the pollution of the rivers. All of these causes combined to create a vicious cycle of pollution, environmental deterioration, water-borne illnesses, and poverty in rivers. In summary, this article describes the primary causes, analyzes the key issues with river pollution, their consequences, and then proposes a potential method for reducing them. Furthermore, the paper argues that in order to reduce the sources of water pollution in the Addis Ababa City River, as well as address some of the impacts on the riverine ecosystem and people, multi-stakeholder efforts are critical, with the goal of increased biodiversity, restored riverine ecosystems, improved water quality in the Addis Ababa river basins, and a healthier environment for the city's residents. In order to develop long-term answers, there is also a need for additional discussion and study on the issues.

KEYWORDS: Addis Ababa, City Rivers, Groundwater, Pollution, River Pollution, Sustainable Development.

7. INTRODUCTION

Water is one of the most essential compounds that make up our biggest planet (Earth), and it is the fluid that most living creatures need to survive. It is continuously exchanged between the atmosphere and the earth's surfaces, which include the land, rivers, lakes, ponds, and seas [1]. Water covers 70.9 percent of the earth's surface, with approximately 97 percent of that found in salt water oceans, 2.4 percent in ice caps, 0.6 percent in land surface water such as rivers, lakes, and ponds, 1.6 percent in ground water, and the remaining 0.001 percent in vapor, clouds, and precipitation. Africa seems to have abundant water resources, with over 17 major rivers covering over 1,700,000 km², over 160 lakes covering catchments greater than 27 km², huge wetlands, and restricted but widespread wetlands. In comparison to Europe and North America, Africa receives a lot of rain on a yearly basis.

Water is mostly used for agricultural and household purposes in Africa. Water use for industry, on the other hand, is very low, accounting for just 3.8 percent of total annual renewable water resources[2]. Our nation, Ethiopia, has 12 river basins with a total annual runoff volume of 122 billion m³ of water, equal to 2.6-6.5 billion m³ of groundwater potential. Addis Ababa, Ethiopia's capital city, is home to many rivers that are tributaries of the big and small Akaki Rivers. The major tributaries of the Akaki Rivers are the Kebena, Banche Yeketu, Kortame, Bulbula, Lequ Soramba, and kotebe and Fincha rivers. The major streams of the Akaki river, the large and tiny Akaki rivers, run towards the southern direction of Aba-Samuel Lakes.

The Awash basin's major water resources are the Legedadi, Gefersa, Dire, and Aba Samuel lakes, which provide residential and industrial water to Addis Ababa through artificial water reservoirs[3][4]. Despite the fact that the Aba-Samuel reservoir was built for electric production in the late 1930s, it is currently contaminated by urban and industrial effluents. With a combined capacity of 77 million cubic meters (MCM) yr⁻¹ or 210,000 m³ day⁻¹, these three reservoirs provide 80% of Addis Ababa's water supply, with the remaining 20% coming from a single well system. Rivers, lakes, and ground water in and around Addis Ababa are used for irrigation, sand mining, industrial use, electric power generation, food production, leisure, habitat for birds and aquatic animals, and drinking and sanitation. Furthermore, in the southern portions of Addis Ababa city, the same rivers and streams are used for agriculture, cattle drinking water, and other household activities.

7.1. River Pollution Sources in Addis Ababa and Surrounding Areas:

Due to improper deposition of household, municipal, medical/clinical commercial, fuel stations' garbage, industrial and agricultural wastes to open spaces of the city, pollution of rivers, streams, rivers reservoirs, and shallow ground waters water quality is alarmingly increasing from time to time, causing various diseases. Despite the fact that these wastes are essentially poisoning and ruining the aforementioned water resources, people utilize the sediments downstream of the rivers to produce a variety of crops. The following are the primary causes of river pollution and contamination in and around Addis Ababa.

7.1.1. Residential:

Domestic or domestic wastes, which are produced as a result of day-to-day activities, are the most significant cause of water pollution in Addis Ababa. Because 40 to 60 percent of Ethiopia's rural population is projected to move to urban regions, the population of Addis Ababa city is steadily growing in comparison to other Ethiopian cities, resulting in a rise of residential/domestic trash. Because the city's massive quantity of solid trash (such as organic wastes, plastics, and papers) lacks well-organized management facilities, these wastes are often deposited on open grounds, stream banks, along bridges, and near residential areas, and eventually washed into rivers. Domestic liquid waste from overflowing and seeping pit latrines, septic tanks, public and communal toilets, open ground excreta defecation, and gray water from kitchens and bathrooms flow through different drainage lines and discharge into the entire Addis Ababa River system, particularly the Akaki River.

7.1.2. Treatment Plant Sites:

In industrialized nations, sewage treatment facilities and other pollution management methods decrease or eliminate most of the worst sources of infections in inland surface waterways[5]. On

the other hand, in emerging country towns like as Addis Ababa, where most of the industrial and treatment plants are built near waterways, pollution is a major issue. Rapid urbanization, poor sanitation, uncontrolled waste disposal, and unplanned sites of treatment plants for large and medium-scale industries are the main threats to the water quality of Addis Ababa's rivers. Although 40% of the city's large and medium-scale industries are located near rivers, nearly all of the city's industries do not use water treatment plants. Heavy metals and other pollution have polluted almost all of Addis Ababa's waterways [6].

7.1.3. Medical Wastes or Clinical Source:

Clinical wastes also contribute to the contamination of the waterways in and around Addis Ababa. Medical waste accounts for 10 percent to 25 percent of total trash, whereas non-clinical waste accounts for 75 percent to 90 percent of total garbage [7]. In Addis Ababa, for example, 29 separate hospitals produce 430.7 tons of infectious trash. The main wastes of these institutions include infectious wastes such as human excrement, laboratory cultures, tissues, and wound garments, as well as pathological wastes such as placenta, body parts, blood, and human fetuses. Because most hospitals lack on-site waste treatment facilities, their wastes are discharged directly or indirectly into streams that are tributaries of the Akaki Rivers, which eventually drain into Aba Samuel Lake.

8. DISCUSSION

8.1. Trends of Addis Ababa City River Pollution:

8.1.1. Big Akaki river

The Big Akaki river rises in Addis Ababa's north-eastern outskirts and feeds into the Aba Samuel dam [8]. However, it is physiologically, chemically, and physically contaminated by businesses such as Kaliti Food SC, AkremMetena Animal Feed Factory, and K.K Textile Factory. Despite the fact that this river is vital for household, industrial, commercial, and agricultural operations, the people who live downstream are in grave danger, and their livelihood is in jeopardy, due to the river's increasing water pollution. They even grow veggies in the contaminated sediments, soils, and wastewater of the large Akaki river. Furthermore, owing to water contamination in the Big Akaki river caused by harmful chemicals produced by many businesses, the river's large fishes are on the verge of extinction. As a result, several key criteria of water quality, such as heavy metals, various ions, and fecal coliform, need significant treatment techniques in order to enhance the water quality of the river and utilize it for irrigation, swimming, and aquatic ecosystems.

8.1.2. Kebena river

The Kebena River is a major tributary of the Awash River basin, and it flows through Addis Ababa's northern outskirts [9]. Despite the fact that the community's livelihood is dependent on the Kebena River as a source of water for a variety of purposes, including drinking water, bathing, washing house items, sanitation, irrigation, and livestock production, the river is constantly contaminated by solid and liquid wastes from various sources. Water quality parameters such as COD, Chlorine (Cl), Manganese (Mn), pH, Silcon Dioxide (SiO₂), Sodium (Na), potassium (K), and bicarbonate (HCO₃) were lower in the upper stream parts of the Kebena River, whereas downstream water quality parameters such as Sulphate (SO₄ -), Nitrate (NO₃), and Arsenic were higher (As). The physical and chemical values of water quality

parameters in the Kebena river are almost the smallest of all the water quality parameters in the Akaki rivers, large and small. In addition, as compared to the smaller and larger Akakai rivers, the Kebena river contains greater organic pollution from commercial, agricultural, and institutional wastes, as well as household pollutant sources.

8.1.3. KolfeKeranio river:

The KolfeKeranio river is situated in Addis Ababa's western outskirts, and it is surrounded by more than 50 businesses that discharge solid and liquid pollutants into the river [10]. Gulelle Soap Factory and Addis Ababa Tannery, for example, have been recognized as having industrial waste disposal issues, and their wastes are discharged directly or indirectly into this river. The worrisome increases in heavy metals, coliform, and pathogen concentrations in and around the KolfeKeranio river had an impact on irrigation water quality and agricultural operations both upstream and downstream.

8.2. Impacts of River Pollution:

Addis Ababa's metropolitan metropolis contains more than 65 percent of the country's industry. The bulk of Addis Ababa's industries, on the other hand, have substantial negative and positive effects on the environment, human and animal health, and economic factors. In most city roadside drains, improper dampening of residential wastes and sewage stench are frequent apparent issues. Due to these major environmental health issues, the majority of the rivers and reservoirs along the city's main industrial zones are excessively polluted, resulting in the spread of water-borne diseases, a reduction in quality of life, and an underestimation of the city's attractiveness to foreign investors and the tourism industry's competitiveness.

8.2.1. Biological Pollutants and their Effects on Human Health:

Biological pollutants such as bacteria may cause illnesses such as hepatitis A or E, dysentery, typhoid fever, cholera, and diarrhea in individuals who live near rivers. These diseases can occur when people utilize polluted river water for household purposes or other associated facilities. In Addis Ababa, for example, diarrhea and viral hepatitis, both of which are linked to fecal contamination, have been the most common infectious illnesses. It's also worth noting that diarrhea alone accounts for 212,809 outpatient cases throughout the nation, with typhoid fever accounting for 14,913 cases in Addis Ababa.

8.2.2. Heavy Metals in Vegetables:

Some crops, such as potatoes, contain hazardous metals like as zinc, nickel, mercury, copper, cadmium, and chromium, as do red beet and chromium-containing onions that were grown on 390 hectares along the Akaki River. People living along the Akaki River and in Addis Ababa consumed carrots, which are rich in arsenic and cadmium, lettuce, which is high in chromium, Swiss chard vegetables, which are high in iron, and zinc cabbage, which is high in lead. As indicated in Table 3, these veggies posed a health danger to humans. According to Mulu and Ayenew, the majority of people living near the AkakiKality industrial zone were afflicted with cough, diarrhea, typhoid, and typhus as a result of severe pollution of the adjacent Akaki River and the consumption of contaminated vegetables containing high levels of heavy metals.

8.2.3. Social Impacts:

Inadequate collection and transportation of home wastes (liquid waste, wood, scrap metals, and wasted food) and industrial wastes, as Mohammed and Elias argued, are major issues affecting society's well-being and health. People who live near rivers are impacted by a variety of health issues as a result of drinking contaminated river water. Organic, inorganic, and other heavy metals in river water collect and bio-magnify in water species such as fish, soil, sediment, and vegetables, posing serious health risks to living creatures. Furthermore, since the majority of people living near rivers rely on the rivers for their water supply, they consume vegetables produced on severely contaminated soils.

8.3. Institutional Contributions to River Pollution Mitigation:

8.3.1. Addis Ababa Environmental Protection Authority (AAEPA):

Environmental Protection Authority is a statutory regulating authority on all waste management systems in Addis Ababa municipal government, and it developed and structured a great set of policies, rules, and standards to help prevent pollution in Addis Ababa rivers and riverside areas. This organization has a research section that focuses on pollution in the environment. As a result, many researchers are working on studies that look at the pollution levels in rivers like the Akakai River, as well as the quantity of effluents that are discharged directly into the rivers. Additionally, the Addis Ababa Environmental Protection Authority (AAEPA) has a powerful division known as Environmental Pollution Inspection (old name) or Environmental Law and Monitoring (new name), which monitors and controls the pollutant status of industries and their products using a set of policies, rules, and standards.

8.3.2. Addis Ababa water and sewerage authority (AAWSA):

The Addis Ababa Water and Sewerage Authority (AAWSA) is one of the organizations in charge of controlling and managing liquid and solid waste from homes and various businesses inside Addis Ababa's municipal limits and suburbs. The primary responsibilities of this company are to offer liquid waste collection services in collaboration with private operators that provide septic tank emptying services. As a result, AAWSA is in charge of the city's liquid waste, and according to AAWSA's report, the organization processes less than 10% of the city's liquid waste, with the remaining pit latrines discharging their effluent into the city's storm water drainage system. The management of wastewater treatment residuals and other byproducts of industrial operations is handled via a centralized waste water treatment system, whereas pit latrines utilize a mix of centralized and decentralized waste treatments.

8.3.3. Institutional coordination:

Coordination is the process of coordinating connections and is essential for decreasing both point and non-point sources of pollution. The city's coordination and cooperation improves efficiency, makes it easier to share risks and rewards, and provides a favorable environment for assessing the health of city rivers. Coordination and collaboration on river pollution efforts with all relevant authorities at all levels would assist to create synergy and ensure efficient delivery. Coordination with and among stakeholders allows for the expression of national priorities, as well as the avoidance of duplication of effort and needless overburdening of operations.

9. CONCLUSION

The rivers in most parts of Ethiopia, including Addis Ababa, are now severely polluted, owing to an insufficient industrial waste management system, increases in urban human population, urbanization, and a lack of sanitary infrastructure services. The water quality of Addis Ababa city waterways has been deteriorating rapidly over time, with the major sources of pollution being trash from residents along the river and away from the river, industry, hospitals (point and nonpoint sources), and macro and micro sectors of the city. The big and little Akaki waterways, among the many municipal rivers, are heavily contaminated by heavy metal buildup from nearby businesses. Residents living upstream and downstream of these rivers, on the other hand, use the rivers for irrigating their vegetable fields, drainage, animal breeding, and other domestic uses. Despite the fact that plants have the ability to collect high levels of heavy metals, the vegetables produced by these farms have the potential to damage human and animal health via the food chain and food web. Furthermore, a large number of city inhabitants are experiencing health problems as a result of drinking and eating polluted water and vegetables, which increases medical costs.

All of the above facts indicate that the city's water quality problem is having serious consequences for the city's environmental, social, and economic aspects, and that the problem is rapidly worsening due to infrequent inspections by mandated regulatory institutions, lax enforcement of environmental policies, a lack of institutional capacity, and poor cooperation among environmental agencies. As a result, all stakeholders, including the city administration and the local community, are strongly encouraged to engage in the development of policies, standards, guidelines, and other activities that aid in the mitigation of pollution in the city rivers.

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MORPHOLOGICAL STRUCTURE OF ORNITHONYMS IN THE KARAKALPAK LANGUAGE

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ABSTRACT

The article scientifically examines the morphological structure of Karakalpak bird names. In the modern Karakalpak language, ornithonyms require extensive research, especially in which the structure, etymology, semantic and morphological structure of dorendi words require special research.

KEYWORDS: *Ortonym, Bird Names, Artificial Bird Terms, Basic Ornithonyms, Compound Ornithonyms.*

INTRODUCTION

In modern Karakalpak language, ornithonyms, ie bird names, are not studied from the point of view of Karakalpak linguistics. The names of birds found in the territory of Karakalpakstan are different, their morphological structure and etymology are very interesting. Therefore, in this study we want to focus on the etymology, semantics and morphological structure of some of the ornithonyms in the Karakalpak language.

The names of birds living in the Republic of Karakalpakstan, listed in the Red Book, including those currently living in the area, form a group of ornithonyms in the Karakalpak language. At the same time, ornithonyms are known lexically and semantically: shegejin - the name of a duck, its small species [1], tuvalak - a type of large bird [1], Singir - diving into the water. 'eating waterfowl [1] also tb

In modern Karakalpak literary language, words with new meanings are formed by four word-formation methods: affixation, word addition, lexical-semantic and lexical-morphological methods. The morphological structure of Karakalpak ornithonyms has different forms, most of them are used as base words, most of them are artificial or compound words. Depending on these properties, we can study them in the following groups:

1. Main ornithonyms: pigeon, crow, swallow, sparrow, ants, storks, eagles, hawks, owls, tuvalaks, ants, sparrows, hawks, cranes, vultures, hawks, hawks, goose, duck, hakka, quail, foul popishak, suksur, mikiy, shunkar, aksar, very short, italgı and t. b. While most of these base ornithonyms are used as a base, some have become a base or morpheme absorbed by the base by the morphemic structure. We saw it when we studied the etymology of those words.

In Karakalpak, as in other Turkic languages, some ornithonyms have a common etymological quality:

The crow is a migratory bird with black or purple feathers. In the Old Turkic language it had the same meaning. However, it is thought that the word is similar to the sound of a crow and may have the suffix -ga added to it: qar + g'a = qarrqa> crow [2]. In fact, the word may also be a word based on a word imitating karr. In the Karakalpak language, zog also means a bird of prey: zog is a bird that eats anything of any color, such as basal or purple [3]; crow - a bird whose feathers are dark, belonging to the family of crows [1]; zağ is the name of our "far away" in some Turkish languages. For example: Mullahs read what they know, sniff what they see (Karakalpak proverb). You were in the garden, the nightingale flew away (Ajiniyaz).

The word burgut is a group of words meaning "bow" and "make a burma" in Old Turkic. The word is mainly derived from the addition of the suffix -t to the -gu form, which means to hold with the verb "bur" and "changali": bur + gu + t = burgut> burkut > burkit [2]. The eagle is a large bird of prey, a large and powerful species of conscious bird [3].

Ukki is a wild night bird that belongs to the Owl family. That's what it means in Old Turkic. The horse was in the form of an arrow, an arrow. Mahmud Kashgari states that the word has two forms, ukhi and ukki, but the form ukki is correct. [2] Ukki is a beautiful bird of prey with a sloping beak that flies at night [1].

Duck is a word for horse, which in Old Turkic means "dive". The word duck means "multiple diver" [2]. The duck is a short-necked, flat-billed, waterfowl with a thin skin between its toes [1].

The squirrel is a bird of prey. The name is derived from the Old Turkic word for fish, which means "to come" - with the addition of the -shin form of the suffix -sin, followed by the -n sound: balik + shin = balikshın> balikshi [2].

Lashin is a bird of prey trained to hunt. In Old Turkic, it was first used as lachun, then lachin, lashin [2]. So the lashin is a type of bird, a wild bird that looks like a vulture [5].

The talented Karakalpak poet T. Jumamuratov's poem "Spring of Labor" states that birds are also a part of nature in order to describe the field of work in the revival of beautiful nature with the advent of spring [7]. For example:

The ducks and geese are pulling the caravan,

Lined up like blue beads.

Duck is a word for horse, which in Old Turkic means "dive". The word duck means "multiple diver" [2]. The duck is a short-necked, flat-billed, waterfowl with a thin skin between its toes [1]. Hence, the poet skillfully used the basic symbols as an eloquent word.

2. Joint ornithonyms. One of the methods of word formation in the formation of ornithonyms in the Karakalpak language is the method of word addition, which is one of the most effective methods.

1). Combined ornithonyms: jibljajibon, spoonful, mashkoz, shankot, sakokqush, kiziltamak, kaftat, toshqara, kizilishtan, tasqara, akqu, shaykus, ostrich, khojasavdagar, boltayutar, kakku and t. b.

It can be seen that some ornithonyms of the Karakalpak language were first used differently, and then they were combined and absorbed by the morpheme structure. For example, the word tik-tik imitates not only the sound of a bird's movement (tapping), but also the object itself, which is the source of that sound. When repeated imitation words lose their meaning and move to subjective, qualitative meanings, they are applied as a single word without repetition: tictik, grasshopper, if we are careful, liqliq, gumgum [6]. So, the word tiq-tik imitated the subject and made the name of the bird "tiqtik" substantivized. The bluebird is a small blue bird of prey that often walks in areas where wolves and wolves roam [1].

T. Jumamuratov's term bird, which is made up of compound words, also includes the word kollarbuga. he pointed out. For example: The drumbeat of a lake deer.

All the birds chirped.

The word "lake" in the example is made up of a combination of two horses. There it is connected with the horse in the first component of the compound word without any grammatical forms [7].

2). Composition ornithonyms: shegejin karavoy, akbas humo, yorga tuvalak, katyn akchorlak, small karavoy, tiyra pigeon, blue koton, white stork, small long-nosed, red goose, white duck, tiyra stork. While these words are made up of two components, it consists of three components: a reddish-bearded vulture, a curly-feathered vulture, a water-beaked squirrel, a small white-tailed deer, a field reed sparrow, a long-tailed eagle, and even a snout. four-component ornithonyms, such as the bird of prey, are also found. Compound ornithonyms are used separately in the Karakalpak language. In particular, in the poetry of the master of artistic words T. Jumamuratov used common ornithonyms in the form of compound words. For example:

White-tailed deer,

The wings have been shown solely to give a sense of proportion.

In this case, the word quv refers to a single species (white chiyabori, ola zog, etc.) in which the color of kuv (bird) is changed by a compound horse made up of the word adjective, which comes from the first component. This means that in the poet's songs, the term bird, which is used both as a key word type (quw) and as a compound word type (white bird), is used productively. [4]

It can be seen that some ornithonyms of the Karakalpak language were first used differently, and then they were combined and absorbed by morphemic construction. For example, the word tik-tik imitates not only the sound of a bird's movement (tapping), but also the object itself, which is the source of that sound. When repeated imitation words lose their meaning and move to the meanings of the subject, the adjective, they are applied as a single word without repetition: tiqtik, grasshopper, [6]. So, the word tiq-tik imitated the subject and made the name of the substantiated

bird "tiqtik". The squirrel is a small wild bird, resembling a blue squirrel, which often walks in places where wolves and wolves roam [1].

In short, the method of word addition is more efficient than other methods in the construction of ornithonyms in the Karakalpak language. We have tried to discuss the features of the application of these words in the language of the work of art. Ornithonyms are also widely used to form new words, so it is important to study them more broadly.

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CONCERNING PSYCHOLINGUISTIC UNITS

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ABSTRACT

Means of communication or a set of conditional signs with social meaning, but also an expression that reflects a person, his inner world, behavior, whole activity, in short, a complete human image. The structure of the psycholinguistic unit is specified. It is well known that each field of science has an object of study, and this boundary is additionally refined with the help of its units and the meanings of the same units. To comment on the question of psycholinguistic units, it is first necessary to clearly define their boundaries with linguistic units. It should be noted that linguistic units are divided into linguistic and speech.

KEYWORDS: *Social Meaning, Means Of Communication, Cognitive Linguistics, Stereotypes, Contradictions, Lifestyle, Social Perception, Social Attitudes.*

INTRODUCTION

It's known that language is not only a means of communication or a set of conditional signs with social meaning, but also an expression that reflects a person, his inner world, behavior, whole activity, in short, a complete human image.

The results of a number of researches in the field of linguistics prove that language and its development is closely connected with the person who is its user and creator and his mind, with the thoughts going on in his consciousness.

Therefore, today, along with the fields of pure linguistics, there is a great need to study its aspects that are inextricably linked with other disciplines. Examples of such fields are psycholinguistics, sociolinguistics, pragmalinguistics, ethnolinguistics, discourse analysis theory, and cognitive linguistics. In particular, psycholinguistics is a field aimed at the harmonious study of phenomena related to the sciences of linguistics and psychology, and is one of the new directions in linguistics.

The existing literature in the field shows that the introduction of the term psycholinguistics to the world of science began in the middle of the twentieth century with the research of the American psychologist N. Pronko, and his work as a truly scientific field began with a seminar in Blumintong with a group of psychologists and linguists.

But in fact, the question of the relation of language to the person and his characteristics has been studied in linguistics since time immemorial. In this case, the German linguists V. von Humboldt and his student G.Steintal have a significant place in their scientific activity. [1]

Both of them in their works try to explain the development of language, the reason for human speech activity and its features, and ultimately express their views on psycholinguistics. [2]

While Humboldt's views on the philosophy of language supported Steinal's views on "folk spirit" and "folk psychology" in psycholinguistics, the Russian scientist A.A. became the basis of his theory of existence. [3] This is the direction of psycholinguistics as a field of study of concepts and phenomena, expressed by the term association between linguistic units. Although some of the views in the listed scientific studies are not named from the point of view of psycholinguistics and related concepts, they reflect the content of questions related to this area. But this provides answers to all the industry's questions, it cannot be concluded that they have been resolved clearly and unambiguously. In our opinion, there are many problems in this area awaiting study. The structure of the psycholinguistic unit is specified. It is well known that each field of science has an object of study, and this boundary is additionally refined with the help of its units and the meanings of the same units. Units of a field of science, in a sense, provide an overview of the object of study, the boundaries and breadth of this field. In addition, with the correct definition of units, differences from other directions, their specific aspects are determined. As for linguistic units, this scientific paradigm is interspersed with phonetic-phonological, lexical, morphemic, morphological and syntactic terms.

In most of the theoretical literature, the semantic structure and formal structure of these linguistic units have been shown as a basis for research. However, the psycholinguistic features, manifested by different shades in different contexts, expressed in the semantic structure of the linguistic unit, were not taken into account and were not separated.

In the case of psycholinguistic units, it should be noted that the group of psycholinguists is determined to clarify this issue. This question has been the subject of interesting discussions among scholars since the earliest days of work in the field of psycholinguistics. The first important scientific source, in collaboration with C.E. Osgood and T.A. Sebeok, which is a prelude to the emergence of psycholinguistics, also pays special attention to the problem of units. One of the seven chapters of the book is devoted to psycholinguistic units. [4] It should also be noted that the issue of psycholinguistic units was not clarified in the listed theoretical literature and in works created in subsequent periods. [5]

To comment on the question of psycholinguistic units, it is first necessary to clearly define their boundaries with linguistic units. It should be noted that linguistic units are divided into linguistic and speech. When studying a question, it is important to make a deep distinction between the two main levels that make up linguistics - language and speech units. In this regard, F. de Saussure's views on the dichotomy of language and speech serve as important background information.

In his lectures, Saussure described the combination of language and speech as opposed to the following characteristics: sociality - individuality, abstraction - clarity, passivity - activity, mental - physical, possibility (latent) - realization, virtual - actual, etc. [6]

In particular, the opinion that language is an entity, a speech process, or that language is abstract, that speech is a concrete phenomenon, or that language is limited and speech is not limited, is an important basis for distinguishing the psychological or social characteristics of language. units. Socio-psychological phenomena include communication, behavior, social thinking and mood, community, stratification, that is, the processes of dividing society into different layers, stereotypes, contradictions, lifestyle, social perception, social attitudes and personality traits (defects) manifested in various social situations, psychological image, attitude to norms, etc. "

Consequently, while linguistic units serve to name objects in the universe, the activation of a sign in consciousness with the help of a linguistic unit to express the intended goal in the process of speech creates psycholinguistic signs in them. Psycholinguistic tools are closely related to the human mind. The use of these tools in the process of speech will be based on the general views of people on the nature of objects and events in the objective world, as well as on their different attitudes. These forms of relationships are expressed using linguistic, paralinguistic, extralinguistic means. These forms of relationships are expressed using linguistic, paralinguistic, extralinguistic means. Their form of expression has an individual value. It is the presence of individual relationships that determines the way of speech. The speech image is reflected in the pragmatics of linguistic units.

In short, linguistic units go through a stage of re-expression of content and attitudes in the process of application in the structure of speech. In doing so, there will be a re-loaded new content related to the existing situation, while preserving the overall social meaning of the linguistic unit. In this sense, speech is directly related to the range of means of expressing personality traits, and the means used in the speech process are related to the structure of linguopsychological units.

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STUDY OF RHEOLOGICAL PROPERTIES OF POLYANILINE COMPOSITIONS WITH POLYACIDS

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ABSTRACT

This paper describes how the characteristic viscosity of polyaniline taken as a sample increases with the average increase in the high molecular weight fraction of polyaniline in the reaction medium. It was found that the intrinsic viscosity of the obtained polyaniline samples increases with an increase in the proportion of the average high molecular weight of polyaniline in the reaction medium. This effect can be explained with the binding of lithium ions to macromolecules and unfolding of coils of the polyacrylic acid chain. The unfolding of the coils can be explained by the electrostatic repulsion of ions bound to the polymers.

KEYWORDS: Polyaniline, Molecules, Composition, Polymer, Rheology, Sample, Viscosity.

INTRODUCTION

We have investigated the molecular weight parameters of polyaniline and their relationship with the synthesis conditions using gel permeation chromatography and viscometer. [1,2]

The dependence of the average molecular weight characteristics of polyaniline on the synthesis conditions was investigated and it was found that an increase in the concentration of the oxidizing agent ammonium persulfate leads to an increase in the proportion of the high molecular weight fraction of polyaniline. The bimodality of the molecular weight distribution of polyaniline is obviously associated with the heterophase nature of its polymerization (Figs. 1 and 2).

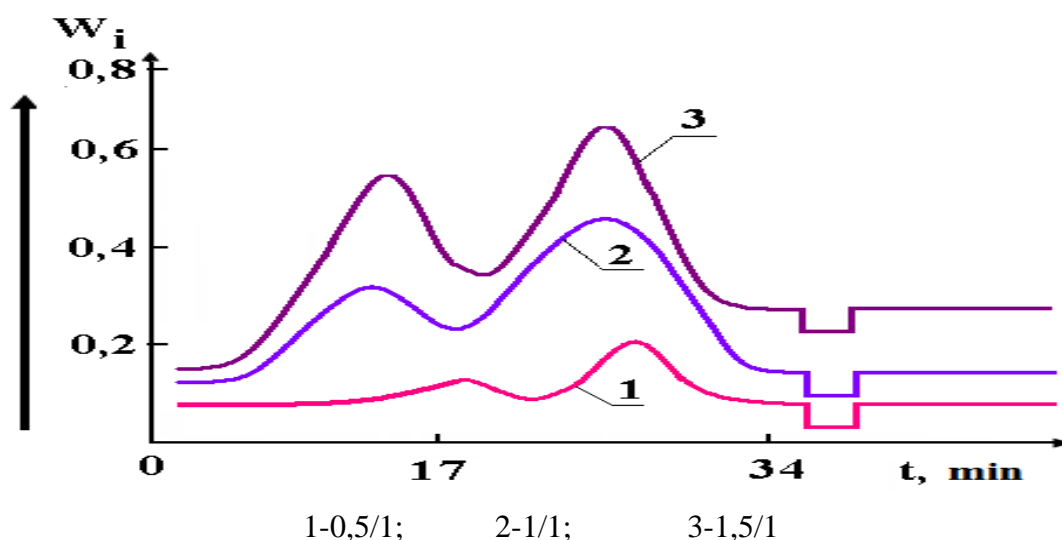


Fig. 1. Gel chromatograms of polyaniline samples obtained by a chemical method at various oxidant/monomer ratios

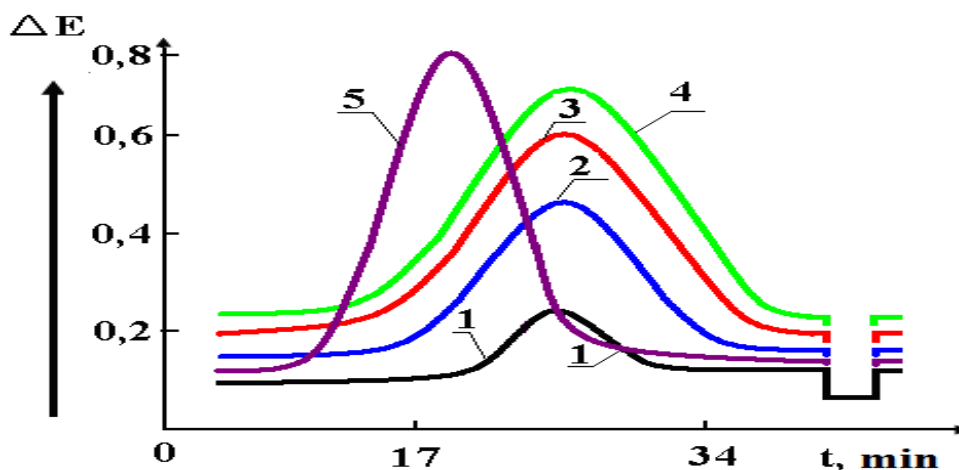


Fig. 2. Combined gel chromatograms of polyaniline. Retention time dependence of absorption

The ratio of the average molecular weights of the polyaniline fractions was judged by the change in the peak areas in 2 and 3. In methylpyrrolidone, the peak has a larger area than in dimethylformamide, which is due to the better solubility of polyaniline in the first case. [3]

It was found that the intrinsic viscosity of the obtained polyaniline samples increases with an increase in the proportion of the average high molecular weight of polyaniline in the reaction medium. Therefore, by changing the monomer-oxidant ratio, it is possible to control the formation of the average molecular weight of polyaniline. With an increase in the duration of synthesis to 30 min, the average molecular weight of polyaniline increases, and multimodal, the nature of the molecular weight distribution of samples with a 9-minute exposure turns into

unimodal. The revealed correlations confirm the previously proposed mechanism of aniline polymerization: the growing chain is formed by oxidation of the monomer followed by addition to the oxidized dimer, etc. [4,5]

Consequently, a stepwise polycondensation character of the polymerization of anilines is observed. The more oxidizing agent in the reaction medium, the more active sites capable of polymerization, the higher the degree of conversion and the value of the average molecular weight of polyaniline (Table 1 and 2).

This effect can be explained with the binding of lithium ions to macromolecules and unfolding of coils of the polyacrylic acid chain. The unfolding of the coils can be explained by the electrostatic repulsion of ions bound to the polymers. From the above, it follows that polyanilines, like polyacrylic acid, exhibit the properties of polyelectrolytes. This is expressed in a similar behavior of solutions, despite the fact that the chains of polyaniline and polyacids are oppositely charged. [6]

TABLE 1 MOLECULAR WEIGHT PARAMETERS OF POLYANILINE DEPENDING ON THE CONDITIONS OF CHEMICAL SYNTHESIS

Mole ratio monomer oxidant mole/mole	Peak area				$[\eta]^*, \partial m / \pi / c$
	DMF		MP		η_{y0} / c
	2	3	2	3	
1:0,5	3,2	96,8	16,5	83,5	0,65
1:0,75	16,9	93,1	31,4	68,6	0,72
1:1	24,4	85,6	38,1	61,9	0,94
1:1,25	31,6	68,4	46,5	53,5	1,43
1:1,5	39,1	60,9	62,3	37,7	1,94

TABLE 2 MOLECULAR MASS PARAMETERS OF POLYANILINE DEPENDING ON THE CONDITIONS OF ELECTROCHEMICAL SYNTHESIS

Electrode potential + <i>B</i>	Peak area				$[\eta]^*, \partial M / \pi / c$
	DMF		MP		η_{vd} / c
	2	3	2	3	
0,65	6,6	93,4	24,2	75,8	0,75
0,8	26,5	73,5	38,1	61,9	0,82
0,85	37,4	62,6	46,4	53,6	0,98
0,9	44,6	55,4	57,1	42,9	1,52
1	59,2	50,8	64,2	35,8	2,24

On going from dimethylformamide to methylpyrrolidone, the area of the first peak increases, while the second decreases. The ratios of fractions with low (fig.1) and high (fig.2) molecular weights were judged by the change in the area of peaks 1 and 2 (Table 1 and 2).

Studies show that with an increase in the duration of the synthesis to 30 min, the average molecular weight of the polymer increases, and the multimodal nature of the molecular weight distributions of samples with a 9-minute exposure becomes unimodal.

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MAIN FACTORS FOR IMPROVING THE NATIONAL EDUCATIONAL SYSTEM

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ABSTRACT

The article deals with the content and importance of the adopted regulatory documents on the implementation of the right to education, as well as entering the world educational space. The system of measures developed for integration into the world education system is analyzed.

KEYWORDS: *The Right To Education, Modern Education, The World Community, Inclusion, Regulatory Documents, School Education.*

INTRODUCTION

The development and future of any society, of the people who live in it, is, of course, closely linked with the upbringing and education of young people, who are the leading forces of states. Since time immemorial, the great Uzbek people have paid special attention to the education of children and youth. After all, the future of our country depends on our younger generation, who has confidence in the future [1].

MAIN PART

In the current process of globalization, the fight against ignorance and enlightenment is very significant. In particular, the use of the rich scientific heritage of our ancestors is extremely important in ensuring the harmony of education and upbringing. Despite the fact that a century has passed, the words of our enlightened ancestor Abdulla Avloni, "Education is for us a matter of life, salvation, destruction, happiness or disaster," are important and relevant for the development of our nation and homeland. [2,3,4]

The content of articles published by researchers on the adaptation of the national education system to international standards, as well as the content of legal regulations on the subject was analyzed. Research methods include analysis and synthesis, retrospective analysis, document analysis. It is well known that the right to education is of great importance in the human rights system. The modernization of society, taking a worthy place in the world community, building a great state of the future, depends primarily on the attitude to the right to education. [5]

The International Right to Education Act (Convention on the Elimination of All Forms of Discrimination in Education, 14 December 1960) recognizes that the term "education" encompasses all types and stages of education and includes access to education, level of education and quality also includes teaching conditions. The norms of international law recommend making primary education compulsory and free, making secondary education

universally accessible and accessible to all, ensuring that higher education is accessible to all on the basis of full equality and everyone's ability, and ensuring compulsory education by law.

Article 41 of the Constitution of the Republic of Uzbekistan states: "Everyone has the right to education. Free general education is guaranteed by the state. School work is under state control. " The state not only creates the conditions for the exercise of the right to education, but also oversees the work of schools in the country. At present, Uzbekistan has a working mechanism to ensure the right to education for the needs of everyone, which is strengthened by appropriate material and technical conditions. As the President of the Republic of Uzbekistan Sh. Mirziyoyev noted, "the issue of ensuring human rights, enshrined in our Constitution as the highest value, will continue to be in the center of our attention». From the first years of independence, our country has completely abandoned the old approaches in the field of education, based on new principles, national values and traditions, advanced world experience. is being mobilized along the way. It is known that on December 12, 2018, at the plenary session of the UN General Assembly, a special resolution entitled "Enlightenment and Religious Tolerance" was adopted. The document, drafted by Uzbekistan, was unanimously supported by all UN member states. The adoption of the resolution was a practical manifestation of the initiative put forward by President Shavkat Mirziyoyev at the 72nd session of the UN General Assembly in September 2017 in New York. Speaking at the UN General Assembly, the head of our state noted that the main goal of the resolution proposed by Uzbekistan was "to ensure the right to education for all, to help eradicate illiteracy and ignorance." The document is aimed at "establishing tolerance and mutual respect, ensuring religious freedom, protecting the rights of believers, and helping to prevent discrimination". [6-16]

It is noteworthy that this document encourages all Member States to promote mutual understanding, tolerance, non-discrimination efforts and respect in all matters of freedom of religion and belief through education and other means, as well as to support research activities. It should be noted that the purpose and content of the resolution are fully consistent with the provisions of important documents adopted by the UN, including the UN Charter, Universal Declaration of Human Rights, Sustainable Development Goals until 2030, as well as traditional UN General Assembly resolutions. [17-21]

In order to improve school education, to adapt it to modern requirements, the Concept of Development of the Public Education System of the Republic of Uzbekistan until 2030, approved by Decree No. PF-5712 on April 29, 2019, was adopted. According to him:

- To make Uzbekistan one of the top 30 countries in the world by 2030 in the ranking of the international program for assessing student achievement in PISA (The Program for International Student Assessment);
- Qualitative updating of the content of the system of continuing education, as well as training, retraining and advanced training of professionals;
- Improving teaching methods, gradual application of the principles of individualization in the educational process;
- Introduction of modern information and communication technologies and innovative projects in the field of public education;

- strengthening the material and technical base of public educational institutions and increasing the efficiency of budget funding;
- Introduction of modern methods and directions of extracurricular education in educating young people and ensuring their employment;
- expanding the competitive environment in the public education system through the development of public-private partnerships;
- Implementation of 5 initiatives, including a set of measures aimed at creating additional conditions for youth education;
- In order to increase the attractiveness of the public education system, it is planned to gradually increase the level of remuneration, financial incentives and social protection of employees of general secondary education.
- It should be noted that the Law of the Republic of Uzbekistan "On Education", adopted on August 29, 1997, consisted of 5 sections and 34 articles. This law established the legal basis for education, upbringing, vocational training of citizens and was aimed at ensuring the constitutional right of everyone to education. The National Program of Personnel Training, adopted on August 29, 1997, is based on the provisions of the Law of the Republic of Uzbekistan "On Education" (1997), analysis of national experience and world achievements in the education system and high general and professional culture, creative and social activity, social - was aimed at forming a new generation of cadres who will be able to independently achieve the goal in political life, to advance and solve future tasks. [22-26]

The role and importance of the National Program of Personnel Training can be explained by the following circumstances:

- a) The implementation of the National Program of Personnel Training and its model was aimed at raising the educational process to a modern level on the basis of national and universal values.
- b) The implementation of the national training program has played an important role in Uzbekistan's worthy place in the international arena.
- c) The national training program was in line with the basic concepts and principles of the idea of national independence, both of which were aimed at forming a harmoniously developed generation.
- d) The implementation of the National Training Program has served to ensure the full implementation of the priorities set out in the concept of further deepening democratic reforms and development of civil society in the country.
- e) Effective forms and methods of spiritual and moral education and enlightenment of students have been developed and introduced in our country.
- f) There is an effective system of attestation and accreditation of educational institutions in the field of education and training.

All of the above confirms that the national model of training is a well-thought-out, effective model. The practical value of the national model can be determined by its place and role in ensuring social development in Uzbekistan. [27-29]

The current modernization process has required the adoption of a new version of the Law on Education. The new version of the Law "On Education" adopted on September 23, 2020 consists of 10 chapters and 75 articles. In particular, in the process of improving the bill, 238 norms were amended, 123 norms were removed. They were replaced by 54 new directly applicable norms. [30-31]. Due to the elimination of redundant administrative procedures and outdated mechanisms of regulation, 7 articles were completely abandoned, and 9 new articles regulating relations in specific areas were introduced. It is noteworthy that the new version of the law also includes the concept of inclusive education. This serves to ensure equal access to education for every child and to prevent any discrimination and discrimination. [32-33]

In addition, the current law, in general, provides a new rule that is not provided by law - in our country, regardless of age, adults have the opportunity to strengthen their knowledge and skills throughout life. With this law, the Laws "On Education" and "On the National Program of Personnel Training" adopted in 1997 have lost their force. [34-35]

CONCLUSION

The different forms and stages of education, depending on the needs and interests of the individual, allow him to exercise his right to education as fully as possible. The essence of the right to education is that it provides equal access to all forms of education and upbringing for every citizen of the Republic of Uzbekistan. The exercise of the right to education is ensured by:

- Creation of necessary socio-economic conditions for education;
- Creation of a network of state and non-state educational institutions;
- Access to education for all within the framework of state educational standards;
- Free education in public educational institutions;
- Mandatory access to basic information;
- Use of various forms of education;
- Independence of educational institutions from political parties and socio-political movements.

This law plays a key role in realizing the right of people to education, bringing the national education system in line with international standards.

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AN OVERVIEW ON SURROGACY

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ABSTRACT

Surrogacy is a kind of assisted reproductive technology in which a woman bears a child for another partner. Surrogacy services are required by a large number of couples throughout the globe for a variety of reasons. Although this arrangement seems to be advantageous to all parties involved, it is fraught with social, ethical, moral, and legal problems. Because of these complications, this technique has become unpopular in many areas of the globe. Surrogacy in India has had its own path, from the country's popularity as a surrogacy destination in 2002 to the Surrogacy (Regulation) Bill, 2016, which would limit many people's access to surrogacy. Surrogacy is an essential medical treatment for all couples who would otherwise be unable to have children. Surrogacy would be conducted in harmony if sensitive problems surrounding surrogacy were adequately handled via correctly worded legislation that protected the rights of surrogate mothers, intended parents, and surrogate children.

KEYWORDS: *Gestational Carrier, Intended Parent, Reproductive Technology, Surrogacy, Surrogate.*

1. INTRODUCTION

The term "surrogate" comes from the Latin word "subrogare," which means "assigned to act in the place of." It refers to a woman who gets pregnant and gives birth to a child with the purpose of giving the kid away to another person or couple, known as the "intended" or "commissioning" parents. Surrogacy is a fertility treatment in which a woman without a uterus, a uterine anomaly preventing pregnancy, serious medical problems, or other contraindications for pregnancy can achieve motherhood through the use of an embryo created by themselves or a donor and transferred to the uterus of gestational caesura. This method has also allowed homosexual couples and solitary men to become fathers by using their sperm and donor oocytes to produce an embryo.

Traditional and gestational surrogacy is the two kinds of surrogacy. Traditional (genetic/partial/straight) surrogacy occurs when the surrogate mother is artificially inseminated with the intended father's sperm, thus making her a genetic parent alongside the intended father. The arrangement in which an embryo from the intending parents or a donated egg or sperm is

delivered to the surrogate uterus is known as gestational surrogacy (host/full surrogacy). The mother who bears the kid has no genetic link to the child in gestational surrogacy [1–4].

Surrogacy may be either commercial or altruistic, depending on whether the surrogate is paid for the pregnancy. It is referred to be commercial if the surrogate gets money for the surrogacy arrangement, and it is referred to as altruistic if she receives no pay other than reimbursement of her medical and other pregnancy-related costs, as well as insurance coverage for her.

1.1 Historical Aspect of Surrogacy:

Surrogacy has been discussed from the beginning of time. This technique was permitted by Babylonian law and traditions in order to prevent an otherwise unavoidable divorce. According to the biblical Book of Genesis, the servant Hagar begetting a child for the childless Sarah via her husband Abraham is the first recorded account of surrogacy.

Rachel requested her maid Bilhah to conceive a child for her and her husband Jacob in the Bible. Surrogacy is also mentioned in Hindu mythology, as Balram is considered the son of mother Devaki and the older brother of Lord Krishna despite being born from the womb of Rohini. Reproductive services have been offered for a charge since the middle Ages [5–10].

1.2 Indication for Surrogacy:

The lack of a uterus is an absolute indicator for surrogacy. Mayer RokitanskyKuster Hauser syndrome or a history of obstetric hysterectomy or hysterectomy for gynecological reasons such as cervical cancer or endometrial cancer are among the possible causes. Significant anatomical abnormalities, such as a tiny unicornuate uterus, a T-shaped uterus, or numerous fibroids in combination with unsuccessful reproductive treatment efforts, are additional indicators. Other reasons for surrogacy include women with serious medical problems (heart or kidney illness) that make pregnancy impossible. Surrogacy may also be used as a final resort for patients who have had several miscarriages and recurrent implantation failure and have exhausted all other options for self-pregnancy. Surrogacy may be required in the case of biological inability to conceive or carry a child in same-sex couples or single males.

1.3 Selection of Surrogate:

According to the Draft Assisted Reproductive Technology (Regulation) Bill, 2014, a surrogate is a married woman between the ages of 23 and 35 (25–35 according to the Surrogacy Bill, 2016), with at least one child of her own and no more than two years between births. For a surrogate mother to become a surrogate mother, her spouse's consent is required. A typical screening procedure includes a comprehensive physical and psychological examination, as well as a thorough criminal and financial background investigation. Routine blood tests, as well as testing to rule out the human immunodeficiency virus, hepatitis B virus surface antigen, and hepatitis C virus, are suggested, as are an electrocardiogram, Pap smear, and mammography. She will also get an ultrasound of her pelvis and abdomen to rule out any anatomical abnormalities.

1.4 Counseling:

The significance of comprehensive counseling for all parties involved in surrogacy agreements cannot be overstated. They must be sure of themselves and their choices, and they must have faith in one another. There are a number of concerns that must be addressed with both the genetic pair and the surrogate:

1.5 For the genetically linked couple:

- All other therapy possibilities.
- The importance of in-depth counseling.
- The treatment's practical difficulties and expense.
- Surrogacy's psychological dangers.
- The child's psychological well-being may be jeopardized.
- The likelihood of multiple pregnancies if more than one embryo is transplanted.
- The probability of a kid being born with a congenital defect.
- The significance of seeking legal counsel and the legal complexities of surrogacy.
- Guidance on the pros and cons of adoption and living without a child.

1.6 Surrogate mother:

- The full ramifications of undergoing IVF and surrogacy therapy.
- The possibility of multiple pregnancies.
- The social ramifications of surrogacy.
- The dangers of pregnancy on one's health.
- Surrogacy comes with psychological hazards.
- There's a chance you'll feel bereft when delivering the infant to the biological parents.

1.7 Synchronization of Cycle:

The gestational carrier's availability will determine whether the surrogate embryo is transferred fresh or frozen. Surrogacy cycles have gotten easier for assisted reproductive technology (ART) clinics with a competent embryology laboratory and freezing facility with the introduction of superior vitrification methods.

For a fresh surrogate transfer, the intended mother's and surrogate's cycles may be synced using oral contraceptive pills or progesterone tablets, or the surrogate can be placed on an agonist injection to allow for more flexibility in transfer dates.

The surrogate begins taking estrogen pills on the third day of her cycle and continues for around ten days. She is placed on progesterone supplementation for 3 days/5 days after attaining a minimum of 8 mm before a scheduled cleavage stage/blastocyst transfer, respectively.

1.8 Obstetric Care of Surrogate:

After a pregnancy is confirmed in the gestational carrier, she either remains at the surrogate house or returns home, depending on the ART clinic's facilities. For a variety of reasons, the idea of a surrogate home has lately gained a lot of traction. Surrogate home is a facility where a surrogate lives for the duration of her pregnancy, from conception to delivery, and where all of her medical and personal needs are met. Due to the importance of the pregnancy, surrogate obstetrics care is comprehensive. Her medical care is provided by a 24-hour nurse team, as well

as a nutritionist, physiotherapist, counselors, and gynecologist. Intended spouses have developed a like to the idea of surrogate home because of the care and accessible amenities. Although staying at a surrogate house is the preferred method these days, it can be emotionally draining for the surrogate and her entire family because she is separated from her own child(ren) and family; however, during their stay at the surrogate house, surrogate can return home for a few weeks during the pregnancy, and her family members can also pay her visits. Surrogate mother should be given the option of staying in the surrogate home rather than being forced to do so.

1.9 Risks Associated with Surrogacy:

Obstetric complications are the most frequent danger linked with surrogacy, with multiple order pregnancy being the most common. Although the American Society for Reproductive Medicine (ASRM) and the European Society of Human Reproduction and Embryology have recently issued many recommendations for single embryo transfer, barely 15%–20% of facilities adhere to these guidelines. It is, nevertheless, an improvement over past years, and an increasing number of clinics are adopting this approach. Complications associated with pregnancy, birth, and the postpartum period include preeclampsia and eclampsia, urinary tract infections, stress incontinence, and gestational diabetes, as well as rare complications like amniotic fluid embolism and the possibility of postpartum hemorrhage, but these risks are associated with pregnancy in general and are not unique to surrogacy.

Surrogacy may cause emotional stress in addition to physical danger, according to Foster (1987), who found that many surrogate women have emotional difficulties after having to surrender the kid. However, according to a research by Jadva et al., although some mothers have emotional difficulties in giving up the infant, these emotions seem to diminish in the weeks after the delivery.

1.10 Social Impact with Surrogacy:

Women in India may better not just their own lives but also the lives of their families by becoming commercial surrogates. Surrogates often have restricted access to schooling, which limits their job possibilities. Surrogacy compensation varies per contract, with estimates ranging from "that equal to" three times the head of house's monthly salary. Earning approximately Rs. 450,000-500,000 in 9 months may give her and her whole family with better home, food, education, and sanitation that would otherwise be impossible to get.

1.11 Psychological Impact with Surrogacy:

Surrogacy, as a last resort therapy for many medical reasons for infertility, introduces a new level of psychological complexity and necessitates a multidisciplinary approach once again. Surrogacy opens up a network of potential connections, which may be emotionally draining at times. According to the ASRM recommendations, all prospective parents should get psychosocial education and counseling from a competent mental health practitioner.

The key to surrogacy's effectiveness is the quality of connections between the intended parents and gestational carrier, which must be explored and thoroughly understood. Unlike donor egg programs, where the intended parents have no personal connection with the donor and just know non-identifying facts about her, intended parents who use a gestational surrogate have a personal bond with her that lasts throughout the pregnancy and frequently beyond. In a 10-year longitudinal study of 42 surrogacy families, intended parents were questioned four times when

their children were 1, 3, 7, and 10 years old, respectively. The study looked at the parents' motivation for surrogacy, their relationship with the surrogate, their pregnancy experience before and after the birth, their contact with the surrogate after the birth, their disclosure to family and friends about the process, and their disclosure to their children when they were old enough to understand.

2. DISCUSSION

Surrogacy is one of the most contentious operations in the area of assisted reproduction, in which one woman carries a child for another woman. The media has tended to concentrate on the bad elements of surrogacy agreements, such as the case of Baby M in the United States, in which the surrogate mother refused to surrender the kid. Surrogacy is divided into two types: partial (genetic) and complete (organic) (gestational). The surrogate mother is also the child's genetic mother in partial surrogacy, and conception is typically achieved via artificial insemination using the commissioning father's sperm. The commissioning couples are the biological parents of the child in complete surrogacy, and the kid is conceived in a clinic using IVF. Despite the fact that surrogacy has been linked to a variety of psychiatric problems, the surrogate and intended parents, as well as the kid, seem to flourish in harmony, with the exception of a few instances. Children born via third-party reproduction fare well psychologically and developmentally, according to studies, and do not seem to be negatively impacted by the absence of a genetic or gestational connection to the intended parent.

3. CONCLUSION

As Souer put it, "a comprehensive knowledge of the medical, psychology, and legislation that pertains to this essential therapeutic activity is an absolute requirement to the effective practice of surrogacy, probably more than any other type of assisted reproduction." Surrogacy does bring up a tangle of potentially complicated relationships, since this particular feature of surrogacy has made it the most contentious of all assisted reproductive procedures in recent years. Finally, the significance of surrogacy practice in ART should not be underestimated. For many couples, it has proven to be a gift and a medical wonder. All physicians providing these services must be aware that the privilege of producing gestational carrier treatment comes with the professional responsibility of practicing safely and ethically, minimizing risks to the gestational carrier and children born as a result of this practice, as well as the risk to our professional autonomy. Surrogacy is supported by reasons of procreative liberty, privacy, and autonomy, while it is opposed by arguments of excessive inducements linked to remuneration, commercialization of women, and concern for the best interests of the resultant kid. Taking all of the advantages and disadvantages into account, we cannot deny that gestational surrogacy provides hope to individuals and couples who would otherwise be unable to start a family outside of adoption. If a fair and legal middle ground is not reached between medical practitioners, regulatory agencies, and, of course, the intended couples needing this kind of medical care, we risk losing our ability to offer this critical therapy.

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THE IMAGE OF BABUR MIRZA IN THE INTERPRETATION OF STEPHEN MEREDITH

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ABSTRACT

This article examines the hard life and unique work of Zahiriddin Muhammad Babur on the basis of the prominent writer Stephen Meredith and his outstanding work, "Babur: the Diarist and the Despot". The interpretation of Babur as a great king and commander, an unparalleled writer and poet, a true expert in the fields of art, gardening and construction has been analyzed with various life examples.

KEYWORDS: Zahiriddin Muhammad Babur, Turks, Mongols, King, Commander, Poet, Writer, Composer, Musician, Gardener, Builder.

INTRODUCTION

The history of mankind dates back several thousand years. During these millions of years, many historical figures have contributed to the development of the world. However, not all of them are recognized around the world for their work. Such people are few. One of them, Zahiriddin Muhammad, known to us as Babur, is the founder of the Mongol Empire in India. [1]

In the pages of the past, he appears as a ruler, a warrior, an athlete, a writer, and a lover of nature. As we turn the pages of "Baburnama", in which he writes about his dreams and fears, thoughts and actions, we realize that we are in front of a person with the most perfect human qualities that adorn the throne of Asia. Babur's character will undoubtedly increase our interest and respect for him. There are countless works in Uzbek and world literature devoted to the description of Babur's way of life, literary works, human qualities. One of the most famous of these is Stephen Meredith's "Babur: The Diarist and the Despot". [2-8]

Main part. Zahiriddin Muhammad, who was a descendant of Amir Temur, the great horn and commander on his father's side, is a descendant of Genghis Khan on his mother's side. For this reason, as Stephen Meredith wrote, Babur inherited courage and bravery from the Turks, and infinite energy and strength from the Mongols. There is no doubt that Babur inherited his intellectual ability and art skills from his mother, KutlugNigarXonim. [9,10] Because his father, Yunus Khan, who was known for his character and skill in conversation, he was also a great musicologist and artist. Babur's two grandmothers, EsonDavlatBegim and his paternal grandmother Shah Sultan Begim, made an invaluable contribution to the formation of his character. [11-15]

Physically, Babur was very energetic and agile. He went hunting many times with his soldiers. One day he was hunting pheasants in the woods, and the next time he caught a deer with the help

of bow arrows, despite the fact that his hands were injured. Another time, he tells an interesting story about how he chased a wild wolf while rhino hunting near Peshawar. [1] Swimming was also one of his hobbies. He was even in the habit of crossing every river he encountered on his way. During the Indian march, he crossed the Ganges and sailed back to its shores without resting. Because of his love of travel, inherited from the Mongols, Babur had a passion for sightseeing and research. When someone told Zahiriddin about a tomb that was moving during the recitation of the blessings of the Prophet in Ghazna, Babur ordered to investigate the matter. As a result, it became clear that the actual movement of the tomb was a fraud, as the masters had set up a platform under it during the construction of the tomb, so that the tomb could be moved. Deception and fraud were the things he hated the most for Babur. For this reason, he immediately ordered that the platform to be dismantled and that this fraud be never continued.[11] As he points out, he has never celebrated Ramadan Eid for two years in the same place repeatedly since he was 11 years old, because he loves to travel. His later generations inherited Zahiriddin's love of travel, especially his grandson Akbar. [11]

The most striking aspect of Babur's personality was his boundless devotion to his relatives and friends. He considered betrayal the greatest crime. When Babur heard that Xursraw Shah had blinded one of his relatives and killed the other, he expressed his hatred for him and cursed him a thousand times. Bad habits or shortcomings of family members never diminished Babur's loyalty to them. Along with his Timurid brothers, Babur was equally loyal to his Mongol relatives. When Qambar Ali, one of Zahiruddin's relatives, told him to renounce the Mongol khans and join Ahmad Tanbal, Babur replied: "Is this right?! These khans are my blood relatives. Serve them rather than betraying."

Babur always demanded that others treat him with dignity in line with his career. In one meeting, Badiuzzaman showed disrespect to Babur, and in response, Babur said: "Although I am much younger than him, my career is greater. I have twice ascended the throne of Samarkand and fought for the throne of the Timurids, and there is no reason for disrespect towards me." [10] Upon hearing these words, Badiuzzaman realized his mistake and invited Babur Mirza to a banquet to apologize.

Babur Mirza took the throne when he was 11 years old and went through many hardships until he was 20 years old. He is visible in history sometimes as the true ruler of the provinces and sometimes as a king who fell victim to ambitious and treacherous nobles. Throughout his life, he had experienced both the joy of victory and the pain of exile. With the dangers and the fame that Zahiriddin faced, his strong psychology formed. The events of the first years of his reign and the problems that arose caused him some feelings of depression and anger. Especially between 1497 and 1498, when he lost Andijan and was persecuted by several hundred loyalists. Even in the most anxious moments, Babur's heart was comforted by poetry.

Babur's courage and bravery are manifested in the fact that a young man under the age of 22 is forced to say goodbye to his homeland and look for a place of refuge for himself and his loyal ones. Despite losing his father's legacy, he always tried to overcome his difficulties with a smile, even when he failed. Thus, Babur, the founder of the Mongol Empire in India, left his homeland for life. [12] This victory can be compared to the conquest of Karshi by Amir Timur or the siege of Herat by Sultan Hussein Mirza in 1470. [7] During the Andijan march against Sultan Ahmad Tanbal, he was also severely wounded by an arrow from his right leg. Still, he continues to struggle and soon his injuries heal. Babur's military discipline was very strict and his methods of

punishment were very brutal compared to today's requirements. During the march of Bhira, he commands his soldiers: "Do not injure the common people and do not harm their herds, cotton fields and even broken needles. "[1] Despite such an order, some soldiers are determined to plunder the common people. Babur, on the other hand, condemned those who disobeyed the order to be executed and some have their noses cut off. Like all Timurids, Babur was a musician and composed music himself. In his book "Musiqailmi", he mentions the names of musicians who were skillful at playing various musical instruments; in particular, the Herat musician Binai, who composed a song under the name of Babur, appreciated the technique of playing the instruments. Babur's taste in musicology was as perfect as his skill in writing letters, and he could not bear to listen to songs sung tastelessly. There is no doubt that Babur's descendants Akbar Mirza, Jahangir Mirza and Shohjahon also inherited his musical skills. During the reign of Babur Mirza, the field of musicology was strongly encouraged in the Mongol Empire. Historian Lane-Poole writes: "Babur's place in history is determined by his conquest of India, his founding of the Empire. His status in literature is invaluable with his work "Baburnama", which begins with the adventures of his youth. In Persian, in Latin, he was a great poet. He was a master of the prose genre in his native Turkish language. "Babur's adventurous lifestyle, the quality of his work is unparalleled. The following is a list of them in the "Baburnama" by the writer Annette Beveridge:[7] "Divan", a collection of poems in 1519; the pamphlet "Mubin", written in 1522, dedicated to his son Komron Mirza, consisting of 2,000 lines compiling the rules of the Muslim religion in the Turkish language; A collection of poems created in India; Autobiographical work "Baburnama"; The pamphlet "Walidiya", a translated work of Khoja Ahror Vali in 1528-1529. Babur created a new alphabet known as the "Xatt-i Baburiy", used it to copy the Koran, and later sent it to Mecca. Babur's poetry, like his prose, has a great taste. The most remarkable aspect of "Baburnama" is its accuracy. As we read it, we make sure that it doesn't really contain anything else. Zahiriddin himself describes his work as follows: "I did not write this to complain about anyone. I just wrote the truth. I just wrote down what really happened. I have revealed the good and bad sides of my father, brothers, cousins and even strangers. [1] In writing about the conquest of Samarkand at the age of 19, Babur refrained from exaggerating his achievements. Proof of his claim that he wrote only the truth in his work can be seen in the fact that Babur never concealed his mistakes and defeats, or allowed any inaccuracies, even in the smallest of places. [16-24]

Babur's greatest contribution to India was his introduction to the arts of gardening and construction, which had entered Central Asia from Iran and flourished in Turkestan. Babur spent most of his time interested in creating gardens rich in fountains, waterfalls and a variety of flowers. [9] He established at least 10 gardens in Kabul, one of which still holds a tomb. After making Agra the capital of India, he ordered the creation of "Aram Bagh" on the banks of the Jamna River. Inside, camps, baths and rose-rich squares were created. Babur delegates the administration of his power to his son Humayun, who announces his retirement and his intention to spend his days in peace and tranquility in the garden he has created. The main reason for his decision is that, after more than 30 years of military campaigns and mental and physical tensions as a result of his leadership, there is no doubt that he made such a decision. [13]

In the late 1530s, Humayun Mirza became seriously ill. Zahiriddin orders all measures to be taken to save the life of his heir. Famous doctors offer him to give a precious Kohinur diamond as a gift to save his son's life. But Babur, who could not equate his son's life with diamonds or any Indian wealth, pledged his own life. As he walked around Humayun, who was on his

deathbed, Babur repeated the following words: "O Allah! If one life can be replaced by another, I will give my life for Babur, for Humayun." [11] Even as he repeated these words, he felt that the disease was surrounding him, and this meant that his pleas were being accepted. Babur then left Humayun's room and headed for his residence, unable to get up again, and died a few weeks later. This story, written by Babur's daughter Gulbadan Begim, may be refuted by modern scholars, but it is doubtful and very strange that Humayun's recovery and Babur, who survived from many illnesses for several years, fell ill at the same time. However, according to a person who believes in divine powers, this state is the product of Babur's true faith and boundless faith in Almighty Allah.

Babur, who was on his deathbed, summoned his advisers for the last time, commanded them to recognize Humayun as their ruler, and expressed the following thoughts: "Always be faithful to him." He then turned to Humayun and told him to apply the laws of freedom and justice, to seek the blessings of God, to respect the obedient, and to forgive the sinners. At the end of his speech, he added: "Besides, I entrust all my relatives and friends first of all to Allah and to you. Never do anything against your brothers, even if they deserve it."

On December 26, 1530, Babur died. Zahiruddin had left by will his burial in Kabul. However, he was buried in a garden called the "Aram Bagh", opposite the present Taj Mahal. Between 1539 and 1544, his tomb was moved to Kabul, to the garden that Babur had created for himself as a place of rest. [10]

CONCLUSION

In conclusion, we can say that Zahiriddin was not even 48 years old at the time of his death, but during this short life he witnessed both the highest peak of success and the lowest level of misfortunes. He had graduated from a school of hardship, for his childhood was spent fighting to protect his father's inherited kingdom from the invasion of the Mongol and Uzbek brothers. Nevertheless, tired of the 20 years of relentless wars, he turned a blind eye to all of them and set out to build a greater Empire on new lands because of his lifelong dream. Pages of "Baburnama" reveal many of Babur's good qualities, including his loyalty to his friends, his love for his mother and all his wives. Babur's literary composition was a remedy for him in times of depression and a shield during uncompromising struggles. Of course, a man who can write poems when he is homeless in the mountains, when his horses are dying of thirst, or when it rains and floods his tents can be called a man with a philosophical heart.

Zahiruddin lived at the same time as such great rulers as Charlie V, Francis I, Henry VIII, and Sultan Sulaiman. Babur, on the other hand, is a child of the Central Asian steppes and is considered to be the greatest and most attractive of them all.

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PEDAGOGICAL SYSTEM OF DEVELOPMENT OF CULTURE OF INTERNATIONAL COMMUNICATION IN STUDENTS

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ABSTRACT

This article describes the process of formation of the culture of interethnic communication as a long-term, multifaceted process and is associated with the emergence of a culture of human relations. The article also addresses issues and recommendations for fostering interethnic tolerance.

KEYWORDS: *Humanity, Behavior, Mechanism, Dignity, Factors.*

INTRODUCTION

The content of the pedagogical process in higher education institutions, the education of the social qualities of the young generation, general education, the experience of the culture of interethnic communication play an important role in the formation of a culture of interethnic communication. In education, the student must know his or her origin and position in the world, and contribute to instilling respect for other cultures.

The formation of a culture of interethnic communication is a long-term and multifaceted process, which is associated with the formation of a culture of relations between people. Communities, families, domestic and cultural institutions, informal groups and others play an important role in the development of a culture of interethnic communication. Children learn about the culture and customs of their neighbours, learn about the history of different peoples in educational institutions, and understand the generality of our socio-historical development by comparison. Children as well as adults gain experience of interethnic communication in everyday relationships. It helps to overcome the feeling of national identity, national exclusivity. The task of educators is to instill in schoolchildren a respect for the dignity and worth of every nation and every person, and to teach them that there is no better or worse nation than another. [1]

Human dignity is not national, but personal and unique. Human shortcomings do not belong to a nation, but to an individual. Today, the importance of shaping the culture of interethnic communication of the younger generation is growing day by day. The formation of a culture of interethnic communication as the most pressing part of socio-pedagogical problems is related to the socio-political processes taking place in social life today. The concept of a culture of interethnic communication depends on the ability of student youth to perceive and observe universal norms, ethics. It is obvious that the culture of interethnic communication is based on the principles of humanity, trust, equality and cooperation.

The research work of students prepares them to creative, cognitive and managerial activities. It serves as a factor in the development of creativity in cognitive activity, the development of independent judgments on the culture of interethnic communication.

The problem of communication culture is one of the most pressing issues not only in the educational process but also in our rapidly evolving society. Realizing that people are different and that we have to accept the other person as he or she is, we can't always behave right. Therefore, it is important to include the problem of tolerance in the problem of education. Because the concept of tolerance such as ethnic, religious and political tolerance, the recognition of the equal opportunity of others is peace

When working with people of different nationalities, regardless of the age of the students, the teacher should focus on developing practical measures to make it easier for students to overcome selfishness and focus on improving the culture of communication.

Ethnographic knowledge about the origins of peoples living in the same society, national etiquette, customs, daily life, clothing, art, crafts, the specifics of the holidays is of great importance for young people. It is important that the teacher not only uses his / her skills in the classroom, but also uses the knowledge gained in extracurricular activities. For example, it can be used in visits to national cultural centers, history museums, theaters and various exhibitions, folklore concerts, watching national films. Or I think that the veterans of our society should be involved in educational work, because communication with them can be called a school of true patriotism and internationalism. Being closer to people's destinies allows for a comprehensive discussion of interethnic issues.

In the context of the pedagogical impact on interethnic dialogue, it is necessary to talk about the education of interethnic tolerance, as it manifests itself in relations between different nationalities and implies the ability to see and build interethnic relations, the interests and rights of mutual stakeholders. National tolerance is interpreted as a characteristic of the nation, the spirit of the peoples, an integral element of the mentality structure, the focus on tolerance, the absence or weakening of the reaction to any factor of interethnic relations. Thus, interethnic tolerance is a characteristic of an individual, which is manifested in tolerance of other nations (ethnic groups), taking into account the specificity of his mentality, culture and self-expression.

The culture of interethnic communication is formed on the basis of the interaction of three leading psychological factors: intellectual, emotional-volitional, activity-practical. [2]

The educational process organized in higher education institutions is of special importance for students, who make up a significant part of the country's youth, to have a culture of communication. Typically, the teacher organizes, directs, monitors, and evaluates the student's activities in order to organize the learning process in the form of learning conversations, roundtables, discussions, and situational games. The learning process takes place through learning intellectual mechanisms such as imitation, differentiation and generalization, guessing and creativity as activities. [3]

Let's take a closer look at the psychological and pedagogical factors, their role and potential in shaping a culture of interethnic communication.

1. The intellectual factor is aimed at knowing the social relations, ideas and concepts that reveal the essence of the culture of interethnic communication, mastering the skills and abilities of

independent thinking, establishing a link between cultural, national and general scientific knowledge.

2. Emotional-volitional factor is an important element in the formation of social qualities of students such as nationalism, patriotism, tolerance and interest in other nations, their customs, dress, and even pronunciation and so on. The emotional-volitional factor alone does not lead to the formation of a stable culture of interethnic communication. The emotional-volitional factor, which contributes to the conscious regulation of one's actions, is interrelated with the intellectual factor. In achieving the expression of the will, positive emotions, which is the basis of positive attitudes of young people in the formation of interethnic culture, it is necessary, first of all, to use an effective and practical factor that reflects the voluntary actions of the individual. [4]

3. The factor of practical activity is an integral part of the system of forming a culture of interethnic communication among students. The content of the culture of interethnic communication, along with the formation of consciousness and emotion, it is necessary to intensify practical activities. This allows students to form consciousness, attitudes and behaviors in the field of interethnic communication. Students should have a clear understanding of how interethnic communication should be conducted in their behavior and activities. The formation of a specialist as a person with a professional and ethical culture takes place in the process of mastering labor activity, in production practice, in his spare time. [5]

Through forms of education, students gain theoretical and practical knowledge, skills, and competencies for effective communication. The educator will also be able to use modern information technology in the development of their professional competence, work with students on the basis of new programs, conduct research, act as an expert, organize innovative open classes and create a personal website will be necessary.

To sum up effective forms of education in the development of students' communication culture are lectures, practical classes, seminars, laboratory classes, competitions, trainings, games, educational performances.

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DOMESTIC INVESTMENT POTENTIAL: A NEW DIMENSION OF A NATION'S ECONOMIC POWER

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ABSTRACT

In macroeconomics textbooks and research papers, authors traditionally try to cover the role of investments in economic growth, especially through econometric modeling FDI, GDP, exports, unemployment, etc. An overwhelming majority of relevant studies have shown that investments, whether they are foreign or not, have a significant impact on the growth of GDP. Consequently, these findings are now serving as a toolkit for policymakers while conducting national investment policy. However, according to Marxist theory investment policy is merely a superstructure constructed on the base – sources of investments and investment relations. This paper aims to investigate those sources under the new category “domestic investment potential”. Our findings indicate that domestic investment potential is a quantitative economic indicator that should play a role in the process of investment policymaking.

KEYWORDS: *Investment Potential, Resource-Based Approach, Investment Resources, Investment Opportunity, Investment Climate, Investment Attractiveness.*

INTRODUCTION

Investments are one of the most important determinants of a country's economic growth in both the short and long run. To examine this notion thousands of researches have been conducted all around the world. For example, research using 210-country panel data by Sarwar et al (2017) [1] revealed that there is a bidirectional causal relationship between domestic investments and GDP growth. A similar finding of Choi and Yi (2017) [2] in the example of 105 countries showed that domestic investments cause economic growth. To sum up, there are a large number of arguments to deduce that the positive causal relationship between domestic investments and GDP is peculiar to the whole developing world with rare exclusions.

We can express the same judgment regarding FDI. Empirical studies of Tiwari and Murascu (2011) [3] over 23 Asian countries showed that FDI has a positive impact on economic growth. Anwar and Cooray (2015) [4], Li and Liu (2005) [5], Samargandi (2015) [6] and others, obtained identical results. Moreover, te Velde and Xenogiani (2007) [7] using panel data on 11 countries found that FDI contributes to the improvement of skills in the host country. According to Feriduni (2013) [8], a rise in the volume of FDI leads to more urbanization, energy consumption, and economic growth. Although FDI presents a myriad of economic effects to receiving countries, its instability in terms of yearly values may create particular risks. For example, if a country receives significantly fewer FDI in a year than the previous this may negatively affect the growth of GDP in coming years.

Hypothetically, the potential amount of FDI a nation can attract within a year may be easily assessed by averaging the values observed in a particular period in the past. However, when it comes to domestic investments the task becomes more complicated due to the diversity of investors and their anticipations of investment opportunities. Domestic investors have more accurate information about the local business climate than do foreign investors (Lautier and Moreau, 2012) [9] and thus they send a “signal” to their foreign counterparts (Ndikumana and Verick, 2008) [10] that may encourage or discourage the inflow of FDI into the country. Therefore creating a domestic investor-friendly business climate is a task of high priority before governments in the light of contracting global flows of FDI.

Any decrease in FDI inflow can be compensated by an increase in domestic investments through which stable paces of economic growth may be attained. However, as any economic resource domestic investments are also scarce. A part of national wealth that can transform into investments is the main source of domestic investments. By calculating it we get 2 important inferences: the capability of domestic investment to compensate FDI shrinkage (1) and effective investment policy measures for stimulating domestic investors (2). In recent literature authors are using a new term “investment potential” to describe those 2 facets of national wealth. Given a number of approaches to define investment potential, we can indicate a common feature of them, that is all definitions include both FDI and domestic investments. In other words, investment potential refers to a maximum amount of foreign and domestic investments a nation may see within a certain period of time. As aforementioned, this feature doesn’t allow to estimate domestic investment potential separately. From this viewpoint, it is important to develop a definition that will have a methodological significance in assessing the money value of domestic investment potential.

METHODOLOGY

To define domestic investment potential we first analyze existing definitions of investment potential. Meanwhile, we will try to identify the core of each definition in order to select the most appropriate approach to define domestic investment potential. Theoretically, the selected approach should point out the way of calculating the domestic investment potential.

LITERATURE REVIEW

The concept of “investment potential” is multifaceted due to its economic nature. For this reason, authors use different approaches to define it. In particular, Lakhmetkina (2011) [11] suggests 3 types of approaches to define the investment potential:

- cost-based: the ability of the territory or economic entity to “swallow” capital;
- resource-based: the potential amount of investment resources, which is determined by the sum of opportunities and available resources;
- result-based: cumulative return on the used resources, or an assessment of economic efficiency of economic activity.

Golaydo (2008) [12] together with the resource- and results-based approaches uses sectors of industry and ratings as a viewpoint to define investment potential:

- industrial sector-based: investment potential is equated to the development potential or level of development of the high value-adding industries;

- rating-based: investment potential is based on the structuring of investment potential, the assessment of its components, and their reunification.

Many authors define investment potential based on a single approach. The analysis shows that their definitions are consistent with one of the above-mentioned approaches. In particular, Tumusov (2000) [13] considers the investment potential as a sum of total investment resources, emphasizing that it can obtain the form of potential investment demand in the money market and transform into real investments. This definition refers more to a resource-based approach and provides the necessary clarity for the concept of investment resources. That is, the calculation of investment potential does not take into account the absolute volume of investment resources, but the part of this volume that can be transferred to production.

According to Katasonov (2005) [14], the investment potential is the sum of all resources that have emerged as a result of previous investment activities and will be used to fund future investment activities. Being a good example of the result-based approach, this definition reduces the scope of investment resources by embracing only a business profit and depreciation costs. This allows regarding investment potential as a synonym of the investment resources of the enterprise.

Some authors consider the investment potential as an integral part of economic independence. In particular, Beznos (2014) [15] describes the investment potential as the ability of a region to satisfy its needs for investment resources without attracting additional sources of financing. There is a valid reason to note that this definition also refers to the resource-based approach. It focuses on meeting the need for investment at the expense of domestic investment resources. That is if we consider the need for investment as a part of the investor's goal (for future profit), then all the internal (existing) resources needed to finance that goal can be considered as the sum of investment resources. Another peculiarity of this definition is that, when interpreted at the macro level, it means domestic investment potential.

Furthermore, many authors see investment potential as a component of the investment climate, the essence of which is explained by the presence of factors that stimulate investing. In particular, Asaul (2008) [16] emphasizes that the investment climate consists of investment potential and investment risk. In this case, the investment potential is explained by "... a set of objective economic, social, natural-geographical and other factors that encourage investment". Reasoning from the author's point of view, we can conclude that the concept of investment potential by its definition is very close to the concept of investment attractiveness.

A large number of approaches to defining the investment potential makes it necessary to bring them into a single and holistic concept. This requires an in-depth understanding of the essence of this economic category, especially its etymological and semiotic aspects.

DISCUSSION AND RESULTS

The word "potential" is derived from the Latin word "potentia" (power), which has two definitions in the dictionary (ABBYY, 2014): having or showing the capacity to develop into something in the future (1), and latent qualities or abilities that may be developed and lead to future success or usefulness (2). The word "potential" is international and is similarly expressed in many languages. To understand the accurate meaning of this word from an economic perspective, it is necessary to refer to the dictionaries of other languages.

In particular, Soglyanik (2004) defines the concept of “potential” as a sum of monies, reserves, and other sources that can be used to achieve a certain goal when needed. A similar definition is given by Ozhegov (2008) where potential means the degree of power in a given relationship, as well as the set of tools needed for something. In addition, the Oxford Dictionary (1995) defines the word potential in a nutshell as “available resources”, while the second meaning of the word is “opportunities for use or development”. The Cambridge Dictionary (2008) also explains the word “potential” as the ability of a person or thing to develop, to achieve a goal, or to succeed. It can be concluded that in all the dictionaries reviewed, the potential is interpreted in the sense of “a set of resources or opportunities”. Consequently, in economic discussions, we would prefer to understand the word “potential” based on the resource-based approach.

Now let's define the words “investment” and “domestic”. It is obvious that the word “investment” as an adjective in all above-mentioned dictionaries is interpreted as “related to investments”, and the word “domestic” stands for “relating to or occurring within a home or a country”. Thus we can summarize the meaning of the concept “domestic investment potential”:

- Potential – the sum of all resources and opportunities necessary to achieve a goal;
- Investment potential – the sum of all available investment resources and opportunities to achieve a particular goal;
- Domestic investment potential – the sum of investment resources and opportunities available in the country to achieve a particular goal.

This way we have developed the “mechanical” meaning of domestic investment potential. However, to give it an economic character, we have to take into account the definitions of investment potential given by above-mentioned authors. At the same time, it should be noted that in those definitions, the investment potential has not been studied in terms of domestic and foreign (external) types.

To understand the true economic meaning of the domestic investment potential, it is necessary to identify the components of investment resources. In this regard, authors usually use financial and value-based approaches to detail the structure of investment resources. According to the financial approach, investment resources are all financial assets involved in funding investment projects. Yuzvovich et al. (2016) suggest that investment resources include:

- Own funds: net profit, depreciation reserves;
- Funds raised: funds of other investors, insurance coverage, funds of partners, budget allocations, initial public offering (IPO);
- Loans: loans, loans from commercial banks, tax credits, leasing, forfeiting, franchising, project financing.

According to this approach, investment resources have become equivalent to the category of sources of investment financing. The investment resources indicated in this approach can also be perceived as a synonym of a company's investment resources. This is because the fact that they are divided into groups such as own, raised, and borrowed funds means that the issue is being considered at the level of an enterprise. Thus we can conclude that this approach is only suitable for use in microeconomic research.

In turn, the value-based approach treats investment resources to be all values that can be included in investment projects. Some authors define investment resources more precisely by stating them as “all

types of material and intellectual property”, “all types of real and financial assets”, “aggregate of material, labor, and financial resources”. For example, Lakhmetkina (2011) emphasizes the following as investment resources: cash; land areas; buildings, constructions, and utilities for them; equipment (installed and not installed); vehicles; subsoil and minerals; forest funds and water resources; patents, ownership of industrial designs; new technologies; trademarks; certificates, etc.

Article 7 of the Law of the Republic of Uzbekistan “On Investments and Investment Activity” (2019) similarly defines investment resources. According to the law, investment resources include:

- cash (including foreign currency) and other financial resources, including loans, shares, stocks, and other securities;
- movables and immovables (buildings, constructions, equipment, machinery, and other valuables) and the rights to them;
- objects of intellectual property;
- the right to own and use land plots and other natural resources, as well as other property rights arising from property rights.

We can hence conclude that the value-based approach provides an opportunity to look at investment resources from the perspective of the region and the country, and is fully suitable for macroeconomic analysis.

Defining domestic investment potential is first of all a matter of methodology. Therefore, it is important to use this concept in its true meaning. At present authors and politicians often use investment potential as a substitute for the concepts “investment climate”, “investment opportunities”, and “investment attractiveness”. As a result, researchers are facing the confusion of terms caused by the problem when two economists say the same words but meaning differently. Therefore, another key task should be to establish semantic borders between those similar concepts.

According to Alkhasov (2015), the investment climate is a set of financial, economic, social, political, legal, and cultural conditions in the region, and the level of potential risks arising from the inflow of capital. Vahabov et al. (2010) [17] describe investment climate as a set of economic, political, legal, and social factors that predetermine the level of risk of foreign capital investment and the possibility of their effective use in the country. The author emphasizes the indicators of investment climate including national legislation, economic conditions (crisis, growth, stagnation), customs regime, monetary policy, economic growth, inflation, exchange rate stability, and indebtedness.

From the above definitions, we can conclude that the investment climate is a macroeconomic concept that is based on two factors: risk and return on investment. The direction in which the factors change is determined by the economic, social, political, legal, and other conditions in the region. The category of the investment climate is often substituted for the concept of investment attractiveness as well. However, this is not the case. To explain the difference between these concepts, we use a unique metaphor used by Litvinova (2014) [18]. According to the author, investment attractiveness and investment climate can be compared to the weather and climate in natural geography. In this case, the weather is a “snapshot” of the climate, and the climate is the statistical ensemble of the geographical area that consists of the average values of the weather for a long time.

Bozorov (2018) [19] argues that the investment climate is an objective reality, which has the property of accurate assessment. It is subjective and can be perceived differently by each investor. Tchiong (2005) indicates investment legislation, the stability of the banking system, the provision of tax benefits, protection of investors' rights, and openness of information as main conditions for investment attractiveness.

Based on the results of terminological analysis, we found that authors use the concept of investment attractiveness in two ways: the investment attractiveness of the national economy (at the macroeconomic level) and the investment attractiveness of the enterprise (at the microeconomic level). The definitions given by the above-mentioned authors reflect macro-investment attractiveness, while Podshivalenko (2010), Kreinina (2005), Thang (2009) studied the investment attractiveness of an enterprise or a particular project.

Being most often interchangeably used with investment potential, investment opportunities are mainly considered not as a characteristic of a region, but as an aspect of an enterprise. Also, this economic category is approached differently in different parts of the world. For example, Kallapur (2001) describes it as a set of opportunities to invest in projects with positive net present value. A broader explanation by Dvoretzskaya (2007) [20] defines investment opportunities as a set of alternative projects for the firm to create new products or to expand current production. According to the US Electronic Code of Federal Regulations, an investment opportunity means "anything, tangible or intangible, that is offered, offered for sale, sold, or traded based wholly or in part on representations, either express or implied, about past, present, or future income, profit, or appreciation.

These definitions of the investment opportunities can be generalized as follows: an investment opportunity is a set of projects in which a business entity can allocate investment resources under favorable conditions. Applying this concept to all subjects of the economy helps to evaluate total investment opportunities within a country. Therefore, investment opportunities at the macro-level are a set of all real and financial objects that can be invested by economic entities within a certain area.

The following table clearly shows the difference between chosen concepts at both micro- and macro-level:

Semantic delimitation of economic categories

Concept	Meaning	
	At micro level	At macro level
Investment climate	-	A set of economic, social, political, legal, and other conditions that affect the risk and profitability of an investment.
Investment attractiveness	An indicator of the economic efficiency of investing in a production facility or financial instruments.	The state of the investment climate at a certain time.
Investment opportunities	A set of projects in which a business entity can allocate investment resources under favorable conditions.	A set of all real and financial objects that can be invested by economic entities in a certain area.
Investment potential	The ability of the business entity to direct its investment resources to realize its investment opportunities.	The sum of all investment resources needed to realize the existing investment opportunities in the region.

Our studies have shown that investment potential is closely linked to investment opportunities, regardless of whether they are considered at the micro- or macro level. That is, when investment opportunities are not identified in a region or at the enterprise level, the existing investment resources remain stagnant. In addition, a favorable investment climate, ie high investment attractiveness, is a prerequisite for the full use of the investment potential.

It should be noted that the concept of domestic investment potential has not yet become the subject of in-depth research in economics. Therefore, to unify all approaches in a single one we suggest defining the domestic investment potential as a set of investment resources needed to fund the existing investment opportunities in the country without the use of foreign sources.

CONCLUSION

There are only a few nations that could build a strong and advanced economy from the bottom through the FDI development convention. Most emerging economies are remaining behind the industrial revolution happening in high-income countries. The lessons from history tell that this will lead to harsher inequality and disparity among nations causing more poverty, migration, and instability. To break the status quo in the way to the development emerging economies have to deal with the dilemma of capital deficiency. That is, to build up a high-value adding economy they need massive capital resources; meanwhile, without an advanced economy, it seems quite difficult to raise enough funds for strategic investments. At present most developing countries see FDI and foreign debt as a solution to this dilemma. However, recent literature has proven that FDI flows to the markets where domestic firms operate in best conditions seeing high returns on investments. Moreover, in most cases, the effectiveness of long-term foreign loans tends to be lower than expected because of factors such as centralized usage of funds, corruption, low skills. Thus to achieve the goal of sustainable economic growth, relying on domestic investments may serve as a “win-win” strategy for both the central government and private sector, where FDI and foreign loans play the role of supplementary instruments of funding. Designing an investment policy oriented towards domestic investors requires, first of all, the evaluation of the domestic investment potential. This makes it possible to diagnose where resources are deployed fully and where they are ineffective or stagnant.

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PROBLEMS IN TOURISM IN UZBEKISTAN

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ABSTRACT

This article provides detailed information on several problems of tourism development in Uzbekistan and measures to address them, the development of national and international tourism in our country. Today, the tourism industry is becoming one of the highest service systems in the world. Its social sphere is distinguished from other spheres by the fact that there are conditions for improvement in all countries, which are present in different stages of development. In addition, moral, administrative and social shortcomings for visitors, visa procedures, the high level of country control over licensing and certification in dealing with tourism are among these problems.

KEYWORDS: *Infrastructure, Tourism Communication System, Extreme Environment, Locomotive System, Tourism Industry, Certification, Licensing, International Tourism.*

INTRODUCTION

The State Committee for Improvement of International Tourism in our country and revealed important problems that hinder the high level of use of the country's tourism potential. Reasons and problems the law "On measures to improve the situation" was applied in his scientific work. This law has been submitted to various sites on the basis of discussions of normative and legal acts. Lack of tourism communication system, lack of qualified teachers, and weak implementation of the Republic of Uzbekistan abroad are among the main problems. In addition, moral, administrative and social shortcomings for visitors, visa procedures, the high level of country control over licensing and certification in dealing with tourism are among these problems. "Given the growth rate of tourism and the positive impact of other sectors of the economy on the growth of welfare, as well as the need to take measures to protect the

environment, the tourism industry is a sustainable development of the country. It should be one of the most powerful tools in the field, "the project says. [1]

One of the most pressing issues in improving the tourism industry is the collection and aggregation of information on the system at the national level, in any case - to introduce new depositors to the industry or to conduct international settlements. It is important to receive and know information that is both quality and valuable, always in an open order. However, in the process of collecting conclusions at the general level, getting acquainted with the legal and regulatory information is different in different regions of the world, and even in countries, and is one of the most important challenges in improving and developing this area. As a result of solving this problem, there are many opportunities to develop tourism improvement laws and changes around the world, in the region and in different countries, as well as in the interpretation of the region. One of the next pressing issues is the lack of quality of service in various hotels. Tourists usually take a thorough look at the layouts of the place they want to travel to. Several tourists get information on these layouts from the hotel's websites. The service of many hotels, the availability of various discounts for tourists, the choice of hotels that are convenient for them depending on their conditions. It is obvious that the quality of service in our hotels is quite low. We cannot say that the good quality of service from small hotels and hostels, organized under private houses, is enough to please tourists. Especially due to the lack of transport services in hotels, tourists arriving in our country face problems from the airport, or rather from the doorstep. [2,3]

Today, the tourism industry is becoming one of the highest service systems in the world. Its social sphere is distinguished from other spheres by the fact that there are conditions for improvement in all countries, which are present in different stages of development. These are natural, economic and social, historical places, geographical location, weather conditions, location in extreme environments, climatic conditions, ecologically problematic, as well as buildings built in different ways. We can see that there are huge benefits to the budget. Nowadays, traditional, economic and historical, but also new styles, methods and appearances are emerging, which means that new trends are not only a source of foreign exchange inflows, but also an improvement in location. creates. Therefore, later on, all countries are paying high attention to the tourism sector as well as the quality level of the country, along with the social sectors, which in a short time have a high level of profitability. While in these systems, advanced countries participate as entities that implement new laws and conditions for the industry, which have created new styles and capabilities of tourism, some of the developing countries are the "locomotive" system of the tourism economy, while others are foreign exchange accounts. He is involved in the process of tourism as one of his books and as one of the systems that introduces the state to the whole world. This is due to the fact that during the high intensification, new images and quality levels of the industry appear later, making it more difficult to keep track of it, to keep statistics, to analyze it and to regulate it on a regular basis. [4,5]

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"UNIQUE WAYS TO ORGANIZE THE FIRST PIANO LESSONS FOR ADULTS"

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ABSTRACT

This article is about specific ways of organizing the first piano lessons for adults and introduces general concepts of music art. Taking into account the laws of development of children's voices, the correct teaching of the laws of music, the analysis in accordance with the intellectual abilities of children are the scientific principles of the lesson. science is difficult to implement without systematization. This requires raising the worldview, culture and spirituality, professional knowledge and human qualities of our young people to the level of world standards.

KEYWORDS: *Classics, Music Culture, Teaching Materials, Spiritual Nourishment, Systematic Basis.*

INTRODUCTION

Our republic is one of the most developed countries in the world. To maintain it, we need to develop our economic potential with the spiritual potential to meet the requirements of scientific and technological progress in the XXI century. The main goal of the educational process is to train and improve the professional skills of personnel in various fields. This requires raising the worldview, culture and spirituality, professional knowledge and human qualities of our young people to the level of world standards. Among the scientific and practical activities in the implementation of such a complex social task, the science of "Methods of teaching music and school repertoire", which is based on science, also plays a leading role as well as opportunities for future teachers to teach pedagogy, psychology, spirituality, the idea of national independence, computer science, new pedagogical technologies, music. based on modern requirements and methods, programs and textbooks in general sciences have been created. [1-4]

Main part: The system of continuing education plays an important role in bringing up the younger generation as healthy and well-rounded people. In order to do this, teachers need to master modern teaching methods along with the theory of education and develop the ability to apply them in pedagogical practice in order to develop the ability to conduct teaching and learning process. . the teacher should be able to create a project of each lesson on the essence of the process of "Pedagogical technology" and skillfully use these projects in pedagogical practice. At the same time, you need to develop the ability to work on your spirituality. to get acquainted with the classics of European and Eastern composers and strive for quality and effective teaching of "Music Culture". [5]

The subject "Methods of teaching music and school repertoire" is a subject of pedagogy

as a generalization of all parts of the work tested in practice, and provides methods of teaching music that have yielded effective results in practice. The science of methodology is mainly based on the results of research in pedagogy, psychology, aesthetics and art criticism. it describes the principles of music teaching and identifies modern technologies and methods to be used in educating the younger generation in the future. [6]

Music is an art form that has a large place in our cultural life and plays an important role in human development. The family, society, school, art play an important role in the spiritual formation of each person. Among the many factors of upbringing, music education plays a special role in leading the younger generation to maturity. music education is one of the main and complex aspects of fine arts education, which teaches a person to correctly perceive and appreciate the beautiful things around him. Music has the potential to have a powerful effect on the human psyche, bringing it into the realm of sophistication. Music equips a person with high taste and gives him spiritual nourishment. The main purpose of teaching music at school is to form a musical culture in students, to bring them up as harmoniously developed people who can meet the requirements of the times [7]. The main tasks of teaching music in school:

Basics of the course "Methods of teaching music and school repertoire"

Functions include:

- have an idea of the culture of the individual in the education system;
- Reforms in the field of education, modern pedagogy study of technology, requirements;
- The use of modern technologies in the preparation of lesson plans;
- Development of methodical developments, visual aids, handouts, be able to use computers, slides, disks, magnetic tapes;
- Age-appropriate music teaching methods for each class and selective application of methods;
- The musical culture and spirituality of the next generation through music formation;

To sum up: The scope of knowledge about music is a key factor in music education and upbringing. It reflects the rules, conclusions, and generalized musical experiences of human music. Acquiring them means developing knowledge and skills through music practice. the relevance of learning materials to children's learning experiences in the classroom. Taking into account the laws of development of children's voices, the correct teaching of the laws of music, the analysis in accordance with the intellectual abilities of children are the scientific principles of the lesson. science is difficult to implement without systematization [8]. All the learning activities of the course and the logical interrelationships of the following lessons form the basis of the system. the principles of mastering works from simple to complex, from unknown to known, raising the level of knowledge and skills for singing and listening, are consistent with a certain order and mean systematic. each activity of the lesson, in turn, is a logical continuation of each lesson, and the principle of continuity means that more and more pedagogical goals are achieved [9].

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PRACTICE OF GENDER CIDE IN INDIA

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ABSTRACT

The three words "It's A Girl" have been dubbed "the world's three deadliest words." We have witnessed numerous changes in the world throughout the years, from advancements to the introduction of new technology, and we have seen many good changes in the world. The majority of people are now receiving appropriate education in order to comprehend what is wrong and what is good. Despite having all of these advantages, some people still see having a female child as a curse and a bad omen. The primary goal of this study paper is to get a better knowledge of the female child's situation in India. Within the nation, female children are seen as burdens in certain rural areas, and male children are given priority. People are being forced to murder their female children due to their naïve faith in religion, their terrible financial situation, and other factors. Because a female kid is nothing but a burden for them. They began the practice of Female Infanticide to get rid of the burden of a female kid. People in India began doing this technique a year ago, and it is still practiced in certain areas of the nation. The status scenario of girl children and problems affecting girl children are two of the major topics that have been considered in this research study. In the case of female children, all of the variables that are causing them to have difficulties have been discovered. It is critical to develop policies to end behaviors like female foeticide, female infanticide, child marriage, child trafficking, and child maltreatment. Additionally, chances to assist education and job possibilities for them must be encouraged, as well as changes in the attitudes and perspectives of those who consider women as a burden and only want male offspring. When given the opportunity, girls and women may improve their families' reputations and maintain their livelihoods.

KEYWORDS: *Evil Practice, Exploitation, Foeticide, Fundamental Rights, Legal.*

1. INTRODUCTION

Discrimination against females in India starts at birth and continues throughout their lives. Gender prejudice still exists in all cultures, whether developed, developing, or developing. Many Indian couples worship many Gods and Goddesses and pray for a child, but only a male kid is considered a blessing. So, despite the fact that women are revered in India, they continue to be victims of discrimination and injustice. India is one of the few nations in the world where women and men have life expectancies that are virtually equal at birth [1].

The lack of a traditional female advantage in life expectancy in India indicates that women's health is a systemic issue in the country. Women in India have a significant death rate, especially

during their infancy and productive years. Indian women's health is inextricably connected to their social standing. Women in India come from a variety of socioeconomic situations, and they are often excluded or ignored when it comes to basic health care. Women, on the other hand, are the fundamental foundation of every community, and if one wants a healthy society, women must be properly cared for. According to research on women's issues, the contributions Indian women make to their families are often ignored, and they are instead seen as a financial burden [2].

Female foeticide and infanticide are two examples of India's distinct and important versions. This is a different kind of violence that exposes Indian society's traditions of demeaning women. The fear of having to pay for a girl's dowry, the belief that a son should perform the last rites for true salvation, the conviction that lineage and inheritance run through the male line and that a son will look after his parents in their old age, whereas the daughters will belong to another family, are all reasons for eliminating the girl child. The true murderer of girls is lifelong discrimination in nurturing and care, which is less apparent and spectacular but just as deadly as female foeticide and infanticide.

2. DISCUSSION

2.1 Infanticide:

The crime of a mother murdering her kid within a year after birth is known as infanticide. The deliberate killing of babies is known as infanticide or baby homicide. Infanticide has been done on every level of cultural complexity, from hunter gatherers to sophisticated civilizations, including our own ancestors, according to anthropologist Laila Williamson. It has therefore become the norm, rather than the exception.

2.2 Infanticide among females:

Female infanticide is the intentional death of female infants. Gender selective killing, or "gendercide," is another term for it. It is a significant source of conflict in several countries, including India, China, and Pakistan.

The sex-selective termination of female fetuses is not the end of discrimination. In the vast majority of instances, it persists after delivery. Despite advances achieved as a result of government-run programs, such as in India, girls still lack sufficient nutrition, healthcare, education, and maternity care. According to child mortality statistics, a higher percentage of female children do not live to be five years old [3].

2.3 Infanticide in Its Many Forms:

Poisoning, throat splitting, starvation, smothering, and drowning are some of the primitive ways of removing girl infants after birth. In many areas, they were killed by stuffing the mouth with cow dung, giving a tiny tablet of opium, or not feeding the female kid. There have also been many cases of children being ruthlessly killed by their own families.

In Indian North Arrot villages, cases of female infanticide were often recorded as natural deaths or stillbirths. After paying physicians, some parents have even been successful in getting fake death certificates produced. The baby girls' corpses are subsequently burnt to eliminate any traces. When proof of parents poisoning their female offspring became public, they started to use techniques like as starving the infant to death.

Many more young girls are discarded, frequently in trash dumps. Although some females are discovered and resurrected, the majority perish. In instances when a female is delivered instead of the expected boy, brutal treatment of the mother and new born girls has been recorded. The woman and her newborn child are treated poorly since they are seen as a burden, and they often go without medical attention.

2.4 Background Information:

Throughout history, women have been subjected to hardship, discrimination, intimidation, and unfair treatment in society. The only variation is in the forms, which change through time and from culture to society. Women are treated as second-class citizens, given secondary status, subordinated to males, subjected to different ordeals, and denied the right to exist. They are seen as individuals whose role is to act on the advise of men, to serve, please, and care for them: first the father, then the husband, and last the son. They are cast in such a perfect role that they must live at the husband's mercy and die on his pyre. The reason for this is because men are given a preferential status in many cultures since they are breadwinners, feed the family, and carry on the family name. Males have access to women at their disposal, whenever and whenever they choose to utilize them. As a result, they are in a subservient position, do not represent an autonomous entity, do not have control over their life, and do not stand alone, but rather reflect the amour proper of others [4].

Throughout history, women have been subjected to assaults on their lives and crimes against their dignity and self-esteem. Infant girls were buried alive. They were poisoned by smearing errukam flowers or oleander berries on the mother's breast and giving them milk. Another option was to use paddy grain sap or give them sleeping pills to get rid of them.

The world-historic phenomena of male revolution overturning mother rights in favor of father rights and reducing women to slaves also found expression in Hindu holy texts, which sanctified the need of a son for salvation. Our nation has a long history of favoring sons. In fact, there is a traditional blessing called "SAU PUTRA BHAVA," which means "may you have 100 sons." This demonstrated that a woman's only function was to give birth to a son or sons. Daughters, on the other hand, were neither welcomed or wanted. So, if a lady only produces daughters, she is considered abandoned, and her husband is free to remarry. There are many traditional customs and rituals in "JIUTIA," where a lady fasts for the whole day in order to have a son.

When women conceive, numerous mantras from the Atharvaveda, one of Hinduism's holy texts, are recited to the mother so that if the embryo is a female, it would change into a boy. Women were treated harshly by ancient Hindu law, which denied them social, economic, and personal independence [1].

2.5 The Source Of The Problem And Its Consequences:

Female foeticide has a variety of underlying reasons that represent many political, economic, social, cultural, and religious behaviors, none of which justify such a human rights violation.

➤ Women's Situation:

When we get to the core of the issue, we find that the low position of women in India, along with gender discrimination, is the most significant reason in the declining sex ratio. Women were worshiped as Goddesses throughout the Vedic period. However, as time passed, particularly

following the Muslim era, women's position deteriorated dramatically. During the British era, they were referred to as "slaves of the slaves." In a patriarchal culture like ours, boys are expected to care for their aging parents while still carrying the family bloodline on. Only the son, not the daughter, is allowed to ignite the pyre of his father in Hinduism. Women are seen as a liability that must be married off in order to relieve the load. Everyone wants daughters-in-law to give their families boys, but no one wants daughters [5].

2.6 Technology Advancement:

Scientists and medical practitioners have been able to use various procedures and techniques to identify the sex of the baby as a result of medical advancements and technology progress. The gender of the fetus has piqued people's curiosity. It is aborted after the gender is confirmed to be female. The purpose of the sex determination tests was to identify gender-related congenital abnormalities in the unborn child. Unfortunately, it is often utilized in India and other Asian nations to determine the gender of the baby in order to have it terminated if it is a girl. The purpose of such exams is good, but people with hedonistic inclinations will always misuse good to fulfill their egos, wants, and aspirations at the expense of others and society. This is true of these techniques. They are mostly employed as sex preselection tests in the process of material development. The sex determination test has been used in India since 1978, and it has progressively gained popularity. In reality, private clinics have sprung up all across the nation in order to make a profit [6].

2.7 Loopholes in the Law:

Article 21 of the Indian Constitution says that every child created has the right to complete development, regardless of gender. Determining a child's sex at any stage of development, even prenatally, is a violation of the Article's right to development. Following the disturbing results of the All India Institute of Medical Sciences 1974 Survey on the frequency of requests for sex selective abortions, the first prohibition on sex determination was enacted in 1978. The Pre-Natal Diagnostic Techniques Act (PNDT) was signed into law in 1994 and went into effect on January 1, 1996. The Pre-Conception and Pre-Natal Diagnostic Techniques Act was modified in 2002, making it the Pre-Conception and Pre-Natal Diagnostic Techniques Act (PC-PNDT). In 2011, it was also changed.

The 1994 Act fails to account for technology advances that allow for sex selection both before and after conception. The objective of the PNDT Act was to regulate and prohibit the abuse of diagnostic methods to identify the sex of a foetus in order to perform sex selective abortion. The PNDT Act of 1994 was designed to prevent the abuse of technology from contributing to the decrease in the child sex ratio. This law prohibits medical practitioners from identifying the gender of a fetus and enables the government to take necessary measures if the PNDT Act is broken.

However, the Act was not effectively implemented, and it was modified in 2002. With the passage of time, numerous loopholes in the Act have been discovered, both in terms of interpretation and execution. Because it is impossible to control all clinics that utilize ultrasound for sex determination as well as a variety of other reasons, such as detecting genetic problems in the baby, the legislation has proven ineffectual [7].

Because of the permissive Medical Termination of Pregnancy Act of 1971, which permits abortion for a variety of reasons, including medical trauma and contraceptive failure, the PC-PNDT Act is made useless. This is a significant flaw since many individuals may fabricate these circumstances and find methods to break the law. While feminists argue that women have the freedom to do whatever they choose with their bodies, sex selective abortion is a kind of female violence in and of itself. To close this gap, Medical Termination of Pregnancy practitioners must be more cautious while conducting abortions in order to differentiate between sex selective abortions and real abortion cases.

2.8 Female Infanticide's Aftereffects:

For every action, there is an equal and opposite reaction, Newton's Third Law of Motion says. The consequences of female feticide holocaust are far-reaching. The majority of parents are blinded by their desire for male offspring and are unaware of the catastrophe they unknowingly invite by engaging in female foeticide [8].

2.9 Female/Female Trafficking is a serious problem in the United States:

Because of the sharp decrease in the number of girls, they are in short supply in comparison to the growing number of men suitable for marriage. As a consequence, in many areas, illicit female trafficking has become widespread. Women, usually young girls who have barely passed puberty, are forced to marry. Many young girls are abducted and sold to the highest bidder by their parents. The consequences of child marriages and pregnancies are catastrophic. The current and future psychological costs of an area participating in the sale of its female population are worrisome.

2.10 Rape and Assault are on the rise:

When women are considered an endangered species, rape, assault, and violence become commonplace. When there are fewer available females, the survivors will have to deal with the realities of living in a culture where testosterone is at an all-time high. The legal system may provide protection, but many crimes may remain hidden for fear of isolation, shame, and punishment on the side of the girl, as is the case now [9].

Decline in Population: There will be fewer births if there are no women to carry offspring (male or female), resulting in a population decrease. While population management is a priority for many countries, including China and India, eliminating one sex is not the best method to accomplish this objective [10].

3. CONCLUSION

In her battle against the barbaric practice of female foeticide, India has a long way to go. The seconds are ticking away. People are unaware that a scarcity of females would result in a scarcity of suitable wives to carry their boys. However, the gap in status between men and women cannot be closed just by adopting and implementing laws unless there is widespread popular support. A century-old habit that has spread across society like a disease cannot be eradicated in a matter of days.

It will take a long time to educate people about their rights and the reality that men and women are equal. This is precisely why effective enforcement of criminal laws is required. There are a slew of regulations that regulate pre-conception and pre-natal procedures, but it's amazing how

little attention is paid to the fact that these laws aren't being followed. Only by reconsidering current criminal laws and ensuring their effective execution can this sort of transformation be accomplished. Only then can justice be guaranteed. The laws that have been passed do not reflect the will of the people. The general public is unaware of the efforts done to improve the status of women in society, and they must be made aware. Because of this misunderstanding, the proposals are met with a lot of pushback and protest from conservatives. Because conservative social thought is firmly entrenched in our patriarchal culture, legislation should be implemented with the public's readiness to accept it. The necessity of the hour is for a coordinated effort by legislators, medical professionals, political leaders, NGOs, the media, and the general public.

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FEATURES OF LANDSCAPE DESIGN FOR 9-FLOOR RESIDENTIAL BUILDINGS

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ABSTRACT

The article discusses the peculiarity of planting trees and shrubs in the courtyard space of a 9-storey residential building in the second climatic zone of Uzbekistan. The nature and density of planting of green spaces at which the necessary light regime of the apartments is provided is determined. The possibility of creating interesting landscape compositions and achieving standardized values of the density of green spaces according to SNK - 2.07.01.-03 (3-4 m² people), while ensuring the necessary light regime of apartments

KEYWORDS: 9-Storey Building, Light Regime, Insolation, Normalized Area Of Green Spaces, Courtyard Space, Latitudinal House, Meridional House, Calculation Method, Landscape Design, Crown.

INTRODUCTION

If you look at the existing multi-storey residential buildings in Tashkent, especially in those areas where tree plantations have already formed, you will notice that insufficient natural light is observed in the living rooms located behind these trees during the day. People are forced to turn on artificial lighting even at noon. Having measured the area of greening of some courtyards in the Chilanzar region, it was found that the area of landscaping was normal (3-4m² / person). However, tree plantation prevailed in the landscaping. Plane trees grew up to 20-22 meters, and residential buildings were 13-14 meters high. At present, in the practice of design and in scientific articles, only a horizontal projection of the crown of trees is included in the greening area, which does not quite correctly reflect the actual area of green spaces. I propose to include the entire outer surface of the crown of trees and shrubs in the landscaping area. Then it will be a more reliable volumetric assessment of the entire landscaping.

Natural illumination was measured at the level of the work surface of the table in the middle of the room. In the apartments on the second floor, in front of the skylights, the crowns of trees were closely adjacent to each other, as a result, the illumination was only 50-60 lux. On the last 4th floor, the sky was clearly visible, so the illumination in the apartments was 80-90 lux. Illumination in the rooms was measured with a luxmeter during the period when the facade of the building was not exposed to direct sunlight. According to European standards, the illumination of the working surface of a table in residential buildings should be within 150-200 lux, and according to KMK 2.01.-02.-18 "Natural and artificial illumination" - 100 lux.

Main part

Currently, when performing a section of the general plan, in particular, landscaping and landscaping, they show the number of trees, shrubs, flowers, the area of lawns. In orthographic projection, a horizontal projection of the crown of trees and shrubs is performed. The explanatory note indicates only the number of trees, shrubs in tabular form. And to the question: do they meet the urban planning norms according to SHNK 2.07.01.-03. greening area of courtyards of multi-storey residential buildings - no answer. No such analysis has been carried out. In most scientific articles on landscape architecture, an analysis of the nature of landscaping and landscape architecture as a whole in a city, a village or a city district has been carried out in terms of indicators such as the area of greenery per person or the area of greenery as a percentage of the total area of the city

One of the reasons for not performing such an analysis by the head of the project section is that in most cases, the area of greenery plantings in multi-storey buildings (9 floors and above) is 1.5-2 times lower than the norm for the conditions of oases and foothills (2 climatic zone of Uzbekistan according to KMK - 2-01-94). As the analysis of the nature of landscaping in micro-districts shows, with an increase in the number of trees and shrubs, an increase in the density of plantations, regulatory requirements are achieved. However, in this case, the insolation and light regimes of the apartments overlooking this courtyard are violated. The area of parking lots and playgrounds is decreasing in comparison with regulatory requirements. Therefore, an analysis was made of the courtyard space of a 9-storey residential building in Tashkent, where green spaces provide a normal light regime for apartments.

A fragment of residential development includes four 9-storey buildings that form a courtyard space with a long north-south axis. The distance between the facades of the meridional and latitudinal houses meets urban planning requirements. The total area of the yard is 4625 m². Poplars and decorative oaks in front of the eastern (2nd house) and western (3rd house) facades of the houses are planted at a certain interval and at a distance of 7-9 m from the facade. In front of the facade of other houses, trees are planted in a certain rhythm. Each row consists of identical trees with a narrow and elongated crown. This allows the living rooms to be sufficiently illuminated with natural light from the firmament. However, the green area (2510m²) of the yard space, taking into account all green spaces, is 1.7 times lower than the standard values and is 2.5m² / person with a number of 3-4m² / person.

It should also be taken into account that the number of tenants was taken into account only for three houses, the fourth house was assigned to another courtyard space (rms. 1). The novelty in this article is that I propose to calculate the area of trees and shrubs landscaping not by the area of the projection of their crown onto the horizontal surface of the earth, but by the outer surface of the crown.

Let's consider several characteristic forms of tree crowns (Fig. 2). The first shape is the cone-shaped crown of a coniferous tree. The area of the horizontal projection of the crown on the ground is: $S_g = \pi D^2 / 4$, where D is the diameter of the horizontal projection of the crown. The surface area of the crown, with the height of the lateral surface of the crown equal to $3D$ (without the area of the lower base), will be $S = 0.5\pi D \times 3D = 1.5 \pi D^2$. That is, the area of the crown will be three times the area of its projection onto the ground. With a crown height equal to $4D$, the area of its outer surface will be four times the area of its base.

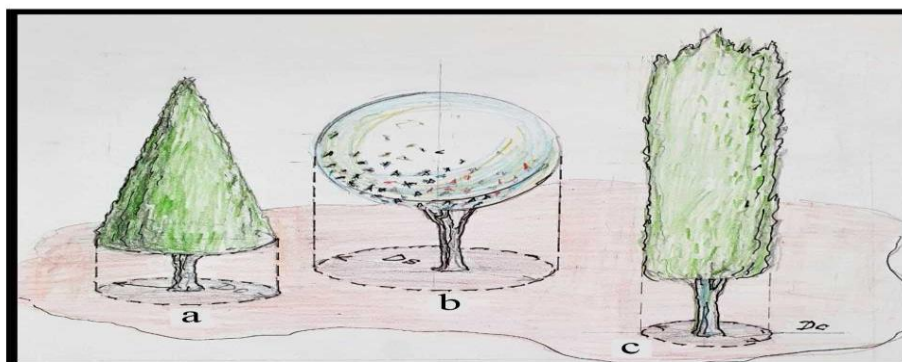


Fig.2. The projection of the crown of trees of various shapes on the surface of the earth

a) cone b) ball c) cylinder

Fig.1. Landscaping of the courtyard space of a 9-storey residential building

Take the crown of a tree in the form of a ball. The surface area of its horizontal projection is: $S_g = \pi D^2/4$. The surface area of the ball is: $S_{ш} = \pi D^2$, i.e. it is four times its horizontal projection. Poplars often have a crown shape in the form of a tall cylinder. Then the surface area of the crown of a poplar can be determined from the well-known expression:

$S_T = \pi D \times h_{ц}$. With a crown height equal to $4 D$, $S_T = 4 \pi D^2$. That is, the area of its crown is 16 times greater than the area of its horizontal projection.

Now let's return to our nine-storey building and calculate the crown area of poplars and ornamental oaks in front of meridional and latitudinal houses. Their total number is 23 trees. With an average crown height of 15 meters (although poplars in Tashkent grow up to 25-30m), the total area of tree crowns was 2925m². Taking into account the area of lawns, the total area of landscaping was 5435 m². The landscaping area per person was 5.4 m², which is 1.4 m² more than the overestimated norm of gardening in the yard. It should be noted that such high rates were even with the construction of two playgrounds, three gazebos and a parking lot for 24 cars. The width of the driveways in the courtyard for the approach of vehicles to the entrances was taken not 3.5 m, but 4-4.5 m. (fig. 1).

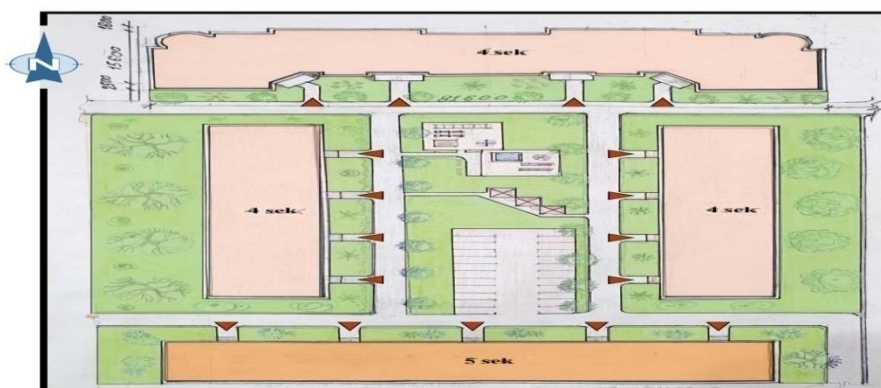


Fig.1. Landscaping of the courtyard space of a 9 storey residential building

Fig.2. The projection of the crown of trees of various shapes on the surface of the earth

a – cone, b – ball , c – cylinder

METHODOLOGY

Methods of full-scale measurements of the illumination of living rooms using a luxmeter in the absence of direct sunlight were applied, i.e. lack of insolation of living rooms. The rooms were illuminated by the diffused light of the firmament and the light reflected from the leaves of trees, shrubs and the facade of the opposing building. A mathematical analysis of the area of the outer surface of the crowns of trees of various shapes (cone, ball, cylinder) was carried out according to the well-known formula. Leaves inside the crown volume were projected onto free areas of its surface. The author analyzed the normative literature on urban planning and landscape architecture.

Literary review. If for determining the gaps between the facades of houses the main role is played by ensuring the normative insolation of each apartment, then to ensure a sufficient light regime of the apartments during the growing season, the main role is played by the density and nature of planting of green spaces are considered by IS Sukhanov, AASaidov [2, 3]. Much has been said by L.A. Adylova, D.U. Isamukhamedova [4, 5]. The norms of green spaces per person in the courtyard, in the microdistrict, residential area, on the scale of the city or settlement are indicated in the SNK for urban planning. [1]

The methods of creating interesting landscape compositions in garden architecture are described in Rosemari Alexander, Karena Batstoun [6]. In the article: "Landscape architecture: design of private houses" Norman K, Booth gives recommendations and suggestions for the organization of landscaping and landscape design of the courtyard of a low-rise dwelling [7]

In the article: "Recommendations for determining the urban planning maneuverability of residential buildings, taking into account the landscape and climatic features of Central Asia" G.K. Goldstein speaks about the landscape solution of the courtyard space, depending on the planning structure of the courtyard and the direction of the prevailing winds [8]. In open and semi-open courtyards of multi-storey buildings, it is recommended to plant trees with a dense crown opposite the prevailing winds. This solution is especially important in areas with frequent dust storms.

Architect I.A. Merport, in his book "Housing for the South", recommends a landscaping structure for desert and foothill zones that allows horizontal and vertical ventilation of spatial formations, and also notes: "The number and placement of trees must meet the requirements for limiting insolation" [8]. He did not say anything about ensuring the normal light regime of apartments. The principles of organizing protective zones from green spaces for tourist villages and roads are described in the articles of Z. E. Matniyazov [9,10,11].

CONCLUSIONS AND OFFERS

The analysis and calculations carried out allow us to draw the following conclusions and proposals.

When calculating the area of trees and shrubs landscaping according to the above method, it makes it possible to achieve the normative density of landscaping even in a 9-storey building, while ensuring sufficient light conditions for apartments.

Shrubs growing up to 5-6 meters can be planted in the courtyard area adjacent to the facade, at a distance of 3-4 meters from the facade at a certain interval to ensure ventilation of the apartments. Shrubs should not form a solid windbreak.

Trees gaining a height of 15-20 m should be planted behind the passage for cars at a distance of at least 8-9 meters from the facade, also with a certain interval between their crowns to ensure the normal light conditions of the apartments.

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**POLITICS AND POLITICAL SCIENCE IN THE NEW UZBEKISTAN,
THE FORMATION OF POLITICAL CULTURE TODAY**

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ABSTRACT

This article emphasizes that political science and today's political culture are primarily about the involvement of everyone in the political life of society, starting with the family. The article also notes that the new political views in the new Uzbekistan are based on modern requirements. If you build your policy correctly, raise a political scientist in the family who correctly assesses the policy of society, then the future of the country and the state government as a whole in all spheres of the social situation of the population can be seen at the highest level."

KEYWORDS: *Politics, Political Culture, Political Science, Society, Political Science, Political Science, Public Administration, Socio-Politics.*

INTRODUCTION

In the first years of independence, first of all, attention was drawn to the fact that all legal laws and regulations of the state are adopted in accordance with the Constitution, which is the main pillar of the state, and the legal spheres of the state serve the interests of the people from a constitutional point of view. Large-scale work has been carried out to form the legal culture of the people. Where the legal consciousness of each nation is at a high level, the development of politics is at high levels. In a democratic state, like other social sciences, political science is one of the disciplines that study the social stratum of society and state power. " Our first President I. In his report "The ideology of national independence – the faith of the people and faith in a great future" Karimov noted that "our centuries-old history shows that the role of education, in particular social sciences, in shaping a person's worldview is invaluable. Whether it's social studies, history, philosophy, political science, psychology or economics - it's not for nothing that they all claim to have a huge power of influence in achieving intellectual maturity" [1]. For a deep understanding of the changes taking place today in the country and abroad, citizens need to have a political culture and political knowledge. Everyone should be indifferent to changes in society. An objective and fair response to the changes taking place around is a requirement of today. "The main goal of our foreign and domestic policy, our actions is to build a just democratic society that will take into account the interests of our people, grant them prosperity and freedom". Politics – participation in the affairs of the state, participation in determining the direction, content, form and objectives of the state's activities.

Historically, the state of Siat developed in parallel with it and developed in accordance with the laws of progress for each epoch. Politics and state power The social situation of the church and its problems are dealt with by the science of political science. This circumstance undoubtedly expresses its relationship with other political sciences -political philosophy, political economy, political theory of international relations, geopolitics, political history, political ethics, sociology, etc. [2]

Political science, with the help of its theoretical methods and means, contributes to the in-depth analysis of government institutions and real political processes. Since the origin of politics and political activity begins from the most ancient times, it is natural that the first treatises and political views on politics also go back to the distant past. The initial form of understanding politics was its religious and mythological interpretation, and in the II-I millennia BC, all ancient peoples were dominated by ideas about the divine origin of power and social order, and these ideas were expressed, as a rule, in the form of myths."Today in Uzbekistan, attention is paid at the state level to increasing the prestige of political science as a science. Confirmation of our opinion is the creation of the Academy of State and Public Construction under the President, the Institute of Strategic and Interregional Relations, dozens of political science departments in higher educational institutions".

Politics is not the sphere that solves any economic, spiritual issues in society. It solves issues related to the development of economic, spiritual and educational spheres affecting the interests of the whole society, the people. In other words, if in economics, spirituality and enlightenment one or another issue is solved within this sphere, then in politics-issues concerning the whole society, all social groups. Politics is an area that solves issues affecting the whole society.

The sphere of influence of politics on the social, economic, spiritual and educational spheres is huge, but not unlimited. He does not always interfere in other spheres of society. Only under a totalitarian regime does politics interfere in the activities of social, economic, spiritual, educational and other spheres at any time and in any place. Politics can interfere with the activities of other spheres in a democratic society when illegal, irresponsible actions are committed within their framework, social justice is violated. Illegal, irresponsible actions in social, economic, spiritual, educational and other spheres of society, violation of social justice, their unfair performance of their function, the emergence and aggravation of a social problem determine the legitimacy of its intervention. The importance of politics for the survival and development of society is no less than the economy and spirituality. Just as without economics, without spirituality, without enlightenment, the existence and development of society is impossible, its existence and development is also impossible without politics. Just as society is doomed to starvation without the production of material and spiritual goods, so its death is inevitable without solving social problems, without establishing unity, organization, justice and order. The great judge and scholar IbnSina said: "... if it were not for the sultans, the khans who led the workers would have been with all of them in such cases". In short, politics is the regulating coach of society, which performs this function on the basis of certain criteria and rules. And political science, of course, will be appropriate if we explain to us its functions and tasks in this direction. When did the concept of political culture arise, in what does its essence find a more precise expression? This problem did not occur yesterday or today. It has existed for many years in all periods of the development of human society and in all countries of the world. The ancient Greek philosopher Aristotle in his work "politics" repeatedly emphasizes that in

ancient slave-owning states, the leading place in state policy should be occupied by work carried out in the cultural life of society, and the head of state and his officials should pay special attention to issues related to the spiritual life of society. An important factor in the development of political culture is the geopolitical space in which peoples of different cultures coexist. Baranov believes that in such conditions the statistical orientation of political culture has been formed. [3]

We call the family a small society within society because every society has its own politics, every family will have politicians and politicians who study it. This means that politics and political culture primarily begin with the family. If you build your policy correctly, raise a political scientist in the family who correctly assesses the policy of society, then the future of the country and the state government as a whole in all spheres of the social situation of the population can be seen at the highest level." Because every family is part of the state, and all of the above people are part of the family, and the qualities of a person should correspond to the qualities of one or the whole, it is necessary" . When you think about political consciousness and political culture, it has aspects that are different in the East compared to the West. While democratic processes in the West rely more on the rule of law, in the East this process takes place on the basis of centuries-old traditions. While the Western example was largely based on the philosophy of individualism and led to excessive politicization of the masses, in the east the concept of democracy is formed on the basis of the idea of solidarity, the priority of public opinion. In the political thinking of our ancestors, the issue of justice and decency in the policy of the Head of State occupied a decisive central place. The famous scientist Albert Einstein urges citizens to interfere in politics. But he believes that politics is more complicated than science. "The pursuit of justice and truth is one of the most important qualities of the nature of our people. In the past, the idea of higher justice was the basis of the requirements and assessments imposed on officials," said the first president of our country, Islam Karimov.

Today, the expression "new Uzbekistan" is repeated over and over again. This is recognition of the fact that in recent years we have reached a completely new level of development, achieving tremendous success. Today, from the rostrum of the UN and international human rights structures, the results achieved in Uzbekistan to ensure the independence of human rights and the media, the eradication of forced labor and the implementation of an open policy are rightfully recognized. Of course, we can say that the era of strategies with new views on politics has come. **We - the world, the world-should be open to us.** Today's life, today's demand for progress, in fact, too. We will definitely make this decisive principle the rule of our life," the President of our country Shavkat Mirziyoyev stressed. "The main goal of this policy is that we must create broad conditions and opportunities for every citizen to realize their strengths and capabilities, abilities and potential". Today we live in a rapidly changing time. On a global scale, the struggle of interests and competition is becoming more and more acute, and the international situation is becoming more acute. In conclusion, I would like to say that our first President I. In his treatise "high spirituality is an invincible force" Karimov writes: "It is difficult to find how many people live on Earth, to meet two people who have the same fingerprint and inner world. Naturally, the thinking and lifestyle of these people differ from each other. When the interpretation is permissible, someone walks on Rahman izmi, and someone walks on Satan izma. This fact itself shows that as long as there is life in this world, differences and contradictions between different people and their consciousness persist." [4]

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FORMATION OF ENVIRONMENTAL COMPETENCE OF PHYSICS STUDENTS IN TEACHING NUCLEAR PHYSICS

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ABSTRACT

The problem of the energy crisis is one of the global problems. According to the conclusions of world experts, the reserves of coal, oil and gas formed in the bowels of the earth for millions of years have been almost completely exhausted by mankind over the past 200-300 years. Therefore, scientists and experts from all over the world have come to a consensus that only nuclear energy can meet the needs of industrial production for electric energy. When using atomic energy, the problem of radioecology arises. This article analyzes the task of implementing environmental education by studying the effects of ionizing radiation on living organisms.

KEYWORDS: *Global Problems, Alternative Sources, Nuclear Energy, Radioecology, Ionizing Radiation, Living Organisms, Maximum Permissible Dose, Absorbed Dose, Radiation Sickness, Environmental Education.*

INTRODUCTION

Currently, special attention is paid to the research of nuclear processes all over the world, including in our Republic. The reason for this is: firstly, that humanity has received modern ideas about the surrounding space thanks to nuclear physics, and secondly, the intensive development of the practical significance of the achievements of nuclear physics. Although the weapon of destruction created as a result of nuclear research is a negative phenomenon and is

criticized by the peoples of the whole world, the peaceful use of huge energy hidden inside the core is one of the urgent problems of our time. This is also due to the fact that the problem of the energy crisis is one of the global problems. According to the conclusions of world experts, the reserves of coal, oil and gas formed in the bowels of the earth for millions of years have been almost completely exhausted by mankind over the past 200-300 years. Expert estimates show that these reserves are decreasing day by day and the daily needs of humanity are increasing

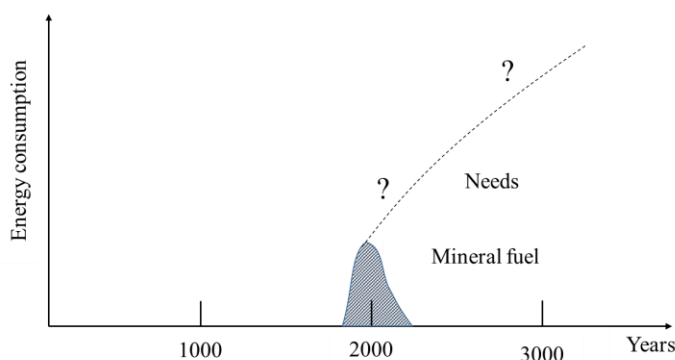


Fig.1. Comparison of a short period of minerals and energy needs.

dramatically and that the continuation of this state will lead to the fact that energy reserves are exhausted in 60-70 years (Fig.1)[1].

Every state and citizens of this state, first of all scientists and intellectuals who care about the future of humanity – the future of the younger generation should assist scientists and researchers who conduct scientific research to find alternative ways of generating electric energy. As a result of these studies, alternative methods of obtaining electrical energy, such as methods of using solar, wind, and geothermal energy, are currently being successfully used. The decree of the President of the Republic of Uzbekistan on the launch of solar power plants in each region of the republic has been adopted. As part of this resolution, a solar power plant with a capacity of 100 MW was launched in the Karmaninsky district of Navoi region, which generates 252 kV·hour of energy. Due to the launch of this power plant, 80 million cubic meters of gas will be saved and the emission of 160 thousand tons of harmful gases into the atmosphere will be suspended.

Despite the fact that alternative methods of production are reasonable from an environmental point of view, due to the low power, they cover only 8-10% of the total electric energy demand. Therefore, scientists and experts from all over the world have come to a consensus that only nuclear energy can meet the needs of industrial production for electric energy. With this in mind, Uzbekistan has decided to build a nuclear power plant (NPP) consisting of two power units with a capacity of 1.2 GW each. This decision is the first step to stabilize the energy system of the republic and provides for covering ~25% of energy consumption at the expense of these power units. Based on this decision, the “Uzatom” agency was established in the republic under the Ministry of Energy, and a branch of the Moscow Engineering Physics Institute was opened. In the leading universities of the republic, new directions of the master's degree in nuclear physics and technology have been organized, the volume of hours of studying nuclear physics in the programs of pedagogical higher educational institutions has been increased. The purpose of the measures envisaged is to train personnel for the project of using nuclear energy for peaceful purposes.

One of the main tasks of personnel training for the nuclear power industry is the formation of perfect knowledge on radiation safety and radioecology of future specialists. In this regard, when teaching radioecological problems and radiation safety, there is a need for a thorough study of the methods of recording devices and the basics of dosimetry.

Environmental problems of energy and the importance of radioecological education

It is known that environmental problems are one of the global problems. In turn, environmental problems can be classified by origin, and consequences in many directions. [2] For example, one of these areas is radioecological problems. The task of implementing environmental education by studying the nature of ionizing radiation and the effects of radiation on living organisms is analyzed below.

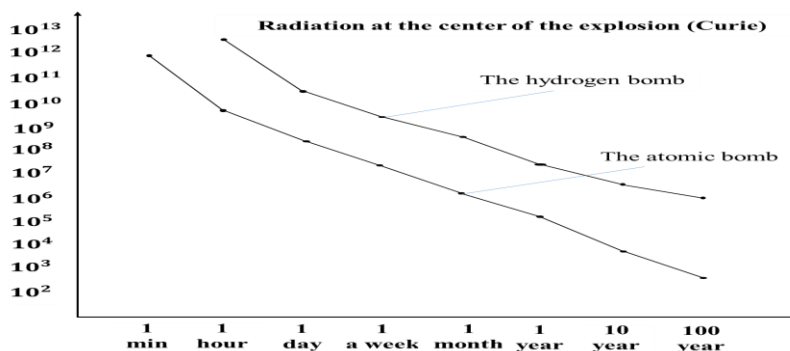


Fig.2. The change in activity after the explosion of atomic and hydrogen

As you know, the phenomenon of radioactivity is divided into natural and artificial radioactivity. Natural radioactivity creates a radioactive background due to cosmic rays, due to the radiation of various underground and terrestrial radioactive elements, and it is impossible to limit the radioactive background. One of the features of radioactive contamination is that the vast majority of radioactive elements are long-lived. Therefore, radioactive radiation after nuclear explosions and accidents persist for many years. Figure 2 shows a graph of changes in activity after the explosions of atomic and hydrogen bombs.

When studying the basics of dosimetry, knowledge of registration methods, basic dosimetric values, units of measurement, the effect of ionizing radiation on living organisms, etc. is important. Despite the fact that there is sufficient literature in this area, due to language difficulties or due to the fact that many books are designed for a narrow circle of specialists, students have certain difficulties. Since the main requirement of education is the possession of future specialists-teachers with perfect knowledge in their specialty, pedagogical research in this area is of great importance. To increase the effectiveness of training, it is necessary to systematize and simplify numerous information. To this end, below we provide basic information on dosimetry and on the effect of radiation on living organisms in a systematic and generalized form. [3]

The effect of ionizing radiation on living organisms

The influence of ionizing radiation on living organisms was noticed seven years after the discovery of X-ray radiation (1895) and radioactivity (1896). By this time, systematic changes were recorded on the skin of scientists working with ionizing radiation. After that, the concept of a safe radiation dose for scientists working with radiation was introduced. This dose is called the maximum permissible dose (MPD) of radiation. By definition, the maximum permissible dose is a dose that does not lead to noticeable changes throughout a person's life. The value of the maximum permissible dose in different years from the experts of the International Commission for Radiation Protection (IPPC) is determined differently (Table 1).

TABLE 1

№	Year	Experts	MPD maximum permissible dose
1	1902	S.Rollinz (England)	10R/days (R-Rentgen)
2	1915	M.Mitcheller (USA)	100 mR/days
3	1934	(IPPC)	200mR/days
4	1936	(IPPC)	100mR/days
5	1948	(IPPC)	50 mR/days, 6 Zv/40 g (Zv-Zivert)
6	1953	(IPPC)	0,6Zv/30g 6mR/days
7	1997	(IPPC) A, B- categories of professional workers	A) -20 μ Zv/g, 6 mR/days
			B) -2 μ Zv/g 0,6 mP/days
			Population -1 μ Zv/g 0,3 mR/days

All living organisms take a certain dose of radiation during their lifetime due to natural or artificial radioactivity. In the diagram Fig.3, the power of various radiation sources is compared with the maximum permissible dose (MPD) set for professional workers.

Table 2 shows the generally accepted types of radiation doses, their definitions, units of measurement and the relationship between the types of radiation. [4]

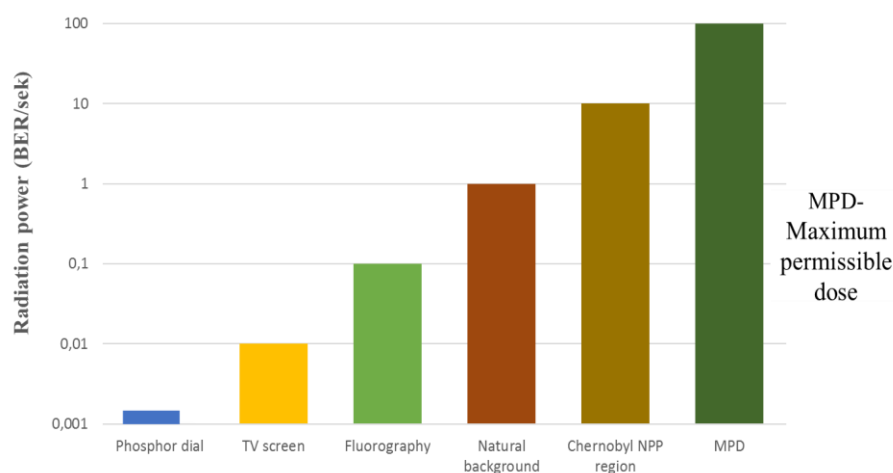


Fig.3. Comparison of the power of various radiation sources.

TABLE 2.

№	Dose type	Definition	Unit of measurement	Relationship between units of measurement
1	Exposure dose	The value equal to the total charge of the same type of ions in a unit mass $D_{exp} = q/m$	Kl/kg $[D_{exp}] = \text{Kl/kg}$	Absorbed dose 1R~0,0091Gr~0,96 rad
			R 1 Rentgen (R) = $2,58 \cdot 10^{-4} \text{Kl/kg}$	Equivalent dose 1R~0,0091Zv~0,91ber
2	Absorbed dose	Energy coming to a single mass $D = \frac{w}{m}$	Gr (Grey)	Exposure dose 1Gr~100rad~110R
			Rad	Equivalent dose 1Gr~1Zv~100 ber
3	Equivalent dose	The absorbed dose, taking into account the quality factor for a specific radiation. $H=D \cdot W_p$ W_p - quality factor or comparison factor.	Zv	Exposure dose 1Zv~110R
			Ber	Absorbed dose 1Zv~100ber~1Gr

It has been experimentally established that the effect of radioactive radiation on living organisms depends on the type of radiation and their energies. Therefore, in dosimetry, to take into account this circumstance, the concept of a comparison factor or a quality coefficient is introduced. Table 3. shows the values of the quality coefficient (W_p) for radiation at different energies.

TABLE 3.

№	Type of radiation and energy range	W_p	№	Type of radiation and energy range	W_p
1	Photons of arbitrary energy (Gamma and X-ray radiation)	1	6	Neutrons (100 keV ÷ 2 MeV)	20
2	Electrons (positrons) and muons of arbitrary energy	1	7	Neutrons (2 MeV ÷ 20 MeV)	10
3	Protons (with energy $W > 2$ MeV)	5	8	Neutrons ($W > 20$ MeV)	5
4	Neutrons ($W < 10$ keV)	5	9	Alpha particles, fission fragments, Recoil nuclei	20
5	Neutrons (10 ÷ 100 keV)	10			

It should be noted that the effects of a certain equivalent dose on different organs and tissues differ. To account for this effect, the concept of a tissue weighing factor - W_t and the concept of an effective radiation dose (E) are introduced. In this case, the effects observed when irradiating the body as a whole is equal to the sum of the effects observed when irradiating each organ separately with this radiation. The effective radiation dose is determined by the following expression:

$$E = H \cdot W_m$$

Here W_t - is the weighting coefficient. The values of this coefficient for various organs are given in Table 4.

TABLE 4

Tissue or organ	Gonads (sex glands)	Bone marrow	Large intestine	Lungs	Stomach	The bladder	Mammary gland	Liver	Esophagus	Thyroid gland	Skin	Bone surface	Other tissues and organs	The whole body
W_t	0,2	0,12	0,1 2	0,1 2	0,1 2	0,0 5	0,0 5	0,0 5	0,0 5	0,0 5	0,0 1	0,01	0,05	1

It can be said that by now the effects of strong and medium-power radiation on living organisms have been studied in detail, but the genetic effects of low-power radiation have been little studied. Table 5. shows the maximum radiation doses that cause non-stochastic effects in living organisms.

TABLE 5

№	Organ, tissue	Dose, Gr	Non-stochastic (deterministic) effect	№	Organ, tissue	Dose, Gr	Non-stochastic (deterministic) effect
1	The whole body	0.5	Vomiting	4	Lungs	5.0	Pneumonia
2	Bone marrow	1.0	Death	5	Lungs	10	Death
3	Skin	3.0	Burn, temporary hair removal	6	Thyroid gland	10	Disorders, destruction of the gland

The biological effect of radioactive radiation is evaluated and controlled by international sanitary rules and regulations (San.R.R.), as well as radiation safety standards. A dose exceeding 250 times the radioactive background from cosmic rays and radiation from the bowels of the earth is considered safe for the human body. Nevertheless, it has been established that one-time irradiation with a dose of 500 X-rays is dangerous for a person, with passive treatments without bone marrow transplantation, in 50% of cases it ends in death. Therefore, in order to control radiation safety, the international agency has developed norms of maximum permissible doses for the population and for professional workers.

The traffic rules for professional workers are 10 times higher than the traffic rules for the population and these workers have certain benefits. In Table 6. the maximum permissible dose for various segments of the population is compared with the natural radioactive background.

TABLE 6

№	Classification according to the biological effect of radiation	Radiation dose value				
		Rad.	Rentgen	BER	<i>Kl/kg</i>	J/kg(Grey, Zivert)
1	Natural radioactive background (for 1 year)	0,08	0,097	0,097	$2,5 \cdot 10^{-5}$	$8 \cdot 10^{-4}$
2	MPD for the population (for 1 year)	0,5	0,61	0,61	$1,6 \cdot 10^{-4}$	$1,6 \cdot 10^{-4}$
3	MPD for professional workers (for 1 year)	5	6,05	6,05	$1,6 \cdot 10^{-3}$	$5 \cdot 10^{-2}$
4	Radiation sickness dose (for 1 time)	200	242	242	$6,4 \cdot 10^{-2}$	2
5	Lethal dose (for 1 time)	400	484	484	484	4

From the above information, it follows that the natural radioactive background due to cosmic rays and natural radioactivity delivers 0.08 ~ 1 rad per year. At the same time, the absorbed dose of human radiation for 70 years is 7 rad. Table 6 shows that according to the decision of the International Commission on radiological protection of traffic regulations for the population, 10% of the traffic regulations of professional workers were adopted. [5]

CONCLUSION

In conclusion, it should be noted that it would be wrong to consider radiation doses below the SDA safe and that small doses will not lead to changes in living organisms. From a scientific point of view, any dose of radiation is biologically dangerous, because chromosomes that have been exposed to radiation and have suffered a mutation are restored with changes. Therefore, any small dose of radiation accelerates the rate of mutation and in 3% of cases of childbirth lead to anomalies. Therefore, the damage of nuclear tests and accidents at nuclear power plants must be assessed not only economically, but also from the point of view of the danger of an increase in the radioactive background that threatens the lives of peoples around the globe. In-depth study of radiation dosimetry in integration with biological actions and their consequences contributes to improving the quality and effectiveness of education, and thereby the implementation of environmental education. The formation of a specialist with in-depth knowledge of nuclear physics is important for the implementation of the task of training personnel for nuclear power.

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ABOUT SCALE, PROPORTION AND IMAGE IN ARCHITECTURE ON THE EXAMPLE OF THE ORDER SYSTEM

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ABSTRACT

This article is about the role of full architecture order in the field of architecture. The main types of this order as well as its basic components have been studied. The author also tries to find out the influence of this order on the development and modern tendencies in the modern world of architecture and construction.

KEYWORDS: *Column, Base, Full Architecture Order, Pedestal, Ionic order, Enablement, Dorian order, Corinthian order.*

INTRODUCTION

Architecture is one of the most important parts of the creative activity of mankind, the works of which - residential, religious, public buildings and engineering structures - serve to meet vital needs and aesthetic requests. They are needed as food, clothing and fuel. But the works of architecture should satisfy not only utilitarian requests. The beautiful and expedient in architecture constitute a single whole. This problem is solved by architectural composition, which determines the interaction of artistic means - symmetry and asymmetry, rhythm and contrast, scale, proportionality and balance. [1]

The unifying principle that creates harmony in architecture is proportionality. "Proportion," wrote Vitruvius, "is the correspondence between the members of the whole work and its whole in relation to the part taken as the original, on which all proportionality is based." [2]

Deciphering the laws of harmony is a cherished dream of architects - practitioners, theorists, historians, art historians. The great architect Le Corbusier, attaching great importance to the disclosure of the laws of proportionality in architecture, wrote: "If an instrument for linear and optical measurements, similar to a musical recording, was found, then how much easier it would be to work in architecture." [3]

Analysis of the relevant literature

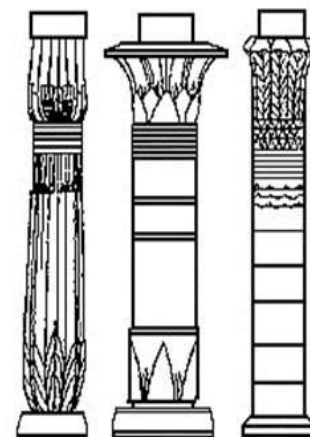
The system of proportionality of architecture, worked out by thousands of years of practice, is of interest not only in the development of theoretical problems of architecture, it is necessary for architects in their creative process. [4]

That's why, with the course projects carried out in the junior courses, the project "Architectural Orders" occupies a special place in the educational process and education of future architects. This is the first project to study the proportionalities of the rack-beam system, which contributes to the understanding of the compositional aspects of classically their architectural monuments. From the student, for the first time they get acquainted with the basics of architectural graphics, learn the basics of methodology for designing architectural objects, get a general idea of the subject design, the concept of an architectural order and its proportions. [5]

The study of architectural orders and their execution in drawings or drawings is one of the essential means that contributes to the understanding of the compositional centuries of classical monuments of art, since the order is the basic law of the construction of the architectural form, is its foundation, on which the entire European culture is built. [6]

THE MAIN FINDINGS AND RESULTS

In the history of the development of construction art, a large place is occupied by the so-called rack-beam structural system, the basis of which are racks (pillars, columns and other free-standing supports), along which beams bearing the ceiling are laid. The origin of the column refers to those times inaccessible to history, when people who had not yet emerged from the state of savagery had just begun to build their dwellings. The trunk of a felled tree, placed to support a roof of wood branches, turf or straw was the first fust of the column; a stone slab or wooden board placed at the lower end of this trunk so that it does not go deep into the ground, were the first bases of the column; the same slab or board laid on the top end of the pillar is the first capitals. From such simple elements, with the development of human culture, numerous forms of columns, different from different peoples, gradually developed. They have already acquired considerable elegance from the Egyptians, and received a certain originality from the ancient Persians, in the architecture of India and China, Japan and America. [7]



Rice. 1 Columns of ancient Egypt.



Rice. 2. Orders of ancient Persia.



Fig.3,4. Columns of ancient India and China.

But nowhere did they reach such perfection as that of the ancient Greeks, in whose architecture, having adopted a threefold type, the column became the main element that subordinated to itself the character or the so-called style of the whole building (Doric, Ionic and Corinthian). From the Greeks, the types of columns passed to the Romans, who, without changing anything significant in them, gave them some bombast and pomp. Thus, two more types arose - Tuscan and composite. Thus, this constructive system, having arisen in prehistoric times, has improved over time and found its artistic expression in the architecture of ancient Greece and Rome. The system of columns with overlapping parts of them has received its final development: the laws of its construction have been established, an art form corresponding to this structure has been found,

and the methods of construction have been established. the system in which the stone rack-and-beam structure found an expressive architectural form, we call the ARCHITECTURAL ORDER.

The name order comes from the Latin "ordo" - order, order. This name was first mentioned by the Roman theorist of architecture of the second half of the I century BC. e. Vitruvius, the author of the treatise "Ten Books on Architecture". [8]

The order has not yet lost its expressiveness and attractiveness to architects. Architects use the order not only as a constructive system, but also as a decorative element, often largely stylizing it.

ORDER CLASSIFICATION

Roman orders (canonical). In the architecture of Ancient Rome, 5 varieties of orders have developed:

1. **Tuscany** is the simplest in shape and heaviest in proportions order. It has a smooth column and a simple entablature.
2. **Doric** - this order was rarely used in Roman architecture. There are two types of order: with teeth and modulons. The frieze consists of alternating plastic elements - triglyphs and metopes. Columns with cannelures.
3. **Ionian** - this order has lighter proportions. The trunk of the column is designed by cannelures with paths. The most characteristic part of the order is the capital with volute-shaped curls. The capital on the side has a different appearance than from the facade. The side rollers formed by volute curls are called "balusters". In this order, the cornice is developed by complicating the supporting part, in which, in addition to the heel and the quarter shaft, there is a belt of teeth (lenticules).
4. **Corinthian** is the most slender in proportions. The columns are either smooth or with cannelures. The capital is sculptural in nature and has two rows of stylized leaves of "acanthus". The structure of the cornice, as in the Ionic order, with modulons under the tear slab. On the lampshade in the intervals between them there are recesses - caissons.
5. Composite – a combination of Ionic and Corinthian orders.

ORDER PROPORTIONS

In ancient Rome, the architect Vitruvius (I century BC) developed, and in Italy during the Renaissance (XV-XVI centuries), the architects Palladius and Vignola significantly clarified and detailed strict proportional systems and methods of erecting orders in construction, which allowed architects to interpret the use of a particular treatment in their own way, but without affecting their basis, i.e. the main features and proportional structure. These canonsoforders are basedon a single proportional system. [9]

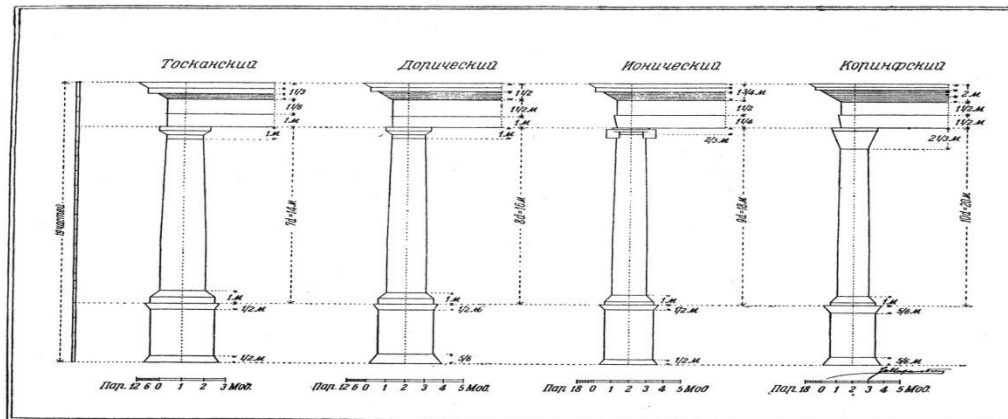
Proportions express the ratio of dimensions (length, width and height) of the structure itself and its details.

The ratio of the radii of the lower parts of the columns (i.e. modules) to their heights and to the heights of the full orders, which include, in addition to the columns, also the entablature (pedestal, column and entablature), retains the general proportionality, which consists in the fact that each complete order of a given canon is divided into 19 parts in its height. These parts are

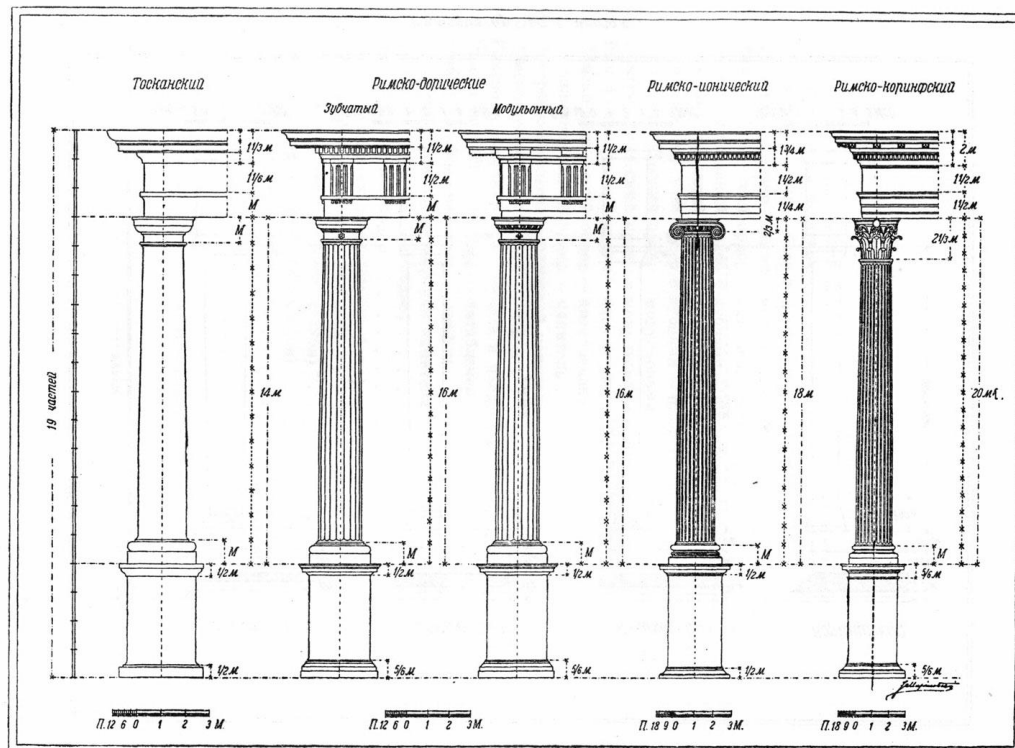
distributed as follows: pedestal - 4 parts, lower (cylindrical) part of the column - 4 parts, the upper (entasis) part of the column - 8 parts, entablature - 3 parts.

Tuscan Order. The simplest in its shapes and details and the heaviest in proportions. It has a smooth column and a simple entablature. The height of the column is equal to seven diameters – 7 modules. Tapered upwards by $\frac{1}{5}$ of the module. Pedestal height – 1 module; base – $\frac{1}{2}$ module; capitals – $\frac{1}{2}$ module; entablature – $1\frac{3}{4}$ modules. The Doric order exists in two varieties (depending on the nature of the supporting part) - the Doric order with teeth, the Doric order with modulons. The diameter of the columns is $\frac{1}{8}$ of the height. The thinning of the column is $\frac{1}{6}$ of the module. The rod of the column is smooth or has a number of longitudinal notches - cannelure. Along the entire circumference of the Doric column there are 20 cannelures. A feature of the Doric order is the frieze, developed by peculiar plastic elements - triglyphs. All triglyphs, not excluding the corner, were placed along the columns. Modularons are placed on the protruding part. The Ionic order has lighter proportions. The diameter of its columns is $\frac{1}{9}$ part of the height, thinning is $\frac{1}{6}$ of the module. The trunk of the column is designed by 24 cannelures, between which narrow gaps belonging to the main rod of the column are left - the path. The most characteristic part of the Ionic order is the capital with its currency-like curls. The capital of the Ionic order differs from all others in that it has a different character on the side than from the facade. The curls of currencies form two rollers (balusters) on the sides of the capitals. The Ionic capital has two varieties - angular and motor. The façade sides of the capitals of the corner column are not opposite, but adjacent faces. Moreover, one currency, the angular one, is made common to both faces and is directed at an equally separated angle of the entablature. A diagonal capital is a capital in which all currencies are arranged at equal to all four corners of the abaca. In this case, the capital is drawn from all sides in the same way. In the Ionic order, the cornice is developed due to the supporting part, in which, in addition to the heel and the quarter shaft, there is a belt of teeth or denticules. The Corinthian order is the most plastically developed and slender in proportions. The diameter of its column is $\frac{1}{10}$ of the height, thinning is $\frac{1}{6}$ of the module. In Roman architecture, the order was used for the largest temples – the temple of Castor and Pollux and the temple of Vespasian in Rome. The rods of the columns either remained smooth or had cannelures (24 cannelures). The capital of the order is of a diagonal type, so it has the same appearance from all four sides. All the eaves of the cornice, not excluding even the teardrop, are often ornamented with cuts. The complex order was created by the Romans, is a combination of the Ionic and Corinthian orders, so it is also called composite or composite. The capital is a combination of Ionic and Corinthian orders. The rest of the details are arranged according to the corinthian model and are also richly ornamented. This order found application in the triumphal arches and large public buildings of the Romans. Its proportions are the same as in the Corinthian order.

Below are the proportional order constructions.



Rice. 5. Roman orders in the masses.



Rice. 6. Roman warrants in detail.

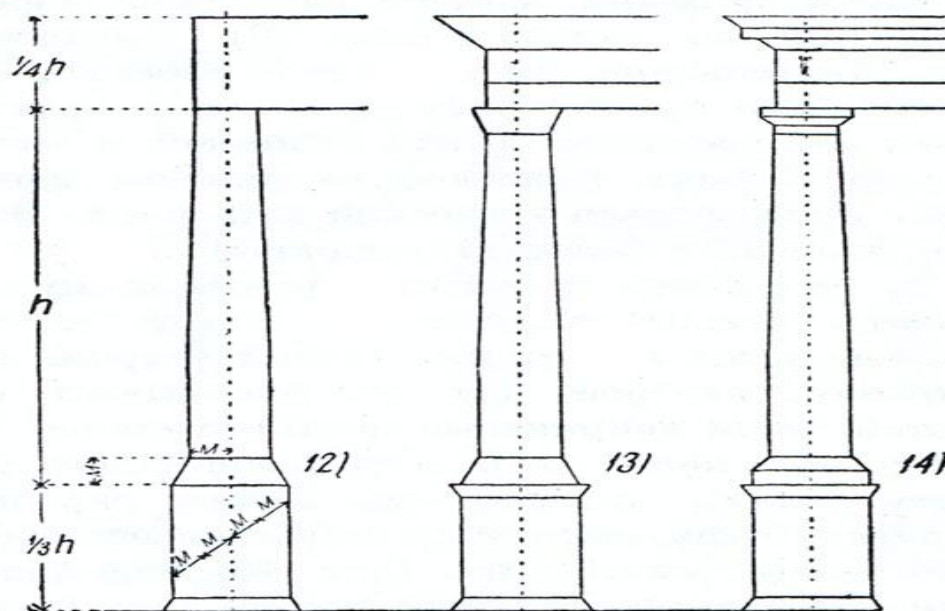


Fig.7. Sequential order construction.

The relevance of the tasks set is due to the fact that recently the domestic art history, architectural studies in particular, again shows an increased interest in the problems of order composition.

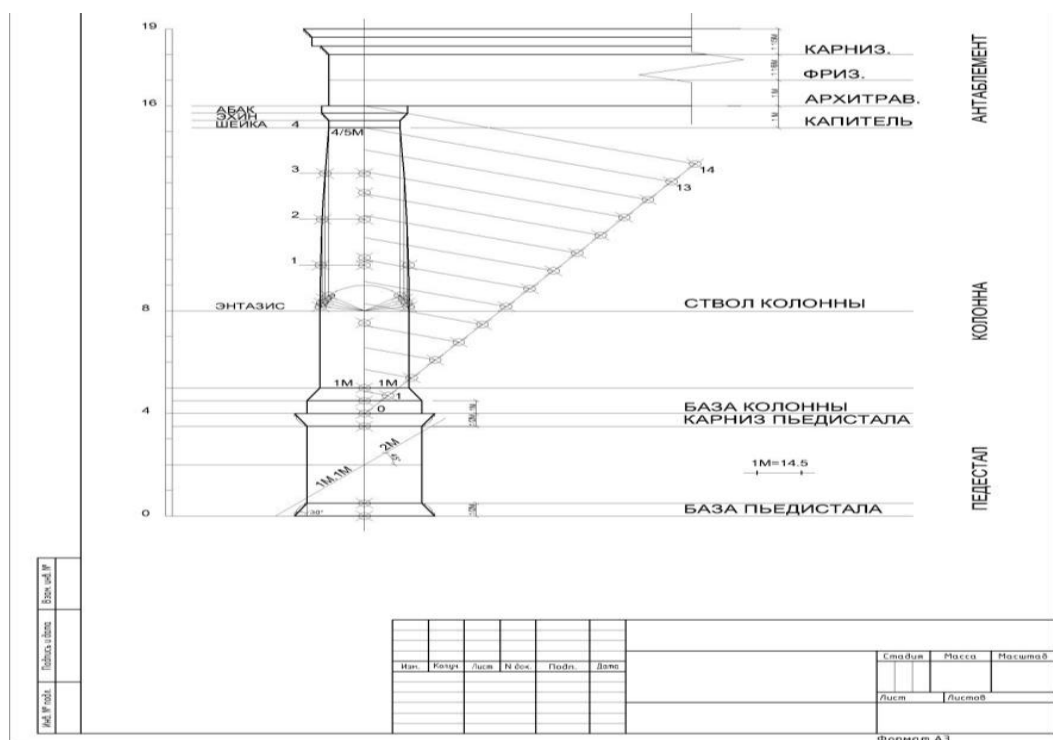
Everyone knows The use of computer technology in the future professional activities of students - designers is beyond doubt. Currently, computer technology has such technical capabilities that allow you to successfully adapt them to solving many routine problems of art, including learning the theory of composition. [10]

Therefore, the task of constructing architectural orders can be performed using graphical programs such as AutoCAD and 3D Studio MAX.

Below is an example of order construction in computer graphics.



TUSCAN ORDER IN THE MASSES



Rice. 9. Example of execution of a Tuscan order in AutoCAD

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THE SIGNIFICANCE OF THE STEM HEIGHT OF GRAPE BUSHES FOR THEIR FURTHER FRUITING, YIELD AND QUALITY OF RECEIVED PRODUCTS

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ABSTRACT

Research has been carried out on the high-stemmed formation of grape bushes, allowing to a large extent to ensure an increase in their yield. The formation of grape bushes was carried out by the method of free placement of growth on the trellis and an increase in the height of the trunk to 170 cm, which contributed to an increase in the rates of fruiting and yield of the Iliysky and Bereke grape sorts, and a significant improvement in the quality of the products obtained.

KEYWORDS: *Grape Bush, High-Stemmed Formation, Stem, Crown, Trellis, Fruitfulness*

I. INTRODUCTION

One of the main directions of development of modern viticulture is the transition to intensive, low-cost, environmentally friendly and economically viable technologies that conserve resources and protect the environment, more efficiently use environmental factors and maintain grape plants in a healthy state by stimulating the defenses of the plant. [1]

The need to develop and introduce progressive methods of grape cultivation into production is explained by the fact that until now most of the industrial vineyards in the South Kazakhstan region are cultivated according to a long-established technology, the main elements of which are row spacings of 2-2.5 m, ground formation of a bush with vertical placement of growth. [2]

Thus, the agrobiological substantiation and development of new techniques and methods for cultivating high-stemmed vineyards is relevant and timely, and a comprehensive objective biological, technological and economic assessment will determine the most effective combination of these and recommend them for further use in production. This will allow obtaining high stable yields of good quality grapes while reducing labor costs and funds for the production of a product unit, which means that the profitability of the industry and the competitiveness of products will increase. [3]

II. Methodology

In the first year of planting the seedling, all conditions are created for good growth of its root and two strong shoots. Next to the bush, a bar with a height of 1.5 m is placed, to which the shoots are tied 3-4 times during the growing season. The installation of a trellis with two tiers of wires should be placed by the end of the first year of the growing season: first tier at a height of 100-120 cm for tying cordons and after 30 cm second tier for planting green shoots with two parallel wires.

At the same time, the shaping of the trunk is carried out in the second year, with the creation of two shoulders and a base for creating spurs.

In the case of the normal development of second-order sucklings in the spring of the third year, branches form on the shoulders, cutting them off by 2-4 eyes. Removal of sucklings and trimming of their spurs is carried out if the sucklings turned out to be inferior. After the grape eyes are well swollen, they are removed on the trunk and on the spurs, with the exception of the two upper ones. Tying the stem itself and its shoulders should be done very carefully, as the garter material can cut into the growing wood. When the length of the shoots is 15–20 cm, the excess ones break off, and the remaining ones are tied to the trellis as they grow.

III. Research results

Important biological characteristics when assessing grape sorts are the indicators of fruiting, which regulate the productivity of plantings, and according to a number of researchers [1, 2, 3], the method of bushes management largely determines their size. Along with this, we studied the significance of the height of the stem of grape bushes in the further formation of their embryonic and actual fruitfulness.

The factors that indicate the level at which the reproductive organs in the hibernating buds/eyes are formed and laid during the previous growing season, and the value of the indicators of embryonic fruitfulness largely determines the degree of further actual fruitfulness of the eyes in the next year.

Studies have shown that bushes with a stem height of 170 cm contribute to an increase in the embryonic fruitfulness of the eyes, rather than in bushes with a stem height of 120 cm (Table 1).

Thus, there was an increase in the percentage of fruiting shoots to 73.2-75.3, the fruiting coefficient to 1.18-1.32, and the fruitfulness coefficient to 1.60-1.76, depending on the load of shoots.

TABLE 1 THE INFLUENCE OF DIFFERENT HEIGHTS OF THE STEM OF GRAPE BUSHES ON THE FORMATION OF EMBRYONIC AND ACTUAL FRUITFULNESS OF THE EYES

Load rate, pob/m2	Fruitfulness (embryonic)			Fruitfulness (actual)		
	percentage of fruiting shoots	coefficient		percentage of fruiting shoots	coefficient	
		Fruiting	Fruitfulness		Fruiting	Fruitfulness
Medium shaping with a stem height of 120cm						
35-40	75,0	1,26	1,67	65,9	0,98	1,48
45-50	74,3	1,24	1,68	65,4	1,02	1,56
55-60	71,3	1,13	1,59	62,8	0,91	1,45
High-stem shaping with a stem height of 170cm						
35-40	75,3	1,26	1,67	66,6	1,01	1,52
45-50	74,8	1,32	1,76	66,2	1,08	1,62
55-60	73,2	1,18	1,60	64,8	0,96	1,48
HCP ₀₅	1,2	0,07	0,05	0,7	0,05	0,03

It is well known that the setting and formation of the reproductive organs are largely determined by the nutritional conditions.

It was revealed that the type of formation with a high stem and the introduction of growth in free form on a vertical trellis promotes an increase in the volume of the crown, an improvement in illumination and aeration of leaves, an increase in the energy of photosynthesis.

Thus, the influx of photosynthetic products was most marked in the places of inflorescences, the improvement of their development and differentiation was largely facilitated by the formation of grape bushes on a high stem. At the same time, the data obtained during the experiment testify to the higher rates of embryonic fruitfulness in all variants of the experiment in comparison with the actual one. Therefore, the part of the inflorescences that was laid in the eyes died in the summer due to a lack of nutrients in the spring of the next year, and in the winter the other part of the eyes died. According to this, taking into account the load of shoots, there is a decrease in the number of fruitful shoots by 12-13%, noted in variants with a standard height of 120 cm, and with a standard height of 170 cm by 11-12%. The data obtained indicate a slightly better preparedness of bushes with a high formation of a stem for autumn and winter, as well as better nutrition of the grape eyes in the initial period of shoot growth.

A significantly high level of actual fruitfulness was obtained in all variants of the load with shoots in plants with a stem height of 170 cm in the variant with embryonic fruitfulness of the eyes, the death of inflorescences from unfavorable conditions was observed to the least degree. With a stem height of 170 cm and a load of 35-40 shoots per 1 m² in our studies, the coefficient of fruiting and fertility was 3% higher, compared with the same load of shoots with the option of forming bushes with a stem of 120 cm. The fruiting coefficient during the load per 1 m² in 45-50 and 50-65 shoots was higher by 6 and 5%, and the fruitfulness coefficient by 4 and 2%, respectively.

The results of the research agree with the conclusions of a number of researchers who have devoted their studies to the questions of the fruitfulness of eyes [4]. According to which, the suppression of the development of polarity and the moderation of growth processes during the period of active growth of shoots is facilitated by the high-stem formation of bushes and the free placement of their shoots on the trellis. As a result, the number of established inflorescences in the eyes of the lower zone of the shoots increased and a greater supply of nutrients to the places where the fruiting organs were laid was noted. Whilst, the growth processes in plants are enhanced due to the vertical placement of the growth on the trellis, as a result of which there is a greater supply of nutrients to the points of growth, and therefore to a lesser extent to the places of setting and differentiation of inflorescences. At the same time, the eyes located in the lower zone of the shoots are in worse nutritional conditions, since they were formed during the period of production of a larger amount of nutrients consumed by actively growing shoots; however, the assimilation surface of the leaves is still incompletely developed.

The distribution of photosynthetic products is rational, depending on the development of vegetative and reproductive organs of grape bushes and the general development of their assimilation processes at a high level in favor of the reproductive organs entirely contributed to an increase in fruiting in variants with a stem height of 170 cm (Table 2).

However, the analysis of fruiting indicators should not be considered as a final assessment that reflects the advantage of each individual type of formation, since the size and quality of the yield are the most important indicators of efficiency when identifying the reasons for the reaction of the variety to agronomic influences. Considering that various forms of grape bushes can

significantly change productivity under the influence of some agrotechnical factors, one of the important conditions of our research was the observance of the same agrotechnical background in all variants of the experiment.

It should be noted that when conducting research in all years, the load of green shoots did not have significant fluctuations in all variants of the experiment and was within the boundaries of the planned mark.

According to the ongoing changes in the development of the grape plant during their cultivation on a high stem, their response to the stem height was clearly revealed in terms of the yield. A significantly high yield per unit area and bush was obtained in variants with a stem height of 170 cm, with all load gradations, respectively, with a high level of reliability.

In our experiments, much attention was paid to the study of the quality of grapes, depending on the influence of formations with different stem heights, in view of the fact that there are works indicating a decrease in the sugar content of berries with high-stem formation [4].

It was revealed that in the juice of grapes, there is a slight change in the sugar content, which manifests itself in the transition from a vertically located growth and the formation of bushes with a stem of 120 cm to a freely located growth and the formation of bushes with a stem of 170 cm.

A significant influence of the standard height in the conducted studies with the standard formation of bushes on the following indicators was not established - the number of berries in a bunch, as well as their average weight. Although with a high-standard formation, all these indicators in total provided the highest fruitfulness of the bushes. Therefore, the free placement of the growth on the trellis and the increase in the height of the trunk up to 170 cm contributed to an increase in the rates of fruiting and yield of the Iliyskiy and Bereke grape sorts, and to a significant improvement in the quality of the products obtained.

TABLE 2 THE QUALITY OF THE HARVEST AND GRAPE BUNCH WHEN FORMING BUSHES WITH DIFFERENT STEM HEIGHTS

Load rate, w.p.m.	Load, thousand / ha			Harvest		bunch Average weight, g	Average berry weight, g	Number of berries in bunches, pcs	Mass concentration	
	shoots	fruitful shoots	bunches	from 1 bush, kg	from 1 hectare, c				sugars, g / 100cm3	acids, g / dm3
Medium shaping with a stem height of 120 cm and vertical growth control										
35-40	127	84	124	7,84	174,2	140	1,40	100	22,1	7,3
45-50	164	109	169	10,49	233,1	138	1,27	109	21,4	7,5
55-60	191	120	173	8,97	199,3	115	1,19	97	20,8	7,5
High-stem forming with a stem height of 170cm and a free growth position										
35-40	127	84	127	8,09	179,8	142	1,42	100	21,9	7,9
45-50	164	109	178	11,2	248,	140	1,28	109	21,5	7,2

				0	9					
55-60	189	122	182	9,68	215, 1	118	1,20	98	20,9	7,3
HCP ₀₅		5,3	7,8	1,2	7,5	3,1	2,8	9,3	1,4	0,8

On average for 3 years, a higher grape harvest with the recommended cultivation method in both farms was provided by the Iliyskiy and Berekesorts (Table 3). So, in the RSKP Experimental farm named after "K.Konysbaev" of the Saryagash region, the yield of Bereke grapes was 127.5 c / ha, in the Raushan farm of the Sairam region, the Iliyskiy variety - 180 c / ha, exceeding the yield in plantings where the bushes were formed without a stem on average by 32.5 and 60 centners / ha, respectively. Reducing direct costs per 1 hectare of plantations in the RGKP Experimental farm named after "K.Konysbaeva" of the Saryagash region accounted for 26%, and in the farm "Raushan" of the Sairam region by 24%.

TABLE 3 THE RESULTS OF THE PRODUCTION CHECK OF THE RECOMMENDED METHOD OF GROWING GRAPES

Farm	Growing method	Productivity, c / ha	Direct costs, thousand tenge	Received profit, thousand tenge
K.Konysbaev	fan-shaped	95,0	324,0	56,0
	high-stemmed	127,5	240,0	270,0
"Raushan"	fan-shaped	120,0	350,0	130,0
	high-stemmed	180,0	265,0	475,0

Calculations of economic efficiency showed that the introduction into production of a high-stemmed grape bush instead of a standard-free fan-shaped one and the observance of the technology of cultivation of this crop contribute to the receipt of net profit from one hectare of about 272-475 thousand tenge, which, respectively, is 216-355 thousand tenge more. Thus, the experiment results of our recommended method for the cultivation of grapes confirm the conclusions drawn from the analysis of the results, obtained in the experimental plantings of grapes.

IV. CONCLUSION

In the irrigated conditions of the South Kazakhstan region to realize the potential of a grape plant of industrial sorts Iliyskiy and Bereke, and other grape sorts of similar biological characteristics, it is necessary to carry out the formation with free placement of growth and with a stem height of 130-170 cm. The planting scheme should be 3 x 1.5 m, the load rate is 45-50 shoots per 1m² of trellis, and the length of the vines pruning, respectively, from 5 to 8 eyes.

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CONDUCTING POLYMERS AND IT'S APPLICATIONS: A REVIEW

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ABSTRACT

Because of their economic significance, stability, and electrical conductivity, as well as their valuable mechanical, optical, and electronic characteristics, conjugated polymers (CPs) have gotten a lot of attention. Conducting polymers are utilized in electrostatic materials, conductive adhesives, electromagnetic shielding against electronic radiation (EMI), artificial nerves, airplane constructions, diodes, and transistors, to name a few applications. This review discusses some of the potential uses of nanofibers and nanotubes in sensors, nanodiodes, field effect transistors, field emission and electro - optic displays, coupled capacitors and power storage, actuators, therapeutic agents, neural interfaces, and protein purification, as well as their future prospects.

KEYWORDS: *Biomedical, Conducting Polymers, EMI Shielding, Nano Devices, Sensors.*

1. INTRODUCTION

Nanotechnology has grown in popularity over the last decade as a result of its enormous potential for a wide range of applications. Nanostructures are divided into four categories: zero-dimensional, one-dimensional, two-dimensional, and three-dimensional structures. Because of its unique physical, chemical, and electrical characteristics, even in nanoscale systems, one-dimensional (1D-) nanostructures were a focus among them [1]. The device function of a 1D-nanostructure is its second feature, which may be used as device components in a variety of nano devices. Carbon nanotubes, inorganic inductive in nature and metallic nano - tubes, conjugated polymer nanofibers/tubes, and other 1-dimensional with nanoscale and molecular-scale characteristics that may fulfill the needs of society in the twenty-first century have made considerable progress. Nanotechnology or molecule electronics, nanodevices and systems, nanocomposite materials, bio-nanotechnology, and medicine are all possible uses for these nanostructures.

A variety of conducting polymers, such as polyacetylene (PA), polyaniline (PANI), polypyrrole (PPY), poly(p-phenylenevinylene) (PPV), and poly (3,4-ethylene dioxythiophene) (PED), have special and unique characteristics including being a conducting mechanism, electrical properties, reproducible doping/dedoping process, controllable chemical and electrochemical properties, and easy processability. For the preparation of conducting polymer (CP) nanotubes and nanowires, a variety of synthetic strategies (both physical and chemical) have been used, including electrospinning, hard physical template-guided synthesis, chemical precipitation template synthesis (e.g., interfacial polymerization, template-free method, dilute polymerization, reverse emulsion polymerization, etc.), and lithography techniques. All of the properties of conducting

polymers are briefly discussed in this review Figure 1 to understand their specific behavior and working, as well as their wide range of applications in chemical and biosensors, ground transistors, field emmissions and electrooptic display devices, supercapacitors, actuators, and separation membranes, among others [2].

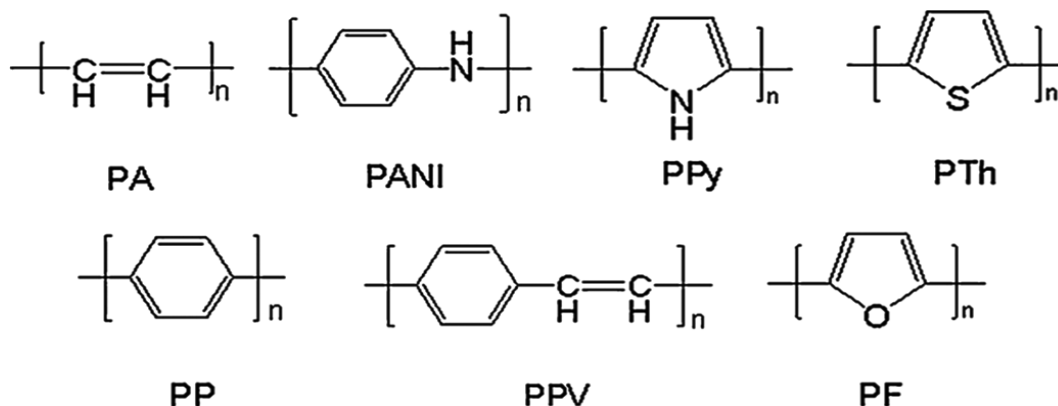


Figure 1 Structure of some conducting polymers[1]

2. DISCUSSION

1. Properties of conducting polymers:

Conducting polymers have a variety of unique characteristics, including electrical, magnetic, wetting, optical, mechanical, and microwave-absorbing capabilities, in addition to conduction.

Figure 2 [1].

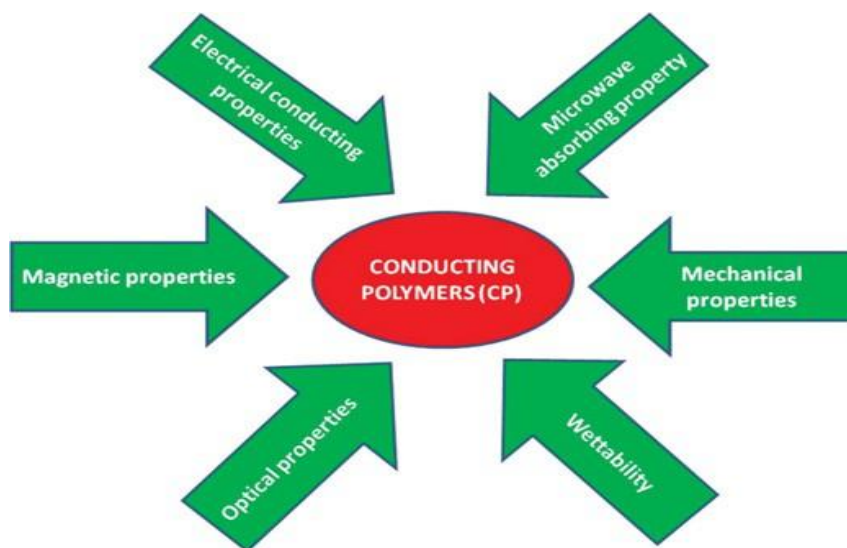


Figure 2: Properties of Conducting polymers.

1.1 Electrical-conducting properties:

Conducting polymers' electrical conductivity may approach the metallic conduction regime after doping. According to Martin, the conductance of a single nanotube is one or two exponentially higher than that of particle nanotubes or nanowires. Chen and colleagues investigated the electrical properties of PANI nanotubes and discovered that a single nanotube's conductivity was

increased by two orders of magnitude. Because the insulating component partially blocks the conductive route, combining an insulating element with 1D-conducting polymer nanoparticles reduces electrical conductivity. Long et al. demonstrated that the resistivity of NSA-doped PANI/Fe₃O₄ hybrid nanowire pellets decreased with decreasing temperature, which is a normal semiconducting characteristic. The higher charge carrier dispersion among NSA-doped PANI/Fe₃O₄ nanoparticles is responsible for the lower composite conductivity. Various types of 1D-conducting nanocomposite materials systems showed a comparable reduction in electrical conductivity [3].

1.2 Magnetic properties:

Conducting polymers' magnetic characteristics have been widely researched because they offer crucial information about charge-carrying species or unpaired spins. The magnetic characteristics of PANI/Fe₃O₄ hybrid nanotubes produced by ultrasonic irradiation were investigated by Lu et al. investigated the magnetic characteristics of PANI/Fe₃O₄ composite nanorods made by self-assembly. The samples produced using the ultrasonic irradiation approach enhance the dispersion of Fe₃O₄ particles as comparing to the self-assembly method. The super-paramagnetic behavior of composite nanotubes produced using the ultrasonic irradiation method was observed. Magnetic characteristics of 1D-conducting polymers, such as Fe, Co, and Ni nanocomposites, have also been investigated [4].

1.3 Optical properties:

Because conducting polymers may be used in nanophotonic devices, their unique optical characteristics have been studied extensively. Photodetectors, photochemical sensors, and photonic wire lasers may all be made using 1D-nanostructured semiconductors. Xi et al. investigated the optical characteristics of CdS/PANI composite usually named and discovered that the photoluminescence spectrum resembled that of CdS nanowires, although signal intensities were increased. Photo-generated carriers transferred from the PANI layer into CdS nanowires, resulting in this improvement. Turac et al. evaluated the optical contrast, switching time, k_{max}, and band gap of a novel polythiophene derivative produced by electrochemical free radical polymerization of 2,5-di(thiophen-2-yl)-1-(4-(thiophen-3-yl)phenyl)-1-H-pyrrole(TTPP) [5].

1.4 Wettability:

Wettability is one of the most significant characteristics of a solid surface, and it has applications in self-cleaning surfaces, microfluidics, controlled drug administration, and bio-separation. Conducting polymers are often hydrophilic. Doping hydrophobic acids in conducting polymers results in a coating with super hydrophobic properties. Controlling the chemical composition of concluding polymers results in a reversibly swappable superhydrophobic and superhydrophilic surface. Chemical dual-responsive properties have also been shown in the hydrophilicity of films of PAN/PANI coaxial nanofibers. When formed on surfaces with decreasing hydrophilicity, a leading strand photopolymerized nanocomposite film comprising polystyrene and TiO₂ nanorods changes its wetting characteristic from hydrophobic to hydrophilic [6].

2. Applications of conducting polymers:

Conducting polymer nanocomposites have multifunctional and unique characteristics due to the synergistic impact of several components. As a result, conducting polymer nanocomposites are

anticipated to find use in a variety of areas, including nanoelectronics, chemical and biological weapons sensors, catalysts or electrocatalysis, electricity, microwave absorbance and EMI shielding, ER fluids, and biomedicine (Figure 3) [1].

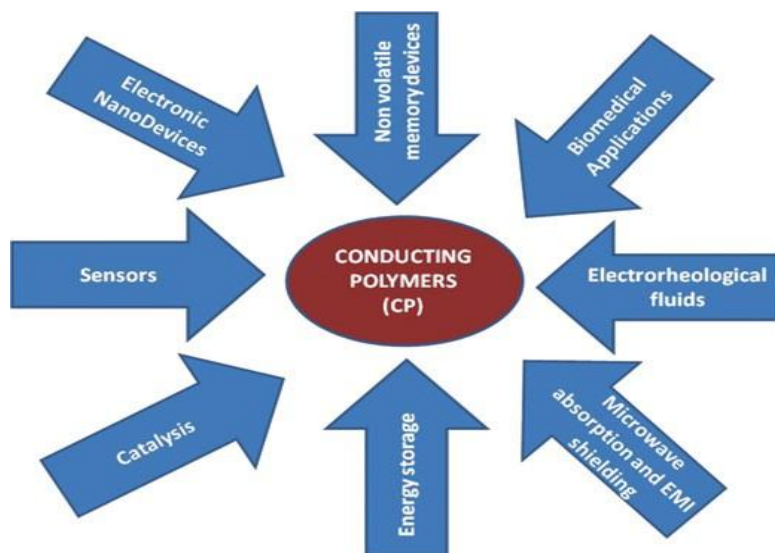


Figure 3: Applications of Conducting polymers.

2.1 Electronic Nanodevices:

Because of the high conductivity, mechanical flexibility, and cheap cost, most conducting polymers are well suited for the fabrication of electronic devices. Metals, semiconductors, carbon nanotubes, and insulating polymers may alter electrical conductivity of conducting polymers, which may be useful in light emitting diodes, transistors, memory, and photovoltaic systems [7].

2.2 Sensors:

Because their electrical and optical characteristics may be reversibly altered by doping/depoining procedures, conducting polymers have been extensively investigated as chemical sensors, optical sensors, and biosensors [8].

• Chemical and Gas Sensors:

Gas sensors are used in a wide variety of applications, including industrial manufacturing, food manufacturing, environmental monitoring, and health care. The sensitivity of PANI nanofibers produced by interfacial polymerization for the detection of NH_3 is considerably greater than that of ordinary PANI films. The inclusion of a second component to 1D-nanostructured conducting polymers, on the other hand, may improve their applicability as gas sensors [9].

In addition to NH_3 , metal oxide nanoparticles incorporated into 1D-nanostructured conducting polymers may be used to detect various gases. For example, at ambient temperature, PANI/ In_2O_3 composite nanofibers produced by carbon dioxide polymerization were utilized as sensors to detect H_2 , CO , and NO_2 . PANI/ WO_3 composite nanofibers were also used in H_2 gas sensors, but the sensitivity was lower than that of PANI/ In_2O_3 composite nanofiber-based sensors. Metal salts may also be used as gas sensors in the 1D-nanostructured conducting polymer matrix. PANI/ CuCl_2 composite nanofibers, for example, have a strong sensitivity to H_2S gas. The PANI-

PVP mix has better sensitivity to CHCl_3 and has the least susceptibility to CH_2Cl_2 . Surface plasmon resonance has been utilized to detect Zn^{2+} and Ni^{2+} ions in aqueous solution using the polypyrrole chitosan layer.

2.3 Photocatalysis and Chemical Catalysis:

PANI/Pd composite nanofibers' catalytic capabilities have been investigated for application in Suzuki couplings reactions. Chemical catalysts were PANI/Pd nanotubes produced using the templating method. TiO_2 is a powerful photocatalyst with low toxicity and high oxidizing activity. The production of superoxidant (OH^\cdot and O_2^\cdot) from water degrading in the vicinity of TiO_2 under radiation is ascribed to TiO_2 catalysis for degrading hazardous inorganic or organic compounds. The enhanced catalytic ability of TiO_2 /PANI bilayer microtubes to breakdown methyl orange was attributed to the red shift of TiO_2 's absorption area due to photosensitization by PANI [6].

2.4 Microwave Shielding and Absorption:

The fast development of electronics, wireless systems, navigation, space technology, and other technologies has resulted in a severe problem known as radio frequency interference (RFI). EMI has an impact on the functioning of electric devices as well as different living organisms, including humans. To avoid electromagnetic noise, shielding materials such as metals, carbon compounds, and conducting polymers have been used. Because of their excellent electrical conductivity and processability, conducting polymers have gotten a lot of interest as shielding materials. When conducting polymers are coupled with other Nano components such as carbon nanotubes, PANI improves EMI shielding performance. Microwave absorbers and electromagnetic interference shielding materials may be made from polyaniline microtubes/nanofibers and polyaniline-multiwalled carbon nanotube Nano composites [10].

3. CONCLUSION

Significant progress has been achieved in the synthesis, structural and morphological characterizations, as well as the physical and chemical characteristics of electrically conducting nanofibers and nanotubes during the past 20 years. For greater control of 1492, future research should concentrate on enhancing synthetic techniques and developing new assembly procedures. However, there is still a need for simple, fast, and huge synthesis of conducting polymer nanostructures with uniform, non-disperse, and very well shape and size, including directed nanostructure arrays. From harvesting energy and biochemical sensing to electrical devices and medication administration, conducting polymer nanotubes and nanofibers have shown a wide range of applications.

However, due to complex microstructures of conducting polymers, there are still issues with realizing their full potential in nanoscale devices, such as reproducibility and/or controllability of individual polymer nanotubes= wires, doping level stability, and improving process ability of conducting polymer nanomaterials. Super capacitors made of conducting polymers are attracting growing interest in the energy sector because to their high specific capacitance. Their stability, on the other hand, is not particularly excellent. The addition of additional nanocomponent as a scaffold of conducting polymers is anticipated to improve the super capacitor device's stability. However, further research is needed into novel techniques for fabricating such materials, as well as discovering new and improved characteristics and extending their uses. Trying to conduct

polymer-based hybrid nanostructures offers a very broad and promising field of research, not only in terms of improving their properties and addressing challenges in their applications, but also in terms of achieving multifunctional nanosystems, which opens up new perspectives in the field of biomedical applications.

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DEVELOPING THE PEDAGOGICAL COMPETENCE OF FUTURE TEACHERS USING WEB-BASED TECHNOLOGIES IN SELF-STUDY

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ABSTRACT

The purpose of this article is to discuss how web technologies can be used to organize and improve autonomous learning for university students. It's made to help students improve their self-study skills and learn more effectively. The usefulness of modern web technologies' capabilities has been demonstrated. Among these, the conduct and management of distant learning receive special attention. Students should develop web-based abilities, according to the article, which also includes the legal and organizational foundations for its operation as well as the findings of research in this sector. Based on the study's findings, the article makes recommendations.

KEYWORDS: *Individual Work, Internet Technologies, Web Technologies.*

INTRODUCTION

The State Standard of Higher Education's general standards for the content of educational programs indicate that the requirements should be targeted at the formation of an independent, decision-making, developed, and versatile individual. Graduates must be able to gather, store, process, and apply information independently, make independent decisions in their professional activity, learn new knowledge independently, work on themselves, and organize work on a scientific foundation, among other things.[1]

The process of individual work is defined as more than 40% of the curriculum of present bachelor programs. In different sectors of education, this procedure is organized differently. This is accomplished through the preparation of an abstract and a presentation. There is a demand for decision-makers who work on themselves in today's society. In keeping with the principles of meeting and complying with the needs of an ever-changing information society. They should take advantage of the possibilities provided by information and communication technology while planning independent educational activities.

The purpose of an independent study might be defined as follows, based on the findings of literature and research: [2,3]

- systematize and consolidate theoretical knowledge and practical skills;
 - further deepening and expanding theoretical knowledge;
 - develop skills in working with literature and reference books;
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- developing students' knowledge and skills and activism;
- formation of independence of thinking, ability to develop, improve and understand;
- developing research skills;
- formation of professional components.

The use of software products used in the educational process in other areas of information technology in computer science, the use of software tools related to the specialty in students increases their enthusiasm and interest in learning.[5]

We need to have a convincing idea that web technologies are a good tool for organizing and developing students' independent learning process. At the moment, that's not enough. We will mention the study of this process and the application of methods of independent learning in higher education to the use of computer technology, Web-technologies and Web 2.0 technologies. Students need to develop skills such as taking advantage of web technologies, providing information. When we studied the organization of these processes, it became clear that there is a lack of clear and goal-oriented work in the areas of higher education. Therefore, the directions we propose will consist of the following. [4]

- developing students' independent learning skills.
- students internet-based, self-learning skills intuitive and orderly systematization.
- further expanding educators' knowledge of the opportunities offered by Web technologies and their capabilities.
- integration of technologies into education.

To do this, it is necessary to build the skills of educators on web technologies. Observations have shown that not all educators have the skills to work with web and web 2.0 technologies. The current state of information and communication technologies has opened the door to a wide range of opportunities for educators and learners for enormous professional growth. Connected to the global information space through an optical fiber network is important in receiving, storing, transmitting and processing information. Expanding the methods, forms and types of education in educational institutions has also led to changes in the content of education.

The introduction of Web 2.0 technologies into the educational process is important for the universalization of education, the acquisition of new knowledge, the constant acquisition of knowledge. However, the educator must familiarize students with the recommended resources, online resources. It requires the introduction of interdisciplinary and interdisciplinary integrative research.

Web 2.0 technology is a set of methods that require personal activity from users of web resources, based on a common set of information and communication technologies. In the field of information technology in education requires the performance of appropriate tasks on each topic. This can be working in applications and completing a given task, using online systems on the web, programming, creating multimedia, creating a website, creating wiki pages. An innovative method of independent learning is online distance learning, which arouses great interest and motivation in students. The use of open multimedia education systems, networked educational resources, and telecommunications requires the teacher to be proactive and skillful. In the

performance of independent learning tasks, depending on the form of education, it should be in a collective, divided into groups, designed to be performed individually, in a differentiated form. [5,6]

The basis of web-technologies consists of "client-server" information systems based on hyperlinks. The informatization of the educational process based on hypermedia and hypertext-based technologies is a growing trend in the future. In recent years, new methods of teaching in the informatization of education on the basis of these technologies have appeared Web-quest (WebQuests) technologies. [5]

Web-quest technology was introduced in 1995 by University of San Diego professors Bernie Dodge and Tom March. In recent years, researchers have explored the possibilities of pedagogical web-quests through e-learning and received news. S.V Napalkov in mathematics and G.I Egorova in chemistry conducted research on these works. Research on e-learning and Web 2.0 from foreign scholars was conducted by Mokhd Khafiz Zakaria and Beatrice Aguti. Web-quest word: English Web-network (set of server computers connected to the world wide web) and quest English quest - search, consisting of a set of travel words. Electronic Web quests can be as follows:

- Carrying out project work on the basis of a plan on problematic and interesting topics.
- Conduct research based on Internet opportunities.
- Completion of tasks based on web pages;
- Analysis of didactic methods of effective use of personal computers in teaching and research [5].

Web 2.0 services include:

- blogs and microblogs (Blog, Blogs.ziyonet.uz, Twitter);- Blog ("online journal or daily correspondence about events") an Internet user (blogger) creates an area of online communication by posting various files (text, audio/video, images) on their blog;

-social networks (Facebook, Davra.uz) - a platform for posting and communicating large amounts of information.

-wiki systems(Wikipedia, Wiki-university, Wiki-book).A wiki system is a unique website that consists of tools that allow unrelated individuals to enter and modify certain information. There are many types of wikis, and the Uzbek-language Wiki encyclopedia currently contains more than 133,000 articles. There are about 6 million articles in English and more than 1.5 million in Russian.

From a pedagogical point of view, the placement of teaching materials on the Wiki service is done through the placement of creative works in a collective form. New articles will be posted.

-social media (YouTube, Utube) - Internet services that allow you to save and edit media files.

-social media graphics: graphing.ru, img.uz, Photos.Google;

- document storage Google Drive;

- save the presentation: SlideShare, Prezi;

- mental cards: Mind24, Mindomo;
- infographics: Mindthegraphtagul, Canva, Wordart.[5,6,7]

The listed social networking services serve as resources for file storage, creation of new files that serve and are used in the learning process. Tasks performed from these systems are given as tasks for the independent learning process in the learning process. In this process, it is possible to work together, prepare training materials as a team, edit, leave comments, prepare projects together. According to Zakaria, Mohd Hafiz, I .V. Krechetnikova, D .V. Moglan, the advantages of Web2.0 services in the field of education are defined by the features of interactivity and continuity, openness, group movement in one direction, innovation, tolerance.

Web2.0 services have provided a new learning and information space with a new environment, collaboration and continuous involvement of students in the learning process, unimpeded access to all information resources.

Modern Internet technologies cannot replace the traditional form of teaching, such as live communication with the teacher, laboratory work with the teacher. Blended learning is a combination of electronic and traditional forms.[8].In mixed teaching, Internet technology is mainly used to carry out theoretical knowledge and independent learning.

In computer science lessons, we will look at ways of doing web quests using Web2.0, blended learning technology. This work is part of an ongoing research effort. Modernization of e-learning with Blended Learning is based on a five-step model proposed by J. Selmona (Gilly Salmon's). Students are immersed in the environment of social partnership (network community) and participate in group discussions and problem solving. [8]



At the first stage, the introduction to the course and the general concepts are of interest, providing guidance in the process. This process is also divided into several steps, registration in Web 2.0 systems related to training, familiarisation with working methods. Creates a targeted training plan and a clear outline of the work to be done in the form of independent study. Creates a personal website using Web 2.0. The first step is to set up a website via <https://sites.google.com>

or <http://blogs.ziyonet.uz>. <https://forms.google.com> an online survey system, creates surveys by topic.

In the second stage (adaptation, adapting to the environment), the pupils are divided into small groups and make plans at the chosen site. It determines what topic and information to post on. For example, if one group has a website about historical sites, another group is given the task of creating a website about national traditions.

The next step (information sharing) is the process of searching and finding sources, systematising them, finding the necessary resources for the didactic and technical aspects of the assignment, and finding available resources to search for information. The teacher's role in this process is increasing.

The fourth stage is a group discussion on the tasks to be completed by the group in the process of accumulating knowledge and successfully completing the topic.

Analyse the joint training activities achieved in the final design phase. The knowledge and skills acquired by each participant, personal development are identified and assessed. [8]

According to the results of surveys and analyses, this type of learning showed an understanding of Web2.0 technologies in the computer science process, fulfilment of pedagogical tasks, student motivation, and quality assimilation of knowledge. Conducting the entire learning process using blended methodology and Web 2.0 technology not only yields good results, but also masters interdisciplinary integration and the effective use of Internet technology in their speciality.

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DEVELOPMENT OF PROFESSIONAL AND PEDAGOGICAL TRAINING OF EDUCATORS OF PRESCHOOL EDUCATIONAL INSTITUTIONS

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ABSTRACT

The paper scientifically examines how young educators are trained in the development of professional pedagogical skills in the development of educator training in preschool education institutions. Educators must be accountable for the development of a peaceful generation, setting an example not only with their spiritual and moral culture, but also with their instructional abilities. The fact that an educator has his or her own skills in society raises not just the value of his or her prestige in society, but also the respect that students have for him or her.

KEYWORDS: *Ethical Culture, Knowledge Skills, Literacy, Logical Thinking.*

INTRODUCTION

Educators must be accountable for the development of a peaceful generation, setting an example not only with their spiritual and moral culture, but also with their instructional abilities. The fact that an educator has his or her own skills in society raises not just the value of his or her prestige in society, but also the respect that students have for him or her. [1]

In their time, Abu Nasr Farobi, Yusuf Khos Khajib, Sadi Sherazi, Abu Raykhan Beruni, Abu Ali Ibn Sino, Alisher Navoi, Abdullah Avloni, and others reflected the profession of education, its difficulties, and the personality of the educator in their works, describing vital information on traits. As a result, an instructor who lacks profound respect for a child and does not comprehend the pedagogical process cannot have a concept that ensures educational efficacy and human perfection. If he correctly analyses any pedagogical scenario, an educator with good pedagogical skills should be able to comprehend the child, treat him compassionately, and settle any disputes that may develop in a timely manner. He should also be able to consistently enhance the pedagogical activity. It should be able to bring to life the lofty ideas established in students' brains during the pedagogical process and in the growth of society. [2]

"An educator should be engaged in science on a regular basis," remarked the famous German educator Adolf Distverg, "in order to achieve a place in society, an educator should be continually engaged in reading science. "It will otherwise resemble a dead tree or a rock. "No future educator can bear fruit, just as a dead tree or stone cannot bear fruit." The educator must first be educated, comprehend the laws of nature and the culture in which he lives, be socially engaged, learn general and preschool pedagogy, the psyche and physiology of children, and be aware of child age features. [3]

Young educators' pedagogical talents, as well as those who have worked in the educational institution for several years, develop as they meet a number of professional development requirements. They can be created using the following resources:

1. Learning through independent reading (getting acquainted with new literature, Internet materials, information published in periodicals, advanced technologies, providing information about the latest developments in the field of pedagogy, etc., preparation of independent projects on the basis of generalization and summarization of ideas).
2. Study of the activities of experienced educators (organized without leaving the educational institution, the time is considered effective in terms of summarizing. Experienced educators are based on the study of activities, observation, analysis of the lessons organized by them it is reasonable to draw conclusions based on the generalization of impressions)
3. Improving professional skills in retraining and advanced training courses and institutes for educators
4. Active participation in regular scientific conferences (theoretical and practical conferences and seminars, pedagogical reading and training)
5. Study the latest information on professional development in leading educational institutions of the Republic and developed countries.

In general, the pedagogical role in the formation of the role and importance of the educator in society and the effectiveness of the quality of education for students increases the prestige of the educator in the community and respect for him among educators.

Educators who are constantly researching must also meet the following requirements that form the basis of their pedagogical skills.

- Ability to correctly understand the inner and outer world of the student in any pedagogical situation;
- Focus on understanding the pedagogical situation;
- Confidence and demand for students;
- Ability to assess the educational situation in all its aspects;
- Diversity - the ability to distinguish the most important from the various pedagogical tactics;
- Ability to make the right decision without hesitation in the event of a conflict;
- Ability to use different methods of influence in education;
- Be able to convey ideas and feedback verbally through facial expressions and pantomimics;
- Ability to communicate with students in class and extracurricular activities;
- Ability to help students in difficult situations;
- Non-categorization of students based on their social background;
- Identify and improve the hidden positive qualities of each student.

The educator influences the children in their daily lives, games, activities, collaborative activities and interactions with them.

According to Ya. A. Comenius, the main feature of upbringing is that he should be an example to the educator with his high level of morality, love for people, knowledge and diligence and other qualities, and set an example and educate them in humanity.

Knowledge of folk art, music, singing, literature, fine arts, love of art makes the educator cultured, helps in the work with children and helps to socialize in society. An educator develops his/her personality only if he/she acquires the necessary knowledge, skills and abilities in a certain sequence, and achieves good results in raising and educating children.

In his research, M.G. Davletshin describes the personal and professional qualities that need to be reflected in the image of the educator as a whole:

1. Personal characteristics of the educator (love of children, practical psychology, intelligence, hard work, activity in public affairs, kindness, humility, humanity, kindness, resourcefulness, strong character, desire to improve their knowledge).
2. Acquisition of professional knowledge (understanding of the essence of the process of education and upbringing, its objectives, knowledge of the basics of psychology, youth psychology, understanding of psychological and pedagogical characteristics of preschool children, knowledge of teaching methods of their subject, educational training knowledge of the effectiveness of secrecy, knowledge of the content of educational work with parents and the public).
3. Possession of professional qualities (understanding of the importance of national traditions and customs in the educational process in a modern preschool organization, the educator's observation, ability to concentrate, the development of pedagogical imagination, self-criticism, self-control, pedagogical tact, emotional expression of speech).
4. Personal pedagogical skills (ability to choose the necessary materials for lessons, to manage students' cognitive abilities, to plan the development of students' consciousness in the process of education and upbringing, to form pedagogical tasks and plan educational work, to learn the objectives of training be able to plan the system of preparation for self-education).
5. Organizational skills (ability to organize a children's team)
6. Be able to lead a group of children in different situations, to motivate children to do something, to apply their knowledge and experience in solving practical problems).
7. Communicative skills (ability to engage children, ability to regulate pedagogical relations with children and parents, ability to regulate children's interactions within and within the community, ability to communicate with children and parents from outside know).
8. Possession of creative qualities (the desire to improve the skills of the educator, the ability to develop and implement a program of education of students, the ability to look at the events that took place in the place of the child, his pedagogical skills, anticipate the consequences of secrecy).

Social and pedagogical, psychological preparation for the formation of a model of educator in society - the educator's mastery of the rules of the educational process, pedagogical,

psychological knowledge and skills, knowledge of the age and individual characteristics of the learner and their psychological state, is the level of initial theoretical knowledge about the educational process, its content, principles, form, method, and means of organizing education.

As Behbudi said, "To live in this world, you need secular science and knowledge," or, as Ibn Sina pointed, "Whomever you advise, follow it first."

The level of innovative culture of an PEI educator is determined by a number of criteria: innovative motives, innovative knowledge, a set of skills.

Innovative motives are reflected in the enrichment of the teacher's knowledge system, the improvement of their activities through the systematic implementation of pedagogical innovations in their professional activities. Innovative skills include gnostic skills, pedagogical design skills, information skills.

Russian pedagogical scientist A.S. Makarenko said that "students learn about the influence of the educator as an educator, his appearance, rich spirituality, the art of public speaking, the ability to use the intonation of the word in its perfect place, facial expressions. They will accept it. [4]

The system of pre-school education has a positive effect on the formation of a culture of communication, the ability to think logically, to express their independent ideas through the use of pedagogical technologies in the educational process. For example:

The purpose of the training "ELPIGICH": To develop students' ability to think logically, to defend their ideas.

Mode of delivery: The course selects some concepts on the topic and analyzes the advantages and disadvantages, pros and cons of the concepts. The member elected from the groups defends the group conclusion.

Expected result: Pupils develop independent thinking and communication skills. The purpose of the "GALLERY" technology: to teach students to think freely, independently, to work as a team, to expand their understanding of the rules of Oriental etiquette, to form good human qualities.

Procedure: Pupils are divided into groups, cards are distributed to each small group. Pupils can present their information in art, music and poetry.

Decency

Morality

Game

Pattern

Expected results: The trainees will develop individual and team, group work, creative and organizational skills, creative abilities.

The purpose of the "INTERVIEW" training: to get certain information on each problem, to teach now to answer, to strengthen the topic.

Training schedule:

Participants are divided into 3 groups and 1 expert, 3 journalists.

Each group will screen a pre-made film. (It could be a fantasy clip.) Then a journalist attached to the group comes to them and gives an interview and comments.

The most active participant in the group participates in the question and answer session.

The groups are given 15 minutes to prepare.

The use of pedagogical technologies in the educational process in preschool education has a positive effect on the formation of personality, such as cultural etiquette, community etiquette, conversational culture, traditions and culture, greeting etiquette.

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KARAKALPAK FOLK LEGENDS ABOUT SULAYMAN BAKIRGANIY (HAKIM ATA) AND HIS SON UBBI

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ABSTRACT

The article provides a scientific analysis of Karakalpak folk tales about SuleymanBakirganiy (Hakim Ata) and his son Ubbi, a scholar, saint, and historian who preached the rules of Islam in Central Asia. The ideological content of these myths, artistic differences, methods of image creation were studied. The article discusses the life of the great person, his miracles, and the legends about his relationship with the old man and his son UbbiKhoja. Special attention is paid to the issues of religious, moral and ethical education in the relationship of Hakim Ata with his son UbbiKhoja. Their ideological content deals with the dedication of the father and son to the success of the people, the burden of the people, the fact that they are not free people, and therefore the origin of the traditions of worship and worship of the people, and so on. Islam in the creation of the images of Hakim Ata and Ubbi and the ancient cults of nature, the power of the word, shamanism, fetishism, etc. the influences of religious beliefs are exaggerated.

KEYWORDS: Idea, Content, Ethics, The Power Of Words, Religion, Shamanism, Fetishism, Religious Faith.

INTRODUCTION

Information about the life and upbringing of our great ancestor SuleymanBakirganiy (Hakim Ata) has not fully reached our time. Scientists make their predictions by studying the information about him by comparing the myths and legends of the people with the information in various historical documents. According to the information given by them, our ancestor SulaymanBakirganiy was born in 1129 in the place called Bakirganiy, located in the vicinity of the present-day Konirat district of the Aral Sea, there is information that in 1192 he was at the age of Prophet [1]. However, researchers provide a variety of information about the years of his birth and death.

Our ancestor SulaymanBakirganiy's contribution to the propagation of Islam in the East during the Renaissance through Turkish and Arabic poetry is significant. The sages of Central Asia have done a great job in conveying the meanings of the Kuran and Hadith to our descendants in our native language. Yassawi and his disciple Bakirganiy were the first in the East to do this [2].

METHODOLOGY

SulaymanBakirganiy's short stories "Bakirgan", "Jum-Juma", "Akirzaman", "Biybimariam", "Merajnama" are narrated under the influence of the ideas of the Holy Kuran, they promote the idea of protecting the soul from the fires of hell by loving God, obeying his laws, abstaining from lust, being content, fasting, and doing good deeds. The ideas of the Kuran about religious philosophy and the great humanity in these books range from the human genres of Karakalpak folklore, it serves as one of the most valuable sources in the ideological and artistic development of large-scale genres of epics, legends, and narratives.

SulaymanBakirganiy (Hakim Ata) was a genius, a great person who devoted himself to the path of religion. Our people have never been indifferent to such great people. Legends have been told about their way of life, their profession, and their customs. In the legends, the stories about Hakim Ata are connected with his noble son UbbiKhoja. In these myths, the father and son dedicate their lives to the success of the people and take on a heavy and arduous burden, the idealization of their images, stating that they are not free human beings, religious concepts, miraculous hadiths are described in connection with life events.

The books contain all sorts of information about how many children Hakim Ata had. In separate books, Hakim Ata and Anbar are mentioned as two: Sultan Ubbi and Askar were born [3]. and in other books, states that Anbar mother had three sons: Mahmud Khoja, AskarKhoja and Ubbi Khoja[4]. In separate books, Hakim Ata married UmmeBibi, the daughter of Bughrakhan, and had two sons. The first was Asfar Muhammad and the second was Ubbi [5].

RESULTS AND DISCUSSIONS

According to folklore, Ubbi's mother was a stepmother. His father, Hakim Ata put Ubbi on a difficult journey. Ubbi can't keep his promise to save the people on the ship that was abused on the way, Ubbi Sultan is late. Ubbi's stepmother blames Ubbi Sultan for her delay and accuses him of killing him. After time passed, Ubbi told his father why he was late. However, stepmother started to set a fire between the father and the child. Then Ubbi Sultan said, "Oh, Ubbi!" How can I be patient when strangers complain to me about my name? I didn't know I was drowning. With God's guidance, I pulled the ship out safely and saved many people from the danger of death. The wise father does not believe his son. After time passed, the people who Ubbi rescues, will bring their alms to Ubbi. All the disciples fall at Ubbi's feet. Hakim Ata was amazed and said, "This child of mine has a miracle." He said to his son, "Two sheepheads do not boil in the same pot, either from you or from us." Ubbi understood the meaning of this word and said, "Two sheephorns will not fit in one pot, and if you destroy their horns, the heads of three sheep will fit in one pot," and said goodbye and left. After, the father and the child are not be able to see each other.

The God said to Hakim Ata: "Ubbi's descendants had 360 saints, and you prevented it. It takes 40 years for a river to flow over your grave to wash away your sins." Hakim Ata searches for his lost son a lot, but he can't find him anywhere. Upon hearing this, Hodja Ahmed Yassawi warned Hakim Ata: "Your grave will be flooded for 40 years." After Hakim Ata's death, he was buried in Bakirgan. Soon the Amu Darya changed course and flooded the city of Bakirgan. Hakim Ata's tomb was flooded and 40 years later the water returned to the sanctuary and Hakim Ata's tomb was opened.

In the legend, Ubbi Sultan appears as a saint, a prophet. In fact, the people recognize him as a man of pure heart, a man of few words. He saves many people from drowning. Probably for this reason, Ubbi's name and his sanctity are associated with water. In the mythological legends of the ancient Khorezm peoples, Ubbi (Hubbi) is depicted as a water god, a hero who saves people from slavery. The image of Ubbi in the legend is given as follows: "In the most ancient times, long before the time of Faridun and the great Jamshid, there was a young man named Ubbi in the Amu Darya. He catches fish with one hand and catches it in the sun with the other, earning a living by eating fish. Ubbi lived in that state for seven hundred years in the Amu Darya and never let a fly into the world. People made a living from the air. However, during the reign of Jamshid, Ubbi disappeared one night. People believe that he was kidnapped by a girl who was the ruler of the waters of heaven. After Ubbi disappeared, his mother came to the Amu Darya. He was the first to build a boat, teaching people how to swim in a boat and how to fight the enemy in the water. Soon, Ubbi's mother disappeared. But people don't forget Ubbi and her mother. When they got into the boat, Ubbi and his mother prayed, "Oh, my Ubbi, Oh, Anbar mother, be my helper".

This mythical plot gradually spread beyond the Turkestan and Khorezm regions and spread among the most populous regions of Central Asia. However, each local region added national features and life gifts to this plot. Thus, this mythological image was more or less mythical. An example of this is the myth of "Er Hubby", which is widespread in the region of Karakalpakstan and in Fergana Valley.

It is said that the plot of all the legends about Ubbi Sultan was in a mysterious quarrel with his father and suddenly disappeared. No one saw his body. Some legends say that the girl who was the ruler of the celestial bodies was abducted, while others say that "Ubbi's body flew into the sky." The reason for this is to increase the viability of the belief that the legend Ubbi saves people from various disasters, to perpetuate his image.

According to some legends, after Hakim Ata's son left in a rage, he uses iron rods and shoes. He swore, "I will look for you, my son, until my shoes is gone as money, and my rods is gone as needle." He had been looking for her child for days, months, and years. Sultan Ubbi was aware of this. "My father suffered a lot, I'll see," he said. Then one day he went out to meet his father and said, "Who is the father?" "It's me, my son," he said. "Father, you're so proud," said the boy, and disappeared. This view has been repeated several times. Since Hakim Ata's answer was the same, his son said, "Don't look for me anymore, we will meet you on the Day of Judgment." The episode of Hakim Ata's using of an iron shoe, far removed from the realities of life, allows us to consider this story as a fairy tale. The ideological content of this myth is that arrogance is the worst attribute, and humility and generosity are the most intelligent qualities that ensure the spiritual beauty of a person. However, we cannot support Ubbi Sultan without understanding the meaning of his actions against his father in the legend. In our opinion, Ubbi Sultan's arrogance and jealousy of his father in order to eradicate the evils of the gods, which he disliked, were the result of Sufism. Myths of this content illuminate the spiritual world of a person and educate him to purity and honesty.

CONCLUSION

SulaymanBakirgani (Hakim Ata) and his son Sultan Ubbi were the people who followed the rules of Islam and made it in history as a great prophet, a saint who preached to the people.

Nevertheless, their actions before Islam, the ancient cults of nature, the power of the word, shamanism in the myths were felt as religious concept, ghosts of beliefs.

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THEORETICAL ISSUES OF ORGANIZATION OF MARKETING ACTIVITIES IN ENTERPRISES

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ABSTRACT

The article discusses the theoretical issues of organizing marketing activities in enterprises. Organizational structures of marketing activities, views on their application in local enterprises in Uzbekistan have been previously asked. Deep structural changes in the economy of Uzbekistan, deep processing of local raw materials, industrialization of agriculture, and development of exports of local products are considered as priorities of economic reforms. As a result, the volume and range of import-substituting goods are expanding. Commodity markets are saturated and there are problems with the sale of goods in manufacturing enterprises.

KEYWORDS: *Marketing Activities, Marketing Services, Marketing Management, Marketing Research, Market Share, Market Potential, Marketing Activities Functional, Product-Oriented, Customer And Regional-Oriented Organizational Structures.*

INTRODUCTION

Deep structural changes in the economy of Uzbekistan, deep processing of local raw materials, industrialization of agriculture, development of exports of local products are considered as priorities of economic reforms. As a result, the volume and range of import-substituting goods are expanding. Commodity markets are saturated and there are problems with the sale of goods in manufacturing enterprises.

This, in turn, raises the issue of organizing marketing activities in local enterprises. Research on the organization of marketing activities, improving the efficiency of marketing management in enterprises is becoming more urgent.

Analysis of the Literature On The Subject

Extensive research on the mechanism of organization of marketing activities has been conducted in the marketing literature. Leading marketing scholars Philip Kotler and Kevin Lane Keller researched on ways to organize marketing activities and organizational forms of marketing services [1], as well as world-renowned marketing experts Jean-Jacques Lambin [2], H. Igor Ansoff [3], Michael E. Porter [4] and others, have researched on ways to organize marketing activities in companies.

The issues of organization of marketing activities are of special importance in the scientific research of Russian scientists. In particular, Berdiyev T.A. [5], Deepak. R.K. [6], T.G. Butova, A.A. Kazakov, A.N. Jiratkova [8], Ergashkhodjaeva Sh.J. [9] researched the organization of marketing activities in enterprises.

In recent years, the scientific work of our local scientists on marketing is also commendable. In particular, Ergashkhodjaeva Sh.J., Qosimova M.S., Yusupov M.A. [9,10] researched on the organization of marketing activities in enterprises, marketing management.

RESEARCH METHODOLOGY

The status and quality of an enterprise's marketing activities are directly related to how the marketing service is organized and how effective it is. Almost all large and medium-sized enterprises in the world have an independent marketing service, since in large companies it is managed by the vice president of marketing. In small businesses, marketing is done by economic service professionals.

The head of the marketing service and his staff can find profitable markets, analyze the market situation, prepare recommendations for new products, determine market prospects, develop marketing strategies, tactics and programs, develop basic requirements for the product, its range and price. be able to determine sales policies and monitor their implementation.

There are several organizational structures in the world experience of organizing marketing activities in enterprises. The most important is functional, product-oriented, customer-oriented and regional-oriented organizational structures of marketing activities.

In researching on the organization of marketing activities in enterprises, attempts were made to reveal the problem using methods such as monographic observations, scientific observation, abstract-logical thinking, analysis, synthesis.

ANALYSIS AND RESULTS

In today's highly competitive environment, marketing is becoming increasingly important in the business of any enterprise. Regardless of the direction and scope of activities, enterprises pay special attention to the organization of marketing activities. Deep structural changes in the economy, market saturation, intensification of competition between goods, changes in consumer needs, rising living standards require the organization of special marketing services.

Engineers and technicians are the main links in the organizational structure of the governing bodies of the enterprise, which pursues a policy of production priority. In a marketing approach, the key decision-maker is the marketing staff. The management of large foreign companies has separate marketing departments and sales management departments, which have more employees than other departments.

One of the main tasks of marketing is to organize and launch the production and sale of competitive products that are guaranteed high quality and meet customer demand. For a product to be considered high quality in a marketing approach, it must meet international technical standards in terms of quality as well as the needs of a particular market segment. Therefore, one of the central tasks of the marketing service is quality management.

Since the 70s, complex systems of quality management in various enterprises of our national economy have begun to develop. But they were mainly based on the creation of various technical standards and control over the production of standard products. However, such systems did not ensure the high quality of the goods because the future demands and needs of the consumers were not taken into account. In the face of a constant shortage of goods, there was also no time to think about future demand and needs.

As the functional set of manufactured products varies depending on the solvency of demand and the lifestyle of each category of buyers, marketing professionals and brand managers need to consider the capabilities of any potential consumer. Therefore, when entering the market, it is necessary to offer a tool to solve the problem of the buyer, not the product. This is the essence of key marketing activities in brand development.

Marketing activities are multifaceted and consist of the following elements:

- Study of market potential;
- Identification of market characteristics;
- Market share analysis;
- Product sales analysis;
- Forecasting short and long term marketing activities;
- Research of competitors' products;
- Assessment of market opportunities for new products;
- Study of the business cycle;
- Price study;
- testing of new products;
- formation of sales plans by regions and territories;
- improvement of information support (system);
- foreign market research;
- Research of trade channels;
- Study of advertising effectiveness;
- Study of advertising media.

The listed elements of marketing activities also have specific components that need to be studied and analyzed.

Marketing professionals need to study and coordinate market attitudes to direct business activities to consumers. The organization of production of competitive products in domestic and foreign markets determines the need for continuous analysis of marketing activities and their components based on "product-market" profile analysis.

Marketing activities are summarized in four main stages.

- 1) Analysis of market opportunities.
- 2) Develop marketing strategies.
- 3) Forming a marketing program.
- 4) Control and coordination of marketing activities.

Companies have appropriate services to successfully carry out all the complex work of marketing management, which are usually managed by the vice presidents of these companies. The structure of such services is formed depending on the direction of marketing. On this basis, we can distinguish four main options for the organization of marketing: function-oriented, product-oriented, customer-oriented and regional-oriented.

Today, special attention is paid to marketing activities at several enterprises producing garments and knitwear in Uzbekistan. Marketing activities are organized in almost all enterprises. Research shows that the activities of the established marketing department mainly correspond to the functional structure of the marketing service. Marketing activities are carried out during the distribution of marketing functions to marketing staff.

A functional organizational structure is the most common form of organizing marketing activities because it is the first structure studied and developed. The functional organizational structure provides for the division of responsibilities in procurement, sales, relocation, distribution and other areas. Specialists in various marketing functions report to the supervisor who regulates their activities (Figure 1). This structure requires the solution of typical managerial tasks to produce a relatively limited range of goods, operating in stable external conditions and ensuring its operation.

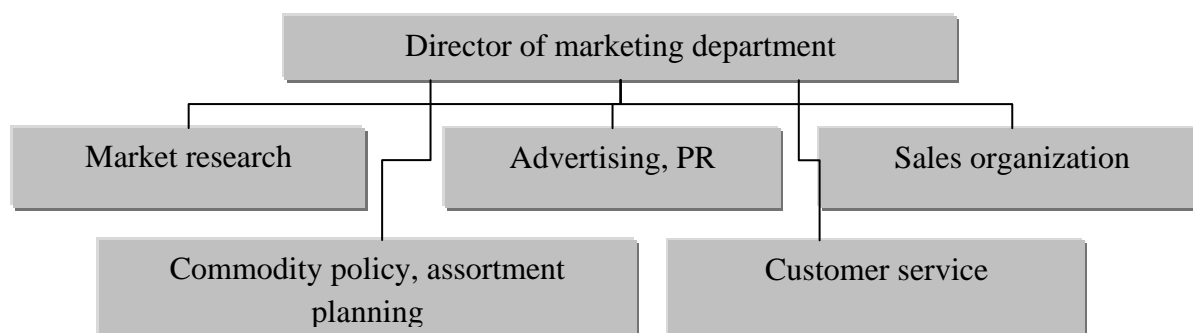


Figure 1. Functional structure of marketing activities

Commodity production organization (Figure 2) does not replace functional organization but complements it with another stage of management. The advantages of the product organizational structure are that it allows firms to better adapt to market requirements for each product and to produce goods with different production technologies, short life cycles, high innovation requirements.

Commodity organization is used by firms with a wide range of goods. Commodity organization of marketing services is especially common in the practice of foreign firms.

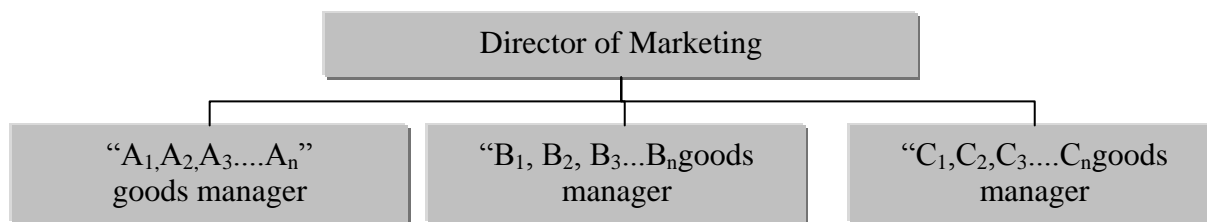


Figure 2.Commodity structure of marketing activities

Given the breadth and depth of the range of sewing and knitting products, it is advisable to organize marketing activities for the production of goods. This is because the effectiveness of marketing activities depends on exactly how marketing activities are organized and the level of marketing impact.

In the activities of textile enterprises, marketing is not limited to the process of selling products or services, but also combines a number of concepts and ensures its full implementation. These are, first, to identify the basic needs of consumers through marketing research tools; second, to create products that meet these needs; third, delivery of these products to consumers using marketing elements (price formation, advertising, sales promotion, etc.); fourth, direct sales of products to consumers through delivery (sales) networks. In this sense, marketing activity involves the conduct of marketing research, on this basis, the development of marketing strategies, programs of marketing activities. This requires the effective use of marketing analysis methods.

The process of organizing marketing in the enterprise itself is usually divided into several stages:

1. The stage of diagnosis of the enterprise (analysis of the potential of the enterprise, information about the internal and external environment and existing problems, the development of hypotheses about the organization of marketing).
2. Analysis stage (analysis of market conditions, competitors' behavior, product supply and demand development prospects).
3. Organizational stage (development of the Regulation on marketing services of the enterprise, development of measures for staffing of marketing services, development of the marketing concept of the enterprise).
4. Methodological stage (creation of marketing information system; development of specific methods of implementation of the product, price, distribution, advertising policies).
5. Implementation phase (substantiation of goals, strategies, activities and marketing costs, formation of a marketing control system, development and approval of documents coordinating marketing activities in the enterprise).
6. Training stage (training of marketing service specialists, management staff in marketing, internships).

The staff of the marketing service can have the following levels: strategic level of management (deputy general director for marketing, marketing director), intermediate level of management (product manager; market, region, region manager; sales, distribution channel manager; with consumers; performance manager; advertising manager; public relations manager), operational-executive (sales agent, representative, promoter, advertising agent, marketing manager assistant, salesperson), technician (training manager, marketing supervisor), assistant (marketing research manager, marketing economist-analyst, interviewer, specialist in computer processing of information).

The highest strategic level of marketing management is carried out by the direct management of the marketing department of the enterprise.

The middle level of marketing management consists of managers in various fields, who perform the function of marketing plan development, forecasting of goods and sales, conducting advertising campaigns, collecting and analyzing market information, marketing products, etc.

The technical level of marketing management in the enterprise trains employees in the methods of marketing activities, as well as oversees the conduct of marketing activities (over marketing costs, sales plans of goods, etc.).

The auxiliary stage conducts marketing research and organizes internal audits of marketing (market share, profit, profitability in terms of assortment and target markets, analysis of consumer attitudes to the enterprise product, etc.).

In recent years, a lot of work has been done in the country to develop a mechanism for conducting marketing research to study the supply and demand for goods produced in our country. This indicates that in our country, too, the era of marketing has become the main tool of the economic system in accordance with the rules of the market.

Here it is necessary to follow the following basic principles of marketing:

1. Carefully study the dynamics of the state of demand and market conditions when making decisions on consumer needs. Adherence to this principle implies a good knowledge of the market situation in terms of current demand and expected demand, the activities of competitors in the market, the behavior of customers in the market and their relationship to the product of the enterprise. The main task of marketing here is to understand what customers want.

2. Creating conditions to ensure the maximum compliance of production with the demand structure and market demand.

The modern concept of marketing includes knowledge related to the entire activity of the enterprise (production, scientific and technical, sales, etc.) related to consumer demand and its future change. Marketing refers to the processes of creating, producing, and selling goods that are in demand by consumers. Marketing service plays an important role in determining the production, scientific, technical, financial policy of the enterprise. Here, based on the analysis of the state of demand and the level of growth, it is concluded whether there is a need to produce this or that product.

3. Informing the main consumers about the goods of this enterprise and influencing their purchase of the goods of this enterprise through advertising and other permitted means.

I have created and produced a new product, and business leaders who think that the goods I have created and produced will find their way to the market on their own are refreshed. Of course, one of the main tasks of many enterprises is to produce new products that are effective. However, the successful marketing of these goods is also an important task.

CONCLUSION

A marketing organization is a set of all material, financial, regulatory and other resources necessary for the implementation of marketing activities, which in the process of its implementation is aimed at one goal, organizing and coordinating the activities of all employees.

The expansion of the range of goods of enterprises engaged in the production of garments and knitwear in Uzbekistan, the growth of exports, the growth of market coverage show that

marketing activities are not limited to the functional organizational structure. The effectiveness of marketing activities also depends on the organizational structure of the marketing service.

When organizing marketing in enterprises of Uzbekistan, including sewing and knitting enterprises, it is expedient to pay attention to the following:

- formation of organizational structures for the organization of marketing activities depending on the scope of activities of the enterprise, production volume, product range, structure of sales channels, market coverage;
- it is necessary to organize regional marketing services in enterprises directly engaged in exports;
- establish cooperation with higher education institutions that train highly educated marketing specialists;
- pay special attention to the organization of marketing services in the marketing activities of enterprises.

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CHARACTERISTICS OF INVESTMENT PROCESSES IN THE COUNTRY

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ABSTRACT

The article examines the system of formation of investment activity in the country and the factors that reflect investment activity. The impact of investment activity factors in the formation of investment potential of the regions was assessed. The systemic development processes between the system of formation of the target development hierarchy of increasing investment activity and the strategy of its implementation are studied. The country has developed scientific proposals and practical recommendations to improve the integration of the specifics of the investment process and the conditions and factors of its development.

KEYWORDS: *Investment, Investment Project, Investment Environment, Macroeconomic Environment, Investment Potential, Investment Resource, Investment Activity, Investment Policy, Social Infrastructure.*

INTRODUCTION

In the context of economic liberalization, it is necessary to constantly increase comprehensive measures to ensure the sustainable development of the country. One of such important events and directions is the organization of effective investment activities in all sectors of the country, the investment climate, process, potential, activity and attractiveness.

Carrying out an active investment policy aimed at modernization of production, technical and technological renewal, implementation of investment projects for the development of production and social infrastructure, direction and distribution of cross-sectoral investments in the tasks identified in the Action Strategy for the five priority areas of development of the Republic of Uzbekistan in 2017-2021 improvement of econometric modeling methodology plays an important role in the development of models for determining investment efficiency, risk and risk levels [1]. From this point of view, the active development of the economy requires large-scale investments.

As the President of the Republic of Uzbekistan Sh. Mirziyoyev noted: "World experience shows that a country that pursues an active investment policy has achieved sustainable growth of its economy. That is why investment is the driver of the economy, in Uzbek, the heart of the economy. We will achieve rapid development of our economy only by actively attracting investment and launching new production facilities. Positive results in the economy provide an

opportunity to systematically address the problems that have accumulated in the social sphere. We all need to understand this deeply and organize our work on this basis.

In recent years, 18 interstate official visits have been made and agreements have been reached on 1,080 projects worth \$ 52 billion. Joint investments with the World Bank, the European Bank for Reconstruction and Development, the Islamic and Asian Development Banks, and other international financial institutions totaled \$ 8.5 billion. [3]

RESEARCH METHODOLOGY

The article used comparative analysis as well as induction and deduction assessment methods. Using the comparative method, the data on tax benefits were analyzed and scientific conclusions were made.

ANALYSIS AND DISCUSSION OF THE RESULTS

At present, a system of measures has been developed to increase investment activity in the country in the following four groups, based on the best practices of countries operating on the principles of free economic relations and the country.

The following measures are important in the organization of the system of formation of investment activity in the country:

- Identification of financial resources and sources of investment and creation of favorable conditions and benefits for their attraction;
- Formation and support of market entities providing effective investment;
- Creating a macroeconomic environment that attracts resources that meet real investment needs;
- Encouraging the subjects of the investment process by the state.

Sustainable development in sectors of the economy depends on the pace and amount of long-term and short-term investment in working capital for the purchase, reconstruction, construction of high-performance, modern fixed assets, depending on the specifics of the industry.

The ratio and amount of long-term and short-term investments also play an important role in increasing investment activity in sectors of the economy. Because the low investment attractiveness of the industry does not fully allow to attract investment in fixed assets. In order to achieve priority development of the country's economy, strengthening its material and technical base, attracting sufficient investment in the creation of effective agricultural technology and intellectual property is a necessary process in the context of economic liberalization.

The positive implementation of the various factors mentioned above will allow the active inflow of foreign investment. This, of course, is more jobs, more income, more opportunities for economic growth. In addition, the most important thing is that foreign investors not only bring capital with them, but also bring advanced knowledge and experience from their home countries. This will also enable the country's future economic growth.

TABLE 1 COUNTRY INVESTMENT ACTIVITY FORMATION SYSTEM *

Identify financial resources and sources of investment and create favorable conditions and incentives for attracting them	Forming and supporting market entities that provide effective investment	Creating a macroeconomic environment that attracts resources that meet real investment needs	Encouraging the subjects of the investment process by the state
<ul style="list-style-type: none"> • domestic funds of farms; • state budget funds; • funds of foreign companies; • international financial assistance; • bank loans. 	<ul style="list-style-type: none"> • formation and development of business entities based on different forms of ownership; • continue privatization in sectors of the economy; • supporting the attraction of direct investment. 	<ul style="list-style-type: none"> • creation of favorable conditions by the state for attracting funds of the population to investments; • reducing current inflation; • state budget deficit and public debt reduction; • implementation of economic policy against monopolies and corruption; • reduction of bank interest rates; • creation of favorable legal, organizational and economic conditions for active participation of all forms of entrepreneurship in investment processes. 	<ul style="list-style-type: none"> • economic incentives to attract capital to all producers; • conducting an effective depreciation policy and reducing the tax burden; • formulation of priorities of targeted investment policy; • providing practical assistance to investors in capital accumulation; • guarantee to investors; • provide practical assistance in the development of leasing relationships.

*** Source: The table was developed by the author.**

There are two important aspects to consider when assessing investment attractiveness. The first is the investment attractiveness of investing in a particular facility. It analyzes the economic situation of the existing sectors in a specific regional system. In conducting economic analysis, the key indicators for determining the effectiveness of investment projects and programs are assessed.

The second is the investment attractiveness of the regional economic system. The following cases will be analyzed:

- Existing legal and regulatory framework,

- Political situation,
- Investment Infrastructure,
- Socio-economic conditions,
- Degree of investor protection,
- Tax rate,
- Strategic and administrative resources.

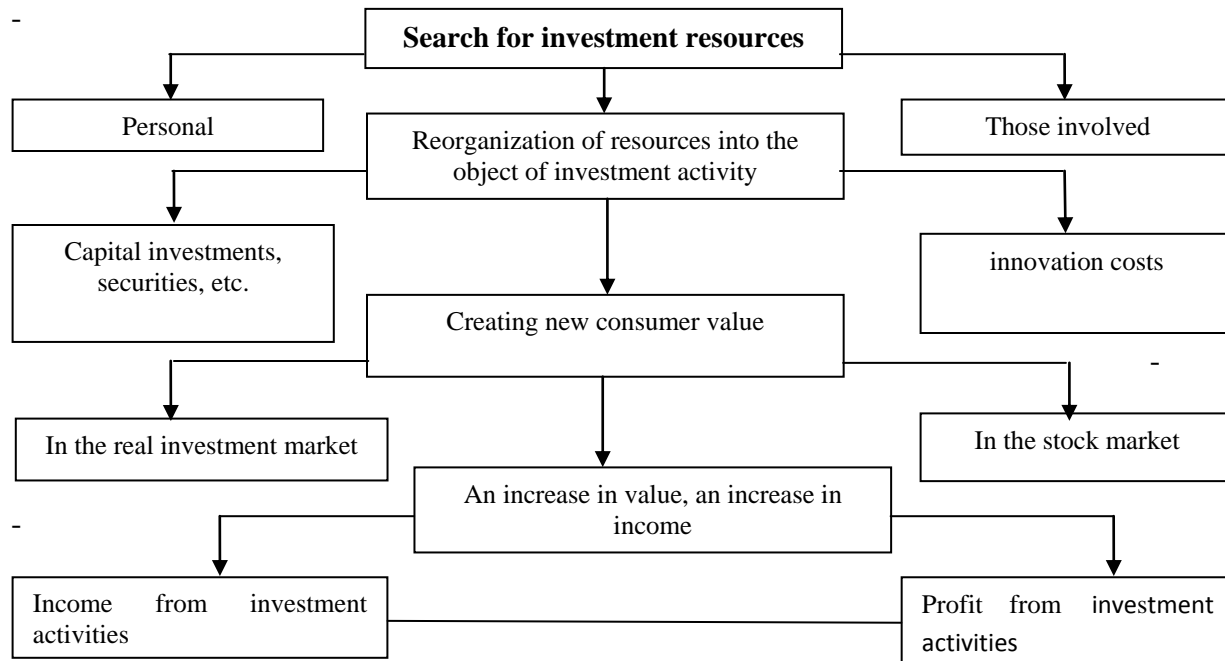


Figure 1. Factors of investment activity *

*** Source: The table was developed by the author.**

As mentioned above, investment activity is an economic category, which is reflected in the impact on investment activity through objective and subjective data.

Economist T.M. Smaglyukova distinguishes from all indicators of investment activity that meet the requirements of the complex assessment. According to him, these indicators are included in the factors of investment activity, which reflect all aspects of the investment process.

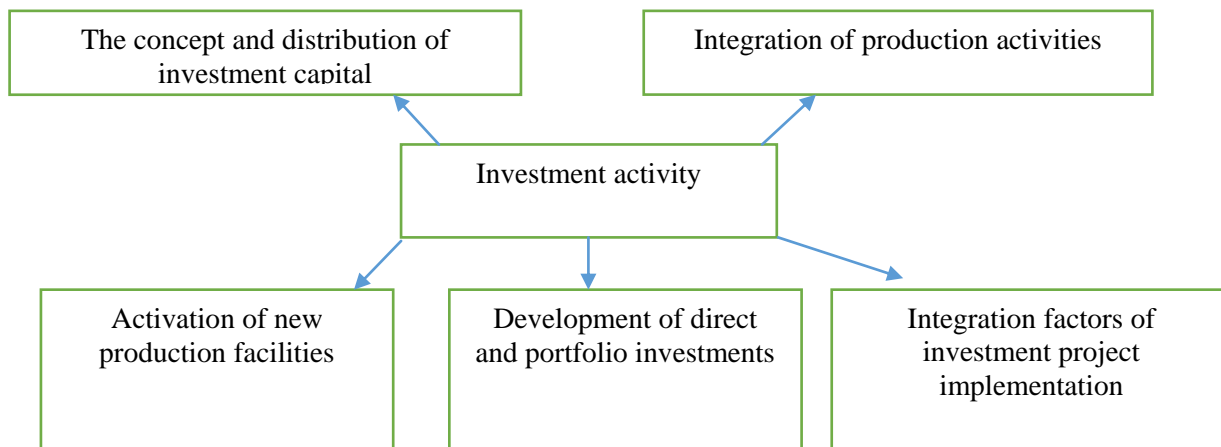


Figure 2. Mechanism of interdependence of concepts of investment activity *

*** Source: The table was developed by the author.**

The sum of formed indicators covers external and internal factors of activity of regions as economic system and objects of investment.

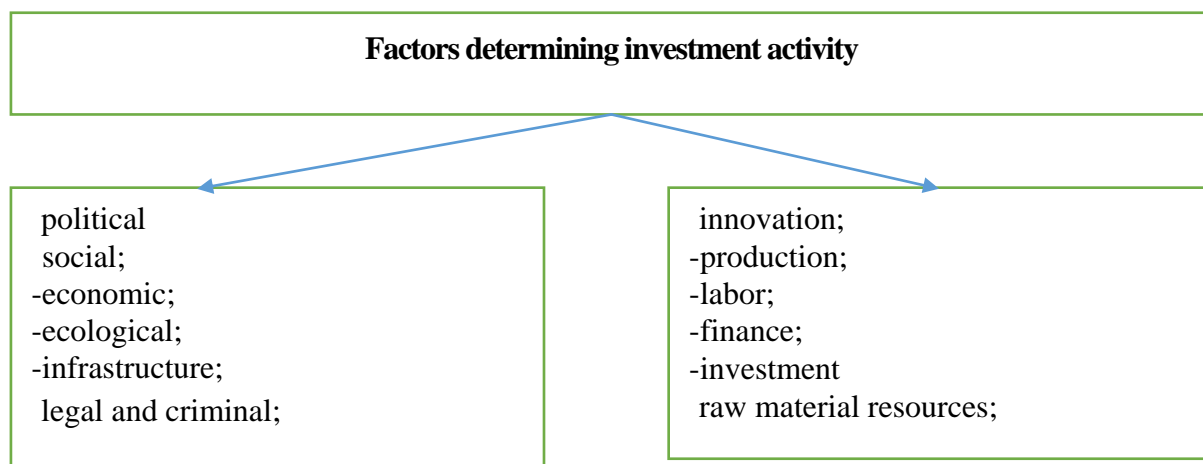


Figure 3. Factors determining the investment activity of the regions *

*** Source: The table was developed by the author.**

In his opinion, the level of risk of investments can be analyzed using all the mentioned factors. Political, social, infrastructural, legal and criminal, innovative and resource-raw factors are excluded from this list to assess the level of risk of investments at the industry level. This is explained by the fact that they do not have a sufficient influence on the formation of the indicators under analysis.

The investment potential category has long been interpreted as an opportunity to invest in assets that have been used for a long time, including securities to increase income or other economic outcomes.

In our opinion, considering it as a multi-stage process of investment activity, there is a need to clarify the concept of "investment process". In this case, it is necessary to highlight the following stages in the investment process:

- Search for investment resources (both personal and borrowed) - the first stage;
- The process of converting resources into capital investments (expenditures), or the conversion of investments into a specific object of investment activity (actual investment) - the second stage;
- Conversion of investments into capital gains, which characterizes the final consumption of investments and the acquisition of new consumption value (in the form of commissioned facilities and production facilities) - The third stage;
- The ultimate goal of investment is to increase the value of capital in the form of profit (income) - the fourth stage.

The division into such stages allows not only to reveal the essence of the investment process, but also to determine the mechanisms of its provision.

The existence of the first stage provides such an opportunity when it is clear which sector of the financial market is the main source of funds for investment activities. At this stage, depending on the mechanism of investment activity, we can distinguish two main categories of the investment process:

- Investment process based on the interaction of the banking system and the real sector of the economy. In this case, along with the own funds of business entities, the funds of commercial banks are the source of investment;
- Based on the interaction of the real sector with the securities market investment process. In this case, investment activity is provided by stock market operations.

Let's take a closer look at the highlighted categories of the investment process.

The first category is characterized by the active use of the banking system in the investment process. The banking system can participate in the investment process in two ways:

1. Funds are accumulated and re-formed for investment through private banks, while private banks form financial-industrial groups, as well as act as independent credit institutions.
2. Investment support for economic growth in priority areas shall be provided through state investment banks operating as development institutions.

The first way for private banks to participate in the investment process has long been formed and is carried out by two models - large commercial banks work closely with manufacturing enterprises, financial and industrial groups are formed. The role of banks in the financial and industrial groups is determined by the main purpose of the bank as an institution engaged in the collection of funds, their placement on a payment basis, the implementation of settlements between customers. Typically, banks and businesses fall into one group through a corporatization instrument. Such a model of stimulating investment processes helps to turn funds into investments. The positive side of this model is that it provides a high level of fundraising and resource mobilization in promising areas of economic growth. Such a model of the organization of investment processes was used in post-war Germany and Japan and contributed to their successful development. The disadvantage of the model is the high sensitivity of financial and

industry group leaders to making wrong investment decisions, as well as the risk of overproduction of production chains and re-accumulation of capital as their basic technologies become obsolete.

The dynamics of the investment process requires the use of flexible means of coordinating it, and they must be applied to all stages of it. Such coordination has a number of tasks, the main of which are:

To create conditions for the potential investor to accumulate free funds;

Creation of attractive sectors, regions and enterprises in the economy for investors;

Creation by the state of legal conditions that will help to attract investments to the economy;

The potential investor can include the creation of conditions for dynamic development, Expansion of production and investment profits and returns, and so on.

The following figure shows the factors that reflect investment activity:

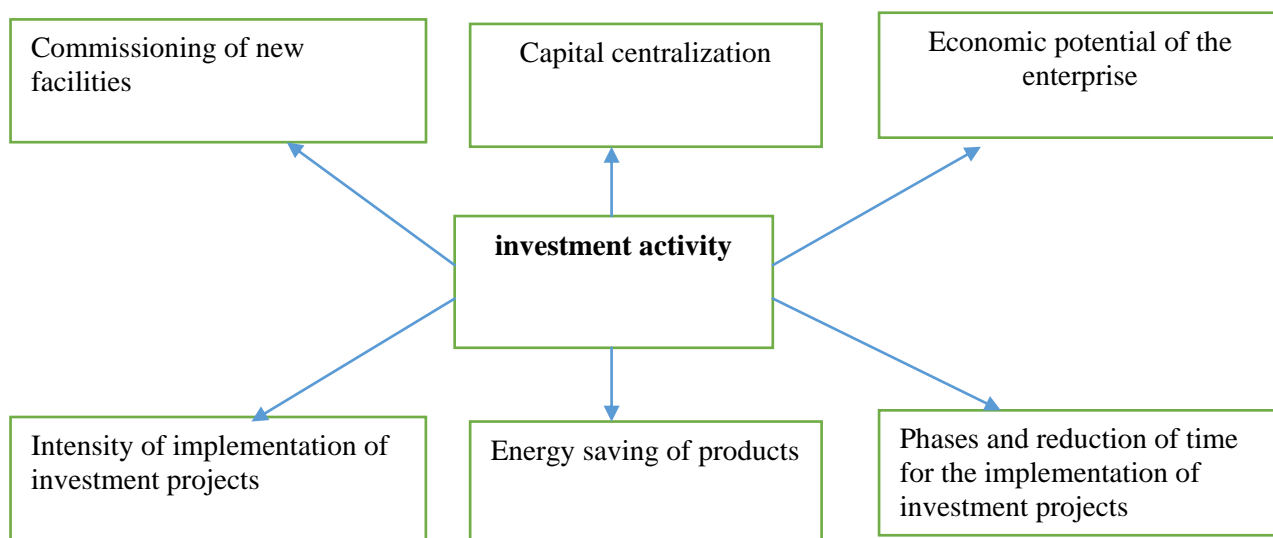


Figure 4. Factors reflecting investment activity *

*** Source: The table was developed by the author.**

The solution of these tasks is the responsibility of investors, investment intermediaries, recipients of investments, regional and local authorities. At different stages of development of the country, different tools and methods of coordination of the investment process are used, their combination and proportion form the investment mechanism.

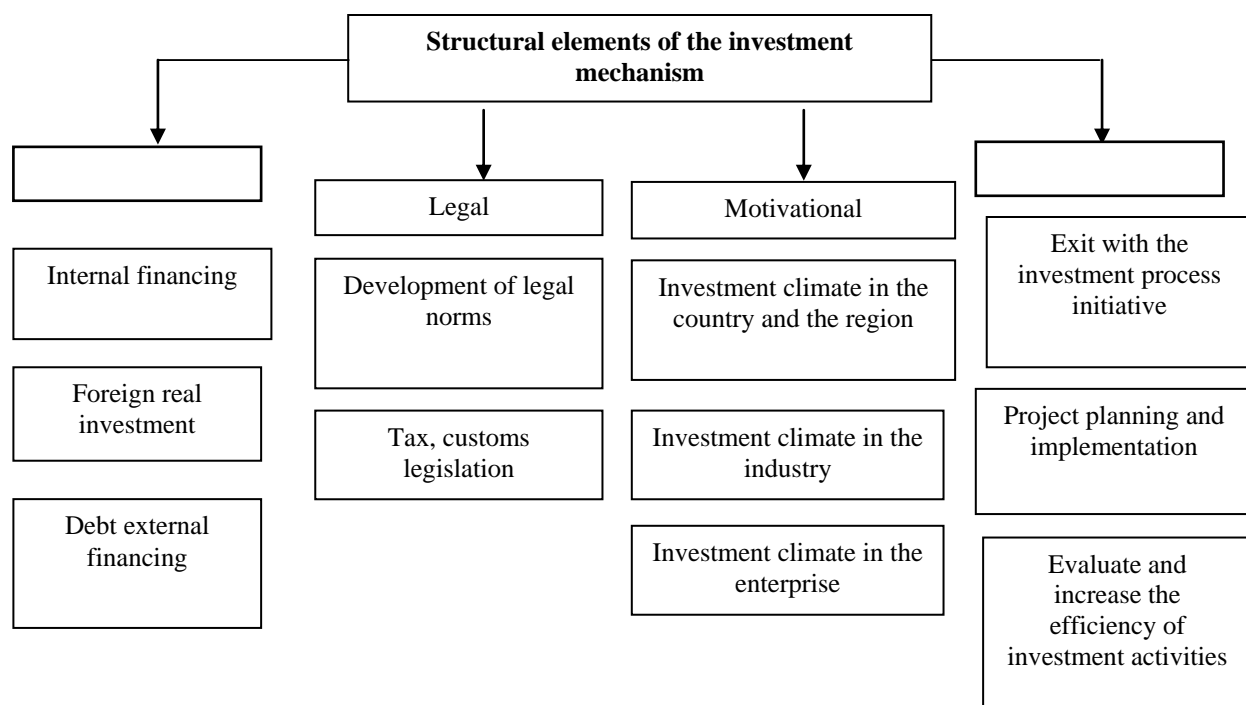


Figure 5. Structural elements of the investment mechanism *

*** Source: The table was developed by the author.**

The investment mechanism includes the means of an interactive system of interaction, designed specifically for investment activities at all levels in the interests of expanding existing production or advancing new production. The investment mechanism consists of the following structural elements: resource, legal, motivational, organizational.

Resource provision of investment financing operates in three forms: internal financing (capital investments), external real investments and debt external financing (loans and deposits). The source of domestic investment is a personal charter fund, income deductions, depreciation, insurance coverage of fixed assets, financial resources of high-ranking holdings and joint-stock companies, etc. [2]. Foreign investment will also come from a variety of sources: federal, regional and local budgets, funding from business development funds; foreign investment in the form of financial resources, material resources, intangible assets; direct investments of international financial institutions and organizations; various forms of deposits (loans from the state, funds, banks, other organizations, bonds and promissory notes) [3]. The organizational structure of the investment mechanism involves the creation of a structure and conditions that facilitate the initiation of the investment process, planning and implementation of various projects, evaluation and implementation of measures to improve the efficiency of investment activities [4]. Legal norms and tax legislation are of great importance for investment activities and promote the efficient placement and movement of capital.

CONCLUSIONS AND SUGGESTIONS

The main directions of the state policy aimed at improving the investment climate are:

- support of first-class research centers in the field of innovation and research activity, information technology;

- creation of a technopark and an innovation cluster;
- formation of favorable infrastructure and financial conditions for foreign investors. These include: the provision of grants for the implementation of projects in the field of land, research, development and vocational training for the construction of industrial enterprises, capital subsidies to cover the cost of purchasing land, buildings and technological equipment, tax incentives;
- formation of public-private partnership institution for the development of investment process infrastructure.

The dynamics of the investment process requires the use of flexible means of coordinating it, and they must be applied to all stages of it. Such coordination has a number of tasks, the main of which are:

- to create conditions for the potential investor to accumulate free funds;
- creation of attractive sectors, regions and enterprises in the economy for investors;
- creation by the state of legal conditions that will help to attract investments to the economy;
- the potential investor can include the creation of conditions for dynamic development, expansion of production and investment profits and returns, and so on.

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A REVIEW PAPER ON HACKING BLIND

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ABSTRACT

The author demonstrate how to build remote stack buffer overflow attacks against services that resume after a crash without having a copy of the target binaries or source code. This enables the hacking of proprietary closed-binary services as well as open-source servers that have been manually built and installed from source and whose binary is unknown to the attacker. Traditional methods are typically used in conjunction with a certain binary and distribution where the hacker is aware of the location of relevant Return Oriented Programming gadgets (ROP). Instead, our Blind ROP (BROP) attack identifies enough ROP gadgets across the network to execute a write system call and transmit the vulnerable binary, after which an exploit may be carried out using existing methods. This is done by leaking a single piece of data depending on whether or not a process failed when given a certain input string. Stack vulnerability and a service that restarts after a crash are required for BROP to work. We used Braille, a fully automated exploit that yielded a shell in under 4,000 requests (20 minutes) against a current nginx vulnerability, yaSSL + MySQL, and a toy proprietary server written by a colleague, against a contemporary nginx vulnerability, yaSSL + MySQL, and a toy proprietary server written by a colleague. The attack uses address space layout randomization (ASLR), no-execute page protection (NX), and stack canaries to operate against current 64-bit Linux.

KEYWORDS: ASLR, Attack, Blind, Hacking, ROP.

1. INTRODUCTION

Attackers have had a lot of success developing exploits with different degrees of target knowledge. Because attackers may audit the code to discover weaknesses, open-source software is the most vulnerable. Fuzz testing and reverse engineering may also be used to hack closed-source software for highly motivated attackers. In order to better comprehend an attacker's capabilities, we ask: can attackers expand their reach and develop vulnerabilities for proprietary services when neither the source nor binary code is available? This objective may seem unachievable at first glance, since today's exploits depend on obtaining a copy of the target binary to utilize in Return Oriented Programming (ROP). Because non-executable (NX) memory protection has essentially prohibited code injection attacks on contemporary systems, ROP is required [1].

To begin answering this issue, we'll look at the most basic vulnerability: stack buffer overflows. Unfortunately, these vulnerabilities are still present in popular software today (for example, nginx CVE-2013-2028). It's just a guess that vulnerabilities like this go undetected in private

software, since the source (and binaries) hasn't been subjected to rigorous examination by the general public and security experts. However, an attacker may definitely employ fuzz testing to discover potential vulnerabilities in known or reverse engineered service interfaces. Attackers may even use known flaws in popular opensource libraries (such as SSL or a PNG parser) that are utilized by proprietary services. The difficulty is devising a technique for exploiting these flaws when knowledge about the target binary is restricted. One advantage attackers often have is that many servers, for the sake of resilience, restart their worker processes after a crash. Apache, nginx, Samba, and OpenSSH are just a few examples [2].

Even if this capability is not built into the program, wrapper scripts like mysqld safe.sh or daemons like system offer it. Load balancers are becoming more popular, and they often distribute connections to a large number of similarly configured servers running identical application binaries. As a result, there are numerous scenarios in which an attacker has an unlimited number of attempts (until discovered) to develop an exploit [3].

Blind Return Oriented Programming (BROP) is a novel technique that takes advantage of these circumstances to create vulnerabilities for proprietary services whose binaries and source are unknown. The BROP attack assumes a stack vulnerability in a server application that is restarted after a crash. The attack works with ASLR (Address Space Layout Randomization), nonexecutable (NX) memory, and stack canaries enabled on contemporary 64-bit Linux. While this covers a huge number of servers, we are unable to target Windows systems at this time due to the fact that we have not yet adapted the attack to the Windows ABI.

1.1 Two novel methods are used to enable the attack:

- Generalized stack reading: this extends a well-known method for leaking canaries to additionally leak stored return addresses, allowing ASLR to be defeated on 64-bit systems even when Position Independent Executables (PIE) are employed.
- Blind ROP: This method locates ROP devices from afar.

Both methods rely on a single stack vulnerability to leak data depending on whether or not a server process fails. The stack reading method successfully reads (by overwriting) the stack by overwriting it byte-by-byte with various guess values until the right one is discovered and the server does not crash. The Blind ROP attack locates enough gadgets remotely to execute the write system call, which allows the server's binary to be copied from memory to the attacker's socket. Canaries, ASLR, and NX have all been overcome at this stage, and the exploit may now be carried out using known methods.

➤ Three additional situations are enabled by the BROP attack, which allows for strong, general-purpose exploits:

- Exploiting closed-binary services that are proprietary. When utilizing a remote service, one may detect a crash or find one via remote fuzz testing.
- Exploiting a flaw in an open-source library that is believed to be utilized in a closed-binary service. For example, a popular SSL library may have a stack vulnerability, and it's possible that it's being utilized by a proprietary business.
- Attempting to hack an open-source server whose binary is unknown. This is true for source-based distributions like Gentoo, as well as manually built installs.

We assess each of the three possibilities. In an ideal world, we would test our methods against production services for which we have no knowledge of the program, however we are limited by legal constraints. To mimic such a situation, we tested against a toy private service written by a colleague for which we had no source, binaries, or functionality details. In the second case, we take use of a genuine flaw in the yaSSL library. This library was formerly used by MySQL, and we are using it as the host application [4–7].

In the third case, we build a generic attack for a recent (2013) vulnerability in nginx that is not dependent on a specific binary. This is especially helpful since the exploit works with every distribution and vulnerable nginx version, eliminating the need for an attacker to create a separate exploit for each distribution and version combination (as is done today).

We built Braille, a new security tool that greatly automates BROP attacks. Braille can get a shell on a vulnerable server in around 4,000 queries, which takes less than 20 minutes in most cases and just a few minutes in others. To crash the server, an attacker simply has to supply a function that creates a request of a minimum length and appends a string supplied by Braille. The function must additionally return a single bit indicating whether or not the server has crashed.

1.2 Our contributions are as follows:

- A server-side method to bypass ASLR (generalized stack reading).
- A method for remotely locating ROP devices (BROP) in order to attack software when the binary is unknown.
- Braille: a program that generates an attack based on information on how to cause a stack overflow on a server.
- The first published attack for nginx's current vulnerability that is generic, 64-bit, and overcomes (full/PIE) ASLR, canaries, and NX (to our knowledge).
- Recommendations for countering BROP assaults. In conclusion, ASLR must be applied to all executable segments (PIE), and re-randomization must be performed after each crash (at odds with fork-only servers). Keeping the binary from the attacker or changing it on purpose may not be a good security countermeasure.

1.3 An Introduction to Buffer Overflows:

Buffer overflows are a well-known issue that has been exploited in the past. They are quite simple to tackle conceptually. A susceptible application, for example, might read data from the network and store it in a buffer. An attacker may then overwrite memory beyond the end of the buffer if the application has adequate bounds checks to restrict the amount of the incoming data. As a consequence, essential control-flow state may be changed, such as return addresses or function pointers. Return addresses are automatically close in memory owing to function calling practices, making stack buffer overflows particularly hazardous. Attacks against the heap's buffers, on the other hand, are possible [8].

It was standard practice in the early days of stack buffer overflows for an attacker to embed malicious code in the payload used to overrun the buffer. As a consequence, the attacker may simply set the return address to a known stack position and execute the instructions in the buffer. On current computers, such "code injection" assaults are no longer feasible since modern

processors and operating systems may now designate data memory pages as non-executable (e.g., NX on x86). As a consequence, attempting to execute code on the stack will only result in an exception.

To overcome non-executable memory protections, a new approach known as return-oriented programming (ROP) was created. It operates by connecting small code snippets already existing in the address space of the application.

Gadgets are bits of code that may be combined to create arbitrary computations. As a consequence, without relying on code injection, attackers may utilize ROP to take control of applications. Simpler ROP variants are sometimes available. Return-to-libc attacks, for example, may utilize a high-level library function as the return address. The `system()` method, in particular, is handy for attackers since it may execute arbitrary shell code with only one parameter.

On 32-bit systems, when arguments were passed on the stack and were already within the attacker's control, these attacks were extremely successful. Arguments are given in registers on 64-bit platforms, thus extra gadgets are required to fill registers. As an additional protection against buffer overflow attacks, address space layout randomization (ASLR) was added. It operates by relocating code and data memory segments in the process address space in a random order. Code segment randomization is often used exclusively on libraries, although complete address space randomization is also feasible [9], [10].

Because ASLR makes the address locations of code (or even the stack) difficult to anticipate in advance, it presents a significant barrier for attackers. Unfortunately, ASLR is limited on 32-bit systems by the amount of available bits for randomization (typically 16). As a consequence, brute-force assaults may be very successful. On 64-bit systems, however, there are usually too many random bits for brute-forcing to work. In such instances, ASLR may still be bypassed, but only when used in conjunction with a vulnerability that exposes address space layout information, such as a format string. 64-bit systems offer a further difficulty for attackers, in addition to the wider address space for ASLR and the requirement to find extra gadgets to fill argument registers. Because the architecture only allows for 48-bit virtual addresses, user-level memory pointers must include zero-valued bytes. Overflows caused by string operations like `strcpy` are terminated early due to these zeros().

Another popular buffer overflow protection is the use of canaries. Canaries cannot prevent buffer overflows, but they can detect them and stop the program before an attacker has a chance to manipulate control flow. With stack canaries, for example, a secret value chosen ahead of time is put immediately before each stored frame reference and return address. The secret value is then verified to ensure it has not changed when a function returns. Because an attacker must properly replace the secret value in order for the application to actually utilize an altered return address, this may prevent stack buffer overflows from being exploited.

Canaries, like ASLR, may be bypassed by exploiting an extra vulnerability that exposes information about the secret value. For canary implementations, the arrangement of stack memory is an essential issue. One typical technique is to put all buffers near the top of the frame, such that if they overflow, other variables will not be overwritten until the canary is corrupted. The reason for this is to prevent pointers from being exploited to overwrite arbitrary memory. Unfortunately, even with layout measures, the structure of a buffer overflow may occasionally

allow an attacker to circumvent canary words and get direct access to crucial state, as occurred with unsafe pointer arithmetic in yaSSL.

2. DISCUSSION

The author has discussed about the hacking blind, Because Windows doesn't have a fork-like API (just CreateProcess), canaries and the text segment's base address are guaranteed to be re-randomized after quite a crash, making the system more resistant to BROP-style assaults. Arguments are also sent in scratch registers (e.g., rcx, rdx) by the Windows ABI, makes pop gadgets for them more difficult to detect. Scratch register gadgets are uncommon because they don't persist between function calls, thus the compiler doesn't need to store them to the stack. Such devices will almost certainly only exist in the form of mismatched parses, making them less probable. The implementation of ASLR varies per operating system. By default, Windows 8.1 and Mac OS X randomize everything. Regrettably, both systems only re-randomize system libraries when they reboot. This may result in a BROP-like situation where references to system libraries are leaked. Reboots are uncommon on client and laptop systems, as users pause and resume more often than reboot. As for ASLR, Mac OS X only supports 16 bits of entropy, putting it behind other 64-bit operating systems. The efficacy of ASLR on Linux is determined on the installation and its PIE setup. Ubuntu, for example, does not activate PIE by default, but does so on a case-by-case basis depending on risk.

3. CONCLUSION

The author has concluded about the hacking blind, We demonstrate that, given the proper circumstances, exploits may be written without having any prior knowledge of a particular binary or source code. This is useful for stack vulnerabilities in which the server process resets after crashing. On contemporary 64-bit Linux servers, our approach is capable of defeating ASLR, NX, and stack canaries. Two new methods are presented: generalized stack reading, which overcomes complete ASLR on 64-bit platforms, and the BROP attack, which can locate ROP gadgets remotely. Our completely automated tool, Braille, was tested against actual versions of yaSSL+MySQL and nginx with known vulnerabilities, as well as a fake proprietary service running an unknown binary, and took under 4,000 requests to launch a shell in under 20 minutes. We demonstrate that architectural patterns such as forking servers with numerous worker processes may conflict with ASLR, and that ASLR is only effective when applied to all code segments in a binary (including PIE). Furthermore, security through obscurity, in which the binary is unknown or scrambled, can only delay rather than prevent buffer overflow attacks. To counteract our approach, we recommend that systems rerandomize ASLR and canaries after any crash, and that no library or executable be excluded from ASLR.

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PRODUCTION AND BREEDING OF JERUSALEM ARTICHOKE SEED IN VITRO

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ABSTRACT

It was studied in-vitro by the method of obtaining high-quality seed material from the cells of the apical meristem and from the sprouts of botanical seeds, as a method of reproduction for faster growth of cells from callus tissue. Rapid reproduction of seedlings in in-vitro, the growth, development and multiplication factor of seedlings in various schemes of planting in the ground, obtaining seed material with various methods in-vitro make it possible to provide the industry with high-quality seed material, raw materials for the food and pharmaceutical industries and has a scientific get out.

KEYWORDS: *Jerusalem Artichoke, Seed And Marketable Tuber, Variety, In-Vitro, Intensive Reproduction, Nutrient Medium, Callus Tissue, Regeneration, Microclimate, Inulin, Dietary Product, Local Raw Materials.*

INTRODUCTION

To provide the population with quality food, grown the crops environmentally cleanly, seed-based and provide high, plentiful and high-quality yields are important.

More than 8% of the adult population of our country suffers from diabetes. It allows the population to increase the range of dietary products to stabilize blood sugar levels, to grow inulin-containing crops to ensure a pure quality harvest throughout the year, and to increase the demand for inulin-containing diet products. Topinamburis one of the inulin-preserving, promising and widely used crops.

In the conditions of the Zarafshan Valley, Professor D.T. Abdukarimov (2002, 2006), T.E. Ostanokulov (2018) Elmurodov A. Berdimuratov (2020) conducted research in the field of planting Jerusalem artichoke varieties in various planting schemes, growing as an annual and perennial crop, processing for various purposes, food, livestock and pharmaceutical industries. In the course of the study, transplanting between plants 35-40 cm in row spacing 90 cm, 30-35 cm in row spacing 60 cm, in the forage field in the Samarkand, Navoi and Jizzakh regions, mountainous terrain. The pharmaceutical industry, obtained and grown in mountainous areas, can store inulin at a level of 12.5-13.6%.

M. Omonova, A. Rustamov (2012) recommended organizing the cultivation of high-quality and high-quality crops of the Mojiz, Fayz-barak varieties in the Fergana Valley and Tashkent region

in March-April, sowing with an interval of 70 cm, primary seed, production and elite cultivation of the Tashkent region in conditions of the Kibray region.

R. Mavlyanova (2013) Faiz-Baraka, author of the book "Wonderful Varieties", opens the possibility of processing Topinamburas a dietary product in the form of a powder and using them in the preparation of various dietary products.

Professor B.Yu. Khodiev, M. Kasimova (2013), taking into account such widespread use, pointed to the problems of increasing the sector of the economy through processing, standardization of Topinambur products and certification.

In soil conditions from QQR species. O. Dzhanaeva (2020) studied the growth, development, yield and productivity of varieties, and also studied methods of growing large masses and finished crops on saline soils.

V. Dzhamoliddinova (2021) recommends the production of "canned Jerusalem artichoke" from artichoke tubers for dietary salads in local conditions at "Agro Mir" and use for children over 12 years old, as well as older patients with diabetes.

Purpose of the study

Research includes in vitro extraction, propagation and harvest of Jerusalem artichoke seeds.

The research will pursue the following objectives:

- Separation of meristem cells from nodules and seminal vesicles;
- obtaining callus tissue from meristem cells obtained from nodules and seminal vesicles;
- The growth of plant seedlings from callus tissue;
- Study of the duration of regeneration of plant seedlings obtained by various methods;
- The growth and development of seedlings obtained in different ways with different planting schemes in the greenhouse;
- study of productivity and profitability of reproduction of seed material obtained by different methods.

Object of study

Jerusalem artichoke variety Etiraf, stems, botanical seeds.

Research methods: laboratory experiments in vitro in physiological vessels, murasiga-skuga in a nutrient medium, physiological observations in field experiments on biometric measurements, productivity of the All-Russian Institute of Botany, State Commission on Variety Testing by Test Methods. The research was carried out in the in vitro laboratory of the Association "Walnut Growers Association" of the Samarkand region, in their greenhouse (phytotron) and on bush fields.

Research results

In the experiment, a variety of Jerusalem artichoke variety Etiraf was studied, growing seedlings from meristem cells by germination.

The cells of the meristem, taken from the tumor of the tubercles, were selected on February 5, and when inoculated into the Murasiga-Skoog nutrient medium, the callus formed in 27-28 days, that is, on March 3-4. When the cells of the meristem are removed from the seeds of the same variety and inoculated into the culture medium, the callus is formed in 22-23 days, or it turns out to take the callus 5 days earlier than in the meristem of the entire tumor. In the experiment, callus from a complete tumor of callus tissue was transplanted into nutrient medium on March 4, and callus from a seminal tumor on February 28.

Callus was obtained from a tissue-dependent seedling after 28-30 days, from a whole tuber after 32-34 days. The first seedlings were transplanted onto freshly poured nutrient media using leaf cuttings for faster propagation. In this case, 5 cuttings were planted in 25 physiological containers, and 100 seedlings - in 25 containers. The duration of the first regeneration was 22 days in seedlings from endogenous tumors and 18 days in seedlings after seed germination. Initially, 100 cuttings were planted in 25 pots, then 500 cuttings were taken and planted in 100 pots. For 18-22 days, 2,500 cuttings were removed from them and planted in 500 pots.

TABLE № 1 OBTAINING CALLUS TISSUE IN EXPERIMENT

№	Variants	Isolation of cells, day	Callus formation, day	Duration of callus formation, day	Callus cell transplant, day	Date formation of the first growth point	Seedling ready for propagation
1	In vitro seedlings obtained from nodule tumors	05.02.2020	04.03.2020	27	04.03.2000	21.03.2021	05.04.2020
2	In vitro seedlings obtained from seeds	05.02.2020	28.02.2020.	23	28.02.2020	18.03.2021	01.04.2020

The duration of regeneration of seedlings of meristem cells obtained from the tumor was 22 days at the 1st regeneration, 20 days at the 2nd regeneration, 19 days at the 3rd regeneration, and 18 days at the 4th regeneration. 17 and 15 days were recorded. In both variants, the variety specificity of seedlings was 6-8 points in the case of a complete tumor and 7-8 points in the case of a seed tumor.

For alternative growth and development of seedlings in physiological vessels, ambient temperature, humidity, duration of illumination and intensity were provided. During the study, the regeneration process was monitored in 500 pots (5 seedlings were planted in each pot) in saturated nutrient media in physiological pots. The average number of minitumors in a container was 12%, weighing 5.6 grams.

TABLE № 2 DURATION OF THE FIRST REGENERATION

№	Variants	Average number of seedlings in a sample, pcs.	Hence the number of cuttings, pcs.	The number of the first transplanted cuttings from the average sample, pcs.	Duration and condition of seedlings, days / points			
					1-regeneration	2-regeneration	3-regeneration	4-regeneration
1	In vitro seedlings obtained from nodule tumors	100 (in 25 containers)	500 (in 100 containers)	22 days (2500 pieces in 500 containers)	22/6	20/7	19/8	18/8
2	In vitro seedlings obtained from seeds	100 (in 25 containers)	500 (in 100 containers)	18 days (2500 pieces in 500 containers)	18/7	18/8	17/8	15/7

In the 2nd regeneration, 75-80% of minitumor formation was observed in seedlings grown from seed tumor of Jerusalem artichoke Recognized variety, or 20-30% more mini-tumor formation than in meristem seedlings obtained from tumortumor, their size Increased by 6.0 grams, the average weight was observed to be 3.1 grams higher. It should be noted that there are high phenotypic similarities in callus tissues and laboratory seedlings obtained from meristem cells, but in some samples morphogenetic changes are possible when grown from seed, in which separate selection work is desirable for selection for selection purposes.

It is recommended to grow Jerusalem artichoke varieties from stems and seed seedlings and use them as a material for selection, seed production, ie primary seed production. To increase the number of minitumor by planting 4-regeneration seedlings in laboratory pots of this variety, the growth and development of seedlings grown by the method of obtaining both seed material in different planting schemes (10x10; 12x12; 14x14; 16x16; 18x18; 20x20) productivity was determined.

On the 60th day when planting Jerusalem artichoke seedlings according to the scheme of planting height 98.7-125.6 cm, the number of side branches 4.1-5.8 pieces, the number of leaves 20.1-29.0 pieces The plant is 104.5-134.5 cm, the number of lateral branches is 5.1-5.3, and the number of leaves is 22.4-35.6. was 5.8–8.8 cm higher than the variant, and the number of lateral horns and leaves was almost close to each other. The health of the plants, the morphological form of the variety, was assessed on a 9-point scale. , 6-7 points on day 120, 9 points on cell seedlings obtained from seed tumor on day 30, 8 points on day 60, and 7 points on seed day 120, or phenotypic homogeneity in seed seedlings grown from seed tumor Seed material can also be obtained by cooking and propagating from tumors. In the experiment, the productivity of

seedlings was studied. The number of tubers per type in different planting schemes of cell seedlings obtained from the tuber tumor is 10x10 scheme 9.6 maximum 16x16 scheme 15.3 average weight 28.8 grams 20x20 scheme single crop yield is recorded in this scheme 400.3 grams . The number of mini-plots per m² is 96.0 in 10x10 scheme, 95.6 in 14x14, 69.5 in 20x20 scheme. provides the area with seeds.

When sowing cell seedlings obtained from seedlings, 15.9 pieces in the highest 16x16 scheme, average weight 33.8 grams in the 20x20 scheme, 473.2 grams in one nest yielded in this variant, the highest per square meter. In the 10x10 scheme, 1 million 20 thousand seeds will be obtained from 102 hectares, which will provide seeds to 32.1 hectares in the future.

TABLE № 3 PRODUCTIVITY OF SEEDLINGS IN THE EXPERIMENT

№	Variants	Number of nodules in one bush, pcs.	Average weight of nodules in one bush, g	crop of nodules in one bush, g	number of nodules obtained from 1 m ² , pcs.	Number of seedlings per hectare, thous.	How many hectares give seeds per hectare
Cells obtained from nodule tumors							
1	10x10	9,6	17,3	166,1	96,0	960	30,2
2	12x12	10,8	20,7	223,6	86,6	866	27,3
3	14x14	13,7	21,1	290,4	95,6	986	31,1
4	16x16	15,3	24,1	367,2	91,8	918	28,9
5	18x18	14,6	26,6	388,4	73,0	730	23,0
6	20x20	13,9	28,8	400,3	69,5	695	21,9
Cellular seedlings obtained from cuttings							
1	10x10	10,2	20,2	209,1	102	1020	32,1
2	12x12	12,3	24,6	302,6	98,4	984	31,0
3	14x14	13,7	25,7	352,1	95,9	959	30,2
4	16x16	15,9	28,9	459,5	95,4	954	30,9
5	18x18	14,6	30,2	440,9	73	730	23,0
6	20x20	14,0	33,8	473,2	70	700	22,1

In the experiment, the reproduction of Jerusalem artichoke minitumors in vitro was carried out by in vitro reproduction of seed material, as well as aeroponics of minitumors, taking into account the high content of inulin. a friendly inulin-rich product that can be slightly economical at a high price.

So, in conclusion, Jerusalem artichoke varieties can be used as a method for obtaining the first seed in primary seed materials by inoculating tumor cells from the tumor and inoculating seeds: In addition, the amount of inulin in the minitumor, taking into account the high level of preservation of minitumor, ensures that it will be environmentally friendly dietary product for patients with diabetes.

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THE ROLE OF INNOVATION IN EMPLOYMENT IN THE ECONOMY

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ABSTRACT

The article examines the role of innovation in employment in the economy, the processes associated with the intensive dissemination and introduction of innovative technologies in production processes. At the current stage of socio-economic development, the role of transformation processes in the field of employment has been assessed. The objective system of development of innovations in employment in the economy and their impact on the formation of employment are described. Scientific proposals and practical recommendations for improving the employment system by increasing the role of innovation in the economy have been formed.

KEYWORDS: *Innovative Technologies, Labor Market, Intellectual Capital, Human Capital, Industrial Economy, Variable Combination, Innovative Potential, Labor Resource.*

INTRODUCTION

In the current situation, the qualitative structural changes associated with the intensive spread and introduction of innovative technologies into production processes are constantly taking place. The development of a knowledge-based economy has to some extent accelerated these changes. These changes will cover all socio-economic institutions in the field of employment and will have a significant impact on the economy as a whole. The transition of the economy to the path of innovative development is characterized by the mass introduction of science-based technologies in all spheres of social life, the development of new forms of labor organization, leading to changes in employment, new trends in the labor market. Among its most important aspects are: dematerialization of means of production in favor of intellectual capital corresponding to the fifth and sixth technological systems; motivation of business entities to move towards human capital development; virtualization of relations in the organization of the production process, which is reflected in the widespread use of remote employment through information networks and others.

The peculiarity of the current state of social development is that innovations in the knowledge economy are based more on the effective application of the flow of knowledge in practice, rather than on variable combinations of resources and applied scientific achievements. If we look at it from this perspective, we will see that labor resources are becoming an important source of innovative growth. They form socio-economic ties that ensure the spread of innovation while possessing knowledge.

LITERATURE REVIEW

Innovative employment in the economy the introduction of more flexible forms of labor use through the use of non-standard organizational and legal forms of employment occupies a special place in the research of T.Tsixan. He notes the existence of non-standard forms of employment, which in turn leads to the fragmentation of the labor market, changes in the functions and roles of trade unions in social life due to the reduction of the social base for the pooling of labor resources [1]. R.M Sirazetdinov argues that the problem of labor protection and employment acquires a new significance, which imposes other requirements on employment management [2]. In the research of V.P.Kolesova, M.N.Osmova, a new sign of employment, study the effect of participation in social production under the influence of transformation processes on the loss of its demand in the labor market [3]. The development and spread of information and communication technologies through R.Huggins' research justifies the need to create conditions for the emergence of new forms of interaction between employees and employers [4]. In their research, C.Nauwelaers and R.Wintjes explore the possibility that activities based on the creation and dissemination of information will become a key aspect for enterprises in innovative sectors of the economy, thereby ensuring overall balance in the labor market. The development and proliferation of information and communication technologies through Huggins research justifies the need to create conditions for the emergence of new forms of interaction between employees and employers. In their research, C. Nauwelaers and R. Wintjes explore the possibility that activities based on the creation and dissemination of information will become a key aspect for enterprises in innovative sectors of the economy, thereby ensuring overall balance in the labor market [5].

The high importance of information resources in the current situation determines its role as a means of production and purpose. Information labor - the basis for the formation of socially useful activities aimed at the use of intellectual capital of labor resources for the creation and dissemination of information. In our opinion, the modern economy is characterized by a new flexible (innovative) type of labor, which is reflected in the need to constantly update its content and structure through the introduction of new forms and types of employment. Innovative employment is the ability of a person, the company's human resources, network labor resources, the economically active population in the region to quickly adapt to the new needs of the economy due to technological innovations.

RESEARCH METHODOLOGY

The research used methods of logical abstraction, scientific observation, abstract-logical thinking, systematic analysis, comparative analysis, induction and deduction.

ANALYSIS AND DISCUSSION OF THE RESULTS

It should be noted that the predominance of certain types of employment in the economy is inextricably linked with the current nature of social production. The introduction of innovations in the field of employment in the pre-industrial economy has a random character associated with certain aspects of the individual economic structure. The Industrial Revolution expanded the possibility of spreading new types of employment within fixed time limits limited by periods of capital renewal. In this case, the change in the form of employment can be seen in the discrete nature of the decline and revival of the economy. However, the spread of the fifth and sixth technological systems, the introduction of innovations into the system of industrial relations is

becoming a continuous process, which is a condition for the competitiveness of products and labor resources. Therefore, in the emerging economy, knowledge participates as a "direct productive force" [6]. According to B. Salikhov, knowledge-based economy is "a specific field of human activity in which the knowledge necessary to solve the cognitive-creative tasks of man is reproduced" [7]. In this regard, V.V.Lokosov noted that the transition from the non-industrial market of "working hands" and the industrial market of "working heads" to the post-industrial market of "dynamic abilities" is taking place [8]. If in the past knowledge was a means of production, now man is involved in this role as a source of such knowledge. So, employment of the population will be an area of realization of its intellectual and innovative potential. This, in turn, highlights the need to create an effective mechanism to manage the employment of the population, encouraging the realization of its potential through the initiative of labor resources innovations. In order to objectively understand the processes of transformation in the field of employment, a general description of the cycles of economic development and their socio-economic consequences of changes in the form of employment (Table 1).

In the current situation, the participation of traditional large enterprises in the formation of the national product, which meet the basic demand for traditional employment, is declining, leading to the emergence of non-standard employment and a reduction in the number and role of "traditional" employees in the economy.

Gender and other social transformations affecting the composition of the labor force are of great importance in the process of developing innovative employment, which is associated with the entry of married women, elderly citizens and students into the labor market. As a result, competition in the supply market in the labor market has increased significantly.

In our opinion, innovative behavior can be considered at the macro level in the framework of the entire employment policy, in which the innovative behavior of labor resources reflects the implementation of a set of measures aimed at creating conditions for labor market entities to achieve greater benefits from labor innovation initiatives. Given the nature of socio-economic trends, it should be noted that there may be a gap between the pace of innovative development, changes in the form of employment and the ability of society to adapt to an innovative economy. For example, the increase in innovative activity and population growth, which is reflected in the growth of labor productivity of business entities, is naturally reflected in the level of wages due to increased competition in the labor market. This forms an independent trend that changes the socio-economic relations established on the basis of the dominance of the middle class in the social structure of developed countries. In our view, the crisis in the labor market can be alleviated through the development of innovative services.

TABLE 1. CHANGING THE FORM OF EMPLOYMENT, TAKING INTO ACCOUNT THE TECHNICAL AND ECONOMIC CONDITIONS OF INNOVATIVE DEVELOPMENT OF THE ECONOMY *

Kondratev's long waves	Innovative development	Changes in the form of employment
1.Revival	A new wave of innovation is emerging. At this stage, due to the accumulated potential of previous cycles, there will be a complex restructuring of the economy, the volume of investment in means of production and human capital will increase.	New forms of employment are emerging due to the introduction of innovative technologies in production processes. The socio-economic obsolescence of labor relations has shaped the demand for socio-economic changes in the labor market and the introduction of social innovations.
2.Rise	The formed technological basis of the new system forms the demand for a new format of socio-economic relations. Business entities of advanced sectors of the economy are actively introducing new technologies.	At this stage, the rate of change in the form of employment will be the highest, which is associated with an increase in labor productivity, which increases the need for social and legal adaptation of the newly formed forms of employment. At this stage, the social compromise between labor market participants is legally strengthened.
3.Debate	A law that reduces profitability comes into force, which leads to a reduction in the efficiency of the dominant technological system. There will be a sharp decline in investment in production	There is a devaluation of the resulting socio-economic relations, which is accompanied by inefficiency of production and the growth of hidden unemployment. There will be a decrease in the volume of capital investment in human capital development.
4.Debate	Outdated technologies are not able to ensure socio-economic development. Capital is directed to the formation of structural innovations.	There will be a decline in the welfare of the population and an increase in social tensions, which is also due to an increase in the unemployment rate. As a result of the abolition of the old forms of employment and labor organization, the groundwork will be laid for the emergence of new forms.

* Source: The table was developed by the author.

The experience of developed countries shows that one of the priorities of economic growth is the effective transition to cost-effective innovative technologies. Because despite the crises in the global financial system and the economies of a number of major countries, prioritizing innovative development has proven to be a key factor in solving many global problems.

The emergence of new global players in the global scientific and technological space is increasingly influencing innovation processes, strengthening the role of international technology exchange, transnational companies, employees. In this context, the economies of developed countries are divided into separate groups with the following characteristics:

- 1) acquisition of knowledge based on scientific research, creation of new technologies and focus on their application in practice;
- 2) accelerating the creation of an information infrastructure that will ensure the dissemination of scientific and technological progress;
- 3) development of innovative processes and increase of production competitiveness on the basis of new energy-saving technologies;
- 4) to establish a process of regular acquisition of new knowledge, and so on.

Based on the above, it is recommended that the innovation policy and strategy ensure the implementation of the following measures: Creation of scientific and technological innovation on the basis of well-founded scientific research. It is necessary to ensure the functioning of all institutions that ensure the continuity of education and research.

Development of policies and institutions in the field of creation and development of innovations. In order to maintain the relevance of the policy pursued in this area, the implemented strategy should be monitored, evaluated and studied. Within the framework of these strategies, the broad participation of enterprises, universities, research institutes, government and civil society organizations in the country will benefit innovation processes with a clearly defined goal. Governance and financing on the basis of independent and democratic conditions can develop the activities of organizations operating in this area. This will not only increase the efficiency of financial resources, but also increase the confidence of these organizations, as a result of which they will develop on the basis of cooperation and increase their competitiveness. Expand existing links between manufacturers and research centers and create new ones. The globalization of scientific research activities may limit the use of national ideas, so it is necessary to ensure the balance of national and foreign scientific ideas. Increased competition in manufacturing and growing demand in the service sector are increasingly attracting manufacturers to the service sector. This trend is especially noticeable in the changing form of economic models of companies. The trend in the IT product market is that many manufacturing companies are shifting their production to the forced provision of additional services to the main product. As a result, they are able to increase the volume of additional products and meet the demand for individualization of services by maintaining long-term interaction with the customer, who at the same time becomes a customer. In this regard, the current trend of IT network development, including the production of microelectronics and the provision of innovative services in Taiwan, which is a world leader in the field of microelectronics, is of great interest. In recent years, Oracle, IBM, Microsoft and SAP have spent a total of more than \$ 15 billion to purchase software from organizations specializing in data management and analysis. The network is

valued at more than \$ 100 billion and is growing at a rate of at least 10 percent a year, which is twice as fast as software for business as a whole. According to the statistical database, the level of open cloud infrastructure spending for the development of services and software hardware in 2016 amounted to \$ 38 billion worldwide.

The development of innovative industries will lead to a decrease in the demand for labor resources in the field of material production and an increase in the demand for them in the field of information services and professional services. This will affect the emergence and spread of new organizational forms of economic activity associated with the introduction of flexible production, the spread of small innovative enterprises in the network, the modernization of modern management models through the introduction of innovative management.

CONCLUSIONS AND SUGGESTIONS

The use of means of communication in economic practice allows the employer to organize a variety of work based on the distance of the employee from the main infrastructure of the enterprise. The emerging virtual environment associated with the provision of services allows labor resources to do their work through the global network of the Internet. The results of the analysis showed that non-standard employment can affect innovative behavior, which is associated with the reorientation of employee interests to short-term goals, loss of relationships within the organization and decreased employee confidence in the employer.

In short, innovative employment implies the introduction of more flexible forms of labor use through the use of non-standard organizational and legal forms of employment. The existence of non-standard forms of employment, in turn, leads to the fragmentation of the labor market, changes in the functions and roles of trade unions in social life due to the reduction of the social base for the pooling of labor resources. In this regard, it is advisable to organize the requirements of labor protection and employment in relation to employment management as follows:

- Study of the new-innovative state of employment relations under the influence of scientific and technical progress;
- Ensuring that labor resources participate in the role of the owner of knowledge. In turn, innovative employment is the formation of a system of social relations aimed at attracting labor resources to science-based production processes, developing their innovative potential and encouraging innovative behavior.
- Formation of a system that is flexible to the emerging relationships between the subjects of labor resources, while increasing the innovative potential of labor resources. To make effective and non-standard decisions independently in this regard and to ensure their adaptability to the rapidly changing technical and economic environment, etc.

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HISTORICAL PROCESSES OF LAND AND WATER USE IN THE KHOREZM OASIS

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ABSTRACT

This article analyzes the processes of using land and water resources and the impact of the natural environment on the economic system of the population of the Khiva Khanate. The article highlights that the natural conditions of the Amu Darya delta are the basis for the formation of agricultural, livestock and fish farming, favorable climatic conditions, water and cultivated soils contributed to the development of agriculture.

KEYWORDS: Khiva, Khanate, Nature, Historical Works, Flood, Canal, Agriculture, Gardening.

INTRODUCTION

Geographically, the lands of the Khiva Khanate are located in the Lower Amudarya plains and form a natural continuation of the Aral-Caspian plain. The territory of the khanate consisted of settlements on both sides of the lower reaches of the Amudarya. The southern part of the khanate is connected with the mountains that stretch along both banks of the river, and is bounded on the west by deserts and sands and the Ustyurt Plateau, on the north by the Aral Sea, and on the east by sands and deserts on the right bank of the Amu Darya. These lands of the khanate were more than 300 miles from north to south, and 100 miles from west to east. [1]

From the socio-economic point of view, the territory of the khanate was divided into two parts: the southern region - covering the Khiva area, which included Khanka, Khazarasp, Urgench, Kat, Kush-Kupir and others. The area was densely populated, with the bulk of the canals and 93 percent of the irrigated land. The northern region stretches from the Old-Urgench-Khujayli line to the Aral Sea. The bulk of its land area was in the underdeveloped, sparsely populated steppe zone. [2]

All the irrigated lands in the area received water from the Amudarya, which carried a large amount of sludge, and therefore every year a layer of mud settled in their irrigated fields. In addition, fertilizers applied to arable lands also contributed to the strengthening of the cultural-irrigation layer of the soil. To increase the productivity of the fields, farmers took special measures that had been formed over the centuries, i.e., sand mixed with manure and soil from the lands of old buildings was thrown into the fields. In this case, manure used as a fertilizer, and sand as an element that improved the physical properties of clay soils. Twenty-two percent of the labor time that farmers spend during the entire farming period is spent on fertilizing the land. Thus, irrigation water, on the one hand, and the farmer himself, on the other, were involved in creating the cultural-irrigation layer of the soil. [3]

The interest of archaeologists, historians and orientalists in the Aral Sea basin dates back to the 19th century. In the early twentieth century, S.P.Tolstov was the first to begin a comprehensive scientific study of the Lower Amudarya region, one of the most important historical and geographical regions in Central Asia. Since the 1930s, the Khorezm archeological and ethnographic expedition, founded and led by S.P.Tolstov, has conducted not only scientific research on the ancient history of the region, but also geology, geomorphology and other issues. [4,5]

S.P.Tolstov, on the south-western shore of the Aral Sea, wrote: "... The delta plain, covered with endless green reeds, stretches to the east. In the west, a huge fifty-meter-high wall of Ustyurt china — layers of white, gray, and blue stones hanging from the top of a shallow cliff. ... I remember these places from 1929 onwards. At that time, I watched the endless reeds, which were home to wild boars and occasionally tigers, not from above, but from below - from a lifeboat that sailed for hours down the aisles [6]. "

In the memoirs of the Iranian military commander Ismail Mirpanji, the following information is given: "This country is called Khorezm. The length of this land, which stretches along the Jaihun, is about forty fars. There are fields and Uzbek fortresses on both sides of the Ceylon coast. The land area is small, narrow in width, small area. There is not much land to be cultivated on either side of the river ... Fifteen farsakhs of the forty farsakhs are cultivated" [7].

A. Vamberi's famous book "Journey to Central Asia" contains the following information: we can confidently note its great productivity, which is explained not only by its cultivation, but also by the fact that the Amudarya is well irrigated with its blessed water.

In such memoirs we find not only information about the natural conditions of the khanate, land and water resources, but also information about the climatic conditions. For example, the Russian Empire's military description of the khanate's climate states that the climate is temperate: "... The summer heat is unbearable if the air is not renewed in summer with constant southeast and south winds. Rainfall is very rare, even in autumn, but in both autumn and winter there are constant winds that bring clouds of sand from the steppes, so sometimes they hide the sun's rays.

One of the chapters of the book "History of irrigation in Khorezm" by Ya.G. Gulyamov is devoted to the study of the dynamics of the irrigation network of Khorezm in the XVI-XIX centuries. This, of course, is of great importance for the study of land relations, for the determination of the location and area of the irrigated and cultivated lands of the khanate. Another chapter provides interesting ethnographic information on irrigation functions [2].

The crisis of the Aral Sea, which began in the late 1960s and its consequences, the problems of water use in the region (water depletion, environmental pollution, public health) are well known and raise questions about the relationship between the ecology and climate of the Aral Sea basin. Due to the continental climate, desert and semi-desert lands, the western part of Central Asia is characterized by limited water resources (especially fresh water) in the past. It is also known that the Amudarya River has changed frequently in the past. In particular, A.S. Kes said, "Such a change in flow would have flowed downstream of the river delta, and as a result, the Khiva oasis, along with the population that has been engaged in irrigated agriculture for many centuries, would be deprived of water, building and life. That is why, man has tried to maintain this changing balance of nature by artificial means, and probably did not allow the re-emergence

of the Uzbay River. These “artificial measures” included, first of all, artificial irrigation systems, which played a specific control role in ensuring that the flowing river flowed smoothly.

Indeed, if we look at the past, we see that the strategy of nature use and the formation of the economic system in the Lower Amudarya region is primarily related to the natural conditions of the oasis. The common plain of the region provided free access to cold Arctic and polar air masses. It was the natural conditions of the Amudarya delta that formed the basis for the formation of an economic complex of the local population, consisting of agriculture, livestock and fisheries. In this case, favorable climatic conditions, water resources, soils cultivated by the labor of farmers have contributed to the development of agriculture.

Under conditions of water scarcity, the oasis has developed its own methods of land preparation, fertilization and irrigation. In particular, the preparation of the area for planting began with the leveling of the surface, that is, the tops of the soil were removed and the depressions were filled and divided into separate small areas separated by soil ridges from each other for easier irrigation. The field was then washed with brine by repeated irrigation several times in a row. The soil, especially during the first irrigation, quickly absorbs water and dissolved salts are formed. Thus the layer in which the plant roots are mainly developed is cleaned. Water is saturated with salt and has not yet penetrated into the soil was also used for drainage.

Since the lands of Khorezm were exactly saline, it was difficult to plant crops until they were irrigated three or four times during the winter. While digging canals and constructing waterworks is one problem, clearing sediments from the muddy water of the river at the bottom of the canals is the second problem, and flood prevention is the third problem. In particular, in the Khiva khanate, the land area required sufficient water to produce more crops, depending on climatic conditions and other characteristics. Therefore, the timely cleaning and digging of canals from the Amudarya River is one of the main tasks of the agricultural population. A lot of work has been put into this work.

The Amudarya River annually produces 200 million tons (1.2 cubic km) of turbidity. Sometimes the river accumulates sediments up to 20 cm thick in the surrounding plains within a year. Therefore, all irrigation points had to be cleaned every year. Digging large canals and building dams was especially difficult. Such work is usually carried out in winter or early spring. For example, in the Khivakhanate about 700,000 workers were used to clean the canals. It took more than 12 days to clear the largest main canal in Khorezm, Polvonyop.

It should be noted that the rich experience accumulated over many years in irrigation has allowed the local population to develop certain skills in the creation and implementation of complex water management techniques. As a result, in the course of long development, from the simplest methods of drainage mechanisms to more complex types, a unique irrigation technique has emerged. In Khorezm, the simplest methods of pumping water from the canals to the fields were "sepma", "depma" and "nova", while the ancient method of pumping water, called "chigir", became the most "improved" method.

Another feature of the natural conditions of the khanate is the problem of floods in the river. These events necessitated, on the one hand, measures to protect the fields in agriculture, and, on the other hand, encouraged their more efficient use in irrigating the lands in the conditions of water scarcity.

The water of the Amudarya overflows several times a year. Because these floods coincided with a time when crops needed water, local farmers created a flood calendar based on centuries of experience. Therefore, in the Khorezm oasis there were special people who knew when the river flood would start and how the river flow would change. According to their calendar, irrigated agriculture in the oasis (during the growing season) was based on the 4 floods of the Amudarya: 1) Blue cane; 2) White fish; 3) Star; 4) Forty children. In particular, the "Blue Reed Flood" (late March) begins, when the reeds in the lakes are just beginning to grow. Depending on the growth rate of the cane, the timing or delay of the flood was determined. In mid-April, whitefish began to migrate from the Aral Sea to the upper reaches of the Amudarya. It's called the "White Fish Flood." The "Starburst" (mid-May) is marked by the time of the appearance of the Hukar constellation. The "Kirk chilla" (summer chilla) began in the second half of June and lasted for 40 days. If the floods were delayed or not at all, it alarmed the whole country and signaled the collapse of the farm.

By the nineteenth century, the state had become more active as a major player in marital relations. In particular, the coming to power of the Kungrad dynasty in the early 19th century and the implementation of their centralization policy led to efforts by the government to establish strict control over the distribution of water and land resources.

In the first quarter of the 19th century, there were no large settlements on the right bank of the Amudarya. The description of the events of 1806 speaks of the strong rabbi that Eltuzarkhan built in the north of Sheikh Abbas. In 1828, the new head of Polvonyop, Toshako, was built, and in 1831, a canal was built to the Old Urgench district. "In the spring, the region's crops were short of water. He said ...

He rode to the saxaul of the Pahlavonotriver, called Toshako, the sakonik of the Pahlavonota river, which he dug last year. The construction of Toshako, the head of a solid canal on the ground consisting of gravel, made the wet canal of South Khorezm much more useful.

By 1855, irrigation work had been carried out on the left bank of the upper delta, including a large area of Khanabad. One of the Khanabad canals, the Karakalpak Canal, was dug by the Karakalpaks in the 1930s, and although the Khiva khan Allakulikhan allowed them to live here, the Karakalpaks withdrew when no action was taken against the oppression of the Karakalpaks by the Turkmen. The Karakalpaks were firmly established in the Aral Sea and above in the first quarter of the 19th century.

In the khanate, Uzbeks lived in villages stretching from Khojaly to Toshovuz and Gurlan. They were mainly engaged in farming, gardening, silkworm breeding, fishing. Most of the population lived along the canals, in wetlands. The periphery of human habitation, as in towns and villages, is surrounded by a soil wall with a height of a ridge to prevent flooding.

For the people living along the Aral Sea, the availability of rich pastures provided an opportunity to develop animal husbandry, the availability of reeds and thickets was useful for breeding cattle, and desert pastures were useful for nomadic pastoralism.

The proximity of the sea, many lakes and rivers contributed to the development of fisheries. All the Kungrad tribes living near the Aral Sea, especially the Koldauly, Muyten, Ashamayli, Kiyat, Kazakhs of Alima descent, have been fishing since ancient times. In the early twentieth century, large fishing communities emerged in the south of the Aral Sea. In 1910, the Khiva Joint Stock

Company was established, uniting Astrakhan and Caucasian fish producers. Of the 57 fisheries covering the entire coast of the Aral Sea, 17 were on the Muynak Peninsula. Fishing on the southern shores of the Aral Sea, in the delta and inland lakes of the Amudarya, amounted to 472.7 thousand pounds in 1912, 699.1 thousand pounds in 1913 and 760 thousand pounds in 1916.

The Turkmen, who lived in the lands stretching from the cities of Tamagur and Ilalli to Old Urgench, were engaged in grain-growing and cattle-breeding. Due to the shortage of water, Turkmen tribes in the ancient Urgench region mainly planted less water-intensive crops such as wheat, barley, millet, sesame, and flax, and engaged in more livestock. They had farms that owned 500 or even 1,000 camels. Between Ilalli and Toshovuz, Bukhara prisoners of war and silkworms lived.

In the Uzbek-populated areas of the Aral Sea region, horticulture is developed, and in their gardens are grown jiida, apricots, apples, peaches, pears, and viticulture is widespread. The Uzbeks knew how to keep their crops well. They dried many varieties of apricots, melons, figs, grapes.

The natural conditions of the Amudarya delta were the basis for the formation of an economic complex of the local population, consisting of agriculture, livestock and fisheries. In this case, favorable climatic conditions, water resources, soils cultivated by the labor of farmers have contributed to the development of agriculture. Exact historical and ethnographic data show that there is a link between the use of natural resources and the natural conditions of human settlements, since the main economic system of subsistence was agriculture.

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GIS TECHNOLOGIES IN GEOGRAPHIC EDUCATION AND THEIR ROLE IN THE EFFICIENCY OF EDUCATION

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ABSTRACT

The current state of the problem of using GIS technologies in the process of training a geography teacher is analyzed. The development of the structure of educational and methodological support should take into account the achievements of the leading domestic pedagogical universities. Two main forms of cognition are known to modern methods: sensory, which is based on the sensations of perception and representation, and also logical, based on abstract thinking. Both of these forms are interconnected and cannot be separated from one another. Geographic information systems (GIS) allow collecting, storing, analyzing and mapping any data about objects and phenomena based on their spatial position.

KEYWORDS: *Geoinformatics; Geographic Information System (GIS); GIS Technologies; Digits Marketing Cards; Information Geo Complex ; School Geographic Information System.*

INTRODUCTION

The modern period of development of society characterizes the process of informatization, i.e. a global social process, the peculiarity of which is that the dominant type of activity in the sphere of social production is the collection, accumulation, processing, storage, transmission and use of information, carried out on the basis of modern computer technology.

The processes taking place in connection with the informatization of society contribute not only to the acceleration of scientific and technological progress, the intellectualization of all types of human activity, but also to the creation of a qualitatively new information environment of society, ensuring the development of the creative potential of the individual.

One of the priority directions of the process of informatization of modern society is informatization of education.

This process includes:

- improvement of educational system management mechanisms based on the use of automated data banks of scientific and pedagogical information, information and methodological materials, as well as communication networks;
- Improvement of the methodology and strategy for the selection of content, methods and organizational forms of training, corresponding to the tasks of the development of the student's personality in modern conditions of informatization of society;
- Creation of methodical system of training, focused on the development of intellectual potential of the student, the formation of skills to independently acquire knowledge, to carry out information and training, experimental research, various types of self-employment processing information;
- Creation and use of computer testing, diagnosing methods for monitoring and assessing the level of knowledge of trainees.

Informatization of education as a process of intellectualization of the teacher's and student's activities, which develops on the basis of the implementation of the capabilities of NIT, supports the integration trend of the process of learning the patterns of the environment (social, ecological, etc.), combining it with the advantages of individualization and differentiation of teaching, thereby providing synergy of pedagogical influence...

Our time - the age of computerization and informatization - provides a modern person with inexhaustible means of enhancing his intellectual capabilities, intensifying the processes of intellectual development of an individual, which allows initiating the development of certain types of thinking (for example, visual-figurative, theoretical); to intensify the processes of development of memory, attention, observation; to form the qualities of a leader capable of leading and organizational activities.

Of all the variety of pedagogical applications of NIT, the use of geographic information systems (GIS) should be especially highlighted in connection with their relevance in relation to geographic education and the ever-increasing popularity in the practice of domestic and foreign geographic educational process.

Despite many years of experience in using a variety of GIS for educational purposes, their potential capabilities remain not fully utilized and not fully exploited. Geographic information systems (GIS) for educational purposes are usually intended for use in the educational process, in the preparation, retraining and advanced training of personnel in the field of education, in order to develop the personality of the student, and intensify the learning process.

In the educational process, GIS performs the following functions:

- Clarity;
- educating and developing;
- Informational;

Visibility function. Two main forms of cognition are known to modern methods: sensory, which is based on the sensations of perception and representation, and also logical, based on abstract thinking. Both of these forms are interconnected and cannot be separated from one another. Visibility enriches the range of geographical representations of students, makes learning more accessible, develops observation, their thinking and cognitive abilities, helps a deeper and more lasting assimilation of educational material. The implementation of the didactic principle of visibility in teaching geography requires systematic work with teaching aids, including GIS .

Educational function. Working with GIS is characterized by increased expressiveness and emotionality, the ability to influence the feelings of students. By including various tasks for working with GIS in the educational process of students, the teacher during the seminars can solve problems of both ecological and geographical nature of varying complexity. One of the important tasks of the entire complex of work with GIS, which is one of the elements of modern polytechnic education, is graphic preparation. The content of school geography, along with knowledge, should include skills and abilities, stimulate the creative activity of schoolchildren. Increasing the role of emotional impact on students and their inclusion in assessment activities.

Developing function. The systematic, purposeful use of GIS contributes to the mental development of students. The implementation of the developmental function presupposes active work with them, the gradual, continuous complication of tasks. Mental development of students in the systematic work of GIS presupposes: at the early stages - to arouse interest in the object or phenomenon under study; the next stage is teaching the techniques of observation, analysis and synthesis of the observed, bringing students to conclusions and conclusions. Students work at this stage largely according to the model, in small groups at seminars. Only after the students have mastered the basic techniques of working with GIS, it is possible to proceed to the next stage - independent, creative problem solving, which is realized in the course of work on term or diploma projects.

Information function. It is realized through systematic work with GIS, which carry a significant semantic and informational load like any teaching tool. Depending on the specifics of the organization of work with GIS at the seminar, it can act as an independent or practical work, exercise, type of homework. All these roles are subordinated to a common goal: the formation of students' spatial ideas and concepts about the location of natural and socio-economic objects and phenomena.

The use of GIS in lecture material, materials from the Internet allows students to study geospatially referenced material much more efficiently using maps, space images, photographs, diagrams and graphs. Therefore, the process of assimilating new knowledge using GIS in the design and work with geographic information systems is more intensive and efficient for students. Geographic information systems (GIS) allow collecting, storing, analyzing and mapping any data about objects and phenomena based on their spatial position. This state-of-the-art computer technology enables the integration of databases and operations on them, such as their query and statistical analysis, with powerful tools for presenting data, query results, samples and analytical calculations in a visual, easy-to-read cartographic form.

These capabilities distinguish GIS from other information systems and provide unique opportunities for its application in a wide range of educational tasks related to the analysis and forecasting of environmental phenomena and events, with understanding and highlighting the

main factors and causes, possible consequences, planning strategic decisions and current the consequences of the actions taken, which is especially important for the ecological and nature conservation specialties of geographical faculties.

The use of GIS is important not only in the formation and development of the skills and abilities of students of the main general faculty stream, but it is also extremely important for the formation of vocational guidance, which is relevant primarily for student cartographers. The use of information technology allows teaching at a higher scientific level, integrating knowledge of the subject, and students feel like active participants in the learning process, acquire new skills, abilities, analyze, compare and be in a constant search for new knowledge. At the same time, the mixed mode of interaction "teacher-students" allows you to reveal and develop the creative potential of both parties, to work in cooperation.

The use of GIS in the classroom in geographical disciplines makes it possible to significantly optimize and expand the potential of the educational process, increases the cognitive interest of students in the subject under study, contributes to the general development of the personality, forms the geographical culture of students, and develops their creativity and imagination.

GIS technologies provide users with the ability to create, display, and analyze raster data. Raster data or grid data, especially suitable for displaying geographic phenomena continuous in space, that like relief, precipitation, temperature, density and population and other data that can be represented in the form of statistical surfaces. Grid data is also used to analyze various types of surface flows, for example, surface runoff, as well as changes in geographic phenomena over time. GIS support function of spatial analysis: analysis proximity overlay analysis and projection operation. Many sophisticated 3D and perspective display, modeling, and surface analysis functions are becoming available to geographers. In particular, GIS includes the ability to create and work with triangulated irregular grids (TINs). TIN is the specific vector topology logic grid data model, most under the TIN to display and modeling of the surfaces, creating a 3-D terrain models.

GIS technology provides the work with remote sensing data, which is today one of the chapters GOVERNMENTAL is regular enrollment replenishment of new information of spatial databases in Geoinformation systems and geography as a whole.

The need to use GIS technologies in the system of national geographic education is obvious. It is also obvious that GIS should be considered as one of the important innovative resources for the further development of the system of national geographic education. The priority area of activity in the field of GIS education should be the development of educational and methodological support, the development of the structure and content of training of specialists - teachers of geography in the field of GIS technologies. The development of the structure of educational and methodological support should take into account the achievements of the leading domestic pedagogical universities. It is expedient, in our opinion, to determine the leading software for GIS technologies on a competitive basis with the participation of geographers, teachers of pedagogical universities and teachers of geography. Along with the training of specialists, it is necessary to retrain and train geography teachers in the field of GIS education. This is the most important and more difficult task due to a number of reasons: the lack or lack of specialists who provide PC courses, problems with the acquisition of software products, the general insufficient level of computer literacy of current geography teachers, and others.

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**THE USE OF PHYSIOTHERAPY PROCEDURES IN THE EARLY
REHABILITATION PERIOD IN WOMEN AFTER LAPAROTOMY
OPERATIONS ON THE ORGANS OF THE ABDOMINAL CAVITY AND
PELVIS**

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ABSTRACT

The aim of the work is to provide a scientific justification of the rehabilitation complex for the early rehabilitation treatment of women after laparotomic operations on the organs of the abdominal cavity and pelvis, to evaluate its effectiveness in comparison with conventional treatment. Research design. A randomized, placebo-controlled, comparative, blinded clinical trial of 85 women who underwent laparotomy operations was conducted. The rehabilitation complex included, in addition to surgical wound care, regimen and diet (similar to the comparison group), laser irradiation of the surgical wound, exposure to pulsed low-frequency electrostatic fields (PLFEF), reflex therapy with extremely high frequency electromagnetic fields (EHF puncture).

KEYWORDS: *Electrostatic, Low-Frequency, Justification, Conventional*

INTRODUCTION

Changes in the motor function of the intestine in the early recovery period after major abdominal operations are of a phase nature and occur with varying degrees of severity in a significant proportion of patients. These changes can be quantified and evaluated in a timely manner using a computer PEG. The dynamics of surgical wound healing is associated with increased intra-abdominal pressure, immunity, and the process requires early rehabilitation with the use of physical methods of treatment.

Relevance One of the main trends of modern physiotherapy is its use at all stages of rehabilitation, including at the inpatient (early recovery) stage [1, 2, 3, 4 2, 6, 12]. There are a number of works on the use of physiotherapy procedures in the early recovery period after abdominal, gynecological operations performed from the standpoint of evidence-based medicine [5, 6].

In the arsenal of rehabilitologists in recent decades, effective portable devices have appeared that can be used at the patient's bedside in the early stages of rehabilitation, including in surgical hospitals in the first days after surgery. Physiotherapy procedures are used, which are not stressful, but have an analgesic, regenerative, anti-inflammatory effect, contribute to the normalization of hemocoalogy and vascular tone [7, 8, 9].

In laparotomy operations, a common complication is postoperative intestinal paresis (PIP). The pathogenetic basis for the development of complications is the severity of the underlying disease, the presence of background diseases, operational stress, the effect of anesthesia, functional insufficiency of the operated organ and system, especially during elective operations [10]. Diagnosis, prevention and treatment of PIP in the early recovery period require further study, in particular scientific substantiation of the possibility of using physiotherapy procedures during this period.

Currently, in restorative medicine, when using a rehabilitation complex consisting of several procedures, special importance is attached to methods of monitoring the effectiveness of treatment.

Evaluation of the effectiveness of surgical treatment of gastroenterological and gynecological patients in the early recovery period is not simple. The search for reliable methods of studying the motor function of the intestine continues, well-known methods are being modified [11]. Recently, due to the development of methods of computer analysis of audio signals, there has been renewed interest in phonoenterography (FEG) [12, 13, 14].

The purpose of this work is the scientific substantiation of the rehabilitation complex for the early rehabilitation treatment of women after laparatomic operations on the organs of the abdominal cavity and pelvis, evaluation of its effectiveness in comparison with conventional treatment.

Research design A randomized, placebo-controlled, comparative, blinded clinical study of 85 women who underwent laparotomy operations in the gynecological department of the National Surgical Center and in the city maternity hospital No. 4 in Bishkek was conducted. The age of the women was from 20 to 60 years, on average - 36.3 ± 1.6 years. The weight ranged from 40 to 95 kg, on average - 56.0 ± 1.2 kg.

The reasons for laparotomy operations were large uterine fibroids, ovarian cysts, pyosalpinx, ectopic pregnancy, intestinal obstruction, ventral hernias, termination of pregnancy with pathology of the uterus and fetus. The predominant pathology was uterine fibroids and ovarian cysts. In 4 out of 19 cases, ovarian cysts were bilateral. In 5 cases, a combination of uterine fibroids with an ovarian cyst was observed. In two cases, tubal pregnancy was combined with an ovarian cyst. In total, simultaneous operations amounted to 22 %.

The study included laparotomies with an incision length of more than 8 cm, most often according to Joel-Cohen, Pfanneschtal. With laparotomy of less than 8 cm in uncomplicated cases, when discharged for 3-4 days, the rehabilitation complex continued on an outpatient basis, which is the subject of a separate study.

By random sampling, the patients were divided into 2 randomized groups, comparable in age, body weight, severity of the disease, and a similar distribution of pathology. The main group consisted of 53 women who received the proposed rehabilitation complex in full or reduced volume. In comparison group B (n – 32 women), physiotherapy procedures were carried out using the placebo method with the toggle switch turned off or reduced to zero intensity, which was sealed with a Band-Aid during the procedure. Neither the doctor nor the patient knew which category the device belonged to, which made it possible to evaluate the work as meeting the requirements of a double-blind placebo-controlled study.

The rehabilitation complex included, in addition to surgical wound care, regimen and diet (similar to the comparison group), laser irradiation of the surgical wound, exposure to pulsed low-frequency electrostatic fields (PLFEF), reflexotherapy with extremely high frequency electromagnetic fields (EHF puncture). Portable physiotherapy devices "MILTA F-8-01", "Khivamat-200", "Nickel-1" were used, which can be used for physiotherapy at the patient's bedside in the intensive care unit, dressing room or in a regular ward.

The order of the rehabilitation complex was as follows: 1. Drug therapy: painkillers, sedatives, anti-inflammatory drugs as needed. 2. Every day, starting from the second day after the operation, in the morning, during the dressing, a 5-minute laser irradiation of the surgical field was performed with a MILTA-F-8-01 device with a power of 50 MW, the pulse duration of laser radiation was 150 ns, the frequency of repetition of laser pulses was 80 Hz. The course consists of 10 procedures.

3. Then, after 1-1.5 hours, massage of the anterior and lateral surfaces of the abdominal wall of the INCHESMP was performed from the "Khivamat-200" device with a power of 8 watts with a frequency of 100 Hz for 15 minutes with special gloves. The massage was started in remote fields, gradually approaching the surgical wound. In the first three days they did not reach the surgical sutures, finishing the massage with a 2 cm margin, on the 4th and 5th day gloves were gently applied to the surgical sutures. The course consists of 10 procedures.

4. In the afternoon, EHF puncturing with a wavelength of 7.1 mm from the Nickel-1 apparatus was performed on 8 biologically active points. The course consists of 10 procedures. 5. Mode: 1 day - bed rest. Walking around the ward from 2 days. 6. Earlier meals.

Research methods The subjective and objective condition of the patients was assessed before the operation (only planned), the day after the operation, and in the following days after the 1st, 3rd and 10th procedures. To assess the condition of patients and the effectiveness of rehabilitation,

the following methods were used: subjective assessment – a feeling of bloating, difficulty in passing gases and stools, nausea, vomiting, etc., objective assessment - phonoenterographic examination and planimetric assessment of the dynamics of wound healing.

The planimetric assessment of the dynamics of wound healing was carried out according to its own methodology, implemented as an innovation proposal in the department of purulent surgery. To do this, a large-scale grid is applied to the plastic film with an inkjet printer. The film is applied to the surgical wound during dressing and photographed preferably at a right angle using a conventional mobile phone. Then digital photos taken every other day are analyzed in an image editor. The area is determined by the initial area of the wound, the maximum area in cm² with the development of inflammation, the healing rate in cm² / day, and the time of complete healing in days.

The FEG technique and the sound decryption algorithm have been filed for patenting in as an invention. Sounds are recorded by a microphone for 1 minute with free breathing and with a 10-second breath delay at four points of the anterior abdominal wall, digital signals are amplified and recorded on a computer. The resulting recording is statistically analyzed using a sound editor.

High-amplitude, medium-amplitude and low-amplitude sounds can be determined on the phonoenterogram. High-amplitude sounds (belching, gas discharge, intestinal rumbling with certain food and drinking certain drinks) can be heard from a distance.

Medium amplitude sounds are picked up by the patient himself and the doctor during abdominal auscultation. Medium amplitude sounds are unstable. Normally, doctors do not always hear them. They are determined on an empty stomach with a frequency of 1-3 per minute, last 0.5-2 seconds. Their other parameters are not very constant.

Low-amplitude sounds are not audible to the human ear, but they are constant, have a certain shape and can be quantified using a computer FEG.

The frequency of low-amplitude sounds coincides with the frequency of signals of the nervous system causing smooth muscle contraction, recorded electroenterographically.

To assess the motor function of the gastrointestinal tract, the following parameters of low-amplitude sounds are used: peak amplitude (PA) and average amplitude (AA) in decibels when entering the computer (a conditional value depending on the parameters of the amplifier), signal duration in milliseconds (SD) and sound frequency (SF) in hertz.

FEG norm does not exist yet. We filmed the FEG from 20 student volunteers. The indicators of FEG in healthy people and in patients in the preoperative period were very variable and were characterized by an uneven distribution. Therefore, we took the FEG twice on an empty stomach and 20 minutes after taking 100 ml of carbonated mineral water (Borjomi or its analogues). YamaguchiK., 2006 [15] uses a trial breakfast for this. Mineral water stimulates peristalsis, but to varying degrees. Normally, the PA and AA values of low-amplitude sounds increase by 30-40%.

Statistical processing of the results was carried out using the application programs "Statistical 6.0" and SPSS 13.

The results obtained and their discussion on the first day after the operation, the condition of the patients corresponded to the severity of the operation. The patients did not refuse the procedures. Blood pressure and heart rate are corrected to normal values.

The average wound area in the main group was 13.22 ± 2.7 cm², and in the control group it had almost the same value. The initial area of the wound was calculated from the calculation of the length of the incision x the average indentation from the edge of the wound to the injection of the needle x 2. In this way, the sutured wound had swelling, slight hyperemia, soreness. Within these boundaries were graduates and drainers (if available). On the third day, the swelling and soreness of the suture decreased in most of the operated women. The average area of the wound decreased to 7.4 ± 2.3 cm².

But 3 women of the main group (5.6% of those operated on) and 3 women of the control group had hyperemia and swelling in certain parts of the wound on day 5, and serous discharge appeared from the wound. The area of wound inflammation on day 7 in these 6 patients averaged 14.12 ± 3.0 cm², which is significantly less than in the control group (Table 1). Clinically, a slight deterioration in the general condition was noted, leukocytosis appeared in the blood.

TABLE 1 - DYNAMICS OF WOUND HEALING IN PATIENTS OF THE MAIN AND CONTROL GROUPS

Group	Cut Length	Wound area			Healing time
		3 days	7 days	14 days	
Main n – 53	13,2 $\pm 2,7$	13,1 $\pm 2,5$	5,5 * $\pm 1,6$	0,0 * $\pm 0,0$	7,3 * $\pm 1,1$
control n – 32	13,1 $\pm 2,6$	15,8 $\pm 2,8$	11,3 $\pm 2,3$	3,2 $\pm 1,0$	11,4 $\pm 1,2$

Note: * - the difference with the control group is significant, $p < 0,05$

Complaints of intestinal paresis symptoms on the first day after surgery were absent in 63.5% of patients in the main group and 64.3% in the comparison group. 30% of patients in the main group and 33.3% of patients in the comparison group complained of abdominal pain. Also, approximately equally, about a third of patients in both groups noted moderate bloating and impaired gas production.

Computer FEG in the preoperative period in planned patients did not reveal significant differences with healthy people.

On the 1st day after operations on abdominal organs, both groups registered a significant increase in the frequency of medium-amplitude sounds and a decrease in the amplitude of low-amplitude sound signals compared to the preoperative period by 12-15% ($p < 0.05$). The intestines reacted to the sample with mineral water with significantly smaller shifts in PA, AA, SF, which we regard as a manifestation of intestinal paresis. On day 3 in group A patients, the changes in FEG were more diverse. In 7 patients, signs of intestinal paresis were clinically noted, their FEG indicators dropped below the baseline level. In some patients, the indicators of FEG were higher than on the 1st day after surgery. On average, the shift in FEG indicators turned out to be even greater than the 1st day after surgery. In our opinion, some patients had unexpressed intestinal paresis, which did not manifest clinically.

In patients of the main group who received in the early postoperative period a course of exposure to electromagnetic fields of extremely high frequency and pulsed electrostatic low-frequency fields, significant positive changes in FEG were noted.

On day 3, the frequency and amplitude of peristaltic waves increased by more than 30%, significantly differing from the initial indicators, while significantly lower indicators were noted in the comparison group.

On day 10 in the main group, the FEG indicators were 12-20% higher than the control level, significantly differing from the comparison group ($p < 0.05$). Samples with mineral water gave a significant increase in the frequency of medium- and low-amplitude sounds, and an increase in PA, AA and SF by 40-50%, which indicates normalization and even stimulation of peristalsis

A year later, signs of adhesive disease were noted in 3 patients of the main group and 7 patients of the comparison group. Postoperative hernia was formed in 3 patients (comparison group).

Visually, the postoperative scars were mostly soft, not protruding above the surface of the abdominal wall. However, in 3 patients of group B who did not receive physiotherapy in the early recovery period, rough dense scars later formed, both deeply sinking and rising above the surface of the skin.

Abdominal pain a year after surgery was observed in 5% of patients in the main group and 17% of patients in the comparison group. The same difference is characteristic of pain during palpation of the abdominal organs (in 13% of the main group and in 23% of the comparison group).

CONCLUSION

Changes in the motor function of the intestine in the early recovery period after major abdominal operations are of a phase nature and occur with varying degrees of severity in a significant part of patients. These changes can be quantified and evaluated in a timely manner using a computer FEG. The dynamics of surgical wound healing is associated with increased intra-abdominal pressure, immunity, and the process requires early rehabilitation with the use of physical methods of treatment.

In the early recovery period, it is possible to use sparing physiotherapeutic procedures, taking into account the pathophysiological and sanogenetic mechanisms of their therapeutic effect, released by portable devices at the patient's bedside or in the dressing room without additional transportation of the patient. Laser irradiation of postoperative sutures and nearby fields has an anti-inflammatory effect, helps to reduce edema, improve microcirculation and regeneration of the skin and underlying tissues, wound healing by primary tension, and earlier removal of sutures.

Massage of the abdominal wall using INCHESMP with course use reduces the symptoms of intestinal paresis: bloating, abdominal pain, stimulates intestinal peristalsis, gas discharge and bowel emptying. EHF puncture on biologically active points affecting the intestines reduces abdominal pain, normalizes intestinal peristalsis. This all increases the effectiveness of rehabilitation.

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CONCEPT OF PLEA BARGAINING

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ABSTRACT

Plea bargaining was first adopted in criminal law as a way to avoid congestion in prisons, overloaded courts, and excessive delay. Its strategy has resulted in quicker processing of criminal cases and appeals, as well as easing the suffering of inmates awaiting trial. If a settlement is achieved, the victim may be compensated by the court. The state has a fundamental responsibility to protect people's lives, liberties, and property. PriyadarshiniMattoo, JesicaLall, and NitishKatara, the finest bakery, are evocative of major gaps in criminal justice enforcement systems that have a direct impact on the degree of infractions in our society. Plea bargaining is an agreement or negotiation between the prosecution and the defendant in criminal law. The defendant pled guilty after waiving his right to a fair trial. Plea bargaining's major disadvantage is that it is often utilized against the poor and the innocent. The present study goes into great depth on the benefits and drawbacks of plea bargaining, as well as the measures that need to be taken to enhance the existing legal system. Plea bargaining is an important aspect of criminal justice administration. This article solely serves the interests of the wealthy, making it irrational, since impoverished offenders avoid confessing because they know that even if they confess, they would not get the same benefits as a wealthy partner. The Supreme Court, on the other hand, found that plea bargaining was unconstitutional, unlawful, and often promoted corruption, collusion, and contamination of pure judicial methods in a historic decision.

KEYWORDS: *Crime, Coercive Bargain, Justice, Plea-Bargaining, Unfair Trials.*

1. INTRODUCTION

The goal of criminal law is to defend and preserve the rights of people and countries from foreign invasion; to protect the vulnerable from the powerful; to ban unlawful actions and to maintain peace in the face of violence. Citizens' lives, liberties, and property are safeguarded. It is the state's solemn duty. Cases like Best Bakery, PriyadarshiniMattoo, Jesica Lal, and NitishKatara highlight major flaws in criminal justice delivery systems that have a direct impact on the level of crime in our society. Plea bargaining is an important aspect of criminal justice administration. Most criminal cases are quickly and definitively resolved as a result of it [1].

It benefits both parties. A plea bargain is a legal agreement between the prosecution and the defendant based on the prosecutor's concession in a criminal case. Sentence bargaining and charge bargaining are the two major kinds of plea agreements. In the previous agreement, the defendant pled guilty and was given a reduced term. However, the defendant admitted minor

accusations against him while in charge of negotiating talks [2]. Fact bargaining and count bargaining are two additional kinds of negotiating that are used. Bargaining takes place in the former when it comes to the facts of the case. The defendant agreed to plead guilty if some of the facts that made up his accusations were excluded from the trial. Count negotiation, on the other hand, is about the number or amount of charges. It eases the load on trial courts, saves money, improves the legal system, and eliminates time-consuming judicial processes, all of which are positive outcomes.

1.1 Definition of Plea Bargaining:

Plea bargaining is difficult to define. The word "plea" refers to the defendant's appeal, petition, request, or formal declaration, according to the Oxford Dictionary. Negotiation, settlement, agreement, contract, barter, or pact are all examples of the word "bargaining." As a result, a plea bargain may refer to an appeal or formal declaration that the defendant makes to the prosecution for a crime that he was involved in or committed.

It is defined as follows according to the Black Law Dictionary: In criminal cases, the procedure through which the defendant and prosecution work out a mutually acceptable case resolution that needs court approval. When there are several charges against the defendant, the defendant usually pleads guilty to a lower charge or punishment in return for a greater penalty than a graver offense or in exchange for a lesser charge.

Plea negotiating is an agreement struck between the prosecution and the defense in a criminal case. In return for any offer from the prosecution, the defendant alters his defense from innocent to guilty. When the court told him that if he pled guilty, the judge would reduce the defendant's punishment [2].

2. DISCUSSION

2.1 Plea Bargaining as a Concept:

The idea of plea bargaining is not completely foreign to Indian criminal law. However, numerous Supreme Court judgments in India show that there is a major shift in the country's criminal jurisprudence that will not be recognized in Indian law. *Maharashtra v. Madan Lal Ram Chandra Daga* is one of the first Supreme Court decisions, in which Hidayatullah J. held that: If the Court believes that mercy is evident from the circumstances of the case, it may impose a lesser punishment. The Court should never be a party to a deal, even if the agent may collect the money for the appellant via this negotiating.

It is worth noting that Krishna Iyer J.'s opinion in *Murlidhar Meghraj Loya v. Maharashtra*, which concerns the Prevention of Food Adulteration Act of 1954, which is related to a case of food adulteration, not only reflects the position of Indian law as it differs from 1976 US law, but also for the current amendment, as current plea bargaining regulations do not cover socio-economic crimes. The following are the Court's pertinent opinions: In criminal proceedings, many economic offenders resort to what Americans refer to as a "plea bargain," "begging for negotiation," "going out," and "compromising," with trial judges overburdened by light burdens agreeing. Instead of facing the agony and uncertainty of a jail cell, the perpetrator pled guilty, "led by example," agreed to plead guilty, and vowed "not to go to prison."

Now, rather than the remote victims, quiet societies, these all-ahead arrangements are beneficial to everyone. Prosecutors are relieved of time-consuming proving processes, legal knowledge, and long arguments, and the Court is relieved of cases that are overloaded. The Court groaned as one case was reduced, and torture was surrounded by a slew of papers and people. Even in the fight for the rule of law, the defendant is relieved that the prospect of abstract innocence for astrology in the costly legal system allows him to devote his spare time to his former career. Negotiating a criminal case in the United States has a lot of advantages. However, under our jurisdiction, this approach contradicts society's interests by contradicting societal choices as represented by pre-determined minimum sentence laws and covertly subverting legal requirements, particularly in hazardous economic crime and food crime [3].

The Law Commission's 154th report suggested that plea bargaining be included as a distinct chapter in Indian criminal law. The concept of integrating plea bargaining was mentioned in the 142 Law Commission report, which said that certain remedial legislative measures were required to minimize delays in processing criminal cases and appeals, as well as to relieve the suffering of trialed inmates awaiting trial. In 2001, the Law Commission attempted to add plea bargaining in Report No. 177.

According to the Committee on Reforms of the Criminal Justice System's 2003 study, the United States' experience has shown that plea bargaining is a method of processing accumulated cases and speeding up criminal justice enforcement.

The N.D.A. administration has formed a committee led by former Chief Justices of the High Courts of Karnataka and Kerala. To combat the rising number of criminal cases, the committee has issued suggestions. The Malimath Committee suggested that the Indian criminal justice system use a plea negotiating mechanism to speed up the processing of criminal cases and decrease the load on courts.

As a result, the 2003 Criminal Law (Amendment) Bill was presented in Parliament. The statement of purpose and rationale expressly states that criminal cases in courts take a long time to process. The trial did not begin in many instances until three to five years after the accused was placed in judicial custody. Despite the fact that it is not recognized by criminal law, it is regarded as another option for dealing with large debts in criminal situations. The law sparked a heated discussion in the public sphere.

Critics argue that acknowledging it would be against public policy in our criminal justice system. The Supreme Court has also reaffirmed the idea of plea bargains, stating that they are not permitted in criminal proceedings [4]. The Criminal Law (Amendment) Act 2005, which modified the Criminal Procedure Code and put it into regulations including Sec.265A to 265L under a new Chapter XXI, established the plea bargain idea in India in the winter session of 2005. (A). On July 5, 2006, the agreement went into force. The Indians tried plea bargaining inside the nation after being inspired by the United States.

The delay in making the legislation available to people has become a barrier to crime prevention. Today, we observe that the rate of crime is increasing quicker than the amount of punishment meted out to these criminals. As a result, the needs of today must be a system for achieving a balance between crime and punishment. A plea bargain is one of the processes that will be used to relieve the Court of its load. The state of Karnataka was the first in India to implement the idea of plea bargaining. HK Patil, the Karnataka Law Minister, thinks that the idea of a plea bargain

would aid in the resolution of court case backlogs. Even Arvind Narain of the Alternative Law Forum thinks that this is often used to clear the backlog [5].

The criminal justice system in the United States has been plagued by long delays. Given the many delays that afflict the whole system, seeking justice is often a difficult and laborious procedure that leaves one with the unpleasant sensation of wasted time. Several judges, academics, and media outlets have voiced grave worries about the court system's idleness and inactivity. In *Babu Singh v. State of Uttar Pradesh*, Jr. Krishna Iyer said in response to a bail request: Because the whole society is interested that offenders do their due diligence in a fair amount of time and are eventually punished, quick justice is a component of social justice. Simultaneously, in criminal procedures, innocent individuals are saved from torture.

In the case of *Hussainara Khatoon & Others v. Home Secretary, State of Bihar*, it was ruled that "no process that does not guarantee a reasonable and speedy trial cannot be deemed "reasonable, fair, or just" and would breach Art. 21." There is no question that quick trials, by which we mean a trial that moves at a reasonable pace, are an essential element of the basic rights to life and liberty enshrined in Art. 21 [6]."

In theory, the plea bargaining process reduces criminal justice administration to a barter system, in which wrongdoers negotiate between legal penalty and receiving rewards. Second, even innocent defendants will accept erroneous concessions and convictions in order to avoid the agony of long and costly trials. Third, instances in which the accused may be exonerated in the future will be reclassified as wrongful convictions. The judicial distribution system is despised by such defendants. Finally, plea bargaining may be viewed as a breach of the Constitution's principle found in Article 21. No one's liberty may be taken away from them unless they follow the legal processes.

2.2 Plea-Bargaining: Constitutional Violation:

14th Article: Plea bargaining, in reality, establishes an artificial and unjustifiable distinction between two people in comparable situations. The sole criterion for making this difference seems to be one person's capacity to recompense the victim (via money if required) vs another person's ability to fail to do so. This is prohibited under Art. 14 of the Constitution since it is arbitrary and irrational.

This article is ridiculous since it exclusively caters to the demands of the wealthy. A poor criminal avoids confessing because he knows he will not be rewarded in the same way as a wealthy buddy if he confesses. Art.14 is violated by the distinction created by the idea of plea bargaining. Due to a lack of incentives, low-level criminals choose to go to trial rather than plead guilty, which tends to grow rather than reduce litigation, since incentives are primarily for the wealthy who can fulfill the victims' demands [7].

Artwork 20: Art. 20(3) of the Constitution also prohibits the notion of "bargaining." The defendant is protected against self-incrimination under Article 20(3), which states: "Any person accused of any crime shall not be forced to testify against himself." Physical threats or violence, psychological torture, atmospheric pressure, environmental coercion, a weary interrogative attitude, dominating, and intimidating tactics are all examples of coercion under Art.20 clause. Although the defendant appears to be proposing under Sec's following conditions by voluntary action on the application. 265-B, in reality, he was "forced" to file an application and plead

guilty, and there was no mechanism to ensure voluntary action, so the concept of plea bargaining not only violated Art. 20(3), but also paved the way for fair and legalized extortion.

It is also worth noting that, even before the "plea bargaining" program was incorporated into the C.r.P.C, and the S.C. S.C. harshly condemned it, the idea was seen as a breach of Art. 21 of the Constitution, which protects the right to life, personal freedom, and liberty.

2.3 The Plea Bargaining Procedure:

Plea bargaining is a simple process. In a pending trial, criminal law enables the defendant to submit a plea transaction application with the Court. The Court must interview the defendant without engaging other parties in the case after receiving an application with an affidavit to assess if the application was submitted freely, without fear or bias [8].

The Court then issued a notice to the public prosecutor or complainant, instructing them to prepare a case that would satisfy both sides. The prosecution, the victim, and the defendant are free to decide on negotiations that are acceptable to both sides. If a settlement is achieved, the Court may give the victim compensation and then hear the parties' perspectives on the penalty. If a minimum penalty is imposed for a crime, the Court may impose half of the defendant's minimum sentence; it may release the defendant on probation if permitted by law; or, if the crime committed does not fall within the above conditions, the defendant may be punished by a quarter of one punishment, i.e., 1/4, provided that such crimes are punishable.

The defendant may also take advantage of Section 428 of the C.r.P.C. 1973, which provides for the defendant's custody to be offset against his or her time in jail. Except for a written petition to the State High Court under Art. 226 and 227 of the Constitution or a S.L.P. request to the Supreme Court under Art. 136 of the Indian Constitution, the judgment of an appeal is final.

The following are some of the most important court judgments on plea bargaining: The Supreme Court held in *Uttar Pradesh State v. Chandrika* that plea bargaining was unconstitutional, unlawful, and fostered corruption, collusion, and judicial contamination. Because of the sluggish and unsatisfying character of our legal system, it may lead to an innocent person pleading guilty and accepting a moderate and harsh sentence rather than going through a long and laborious criminal trial [9]. It not only takes a long time and costs a lot of money, but the outcome is also unclear and unexpected. The judge has the authority to stray from the path of justice. He has the option of accepting the guilty plea or convicting the innocent person. As a result, the legal process was subverted, and the social goal was defeated. This approach also encourages collaboration and corruption, as well as lowering judicial standards [10].

Additionally, in *Kachhia Patel Shantilal Koderlal v. Gujarat*, the defendant was found guilty of adultery, and the Court ruled that plea bargaining was unconstitutional and unlawful, since it would jeopardize judicial processes as well as the anti-adulteration statute's societal objectives and purposes.

3. CONCLUSION

Plea bargaining was presented as a possible solution to problems such as jail overpopulation, high court costs, and unreasonable delays. Its method may assist expedite criminal trials and appeals, as well as relieve the suffering of inmates awaiting trial. If a settlement is achieved, the victim may be compensated by the court. The Supreme Court, on the other hand, decided in a

historic decision that plea bargaining was unconstitutional and unlawful, and that it often encouraged corruption, collusion, and contamination of the judicial process.

It goes on to say that no court has the authority to override the law's minimum punishment. Plea bargains may be a good way to get rid of the backlog of court cases. Its effectiveness, however, is contingent on the offender's willingness to plead guilty and the victim's willingness to accept a reduced sentence. Indeed, remuneration has been creatively included into the plea negotiating framework. We'd also want to point out that simple reforms, suggestions, and procedural and substantive legislation changes aren't enough to accomplish the noble objective of a fair trial for everyone. It is a great concept that must be safeguarded and maintained in the thoughts of those charged with delivering justice to citizens.

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CONNOTATIVE SEMANTICS TYPICAL OF THE NICKNAMES OF FRENCH PRESIDENTS

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ABSTRACT

The article presents the connotative semantics typical of French presidents. In political discourse, the nicknames of prominent party leaders perform a specific expressive-figurative function. This function allows the creation of a convincing linguistic-political portrait that reflects important characters in the character of prominent political figures. Nicknames can describe a referee's appearance, reflect his or her appearance, habits and behavioral characteristics, ethnic and racial background, and provide a social assessment of his or her mental abilities.

KEYWORDS: *Konnotatsii, Anthroponyms, Informal Secondary, Anthroponyms, Prozhivshcha. Ethnic, Connotative Semy*

INTRODUCTION

The complex, content, and associative nature of French anthroponyms is reflected in their nominative / informative functions. Correct understanding and understanding of the interrelationships between anthroponym semantics and its associative nature and its axiological functions will be essential for communicators in overcoming linguistic and intercultural barriers that negatively affect the formation of full-fledged communication in French. Nicknames are complex linguistic phenomena. Let us consider the unofficial secondary anthroponyms of the French presidents Charles de Gaulle, Jacques Chirac, Nicolas Sarkozy, and François Hollande.

LITERATURE REVIEW AND METHODOLOGY

A nickname is a name given to a person in addition to his real name and surname. This name usually indicates a sign of his character, habits, appearance, nationality, belonging to a certain class, type of activity. In the process of analyzing the selected anthroponyms, we found that often these nicknames are due to the nature of the policy pursued by the presidents, such as "Chaméléon Bonaparte" - J. because of their political variability. The nickname given to Chirac is attributed to the personal qualities of the presidents, such as Sarkozy for the lifestyle associated with the pattern and elegance of the secondary anthroponym Rolex, which is often used by Twitter users. Charles de Gaulle stood out among his contemporaries not only for his height and innate aristocracy, but also for his brilliant mind. The French had to elect him as their president. Edmond Rostan's play *Sirano de Berjerak* was his most needed book. De Gaulle later admits that the protagonist of this play has become the favorite hero of his entire life. The president is proud of his long nose, seeing the similarities between his nose and the character's nose. The anthroponym "Sirano" is also derived from this, which can be divided as a positive

description. On the eve of his 50th birthday, in 1938, he was appointed commander of a tank regiment in the Mets. Here, his colleagues give him the new nickname "Colonel Motor" for his boundless energy and ability to work. Well-wishers call him "Two Meters and Big Charles" for his very high neck. He takes nicknames from his enemies, such as "Peacock" and "Rooster", for his obvious arrogance. The nicknames "General" (le Général) and "Generalim" (Mon général) were often used.

DISCUSSION

As for Jacques Chirac, the fifth president of the Fifth Republic, his nicknames are dominated by bright negative colors due to protests over his political methods. As soon as he began his professional career as an auditor of the Chamber of Accounts to the Government Service, Chirac showed that he was able to overcome any obstacles, he was a "wonderful argument". "But the problem is, he keeps jumping even when he already has to stand still," says one of his employees. George Pompidou, who brought Chirac to government work, called him a "Bulldozer" and a "Helicopter," and these names became his nicknames because of his resourceful abilities. Due to his political variability, Chirac will have the following nicknames: Caméléon Bonaparte "Chameleon Bonaparte", La Girouette "Flyuger - unproven", Chichi - flirtation, Le Chi, Jacquou le rockant "Shikusha-rocker", and Jacquouille la fripouille. Among the positives, only the nickname Le Grand Condor the Great Condor can be singled out. In doing so, it is seen as a synonym for experience, wisdom.

Nicolas Sarkozy is a contradictory and ambiguous character of the political elite of the French Republic. Many of the common nicknames have a negative connotation: Sarkozy. Sacrézizi (Sarkopipiska - a symbol of his passion for women), Nono le Bigorneau (Olux Nono). Due to its dependence on expensive accessories and unique leisure time, people call it "President Bling-Bling" (English Bling - shiny, bright, beautiful) or "Rolex", "Baby Nicolas" (Le petit Nicolas) - the president's neck and Rene Gosinni and Jean. A reference to the memory of the famous character of Jaka Sampe's work of the same name. Workers at the American embassy "Le barefoot king" (Le Roi nu) for the eyes of Sarkozy. Diplomats describe Sarkozy as a "man of power" who is rude to his colleagues. These include SuperSarko, Notre omniprésident, and Sarko Premier as symbols of self-proclaimed authority. The following neutral nicknames are common among Twitter users: "Tokay wine" because Tokay wine is produced in Hungary. Sarkozy's father is Hungarian, or "weather in Hungary" (for the same reason). Among the positive nicknames are: "Duracell-president" - German Chancellor Angela Merkel called him for his hyperactivity. (President).

For the next 60 years, no French president has had such a low rating as François Hollande a year after coming to power. Perhaps this explains the emergence of negative anthroponyms such as "Mese Nimjon odam" in Hollande: for the past 30 years, the title of "most boring politician" has earned him the nickname because of his instability and unwillingness to make responsible decisions. Neutrality is also reflected in the tone of the nickname "Mse Normal". Hollande got the nickname because of the promises he often makes in the media or on the internet. Hollande also has comic nicknames, such as "Mese joke": his opponents called him that, pointing out that he loved to joke. Twitter staff gave him the nickname "Flan." In France, cheese is produced under the brand name "Flanby", for François Hollande the nickname belongs to his surname "Dutch cheese" (fr. Hollande - Dutch cheese, potatoes, porcelain, Dutch paper, etc.).

Result. Thus, the relationship between the positive / neutral and negative meanings specific to the nicknames given to presidents can be seen more clearly in the following tables.

1-TABLE THE AMOUNT OF ANTHROPONYMS CONSIDERED

	Positive / neutral paint	Negative paint
Шарль де Голль	4	3
Жак Ширак	1	8
Николя Саркози	6	9
Франсуа Олланд	4	3

2- TABLE PERCENTAGE OF THE TOTAL AMOUNT

	Positive / neutral paint %	Negative paint %
Шарль де Голль	57 %	43 %
Жак Ширак	11 %	89 %
Николя Саркози	40 %	60 %
Франсуа Олланд	57 %	43 %

The existence of such a large number of secondary anthroponyms indicates the high political activism of the society over the last fifty years. There is stability in the French use of secondary anthroponyms to fully express their political views.

For the post of President of France, the anthroponym François Fillon is intertwined in the French press with a series of nicknames that provide additional information about the politician's identity, identifying certain aspects of his political career. The most common nickname, "Courage Fillon" ("Courage Fillon"), probably originated during his entire political career under various presidents: from Jacques Chirac to Sarkozy, from Sarkozy to François Hollande, because he held various positions in power. The transition from one position to another, depending on the circumstances, required great courage, perseverance and patience from the politician not to fall spiritually. Wanting to inspire a person in such situations, the French usually Courage! (Be strong! Don't be idle!), Or Bon courage! (Good luck!) They say.

Journalist Sophie Couanyar, in an article on François Fillon, used his nickname, "La revanche de Courage Fillon," in which he emphasized: donnera ce surnom qui l'a poursuivi »[Coignard]. Translation: "Regardless of the outcome, François Fillon has won at least one victory: no one will call him by this nickname, which no longer gives him peace. "

Another nickname of François Fillon is Mr. Nobody (Mr. Nobody) probably appeared under the influence of the American film of the same name, which became famous in France. The plot of the film develops around the protagonist - Nemo Nobody. His destiny undergoes a fantastic change and consists of many parallel real lives.

After becoming President of the French Republic, Macron quickly received a new "Jupiter" ("Jupiter") title from journalists. Le Figaro writes about this, but its employee indicated the initials of his name: "Pourtant," Jupiter ", le surnom vite accolé au nouveau chef de l'Etat, aborde la planète Mars d'assez loin" [AB: 5] . Translation: "But the nickname 'Jupiter' has quickly joined the new head of state, approaching Mars from a considerable distance."

CONCLUSION

Thus, a linguistic analysis of the nicknames of prominent political leaders has shown that nicknames are the product of secondary naming that accompanies anthroponyms and provides them with additional connotative information. In political discourse, the nicknames of prominent party leaders perform a specific expressive-figurative function. This function allows the creation of a convincing linguistic-political portrait that reflects important characters in the character of prominent political figures. Nicknames can describe a referent's appearance, reflect his or her appearance, habits and behavioral characteristics, ethnic and racial background, and provide a social assessment of his or her mental abilities. They are one of the linguistic means of expressing feelings, attitudes towards the referent, to achieve expressive effect in verbal communication. Nicknames represent a category of unregulated names that act as communicative and emotional substitutes for names and surnames and cannot accompany a person for the rest of their lives.

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THE ROLE OF MODERN PEDAGOGICAL TECHNOLOGIES IN FOREIGN LANGUAGE TEACHING

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ABSTRACT

Teaching foreign languages to the younger generation quality assurance, training of specialists who are fluent in foreign languages world education through radical improvement of the system, mastering foreign languages Training of qualified personnel meeting the standards is carried out in our country is one of the goals of the ongoing education reform. In language teaching the teacher's knowledge in identifying and identifying opportunities, creativity, the ability to inspire students to love their subject, with the student Establishing a partnership requires modern requirements. The decision is foreign further development of language teaching, general education in accordance with international standards schools, vocational colleges and academic lyceums, higher education institutions to train qualified teachers with a high level of foreign language proficiency ensure the implementation of measures to improve the level and quality was adopted for the purpose.

KEYWORDS: *Pedagogical Technology, Artificial Intelligence, Open Databases, The Ethics Of Using Data, Integration Of Education, Intellectual Potential, International Education*

INTRODUCTION

Today, the rapid development of economic, political and cultural ties of the Republic of Uzbekistan with other countries, the interstate integration of our country and its integration into the world community in the field of education require a modern approach to education. As we strive for this sacred goal, we must keep in mind that only young people with a deep understanding of the need for harmony of national and universal values, modern knowledge, intellectual potential and advanced technologies can achieve their goals.

In the education system of the Republic of Uzbekistan, students not only acquire a wide range of knowledge and professional skills, but also actively communicate with their peers abroad, keep abreast of innovations and changes, which is the most important condition for acquiring great intellectual wealth in the world. great importance is attached to their in-depth study of languages as well.

In recent years, many measures have been taken to further develop the field of education, especially the formation of a comprehensive system of foreign language teaching. A vivid example of this is the PD № 1875 of 2012 "On measures to further improve the system of learning foreign languages." The purpose of teaching the Russian language is to form a

harmoniously developed, educated, modern-minded young generation in the future, to create a system aimed at further integration of our republic into the world community.

The priority of education in the future is to develop the youth of our country, both physically and mentally, as world-renowned professionals. Therefore, the fact that the scientific potential of our youth today and tomorrow meets the criteria and requirements of international education - will lead to the development of mutual scientific and social relations, not only in Russian, but also in other foreign languages. This, in turn, requires teachers to make effective use of advanced technology and modern manuals.

It is known that the expression of thought, communication between peoples, spiritual and other communication is expressed through language. Reading in a foreign language, including Russian, helps to develop communication skills. In addition, those who are fluent in Russian will be provided with benefits to identify future needs.

One of the main requirements for higher professional skills today and tomorrow is a perfect knowledge of foreign languages. It is no coincidence that special attention is paid to the study of Russian, which is one of the leading languages of international communication.

Teaching a foreign language in the education system of the Republic of Uzbekistan is rising to a new level of quality on the basis of a scientific approach, the introduction of new information, communication and pedagogical technologies that can fully meet the requirements of the time.

Pedagogical technologies are aimed at achieving a predetermined goal by ensuring a high level of student activity in the classroom.

Modern requirements require teachers not only to know their subject, but also to use modern computer and telecommunication technologies in the creation of modern textbooks, the teaching process, and to be able to work perfectly in these technologies, to manage them. This develops the student's mental performance, monitors his or her language performance, analyzes, compares, and helps identify strengths and weaknesses.

It is known that learning a foreign language is a very complex process. If you follow them during the training, you will definitely get good results. Advanced technologies reflect a person-centered approach, and effective, positive results can be achieved not only in the acquisition of knowledge, skills and abilities of each student, but also in the individual characteristics of his development.

Nowadays, new pedagogical technologies have been developed that are unconventional, convenient, and thought-provoking to enhance students' ability to think independently. Effective use of these methods is an important task for all educators.

When it comes to the role of the teacher, including vocational education teachers, in ensuring the well-being of the community, he or she is not only a learner and loves his or her profession, but is also well-rounded in the subject he or she teaches. Being an expert, the methods of business action should have positive-personal qualities. Therefore, today's teachers have a great responsibility. Today's educators need to be able to communicate their knowledge to students using modern pedagogical technologies to improve the quality of education in line with the times.

The short-term effectiveness of modern pedagogical technologies, which are becoming more and more widespread in the educational process, is explained by the fact that they have been tested in a number of European countries.

Knowledge, experience and interactive methods of pedagogical technology and pedagogical skills ensure that students acquire knowledgeable, mature skills. With these tools, the teacher can provide more information in a shorter period of time and make the lesson more interesting for the student. The teacher will have the opportunity to organize the lesson through new methods of teaching a foreign language, such as group work, role-playing games, cluster, brainstorming, reading together, case studies, and more. This means that the teacher must first create a foreign language environment, including the ability to express himself / herself in that language.

In addition, the use of multimedia, computer technology, information technology, and modern textbooks, which allow the student to memorize information and information in a foreign language through repetition, is also effective.

In the process of using modern pedagogical technologies, the teacher deeply masters the method he wants to use and then gives it to the students. In this process, the teacher creates conditions for the development, formation, acquisition and upbringing of the student's personality, and at the same time acts as a guide, a guide.

Unlike traditional classes, teaching a foreign language on the basis of new pedagogical technologies develops critical thinking in students and at the same time increases student activity. An important aspect of using such tools in the classroom is that the student activates previous knowledge, as well as acquires and acquires new knowledge and information.

Teaching a foreign language, especially in a group, often has a positive effect. The advantage of this method is that students can develop the skills of listening to others, exchanging ideas, and debating. For example, the teacher encourages students to discuss a problem on a topic, to develop students' thinking skills, and to get to know and learn more about it.

Such modern methods encourage the student to search independently and to delve deeper into the grammar, vocabulary and translation of the foreign language being studied. And, of course, we hope that these fast-paced methods will pay off for the younger generation we raise.

Thus, the study of foreign languages is a modern requirement, and the development of new methods of language learning for the younger generation, based on the "National Program of Personnel Training" and recommendation to the learning process is a priority for scientists and experts. issues. In order for our talented young people to become experts in their fields of interest, they must first have a thorough knowledge of foreign languages, including Russian. Therefore, the introduction of advanced technologies and ensuring that foreign language teaching methods meet the requirements of the times is the urgent task of educators and scientists.

In short, in the process of conducting education on the basis of new technologies, the characteristics of the student who wants to master the subject, such as mood, interests, lifestyle thinking, mental and professional abilities, emerge.

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THE IMAGE OF BOBUR IN THE LEGENDS

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ABSTRACT

The article examines the peculiarities of Uzbek historical legends, their place in the system of folk prose and the composition of images. Zahiriddin Muhammad's analysis of folk tales about Babur illustrates oral stories about historical figures and the artistic interpretation of life in an epic plot.

KEYWORDS: *Uzbek Folklore, Historical Legends, Epic Plot, Motive, Historical Prose, Image, Literary Source, Genesis, Plot Structure.*

INTRODUCTION

It is well known that the art of epic genres is based on fiction. Therefore, it is natural to take into account the nature of fiction in determining the specific features of the genre. No matter how realistic the realities of life, which are the basis for the emergence of historical legends, the perfection of the genre, as well as the laws of epic thinking, opens a wide way for fiction in the interpretation of the plot. Whether the fiction is vital or imaginary depends on the nature of the reality being expressed. Fiction is also vital because historical narratives reflect mainly real events, the lives and activities of people who actually lived in the past. Such narrations, although not directly occurring in the lives of the characters portrayed, actually narrate events that may have taken place in real life, i.e., that have a vital basis. This leads to such features as the vitality of historical narratives, historical concreteness, the reality of the interpretation of the characters. In particular, the details of the events in the legend of "Babur's nickname" are given on the basis of such a vital fabrication. It says, "Zahiriddin Muhammad, the son of Umarshaikh, the king of the Fergana region, grew up to be much smarter and braver than he was in his youth. Umarshaikh spends his free time hunting, and every time he goes hunting, he takes his son with him. One day, at the height of the hunt, young Zahiriddin Muhammad got lost in the forest. He was never afraid of his bravery. He did not cry. The sun had set and it was late. At one point he saw a lonely cave. I go in and lie down here, and in the morning I go out and get into the cave, thinking that I will definitely find my father. Going into the middle of the night, the man heard a horrible roar that made his ears tingle. Still, he didn't panic. He sat quietly, waiting for what would happen. The sound was getting closer and closer to the cave. Zahiriddin Muhammad took a deep breath and stared. A mother tiger, biting a large prey in its mouth, was approaching the cave. The boy was silent, wondering what would happen to the prey. The tiger entered the cave in awe. At that moment, the two tigers chased each other, passed Zahiriddin Muhammad and clung to his mother. The mother tiger licked and caressed her cubs, threw the prey to them and fed them. So the boy did not wake up until morning. It is morning. The mother tiger went out of the cave in search of prey. Zahiriddin Muhammad was silent for a while, but took a risk and went

to the tigers. The tigers roared to greet him. The boy was not afraid. Then he found a common ground, became friendly with them, and became pale.

Now hear from Umarshaikh. Umarshaikh, who was devoted to hunting, did not notice that his son was missing. Late in the afternoon, when the trumpets sounded and the hunting stopped, it became clear that Zahiruddin Muhammad was missing. Hearing this, Umarshaikh was very sad. He screamed. He lit the torches and ordered the claws to be inspected step by step. "If my child is not found, I will cut off everyone's heads and bodies," he said.

At one point, Umarshaikh's eyes fell on the tiger's footprints. "My child was kidnapped by a tiger," he thought, and the tiger rose into the sky. He fainted and fell from the horse.

Umarshaikh came to his senses and ordered them to take him on a bloodbath. As they followed, they came out in front of an abandoned cave at the edge of the forest. When they entered the cave, they saw a boy playing with two tigers. Umarshaikh's heart broke as he recognized and rejoiced at his son.

The hunters took Zahiruddin Muhammad and their tiger cubs back to the palace. The incident spread to the city in an instant. "The sons of His Majesty fought with the tiger and overcame it," said a young man between the ages of seven and seventy. Everyone grabbed his collar in amazement.

After that, the boy's real name was Zahiriddin Muhammad, with the nickname Babur, meaning tiger. Babur grew up in harmony with the tiger cubs. All creatures, even the king of wild beasts, have grown up to be brave and courageous, not afraid of the tiger" [1, 102-107]

Underlying the epic plot of this historical narrative is a vital fabrication. Umarshaikh's hunting trip and his son Zahiriddin Muhammad getting lost in the mountains and spending the night in a lonely cave are real-life events. Both Umarshaikh and his young son loved hunting. Young Babur may have got lost in the hunt and spent the night in a cave. In fact, this narration, which shows that Zahiruddin Muhammad's bravery was young but brave, is based on one of the ancient motifs - the hero's motive to enter the cave. The historical basis of this motif is linked to test ceremonies. Folklorist V. Ya. Propp considers the motive of the hero of a magical fairy tale to get lost in the woods and encounter a lily hut as an epic motif of the trial-and-initiation ceremonies of ancient times. He wrote that the probation ceremony was for the breeding period, and that the adult boys had to meet certain probationary conditions in order to obtain the status of an equal member of the tribe. For this purpose, a test ceremony was held in a special place, and during the ceremony, magical actions were performed, including the resurrection of the child being tested. Temporary death and resurrection were considered a means of attaining special magical properties. In order to symbolize the state of death and resurrection, the priests who performed the ceremony showed the tablets through various actions, consisting of a child being swallowed by a wild animal and reborn. According to the mythological notions of those times, a child who had been in the womb of a wild animal for a certain period of time had new traits, i.e., re-breastfeeding as an adult. The mouth of the house or hut where this ceremony is held is symbolically compared to the mouth of a wild animal: that is, entering the hut symbolically means that the animal swallows the child, and going out of the hut at the end of the ceremony means getting rid of the animal trap [2, 43-44].

Zahiruddin Muhammad's straying in the mountains and going to the cave is an epic interpretation of the fact that according to the traditions of the Seed period, the child went to the residence of the tribal priests to fulfill special conditions during the test ceremony. The narrators describe the young Zahiriddin Muhammad's courage and fearlessness through this ancient epic motif. This proves that the courage of the young Bobur in the battles of Samarkand and other places was not accidental.

In Uzbek folk tales, there are motifs such as the epic hero being fed by different animals, the hero growing up sucking animal milk, and the patronage of animals, all of which are part of the plot elements arising from the artistic interpretation of the above-mentioned ancient initiation ceremonies.

The fiction, which is the basis for the formation of the plot of the legend "Babur's nickname", is characterized by historical and ethnographic specificity. "The sign of historical and ethnographic specificity is directly related to the fact that the narration is associated with a particular historical figure, geographical area and ethnic unity" [4, 55].

Historical legends are one of the most ancient genres of Uzbek folk prose. The epic interpretation of such legends, which realistically reflects the events of the past, embodies the ancient traditions, customs, political and social views of our people and provides information about the life and work of specific historical figures, is characterized by historical and ethnographic specificity. The vitality of a series of characters, that is, the fact that they are composed of real people and imaginary characters, the temporal and spatial concreteness of the interpretation of events, the lack of a criterion plot, the performance by the general public and the audience and narrators as details of real events.

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ANALYSIS OF ECONOMIC REFORMS INCREASING LABOUR RESOURCES IN THE REPUBLIC OF UZBEKISTAN

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ABSTRACT

This article analyzes ways to increase the activity of labour resources in the Republic of Uzbekistan, identifies socio-economic factors affecting it and develops proposals and recommendations to improve the efficiency of the regional labour market. According to these definitions, employment refers to any activity of the able-bodied people by the conditions of satisfaction of needs, legal behaviour and income, while according to other scholars, "Employed population is the population involved in the production and non-productive activities.

KEYWORDS: *Population, Economically Active Population, Labour Resources, Employment, Unemployed, Labour Market, Jobs, Employment.*

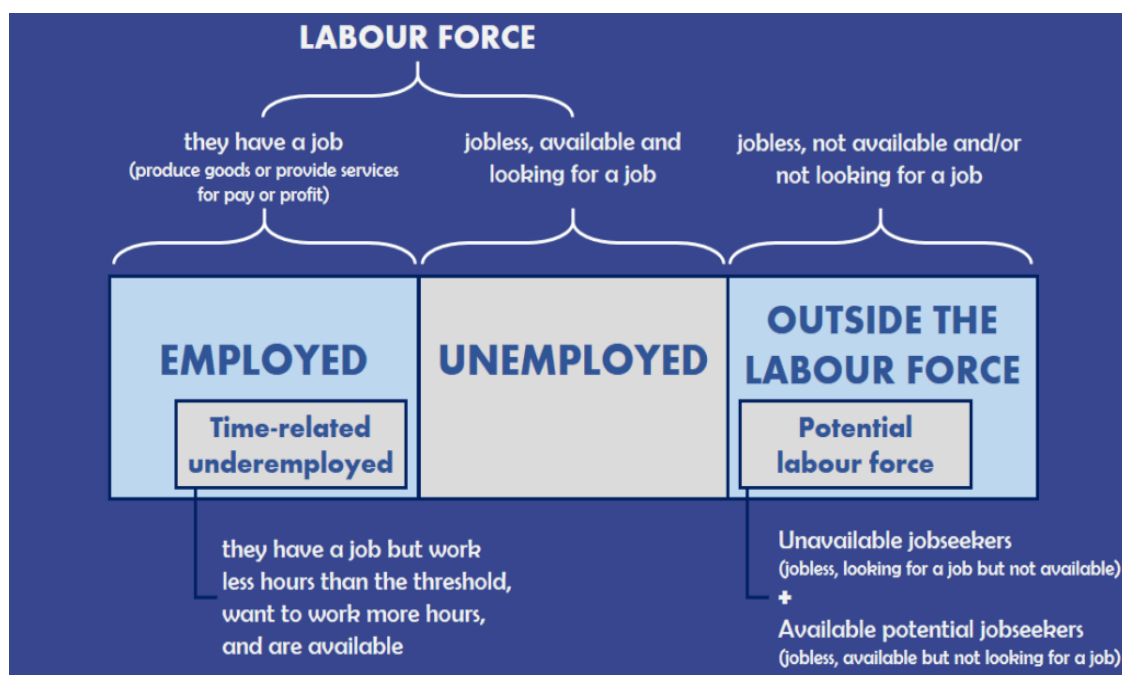
INTRODUCTION

Structural changes in the economy of the Republic of Uzbekistan require further attention to the issue of employment.

The role of employment is extremely important in creating the economic basis for human development. For many people around the world, working is the main source of livelihood for themselves and their family members. For them, losing their job is tantamount to risking their development. Employment status also affects people's subjective feelings.

From the point of view of society, effective employment provides the able-bodied population with the necessary income, creates an economic basis for human development. At the same time, the state creates conditions for the creation of equal opportunities for all members of society by supporting and protecting the socially vulnerable and the disabled.

In economic theory, employment is interpreted as "the degree to which the economically active population is involved in the economy."



The working-age population is composed by three mutually exclusive groups: employment, unemployment and persons outside the labour force. Groups in labour underutilization are in gray (Picture-1).

The Law of the Republic of Uzbekistan “On Employment” states that “Employment is an activity of people that does not contradict the Constitution and laws of the Republic of Uzbekistan, is related to meeting their personal and social needs, and provides them with wages (income)” [1].

Employment is one of the most important aspects of human social development, which reveals the problems associated with labour issues and ways to meet the demand and supply of labour. The employment relationship is a socio-economic indicator that shows how many able-bodied people are involved in socially useful work.

ANALYSIS OF THE RELEVANT LITERATURE

Employment of labour resources is a complex socio-economic category, the scientific literature of which still does not have a complete, single definition. Many aspects of the problem under study have been considered in the works of classical economists such as A. Smith, D. Ricardo, Fr. Kene, A. Pigou, J. Keynes.

To date, employment issues are being studied by many foreign and domestic scientists. However, in most cases, it is possible to observe that there are specific inaccuracies in the definitions, aspects that do not fully correspond to the socially accepted content of this concept. In particular, the Russian scientist A.Ya. According to Kibanov, “Employment is a socio-economic relationship, in which people interact to engage in socially useful work, regardless of where they work. The socio-economic nature of employment is threefold: first, from the point of view of the realization of the right of everyone to work; secondly, in terms of the rational use of the labour potential of society as a whole or of each individual taken; thirdly, it can be seen in terms of the

fact that different social, demographic, professional and other groups are involved in social work”[2].

Other economists Yu.G.Odegov and G.G.Rudenko point out that "employment of the population is the level of employment of the able-bodied population in activities related to the satisfaction of personal and social needs, which is usually understood as earning income" [3]. According to these definitions, employment refers to any activity of the able-bodied people by the conditions of satisfaction of needs, legal behaviour and income, while according to other scholars, "Employed population is the population involved in the production and non-productive activities. The employed population includes: employees, entrepreneurs, paid students; part-time housewives and students; freelancers; military personnel; supportive family members are included”[4]. That is, in this definition, employment is based on the social status of employees.

As stated in the Law of the Republic of Uzbekistan "On Employment", "Citizens of the Republic of Uzbekistan have the right to possess their abilities for production and creative work and to engage in any activity not prohibited by law." Administrative coercion in any form of labour is not allowed. The fact that people are not engaged voluntarily is not a reason to hold them accountable”[5].

Employment can be described as a socio-economic phenomenon: "Employment is an activity of citizens related to the satisfaction of their personal and social needs, which does not contradict the law, bringing them wages or income [6].

In our opinion, employment has a dual nature, on the one hand, it provides for the satisfaction of people's labour needs and their source of income, on the other hand, the optimal combination of economic development as a product of macroeconomic development of society.

RESEARCH METHODOLOGY

The article used methods such as economic research methodology, system analysis, monographic analysis, comparison, grouping, expert assessment, economic-statistical.

ANALYSIS AND RESULTS

The level of employment in the labour force is influenced by several factors, the most important of which are the population, its gender and age structure, migration, forms of ownership, existing jobs in sectors and industries of the economy. It is advisable to study all these factors in specific regional conditions.

In September of this year, the Republican Scientific Center for Employment and Labour Protection of the Ministry of Employment and Labour Relations conducted another public survey in 108 cities and districts of the country.

The survey covered 500 self-governing bodies, 5.0 thousand households and 26.5 thousand citizens.

In January-September 2021, the number of labour resources amounted to 19,322.8 thousand people, an increase over the same period in 2020 by 101.1% or 201.4 thousand people. The number of people employed in the economy amounted to 13,609.1 thousand people, an increase over the corresponding period by 3.1% (403.9 thousand people).

In January-September 2021, the number of people employed in the official sector amounted to 6,124.3 thousand people, compared to the same period in 2020, the number of people employed in legal entities increased by 7.9% or 450.5 thousand people.

The number of people employed in the informal sector amounted to 5,943.9 thousand people, a decrease of 4.1% or 254.0 thousand people compared to January-June this year.

According to the survey, the total number of people in need of work was 1,413.7 thousand people, the unemployment rate among the economically active population was 9.4%. The unemployment rate among those aged 16-30 was 14.9 per cent, while the unemployment rate among women was 12.8 per cent.

In January-September this year, the economically inactive population of the country amounted to 4,300.0 thousand people, an increase of 0.6% or 26.3 thousand people compared to the same period last year.

During the first 9 months of this year, a total of 338.2 thousand new jobs were created or 124% of the forecast (an increase of 126% over the previous year, an increase of 66.9 thousand). Including

- ❖ A total of 9,064 out of 78 projects through the implementation of sectoral investment projects;
- ❖ 108.8 thousand (116%) new jobs were created due to the implementation of 10.6 thousand projects included in the regional investment program.
- ❖ 4,920 permanent jobs (182% compared to the 9-month forecast) were created due to the development of social infrastructure.
- ❖ 123.9 thousand new jobs were created in about 60,000 newly registered small enterprises and micro-firms.
- ❖ 91.5 thousand people (122%) were employed through the establishment of individual entrepreneurs.

Training in vocational knowledge based on the requirements of the labour market has become a priority of the ministry. Under the Ministry's auspices, 16 "Welcome to Work" Monomarkaz, 59 district and city vocational training centers, and 136 mahallas have been established.

In the first 9 months of this year, 97.7 thousand unemployed people were involved in vocational training in 54 types of professions, entrepreneurial skills and foreign languages, which are in high demand in the labour market.

The majority of those involved in vocational training were women (66 percent) and young people (54 percent). 26.4% of them are unemployed registered in the "Women's Book" and 40% in the "Youth Book".

Of those involved in vocational training, 48.9 thousand (50.1%) are in industry and services, 27.1 thousand (27.6%) in construction, 3.6 thousand (3.7%) in agro-technology, 6, 6 thousand (6.8%) were directed to IT professions and 11.5 thousand (11.8%) to craft trades based on the tradition of "Master-Apprentice".

Employment in the Republic of Uzbekistan includes a group of physically and mentally healthy people aged 16 to 60 years and older, which are as follows:

- 1) those who are employed and receive remuneration based on full-time or part-time work, engaged in other income-generating work;
- 2) temporarily absent from work for various reasons (illness, vacation, business trip, retraining, advanced training, etc.);
- 3) those who worked in a family business without pay.

According to the definition of the International Labour Organization, "employed" includes the following persons.

I. Employment:

- 1) employees - those who performed certain work for a fee during the reporting period;
- 2) those who have a job and are temporarily unemployed during the reporting period, but have officially retained their jobs.

II. Employees in their company:

- 1) employed persons, who were engaged in a certain activity to earn income during the reporting period;
- 2) those who own an enterprise and do not work for any reason during the reporting period.

Employment itself is divided into 2 groups:

- 1) traditional employment, ie permanent employment during a full working week;
- 2) non-traditional (flexible) employment.

As a result of economic reforms in Uzbekistan's transition to a market economy, new forms and methods of employment have emerged. Flexible employment is an important indicator of the changing trend in the composition of the hired labour force. It is an integral part of the labour market and also includes several other elements:

- ❖ functional flexibility (rotation of workers with a wide range of specialties);
- ❖ flexible payment systems;
- ❖ remote flexibility (work based on subcontract system in small systems).

Employment is a key criterion for the economic and social development of any country. Because employment plays a key role in solving social problems in society, increasing economic labour productivity and living standards. Employment plays an important role in ensuring the stability of the country in improving professional skills.

CONCLUSIONS AND SUGGESTIONS

We make the following practical recommendations for further increasing the efficiency of the use of available labour resources and employment in the Republic of Uzbekistan:

- New facilities specializing in the processing of agricultural products, operating based on local natural raw materials and material resources, as well; pay special attention to the launch of enterprises in the light and food industries that employ women;
- providing financial assistance from the Employment Fund to increase the production capacity, change specialties, technical re-equipment and reconstruction of enterprises experiencing temporary difficulties in order to maintain existing jobs;
- intensification of work on the creation of new jobs in the field of consumer services, the involvement of extra-budgetary funds and public funds in these activities;
- Development of a mechanism to encourage employers to create jobs in the form of domestic labour in enterprises, which may include tax benefits provided by law, other economic incentives for the development of domestic labour;
- Reimbursement of costs incurred in the organization of domestic labour by setting variable prices for utilities and electricity;
- Ensuring the coordination between structural changes, processing, social and market infrastructure, small business and entrepreneurship, carried out to accelerate the development of new sectors of the economy in these specialties within the established areas of training in professional colleges;
- Monitoring the effectiveness of training in terms of determining the balance between the demand for specialists in the economy and specialists in vocational education, based on the results of which to make changes in the structure of the organization of new types of educational institutions;
- Introduce the practice of pre-ordering for the training of relevant specialists in professional colleges in the practice of personnel activities of enterprises.

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TREASURE OF COINS FOUND QIRQQIZ MONUMENT

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ABSTRACT

This article discusses 10 copper coins accidentally found in a new monument during the next archeological excavations carried out by scientists of Termez State University. The organization and location of these coins are analyzed. The area where this excavation was carried out has been a major strategic location, the only salt deposit in Central Asia, and has been under-exploited by humans since antiquity, at least since the Bronze Age. As an example, we can cite the fact that Ulanbulaksay, which laid the foundation for its culture and, in turn, caused the crisis, is located on the very edge of consciousness.

KEYWORDS: Coins, Archeological Excavations, Ulanbulaksay, Copper Coin Treasure, Vasudeva I, Vasudeva II Or Kanishka III, Qirqqiz.

INTRODUCTION

At the end of the current 2020-2021 academic year, the team of Termez State University conducted the next student practice and archeological excavations in a completely new area and monument. According to the plan, it was carried out in May-June at the Kattabulak monument of the Bronze Age, located southwest of the village of Chorbog near the Salt mine in the Sherabad district. Archaeological excavations have revealed a great deal of news and information about this period.

Archaeological excavations were carried out in the foothills adjacent to the neighboring villages of Chorbog, Aktash and Goz.

REFERENCES AND METHODOLOGY

The area where this excavation was carried out has been a major strategic location, the only salt deposit in Central Asia, and has been under-exploited by humans since antiquity, at least since the Bronze Age. As a result, the first archeological excavations in the region were carried out by LI Albaum in the 70-80s of the last century, and later by academician A. Askarov. At the same time, excavations were carried out in a number of areas of the district under the leadership of SHR Pidaev [3]. During the years of independence, Uzbek-German and Uzbek-Czech scientists have been conducting expeditions in the region, including several years of research by Uzbek-Czech scientists. Coins of the Kushan period found in this area were perfectly organized by EV Rtveladze and SHR Pidaev, and several scientific works were published [4].

THE RESULT

A search in the southern part of the village of Goz revealed a hill on the southeastern side of the village, called Kyrkiz kyz by the locals. When the sides and top of the hill were formed, it was estimated that pottery fragments were found around it, and based on these pottery, it was assumed that the hill belonged to the I-VII centuries AD. The hill coordinate where the monument is located is 37.625345, 66.743080.

During the sampling process, 10 naturally affected copper coins were found in the western part of the monument, under the spool flange, about 1/5 of which was buried in the ground. Coins were cleaned in the restoration department of the Termez Archaeological Museum. As a result, it was determined that all these coins belonged to the period of the Kushan kingdom and were classified. 10 coins were conditionally divided into 3 groups:

- a) Coins of Kushan king Vasudeva I. Total 2 pieces.
- b) Coins of Kushan king Vasudeva II - Kanishka III. A total of 7 pieces.
- c) An unknown coin whose period could not be determined due to severe damage to the images on the reverse and reverse sides as a result of a strong natural impact. Total 1 piece.

DISCUSSION**1-TABLE**

№	the name of the ruler	short story	weight	diameter	status
a-1	Vasudeva I	Aversi: A king standing upright in the center, facing the sacred altar on the left. Reverse: An image of the holy god Visha-Shiva standing next to a bull	6.44	23	archaeologically complete, good
a-2	Vasudeva I	Aversi: A king standing upright in the center, facing the sacred altar on the left. Reverse: An image of the holy god Visha-Shiva standing next to a bull	5.78	21	archaeologically complete, good
b-3	Vasudeva II-Kanishka III	Aversi: A king standing upright in the center, facing the sacred altar on the left. Reverse: The image of the goddess Ardox sitting on a throne with a symbol of animal husbandry on the left hand and a wreath on the right hand of the forward mind.	4.33	23	archaeologically complete, good
b-4	Vasudeva II-	Aversi: A king standing	5.40	18	archaeologically

	Kanishka III	upright in the center, facing the sacred altar on the left. Reverse: The image of the goddess Ardox sitting on a throne with a symbol of animal husbandry on the left hand and a wreath on the right hand of the forward mind.			complete, good
b-5	Vasudeva II-Kanishka III	Aversi: A king standing upright in the center, facing the sacred altar on the left. Reverse: The image of the goddess Ardox sitting on a throne with a symbol of animal husbandry on the left hand and a wreath on the right hand of the forward mind.	4.39	20	archaeologically complete, good
b-6	Vasudeva II-Kanishka III	Aversi: A king standing upright in the center, facing the sacred altar on the left. Reverse: The image of the goddess Ardox sitting on a throne with a symbol of animal husbandry on the left hand and a wreath on the right hand of the forward mind.	7.52	23	archaeologically complete, good
b-7	Vasudeva II-Kanishka III	Aversi: A king standing upright in the center, facing the sacred altar on the left. Reverse: The image of the goddess Ardox sitting on a throne with a symbol of animal husbandry on the left hand and a wreath on the right hand of the forward mind.	5.51	18	archaeologically complete, good
b-8	Vasudeva II-Kanishka III	Aversi: A king standing upright in the center, facing the sacred altar on the left. Reverse: There is an image of the goddess Ardox sitting on the throne with a wreath on	5.12	20	archaeologically complete, good

		the left hand and a wreath on the left hand of the forward mind.			
b-9	Vasudeva II-Kanishka III	Avers: A king standing upright in the center, facing the sacred altar on the left. Reverse: The image of the goddess Ardox sitting on a throne with a symbol of animal husbandry on the left hand and a wreath on the right hand of the forward mind.	6.94	22	archaeologically complete, good
c-10	"unknown" coin	Aversion: Images are not preserved due to external influences. Reverse: Images have faded from being in circulation for a long time.	4.40	21	archaeologically complete, satisfactory

Coins minted by the Kushan king Vasudeva I (a-1, a-2) usually have the same meaning as the images on all gold and copper coins [3]. The ruler's plot, standing next to the sacred altar on the Avers, repeats the style, tradition, in the coins of almost all the Great Kushan kings (except the Khuvishka coins). In depicting the reverse, we can see that Vima Kadfiz mimicked the plot of the coins. It is found in the territory of southern Uzbekistan and southern Tajikistan in archeological excavations and random finds, separately and as part of the treasury [5].

2-TABLE

Copper coins of the Kushan kingdom found as a result of archeological excavations in Dalvarzintepa and Kholchayon palaces.			
The name of the ruler	Dalvarzintepa		Kholchayon Palace. Found separately.
	Found separately	Found in treasures	
Soter Megas	12	-	16
Vima Kadfiz	7	4	2
Kanishka I	10	7	8
Xuvishka	8	-	6
Vasudeva I	14	21	16
Vasudeva II-Kanishka III	7	3	5

In the case of Vasudeva II or Kanishka III, which is currently being debated in numismatic scholars, in our opinion, E.V.

The coin of Kanishka III above (b-3, b-4, b-5, b-6, b-7, b-8, b-9) also depicts a king facing the sacred altar on the left, standing upright on the obverse. On the reverse is the image of the goddess Ardox, sitting on a throne with a symbol of animal husbandry on the left and a wreath on the right hand of the forward mind. III served as the main patron goddess for the coins. Like

many Kanishka III coins, these coins do not have inscriptions. As we can see in the table above [4], Table 2, even in the largest Buddhist centers and palaces of the Surkhandarya oasis, Kanishka III coins were not found as such a large amount of treasure.

CONCLUSION

In conclusion, we can assume that the kata part of these coins belonged to the same ruler (Kanishka III) and if we analyze the geographical point of discovery, we can assume that the kata was probably one of the seven strategic points before the Kushan-Sassanid period. As an example, we can cite the fact that Ulanbulaksay, which laid the foundation for its culture and, in turn, caused the crisis, is located on the very edge of consciousness. We intend to focus on the monument where this treasure was found in the upcoming 2022 summer archeological field research.

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IMPLEMENTED IN THE DESIGN: VARIOUS APPROACHES, ISSUES AND FUTURE TRENDS

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ABSTRACT

As a major research emphasis, the Recommender Systems (RS) has evolved to help consumers discover products online by giving recommendations that closely match their interest. This article offers an overview of accomplishments and the future direction in the field of Recommended Systems. It was thought that helping users cope with the issue of data overload was the initial goal of information retrieval systems or search engines, but what distinguishes suggested solutions from the existing search engines is the requirements of personalized useful and amusing. The "intelligent" aspect is what makes a suggestion more interesting and useful. Intelligence is one of the main methods of customization to know the interests of the user, anticipate the unknown preferences of the user, and finally give suggestions by matching the query and the content beyond a basic search. This study has resulted in many important results, which will allow current and the future generation researchers of RS to evaluate and define the roadmap of their research in this field.

KEYWORDS: *Filtering Techniques, Future Direction, Issues, Research Trends, Recommender Systems.*

1. INTRODUCTION

Unfortunately, almost every one of us has observed that these pleasant recommendations are not always successful in many situations, even with their best intention, because the taste of others does not always mean matching with that of ours. Sometimes these suggestions are biased as well (Fig. 1). Really, RS is a big insightful computer-based method that forecasts and aids individuals select things from a wide pool of online stuff on relying on the consumer adoption as well as usage. Most of the Internet users depend upon the RS in one or the other way. For example, prospective buddies are suggested by Facebook, movies in accord are indicated by you tube agreement, Matching jobs are offered by Glasspool, TripAdvisor gives us perfect vacation destinations, Goodreads suggests the books which are interesting and so on. E-Commerce sites use RSs to attract customers by using the goods that people are likely to want. This has allowed them to achieve an incredible sales increase. Which four-wheeler should I buy? "Which restaurant am I supposed to visit this weekend?" "Where do my family have to go to spend the holidays?" these are some of the examples of a very frequent queries for which our friends and acquaintances regularly seek suggestions.

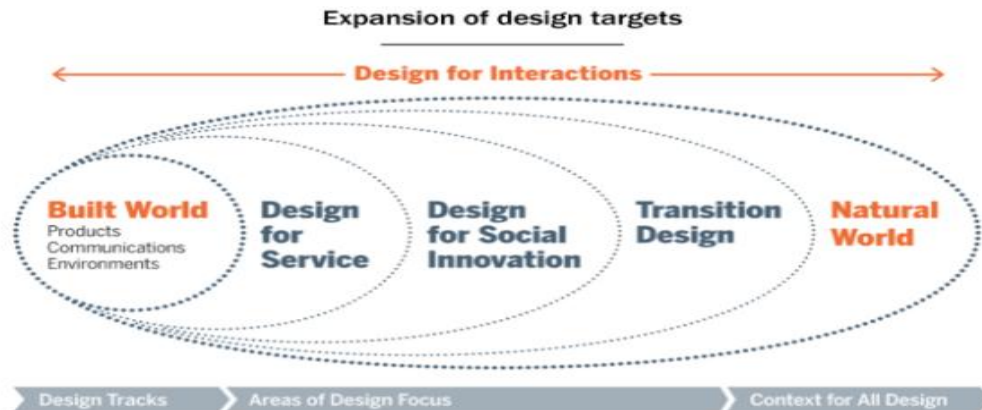


Fig. 1: People Anticipate That Design Plays The Function Of More Socio-Technical Interventions Such As Experiences, Services, And Societal Innovations.

These are not restricted for online businesses alone, but also there are many applications which eventually take benefits of RSs, to mention a few, social networks, entertainment sites, news through online portals and many more applications for knowledge management. In reality, in the communication technique between customers as well as the service suppliers, RSs have created a new dimension. Many businesses are progressively using RS techniques as an additional benefit to improve their customer services. While the RS implementation depends upon the unique recommendation method employed by the application and correspondingly, the basic work of the recommendation systems for all applications remains more or less the same. The main aim of recommendation systems is to help customers in aiding them in the process of decision-making so as to select an item via internet by promoting high accuracy recommendations in-hand. People from different fields like data processing, data retrieval, knowledge discovery, theory of approximation, theory of forecasting, artificial intelligence, information retrieval, business, marketing etc., have made important contributions to numerous research techniques. The research group has done a great deal of work to improve applicability as well as efficiency of RSs in the past few years [1]. To solve many of the technical problems, new techniques have been developed, such as providing more accurate recommendations while decreasing online computing time. A broad range of Artificial Intelligence methods have been integrated into recommended system research, including (ML) machine learning, data science, user simulation, as well as case-based reasoning. The concept of a smart computer that can think as well as learn like a human being has led to most of the humanized techniques which is known as Computational Intelligence (CI).

Social networking platforms have now emerged as a major arena for the application of RSs. Of course, these famous sites are considered as the main supplier of people-related information and therefore to be a wonderful choice for applying new and inventive methods to the suggestion, supporting the old strategies, in order to improve correctness [2].

There are many phases in the development of Recommendation systems:

- *Phase 1-Information collection:* Gathering the specific user information to build a profile of a user or say a model for purpose of prediction tasks, that includes characteristics of activities of the user, or resources that are being obtained by user is done in this phase. Till the profile

of the user or model of the system has been adequately created, an agent of suggestion cannot operate sent percent successfully. In order to give an open-ended suggestion right away from the outset, the system has to learn from the user as much as possible it can. Recommendation systems depend on various types of inputs, like the very much convenient feedback taken explicitly which are of standard quality, which includes input which are straight forward from users regarding their attentiveness in products or feedback which is implicit by implicitly inferring user likings via user behavior observation [3].

- a. *Explicit Feedback:* In order to develop and enhance its model, the system typically reminds the user via the interface of the system to give rankings for objects. The recommendation correctness really is dependent on amount of user ratings or rankings provided. The one and only drawback of this approach is that it takes user effort and users as such are not always ready to provide adequate information. It is even now regarded as providing more accurate data, in spite of the fact that more user effort is required for clear feedback and also offers clarity in recommendation process.
 - b. *Implicit Feedback:* Automatically, the system gathers the tastes of the user by monitoring different user behavior, particularly purchase history, history of browser, time spent on specific web sites, email content, and clicks of buttons. Implicit feedback lowers the burden on online users by inferencing the desires of their users from their device actions. This method is less precise compared to explicit input; however, no effort is required by the user.
 - c. *Hybrid Feedback:* To reduce their limits and achieve a better functioning system, the benefits of implicit as well as explicit feedback, both may be merged in a system called hybrid. This is done by making use of implicit data genuinely as an explicit rating audit, or by requiring users to provide explicit input only when showing explicit interest.
- *Phase 2-Learning Phase:* This phase uses any of the learning algorithms to clarify and to make use of the characteristics of the web users through the feedback received in the gathering process of data.
 - *Phase3-Prediction Phase:* This suggests or forecasts the kind of products or things that the customers would enjoy. SO, this is done instantly on grounds of data set acquired in the information gathering process that may be either model-based or may be memory-based by the user's recorded activities of the system.

To a system which can offer great and practical advice to the system's individual users, use of appropriate and accurate recommendation methods is very essential. This demonstrates the significance of knowing the characteristics and potential of various methods of suggestion.

Collaborative filtering: Collaborative filtering uses similarities between individuals and things simultaneously to offer recommendations in order to get rid of the constraints of content-based filtering. This allows for spontaneous recommendations which is based on likings of a similar user B, collaborative filtering models would offer an item to user A. In addition, without relying on hand-engineering of functionality, the embedding may be automatically taught. The technique of collaborative filtering works by creating a database of user likings or preferences for things. Then, people are matched with appropriate hobbies and likings or preferences to generate recommendations by evaluating the user profiles similarities [4].

- *Memory based technique:* In searching for a neighbor who shares recognition with him, the things which were previously enjoyed by the client before play an acceptable role. When a neighbor of operator is found, various methods are utilized to aggregate neighbors' preferences to produce recommendations. Widespread popularity was gained in real world applications due to the efficacy of these techniques. User-based as well as item-based approaches, are the two ways via which memory-based CF may be accomplished. Firstly, their assessments or rankings on the same item are compared. The user-based method computes the similarity between users. Secondly, the item-based method builds the forecasts considering the similarities among the objects but not that of users.
- *Model based technique:* To enhance the efficiency in Collaborative filtering, this method uses the previous rankings for building a model. Using the techniques like machine learning or data mining methods, the process of building the model may be completed. In reality, by making use of pre-computed model, truly may merely offer a collection of items and in fact have been proven to generate recommendation results which are close to neighborhood-based methods of suggestion. Learning algorithms have evolved a lot and have changed the method how suggestions are generated, in order to advise what consumers should consume, to indicate when a product should actually be consumed. Therefore, it is very important that the remaining learning algorithms which are utilized in this model-based recommendation systems be evaluated.
- *Association rule:* These algorithms bring out the rules which anticipate the presence of an item based upon the existence of other items in any transaction.
- *Clustering:* In various fields, clustering techniques have been used, notably design recognition, digital image processing, analytical data and information discovery. To identify meaningful classifications which exists among them, the clustering technique tries to split a collection of data based on the similarity features into a number of sub-clusters.
- *Decision tree:* The technique is modeled as per the tree graph methodology that is produced by evaluating a collection of training samples for which we establish the labels for the class. Then, there are utilized to identify cases previously not detected. If training is done on a very high quality of data, then accurate predictions may be expected.
- *Regression:* This technique is employed when a linear relationship is considered to consistently link two or more variables. It is a powerful technique of diversity to evaluate associative links among a dependent variable as well as one or more independent variables. Regression uses curve fitting, estimate, and a very systematic hypothesis among connections between evaluations of variables.

- *Artificial Neural-network (ANN)*: This is a composition of many linked neurons (nodes) that are organized in systematic ways in layers. Depending on the degree of impact that one neuron has on another neuron, the connections of neurons will have weights connected with them. In some specific problem scenarios, the use of neural networks provides certain benefits. For example, an ANN is very much resistant to noisy as well as data sets which are erroneous since it contains many neurons, additionally it distributes weight to every connection.
- *Link Analysis*: This is a method of building connected object networks in order to evaluate trends and patterns. It has created tremendous potential for improving the efficiency in internet searches. Link analysis includes methods for Page Ranking as well as HITS. A web page is considered by most of the link analysis algorithms as a distinct node in the graph of web.

2. DISCUSSION

It is difficult to notice or understand the reader's satisfaction with the article, to know whether the user is really liked the piece or not, without clear news reader feedback [5]. By using communal or CB- filtering techniques, the explicit input of a user may play a significant role in accurate recommendations of the material to users who are the same news readers. Predicting the future interest of the user is extremely tough and incredibly complex in the field of news for all types of user-based recommendations. While some of the events occurring [6], e.g. a news, the needs of the client may be altered. Readers may be interested in reading articles about a World Cup season football match.

In order to achieve better device optimization, the hybrid filtering technique mixes various methods of suggestion to avoid certain disadvantages and problems experienced by some pure or clear recommendation systems [7]. The concept behind hybrid techniques is that algorithms are combined to provide recommendations that are more accurate and efficient when compared to those of a single algorithm, because one algorithm may solve the limitations of another algorithm [8]. In a combination model, integrating several recommendation techniques will minimize the limitations of a single strategy. In any of the following ways, the combination of methods is done: separate implementation of the algorithm and outcome combination, using few content-based filtering methods in collaborative mode, or using few collective filtering methods in content-based technique by generating a single reference framework that carries all approaches organized.

When the sparsity grows, a greater number of things are presented to the scheme, this issue will be more frequent in the news domain, for instance, in a continuous way, current news when published online and the number of news items increases rapidly [9]. Commercial websites are progressively embracing the suggested techniques since they may be used to substantially increase the income of merchants without demanding participation. The suggested techniques are being used to highly rate their own goods or product of their own and there are possibilities of showing substantially less ratings of other competitor items and other types of assaults, such as shilling attacks or attacks through profile injection [10].

3. CONCLUSION

It will always be a tough and complex job to make a choice amongst various alternatives based on large amount of data available online. Recommendation systems (RS) through internet help us to handle this. RSs utilize effective information extraction and filtering methods to do their job professionally and properly. In this article, we provided the basic knowledge of recommendations systems, general classes, sub-categories, their problems along with future possibilities. The research methodology, data collection methods, inclusion & exclusion criteria were clearly described. This paper's major aim and main emphasis is to monitor the advances in RS research. A few interesting statistics have emerged. Most RS analysis, for example, depends on collaborative filtering and knowledge-based techniques. We are confident that numerous new and creative pathways of technologies such as Cognitive Computing, Artificial Intelligence, Internet of things and many more cutting edges will be seen in future RS research. By studying personal patterns and behaviors, suggestions would be more personal and personalized. Digital reality that will engage consumers in more customized buying will be used by RSs. Future RSs are going to highly intelligent, immediate responsive, linked and secure with the easy technologies like virtual reality and potential of data. The RS of the future will infiltrate our everyday life. By monitoring our everyday activities, like walking, talking, breathing, sleeping, eating and gathering vital data, they will keep a record of our routines.

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CLOUD RELATIONAL DATABASES IN ISLAMIC EDUCATION INSTITUTIONS

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ABSTRACT

Database Management Systems are observed to operate in distinct environments within organisations. These environments are classified as 'Corporate' and 'Devolved', and different types of database management systems are considered as more appropriate to each. When designing any information system, there are problems of ensuring information security and data protection from unauthorized access to confidential data. The dominant components of information security for cloud information systems (the core of which is a cloud database) are confidentiality, structural stability, and secure access control. The database administrator regulates confidentiality issues and secures access control. However, the problem of ensuring the data structural stability is solved in advance, at the stage of database design. Structural stability is ensured by maintaining the database integrity. Data integrity in cloud information systems guarantees the correct operation of the entire system. The application of an abstract mathematical tool through categories creates a theoretical basis to study data integrity. Data integrity of cloud systems is achieved by solving a variety of problems, among which the dominant ones are to ensure the integrity of domains, the integrity of tables, and referential integrity. The applicability of the methods of category theory, namely, the argumentation of the categorical description of the tasks of maintaining the integrity of domains, the integrity of tables, and referential integrity is presented in the article. The categorical description allows us to represent the cloud information system as a dynamic system. The corporate database is closely associated with an evolutionary model of the entire organisation, whereas each devolved database is a tool used by an individual or group to analyse information necessary to that person's function within the organisation. The requirements for a Restructuring Mechanism to allow a corporate database to be altered in structure to reflect alterations in the organisation and enhancements to the model are identified. Conclusions are drawn that a Restructuring Mechanism is an essential ingredient for a Database Management System, to allow the database to reflect the ever-changing structure of an organisational data model. Areas where future research is likely to be fruitful are identified, and it is suggested that the classification of corporate and devolved will be useful in this respect.

KEYWORDS: *Table Integrity, Morphism, Cloud Information System, Categorical Description, Structural Stability, Data Integrity, Mechanism.*

1. INTRODUCTION

The necessary resources of electronic libraries, machine learning, and artificial intelligence are stored in databases (DB). DB is universal storage of information in all automated information systems. At present, the database is a cloud service of a cloud information system (CIS). The CIS, as one of the last paradigms of distributed data processing, is widely included in our life [1].

Cloud information systems provide easy and convenient access to shared computing resources via the Internet. Computing resources are the data transmission networks, servers, storage devices, application programs, service applications, etc. In the field of cloud computing, most service providers not only provide access to cloud computing platforms but also create specialized cloud computing systems that meet technological and the customer's regulatory requirements. The CIS have a number of advantages [2], namely, increased flexibility and responsiveness of the system.

Less time is spent on initiating, configuring, tracking, and building cloud environments. It is possible to instantly launch the user's application on any computing hardware infrastructure, and if there is no such virtual server, then you can download a ready-made virtual machine with an installed and configured server from libraries prepared in advance according to user requirements. The accessibility of applications was increased and the continuity of operation of virtual CIS environments was ensured. The use of software setting increases the manageability of the CIS infrastructure. This system reduces the time spent on server administration, provides load balancing and on-line migration of virtual machines. The list of its shortcomings is reflected in [3].

The core of the CIS is the database. Currently, there are two most common ways of developing the CIS. The first way: at the initial stage, the basic form of the CIS is developed, and then it is transformed into a cloud service. The second way: first, the type of cloud is formed, and then all developments are implemented in the cloud [4]. In both cases: in the CIS development and deployment, it is necessary to ensure the integrity of the information in databases. Data integrity means that all data accumulated in the CIS DB are collected in accordance with some predetermined rule and do not contradict each other. In modern databases, a relational database management system is widely used [5]. The relational model in a relational database has a set of established rules to ensure data integrity. Rules are used to ensure the integrity of information in relational database. Domain constraints, table constraints, and referential constraints can be considered as these rules.

Due to the lack of theoretical argumentation for the data integrity maintenance in the basic structure of the CIS, we propose a categorical description as a universal method of presenting the data integrity maintenance in the CIS.

The relevance of the presented method lies in the fact that fraudsters and hackers attack information resources. Therefore, a colossal number of risks arise in the field of information security. It should be noted that ignoring emerging problems could lead to a loss of competitiveness at the state and corporate levels.

At the same time, not only organizations and enterprises but also ordinary citizens who use gadgets and other means of communication suffer from crimes in the information sphere. The urgency of the threat to the integrity of information and data requires to solve the task of its

protection. It is worth noting, that 20 years ago, the task of ensuring information security was solved by using encryption algorithms, installing firewalls, differentiating access, and so on.

Today, these technologies are not enough, and, so, almost any information of a financial, competitive, military or political nature is threatened. Especially if this data is in the cloud. Therefore, there appear new methods of ensuring information security of information systems, among which we can mention the methods given in [6].

In particular, the article discusses improved query performance at the stage of generating and analyzing NO-relational data. For this, no clustered indexing and map-reduced data cube numerosity reduction method are used. In [7], a hybrid model for assessing information security risks is proposed. The hybrid model is based on threat modeling methodology. Systematic threat analysis allows IT-risk management in the integrated process of information system functioning. In [8], to protect accounting information the cryptography methods with block chain technology were used. In articles [9] and [10], the issues of security of using data in end devices that are clients of cloud services are considered.

The categorical description given in this article presents an innovative method of description of the data integrity maintenance of a cloud information system. The novelty lies in the fact that the basic concepts of parallel algorithms and logical structure can be specified through formalization. In addition, this method has the ability to add new mathematical structures capable of investigating the spatial, structural, and temporal properties of the logical structure of the system.

Theoretical and historical preconditions

Category theory, in general, is a branch of mathematics that studies the properties of the relations between mathematical objects that are not dependent on the internal structure of objects. The theory of categories occupies a key place in modern mathematics, and this section of mathematics is actively used and implemented in computer science, logic, theoretical physics, and other fields of science.

American mathematicians Saunders MacLaine and Samuel Eilenberg are rightfully considered the founders of the category theory, which is one of the brightest and most controversial achievements of the 20th century. The theory of categories together with the theory of sets serves as the universal language of modern mathematics. Categories, functors, and their natural transformations are widely used in all mathematical sections as a convenient means of considering various structures in a uniform way and formulating general properties of various structures. The significance of the theory of categories cannot be reduced to the narrow boundaries of the convenience of its expressive possibilities. This theory substantially changed the views on the foundations of mathematics, expanded the boundaries of freethinking. Within the framework of category theory in the 1960s, one of the most ambitious mathematical projects of the 20th century was implemented - the socialization of set-theoretic mathematics. The theory of topos was developed, providing a broad class of categories within which ordinary set theory can be perceived as an ordinary individual theory.

Today, there is a tendency to increase research work on the application of category theory in various fields of natural science, including the study of information technology problems.

The categorical approach was proposed in [11]. That article investigates the consistency of the theory of homotopy types with the concept of a category. Identity was established between the models of an abstract bundle in the axiomatic homotopy theory with models of object mapping that have a weak ortho-factorization. The study in [12] describes the possibility of representing an algebraic model using a polymorphic abstract theory, in particular, the admissibility of representing objects in the form of a polymorphic structure using a categorical description.

In [13] the category theory is applied to solving problems in the field of computer science. A category of algorithms is created with the values of input and output variables. In [14], the application of category theory in all areas of modern mathematics is argued. Numerous examples from various branches of mathematics are given where category theory can be applied.

The basic grounds of category theory are described in [14,15] and other publications.

2. PROBLEM STATEMENT

We introduce the concept of a category as follows [16]. Let a set of objects $K_o = \{K_{o_1}, K_{o_2}, \dots, K_{o_m}, \dots\}$ be given and K_M be a set of morphisms between objects K_o , i.e. $K_M = \{H_{K_o}(K_{o_i}, K_{o_j})\}$, where $H_{K_o}(K_{o_i}, K_{o_j})$ are the morphisms between elements $K_{o_i}, K_{o_j} \in K_o$. Then the class of sets K_o and K_M is called categories of K if the following conditions, presented in table 1, are met:

TABLE 1 - CONDITIONS FOR A CLASS OF SETS

Conditions	$\forall A, B \in K_o \rightarrow H_{K_o}(A, B) \in K_M$
	Each morphism from K_M belongs to one and only one of the sets $H_{K_o}(A, B)$
	A private internal law of composition is introduced in class K_M , i.e. the product $\alpha * \beta$ of morphism $\alpha \in H_{K_o}(A, B)$ by morphism $\beta \in H_{K_o}(C, D)$ is defined if and only if the object B coincides with the object C . In this case $\alpha, \beta \in H_{K_o}(A, D)$. The composition of morphisms is associative: $(\alpha * \beta) * \gamma = \alpha * (\beta * \gamma)$
	Each set $H_{K_o}(A, A)$ contains a morphism 1_A called an identity or unit morphism of object A , such that $\alpha * 1_A = \alpha$ and $1_A * \beta = \beta$ for all $\alpha \in H_{K_o}(X, A)$ and $\beta \in H_{K_o}(B, Y)$, where $A, X, Y \in K_o$

The concept of morphism is a more general concept that means the interaction between objects. The morphism, depending on the considered situation, can be a correspondence, mapping, isomorphism, homomorphism, etc.

The purpose of this article is to show the applicability of the category description for solving the problem of data integrity maintenance in the basic structure of the CIS.

3. SOLUTION METHOD

Argumentation of a categorical description of a domain constraint in a relational database. The relational model is based on the concept of "relation" [17]. A relation is defined as a subset

of the Cartesian product of domains. A domain is a set of specific relations. The element of relations is characterized by some attribute or property. Mapping is considered as a morphism.

Let us assume that the following domains are specified D_1, D_2, \dots, D_n . Their Cartesian product D is defined as follows $D = D_1 \times D_2 \times \dots \times D_n$; here $D_i = \{d_{i_1}, d_{i_2}, \dots, d_{i_n}\}$ and $1 \leq i \leq n$. $\forall d \in D$ are called a tuple of elements n and are defined as $D = \{d_1, d_2, \dots, d_n\}$, where $d_i \in D_i, 1 \leq i \leq n$. Classically, relation R in a Cartesian product D is defined as $R \subset D = D_1 \times D_2 \times \dots \times D_n$. That is, a relation is a set of tuples that consist of n elements. In other words, the elements of relations are tuples. The number of elements in a tuple determines the length of relation. If a tuple consists of n elements, then relation R also consists of n elements. Since a relation is a set, it should not have two identical tuples.

Besides, it doesnot matter what order the tuples are in relation. In a relational database, a relation is conveniently represented in the form of a table. The column of this table corresponds to the domain, and the domain is the component of the Cartesian product. Each row is a tuple, the length of which corresponds to the number of domains in the Cartesian product. The table displaying the relation has the properties shown in Figure 1:

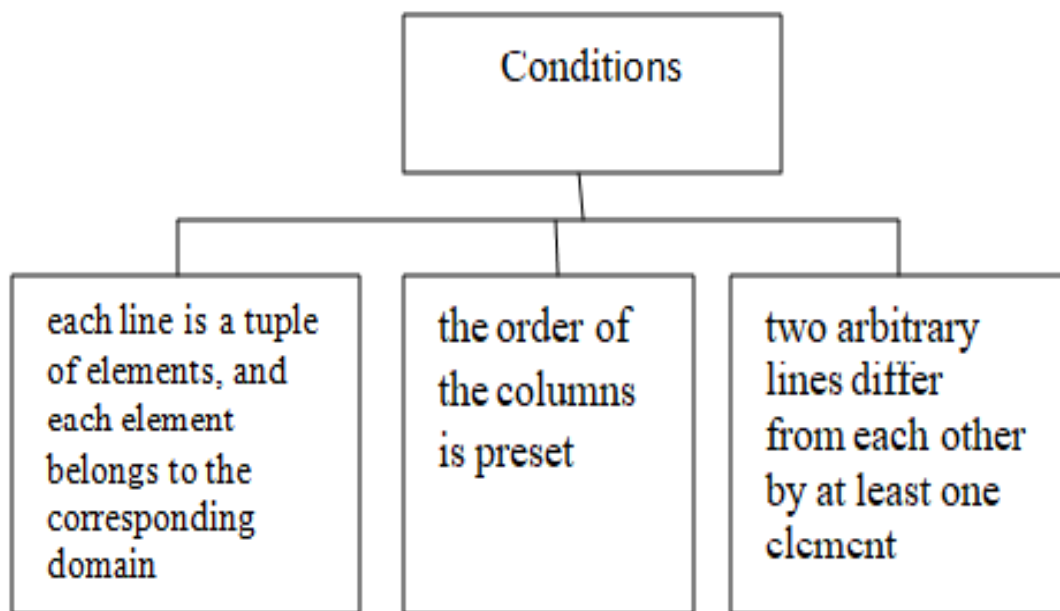


Figure 1. Basic properties of a table displaying relations

Within the meaning of data processing operations, tuples can be processed in any order. Suppose that mapping $f: D \rightarrow N$ is given, i.e. mapping f shows the Cartesian product D to the set of natural numbers N . In [10], it was proved that such a mapping is a bijective mapping. Bijectivity of mapping f ensures domain integrity. In addition, for a bijective mapping, there is an inverse mapping f^{-1} , which is also bijective. $f * f^{-1} = 1_A$ is true for f and f^{-1} .

Hence, there is a single mapping for mapping f . Now it remains to show the existence of a composition of mappings. Let $\alpha \in H_{K_o}(A, B)$, $\beta \in H_{K_o}(B, C)$, $\gamma \in H_{K_o}(C, D)$. This means that $A, B, C, D \in K_o$. Then $(\alpha * \beta) * \gamma = \alpha * (\beta * \gamma) : A \rightarrow D$, or $(\alpha * \beta) * \gamma, \alpha * (\beta * \gamma) \in H_{K_o}(A, D)$, where $A, B, C, D \in K_o$. Thus, all the conditions of the category are met.

The objectivity of mapping $f: D \rightarrow N$ means that there is a primary key that one-to-one identifies the rows of the table. This key allows us to set such an order in the table that its rows are exactly different from each other since the two values of natural numbers do not match.

Ensuring domain integrity means that inter-table links in a relational database are reliable in a well-defined order. Ensuring data integrity in a database is quite a serious and difficult task. The argumentation of the category description means that the methods of category theory can be applied to this direction of research [16].

Argumentation of the categorical description of the table constraint. One of the internal constraints of data integrity is the integrity of the entire table, i.e. each row of the table must be unique. If this constraint is applied to a table, then each row of the table is uniquely identified.

In order to establish the integrity of the entire table, at the time of its creation, it is necessary to define one column or a group of several columns as the primary key. The unique value of the key field must enter every row of the table.

This means that each row has a unique value of the primary key. If there is a complex key, then the row must have a group of column values. The key field value cannot be NULL. A table can have only one primary key. In many cases, programmers must consider using the primary keys of other tables. To do this, the programmer, when creating the table, enters another alternative or unique key. Alternative and unique keys can be the primary keys in their own tables.

To argue the table integrity in relational databases, we will proceed as follows. Let S_1, S_2, \dots, S_n be the columns of a relational table, and $S = S_1 \times S_2 \times \dots \times S_n$ be the Cartesian product of these columns. For $g: S \rightarrow N$ a mapping presents a Cartesian product on a set of natural numbers. Under these assumptions, the following assertion is true: $(\eta * \mu) * \tau, \eta * (\eta * \tau) \in H_{K_o}(S^1, S^4)$.

ASSERTION. To ensure the integrity of table values S , mapping g must be bijective.

Proof. Firstly, $\forall s \in S, s = \{s_1, s_2, \dots, s_n\}, s_i \in S_i, 1 \leq i \leq n, \exists m \in N \Rightarrow m = g(s)$. That is, mapping g is an injective mapping, because the table S consists of a set of tuples, and the corresponding number from the set N can be found for any tuple.

Secondly, $\forall s^1, s^2 \in S$ and $s^1 \neq s^2 \Rightarrow m_1 = g(s^1) \neq m_2 = g(s^2)$.

That is, the mapping is a g -surjective mapping because the table consists of a set of tuples, and two arbitrary tuples differ from each other by at least one element. By the property of relational databases, a table cannot contain rows with matching values.

Since g mapping is injective and surjective, it is bijective. The assertion is proven. An important consequence of this assertion is that a primary key is defined in a table, which is used to establish

the order in the table. This established order is responsible for maintaining the table values integrity.

Further considerations are similar to maintaining the domain integrity. For a bijective mapping, there is an inverse mapping g^{-1} , which is also bijective. $g \circ g^{-1} = 1_A$ is true for g and g^{-1} . Hence, there is a single mapping for g mapping. Now it remains to show the existence of a composition of mappings. Let $\eta \in H_{K_o}(S^1, S^2)$, $\mu \in H_{K_o}(S^2, S^3)$, $\tau \in H_{K_o}(S^3, S^4)$, where S^i is the i -th object from the set of objects K_o . It means, that $C = N_1 \times N_2 \times \dots \times N_n$, $S^1, S^2, S^3, S^4 \in K_o$. Then $(\eta * \mu) * \tau = \eta * (\mu * \tau): S^1 \rightarrow S^4$, or $(\eta * \mu) * \tau, \eta * (\mu * \tau) \in H_{K_o}(S^1, S^4)$, where $S^1, S^2, S^3, S^4 \in K_o$. These calculations allow us to assert that the methods of category theory are applicable here.

Argumentation for referential constraints maintenance or referential data integrity in relational databases. Data integrity is another elementary rule of the standard trust model. The integrity of an association determines the relationship between various columns of a table and a table in a relational database.

This name comes from a reference or match to a column of a column's value or multiple columns. A number of new terms come up when describing referential integrity. The column (or columns) that is linked to another table is called a foreign key. In this case, the column must be a parent key (or primary or unique key) that directs the table to another table.

The foreign key or extension is in the table, and the inherited key is in the inherited table. If the origin and appearance are within the same table, this is called a closed relation (self-reliance).

The argumentation for ensuring referential integrity in a relational database is based on the concept of "relation". Relations are subsets of Cartesian product of domains.

A domain is a set of elements, and elements are added to this set in accordance with predefined properties.

Assume that the following domains N_1, N_2, \dots, N_n are given, and their Cartesian product C is defined as $C = N_1 \times N_2 \times \dots \times N_n$. Here $C_i = \{c_{i_1}, c_{i_2}, \dots, c_{i_n}\}$, where $1 \leq i \leq n$. $\forall c \in C$ is called a tuple of n elements and $c = \{c_1, c_2, \dots, c_n\}$, $c_i \in C_i, 1 \leq i \leq n$ is true for it.

The concept of relation R is introduced as $R \subset C = C_1 \times C_2 \times \dots \times C_n$. That is, a relation is a subset of Cartesian product of domains and is a set of n -dimensional tuples. The number of elements in a tuple determines the number of elements in the relation. In a relational database, a relation is represented as a table. The column in this table corresponds to the domain that is the component of the Cartesian product. Each row is a tuple, the length of which corresponds to the number of domains.

Since a relation is a set, therefore no two identical elements are allowed. We introduce mapping $\delta: C \rightarrow N_1 \times N_2 \times \dots \times N_n$. It maps the Cartesian product of domains by the Cartesian product of natural numbers.

For each N_i , the mapping $\varphi: C_1^i \times C_2^i \times \dots \times C_n^i \rightarrow N_i$ must be true, where C_k^i are the domains of the primary table, and N_i are the set of values of foreign key. In turn, N_i is a primary key for tables

where domains C_k^i participate; here $1 \leq k \leq n$. From these considerations, it follows that the fidelity of mapping δ is the guarantor of referential integrity in relational database tables.

One of the most important functions of a relational database is the ability to interconnect data from different tables and ensure the application of referential integrity of data in the basic structure of the CIS. A relational database management server efficiently stores data due to the ability to interconnect data from different tables. This option reduces data overflow in database tables. Excessive information and lack of data in tables cause data integrity problems.

Referential integrity ensures that each value of foreign key matches the inherited key value. Thus, referential integrity not only identifies potential foreign key values but also ensures manipulation integrity when performing operations on the inherited key. For example, suppose a table has two referential integrity constraints. The first referential constraint is a reference to another table that in cascadedeletes that referential integrity through the application. This operation cannot be performed because to delete the row corresponding to the inherited key, all rows associated with the descendant key must be deleted.

The domain mapping of itself meets the requirements of a single morphism. A single mapping does not change the domain structure. The composition of the mappings is defined as follows. If we consider a domain as a set, then for two sets A and B by $H_{K_0}(A, B)$ we mean the set of all mappings A in B , and by composition $\delta * \varphi$ we mean the usual composition of mappings [15]. In this case, K_O and K_M together form a category. So, the categorical approach is also applicable to the study of referential integrity.

4. RESULTS

Using the methods of universal algebra, the applicability of categorical descriptions for solving problems of data integrity maintenance in relational databases was proved. The problem was solved by staged argumentation of the category description of domain constraints, table constraints, referential integrity constraints of data in relational databases.

The argumentation of the categorical description of the domain constraints is based on the assertion about bijectivity of mapping $f: D \rightarrow N$, where $D = D_1 \times D_2 \times \dots \times D_n$ and N – is the set of natural numbers. The bijectivity ensures the domain integrity maintenance by one-to-one identifying the rows of the table. In the case of the table restraints, the assertion about the bijectivity of the mapping $g: S \rightarrow N$, is proved, where $S = S_1 \times S_2 \times \dots \times S_n$ and N – is the set of natural numbers.

The bijectivity of inverse mapping g^{-1} is also proved. An important result of this assertion is that a one-to-one assertion allows us to compare table rows with a set of natural numbers and to define the primary key forth rows. The primary key forms the order in the rows of the table, and this order is responsible for maintaining the integrity of the table values. At the next stage, the possibility of categorical description of the referential integrity of data is argued. In the process of arguing the categorical description of the referential integrity of data, the relation between the values of the foreign key and the value of the inherited key is shown. This relation acts as a guarantor of the referential integrity maintenance of inter-table links.

Advantages of relational databases. There are plenty of good reasons why relational databases have become the standard in electronic data processing. The following aspects highlight the benefits:

Simple data model: relational databases are based on a data model that is comparatively easy to implement and manage. Plenty of information – like customer data, order lists, or account movements – that companies may want to store long-term can be represented easily using the table structure that the relational database model is based on.

Low data redundancy: the relational database model specifies precisely defined rules for redundancy avoidance with the various normal forms. If normalisation requirements are consistently implemented, relational database systems more or less enable redundancy-free data storage. This simplifies the maintenance and servicing of data, since changes only have to be made in one place.

High data consistency: normalised relational databases enable consistent data storage and so contribute to data consistency. Relational database systems also offer functions that allow integrity conditions to be defined and checked. Transactions that endanger data consistency are excluded.

Quantity-oriented data processing: the relational database system is based on quantity-oriented data processing whereby each entity is broken down into atomic values. This makes it possible to link different entities through their content, as well as complex database queries like JOINS.

Uniform query language: for queries concerning relational databases, the data base language SQL, standardised by a committee from the ISO and IEC, was developed. The purpose of this standardisation is that applications can be developed and executed mostly independently from the underlying database management system. However, support for SQL still varies greatly depending on the DBMS.

Disadvantages of relational databases. Depending on what situation you are using a relational database for, advantages like the simple table-based data model and the distribution of data to several linked tables can also be interpreted as a disadvantage. Furthermore, central features of the relational data model are difficult to reconcile with modern requirements for application programming (like object orientation, multimedia, and big data).

Tabular data display: not all data types can be compressed into the kind of rigid schema required by interconnected two-dimensional tables (impedance mismatch). Abstract data types and unstructured data that occur in connection with multimedia applications and big data solutions cannot be mapped in the relational database model.

No hierarchical database schema: unlike object databases, relational databases offer no option to implement database schemata with hierarchically structured classes. Concepts like subordinate entities that inherit properties from higher-level entities cannot be implemented with them. For example, you cannot create sub-tuples with them. All tuples in a relational database are on the same hierarchy level.

Data segmentation: the basic principle of a relational database systems of dividing information into separate tables (normalisation) inevitably leads to the data being segmented. Related data is not necessarily stored together. This database design results in complex queries across multiple

tables at application level. The resulting high number of queried segments usually also has a negative impact on performance.

Poorer performance compared to NoSQL databases: the relational database model places high demands on data consistency, at the expense of write speed for transactions.

5. CONCLUSION

The categorical approach used in this article to describe the data integrity makes it possible to involve the highest achievement of the theory of functional analysis and universal algebra in solving information security problems. This enriches the tools for studying the structural stability of cloud databases. By strengthening the mathematization of the research apparatus, the rigor of reasoning and logical conclusions is increased. The advantages of this approach are manifested in the fact that the details of the analysis of the possibility of categorical descriptions of data integrity are transferred to the space of universal algebra and research tools become laconic and compact. Furthermore, the categorical approach is a kind of bridge that attracts the latest research achievements of category theory to solving practical problems of ensuring the structural stability of relational databases.

This is especially important when designing the service delivery in the form of a database. Because, unlike other types of distributed information processing, cloud systems are characterized by a high degree of dynamic virtualization and scalability. The categorical approach, unlike other methods, is precisely aimed at studying the dynamic processes occurring within the cloud information system.

In the future, it is planned to develop a working tool for the practical implementation of the solutions presented in the article, using the capabilities of functional programming, and to assess the impact of this approach on the overall performance of the cloud information system. In business areas where **transaction data processing** is at the foreground, relational databases in particular offer numerous advantages. Data on customer campaigns or marketing measures can be ideally mapped in tabular systems. Users also benefit from syntax that enables complex queries despite being relatively simple.

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THE USE OF GAMING TECHNOLOGIES IN TEACHING RUSSIAN IN TECHNICAL UNIVERSITIES

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ABSTRACT

This article discusses the benefits of using a number of games in teaching Russian to increase students' vocabulary. We are convinced that memorizing new words through games is convenient for everyone and makes the process easier. In the game we mentioned above, during class, 15 items in the classroom are placed on the table, and students come and look at these items. Currently, teachers are looking at the impact of Arsenal in the study to introduce the world to the rich culture and traditions of the country's culture and traditions. A real way to preserve cognitive motifs is for students to "include activities in mastering the Russian language in an activity that has a certain personal meaning".

KEYWORDS: Game, Russian, Student, Education, Creativity, Ability, Information, Intelligence, Technology, Activity, Teaching

INTRODUCTION

The task of education today is to teach students to work independently in a growing information learning environment, the effective use of modern information technology in various fields and the rational use of information flow. To this end, it is necessary to create opportunities and conditions for continuous independent work of students, as well as to teach them to think creatively and make independent decisions. [1]

The solution to this problem, of course, depends on the quality of teacher training, which is the main organizer of this process. The future of any society is determined by the level of development of its education system, which is an integral part of it and a vital necessity. Reforming and improving the system of continuing education in our country, which is moving forward on the path of independent development, raising it to a new level of quality, introducing advanced pedagogical and information technologies and increasing the effectiveness of education has become a state policy. The ongoing socio-economic reforms in our country also highlight the need for specific changes and innovations in the education system. [2]

In recent years, there has been a significant increase in interest in the Russian language. It is recognized as the language of professional communication in various fields of activity. The most important task of a teacher is to encourage students to learn Russian. Currently, teachers are looking at the impact of Arsenal in the study to introduce the world to the rich culture and traditions of the country's culture and traditions. Ways and means of shaping all types of speech will be reviewed: reading, speaking, listening, letters. Activation of the learning process, stimulation of cognitive activity, traditional lessons, along with game technology, help to

implement the learning process. The reason for such a great interest in different games is, first of all, the abandonment of traditional forms and methods of teaching. It should also be noted that there is a decline in maintaining a sufficiently high motivation. kicrobitiv interest in learning a foreign language. This phenomenon occurs because students face some difficulties as they get harder. Entertainment, which is one of the ways to encourage education and enlightenment activities, allows you to take advantage of all levels of learning. Consequently, the interest in using game technology in foreign language lessons is not accidental. [3]

Game technology is one of the current issues of didactics to increase students' ability to learn as a condition for creating a motivational basis for learning the Russian language. A real way to preserve cognitive motifs is for students to "include activities in mastering the Russian language in an activity that has a certain personal meaning". Motivation determines the importance of what students know and learn, their attitude to the field of education, and their attitude to its outcomes.

Is the science of "Computer Science" being taught effectively, which is aimed at gaining knowledge of modern information technologies, which are now rapidly being introduced in all areas? Are students gaining basic skills in working with information technology for their careers? Can all teachers today design lessons correctly? What factors determine the effectiveness of a lesson? It is a pity that we cannot answer such questions positively at the moment. According to the survey, in some groups of educational institutions in the country, students received relatively low scores in the control of computer science. [4]

This is a low quality indicator. As a student in the field of education today, he she should be able to effectively use modern software, hardware and communication tools to continue the next stage of education, in particular: knowledge of the role of information and information technology in modern society. have the skills to receive, collect and process information as an information management tool; working in global computer networks and using them to obtain useful information and use it to develop creative thinking.

There are a number of fun games in the process of teaching Russian. It should be noted that language games should be used in teaching children so that all students participate equally and learn something new from the lesson (for example, new dictionaries can be memorized, if this process is repeated every day, the student can dictionary richness rises to a higher level). It is inappropriate for students to start learning Russian with grammatical concepts, as it can quickly bore students, especially younger ones. As a result, interest in the Russian language may fade. It is even necessary to start the process of greeting them in an unconventional way, for example, with the arrival of the teacher, an effective way to start the lesson with a greeting Russian song. This way, students will not lose focus on each task during the lesson. They even look forward to Russian lessons. Of course, all this must be organized by the teacher, and it is the responsibility of the educator. So here are some games to make learning Russian fun.

Role-playing games can be used to increase the effectiveness of Russian language lessons. The advantage of this game is that it is based on the situation. This game is not only useful for the study of science, but also helps to develop mental abilities. In this game, topics are selected and students create dialogues. For example, a conversation between a passenger during a taxi stop, or a conversation in a clothing store - all this is done both in Russian and in Russian. In this game, we can use the tactic of working in groups, that is, dividing students into groups and dividing

them into different topics. In this case, competition also arises. Competitiveness is a measure of success, and the more students who do well, the more motivated the rest of the students will be. It is also advisable to use didactic games to make Russian lessons meaningful.

OBJECT - This game is designed to increase students' vocabulary. We know that the most important part of studying Russian is to memorize a new word. Given the character of the students, each student memorizes a dictionary in their own way. We are convinced that memorizing new words through games is convenient for everyone and makes the process easier. In the game we mentioned above, during class, 15 items in the classroom are placed on the table, and students come and look at these items. The items will be covered and then students will be asked to write down what they saw in Russian for a certain period of time. The student who spells the most words correctly wins. In order to ensure the quality of this game, I can say that in order to involve the students who are in the same situation, who did not participate, in the lesson, it would be expedient to ask them to make one sentence on the names of these objects, and this also prevents indifference.

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DEVELOPMENT OF TECHNOLOGY FOR OBTAINING COMPOSITE THERMOSETTING EPOXY POLYMERIC MATERIALS OF MACHINE-BUILDING PURPOSES WITH HIGH ELECTROPHYSICAL AND ANTIFRICTION AND STRENGTH PROPERTIES

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ABSTRACT

Today in the world polymeric materials are widely used in many industries. Polymer materials applied in the form of thin films to metal surfaces withstand high loads, provide better heat dissipation and are less prone to dimensional changes than molded polymer parts. The use of composite polymer coatings with high electro physical and antifriction-strength properties in the working bodies of machines and mechanisms is of particular importance.

KEYWORDS: *Development, Epoxy, Composite, Thermosetting, Electro Physical, Strength.*

INTRODUCTION

The development of scientific and methodological principles for obtaining electrically conductive and antifriction and strength composite thermosetting epoxy materials and coatings based on machine-building purposes by one of the promising directions in the field of creating highly efficient production by composite thermosetting materials and coatings of them are the development of original technologies for their preparation, allowing to obtain composite thermosetting epoxy Polymeric materials using organic ingredients from local and secondary raw materials of engineering purposes. [1]

Consequently, composite polymeric materials operated by friction with fibrous materials should be distinguished by a number of features. Thus, they must primarily have high adhesive strength, microplace, electrical conductivity and, accordingly, low friction coefficient and electrical resistance, as well as high resistance to interactions to different temperature and abrasive media.

Adjusting electrophysical and antifriction and strength properties with the simultaneous provision of high adhesive strength, micro hardness, electrical conductivity due to the introduction into the polymer of various organic-mineral fillers made it possible to develop composite thermosetting epoxy polymer materials with high electrical conductivity, adhesion and antifriction properties, as well as hardness. [2]

We are based on numerous test results analyzes, scientific and methodological principles of obtaining composite thermosetting epoxy polymeric materials and coatings of them were developed using organic ingredients from local raw materials and waste production.

The calculated amount of Epoxy oligomer ED-16 and fillers is dried in a drying cabinet in order to remove moisture at a temperature of 373 K for 2 hours.

The oligomer is cooled to 323-333 K. The dosage procedure is then carried out, i.e. All components are weighed in the calculated quantity.

The first in the resin is adding a DBF plasticizer. The mixture is thoroughly mixed with the help of an electromotive to obtain a homogeneous mass. It is then added to the mass of graphite, kaolin, talc, iron powder, and dr. The mixture is also thoroughly stirred to completely wetting with binding fillers.

Complete wetting of particles of fillers is determined by the complete cessation of the exit of air bubbles from the mixture. To accelerate the process, the mixture is heated to a temperature of 353-360 K and a pap hardener is introduced. The mixture is thoroughly mixed to obtain a homogeneous mass for 10-15 minutes continuously. The viability time of the finished mixture is only 25-30 minutes. Therefore, the compositions are obtained by small batches from 2 to 5 kg and the mixture immediately differ in advance prepared and treated with an anti-adhesion substance form, having the form of structural elements, and coated on the work surfaces of the products. [3]

Molded or coatings polymer compositions are cured at a temperature of 350 K for 4-6 hours in thermoshkaf. Cooling compositions is carried out with thermoshkaph to room temperature. Then the structural elements or coating parts, or the products are removed from the mold and are packaged in polyethylene bags and are sent to test or use as intended.

Based on a comprehensive analysis of the above-mentioned theoretical and experimental studies, the problem of creating effective compositions and technologies for obtaining electrically conductive and antifriction and strength composite materials based on the use of thermosetting ED-16 polymers was solved.

An important characteristic for composite thermosetting epoxy polymeric materials used as coatings is preserving under the permissible limits of electrophysical and antifriction and strength properties, during operation during contact interaction with cotton raw. They differ in electrical conductivity, antifriction and strength properties, high adhesive strength, microhardness and one more important feature, technological in obtaining a composition of oligomers and applying machinery and mechanisms on the surface of the working bodies.

1. The developed production is an electrically conductive and antifriction and strength perspective, eliminates the formation of static electricity in the interaction of parts and the design of the working bodies of cotton processing machines and mechanisms with cotton rates when operating in a cotton factory and other industries in the temperature range from minus (-40°) to plus ($+120^{\circ}$) S.

2. Electric conducting and antifriction and strength materials are recommended for use as anti-static antifriction materials in the manufacture of working bodies of cotton processing machines and mechanisms.

3. The results of a scientific research in the field of the creation of electro-thermal conducting and antifriction-strength composite epoxy polymeric materials and coatings and for other engineering industries.

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RESEARCH OF PHYSICAL AND MECHANICAL PROPERTIES AND DEVELOPMENT OF ANTI-CORROSION COMPOSITE MATERIALS AND EPOXY RESINS AND INDUSTRIAL WASTE COATINGS

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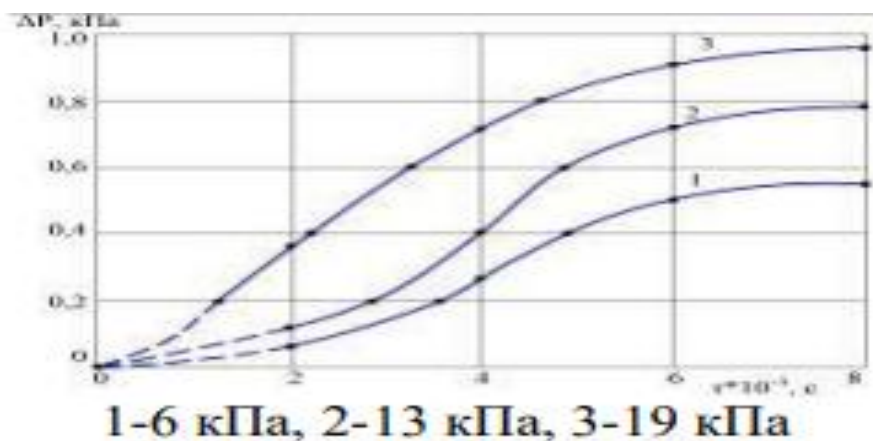
ABSTRACT

This article provides results in the research of physic mechanical properties and the development of anti-corrosion composite polymeric materials and coatings based on epoxy compounds and organic ingredients from industrial waste.

KEYWORDS: *Research, Physico-Mechanical, Development, Effective Composition, Technology, Production, Anti-Corrosion Composite Inhibitory Materials, Coatings*

INTRODUCTION

The study establishes that organometry fillers show a positive effect on the physicomachanical and anti-corrosion properties developed by composite materials and coatings based on them. To identify, next, we show the results of the following studies of the composition based on ED-16, ED-20 ED-22, OIF fillers. [1]

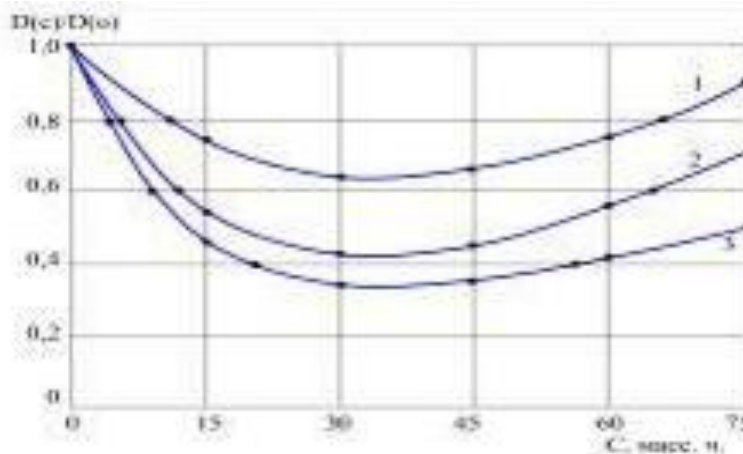


Absorption of NCL vapor epoxy compositions based on ED-16

Figure 1 shows the dependence of the absorption of vapors of itEpoxy composition based on ED-16 at different pressures. As can be seen from Figure 1, degradation in hydrochloric acid steam filled with the waste of gold production production of the Osif-MB of composition seems to occur at the places of reactive groups of binders. [2]

It will be appropriate here that it seems that the phenomenon of the stabilizing effect of the caustal waste of the ZIF is due to their composition, since they include silicon oxides and a

number of metals, very resistant to the action of mineral acids, in addition, the Nelson effect is implemented when it increases The path of passage of aggressive fluid into the depth matrix. Similar results are observed and coatings based on ED-20 and ED-22. When filling the material above the critical level, the phase transfer of the liquid takes place. [3]

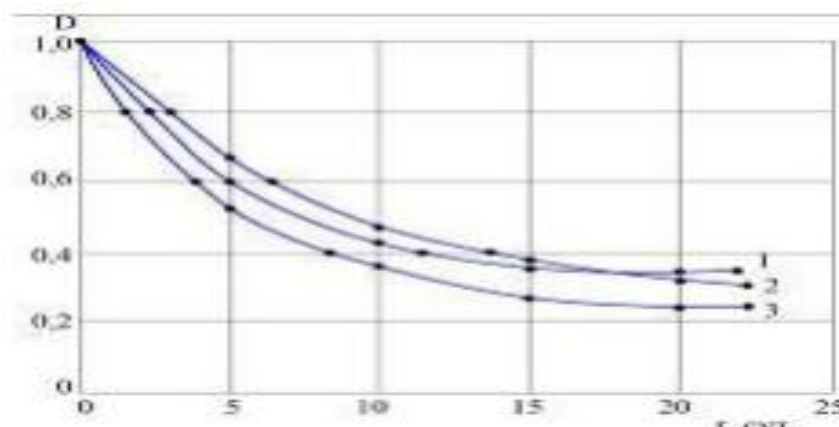


Absorption of NSL vapor epoxy compositions based on ED-16

It will be appropriate here that it seems that the phenomenon of the stabilizing effect of the caustal waste of the ZIF is due to their composition, since they include silicon oxides and a number of metals, very resistant to the action of mineral acids, in addition, the Nelson effect is implemented when it increases The path of passage of aggressive fluid into the depth matrix. Similar results are observed and coatings based on ED-20 and ED-22. When filling the material above the critical level, the phase transfer of the liquid takes place. [4]

This phenomenon well explains the process of education through porosity. The study establishes that organizerine Fillers show a positive effect to physical and mechanical and the anti-corrosion properties of the developed compositional Materials and coatings based on them. Thus, the process of aligning the difference in concentration and Accordingly, the difference in chemical potentials in the systems under study occurs due to the diffusion and phase transfer of the aggressive fluid and its chemical interaction with reaction capable components. In this case, we observe uneven change in the elastic-deformation characteristics of the studied materials. In the outer sides of the sample, mechanical changes have minimal values increasing as the sample center approach. [5]

It is established that as a result of an alkaline environment The samples under study, the micro hardness is significantly reduced. How micro hardness and bearing capacity and stiffness of samples, filled with the OIF depends on the duration of excerpts in the medium and varies on a certain law. Figure 3 shows Degradation features of the micro hardness of epoxy compositions filled with Ed-16, ED-20 and ED-22 with a compression.



1 - ED-16, 2 - ED-20, 3 - ED-22 Figure 3. Degradation functions of the microhardness of epoxy compositions filled with overlooking when compressed

It can be seen that the two areas of the cross-section degradation: the area of homogeneous and diffusion degradation. In the first region, the micro hardness, respectively, and the carrying capacity, and the rigidity of constant and the equifunted value; In the second region, the micro hardness depends on the coordinate of the point and linearly increases with increasing depth.

For a certain time, interval, the presence of an inner region, where the micro hardness and, accordingly, the carrying capacity and rigidity remains initial. In the area of direct contact of the sample material with the medium, micro hardness, the carrying capacity and stiffness is reduced to a constant value for a short time, and then a continuation of the area of homogeneous degradation into the sample is also observed.

Grows the thickness of the first and second regions, and, accordingly, The internal area decreases. In this case, the shape of isochoric degradation can be adopted constant. The studies have established that the anti-corrosion properties of epoxy compositions affect the type of used hardener. Studying the influence of the nature of the hardeners used on the diffusion properties of epoxy compositions were shown, which the smallest permeability of water vapors and water absorption possess epoxy compositions cured with an aliphatic polyamine diethylene amine.

Thus, it was established that the rate of destruction of the filled compositional polymeric materials is determined by the speed of the chemical reaction of the aggressive medium and the reactivity of the fillers due to the formation of the cross-cutting porosity of the material with them some critical content.

It is shown that a composition based on ED-20, cured with aliphatic polyethylene polyamine, has the smallest permeability of steam and water absorption. The experimental studies of the dependence of the destructive voltage during the bending of the composition based on the epoxy oligomer ED-20 on the fillers content were shown that with an increase in the content of phosphoric in the composition, it increases and passes through a maximum with the amount of phosphoric equal to 20 mass. Further increase in the content of this filler bursting Strength - σ_r sharply decreases. Increased adhesion strength σ_{ad} Compositions to the content of filler 20 masses. h. due to the fact that The content of phosphoric, calcium oxides, silicon, magnesium, which are in a combination of more than 92% and their high dispersion play the role of the center during gelation and the content process is completed with higher degrees of stitching. Reducing the

value of the destructive voltage of the composition under the content of phosphochercha more than 20 wt. h. due to a decrease in the density of packaging macromolecules of the binder.

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TOBACCO USERS AND NON-CONSUMERS ACTIVITY

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ABSTRACT

Tobacco use is a known risk factor for disease development, and it is thought to play a significant role in the course of metabolic syndrome. Amylase is an enzyme that catalyze the hydrolysis of a (1, 4)-glycosidic bond in amylose, amylopectin, and glycogen into oligosaccharide and disaccharide. Furthermore, it improves glucose metabolism and bacterial adherence at both the surface and inside the body, allowing for the initiation of bio adhesion in humans. As a result, a lack of it may have a negative impact on fat digestion. The stomach and liver also contain lipase, which are referred to as gastric lipase and hepatic lipase, respectively. The metabolism of lipids may be altered by a lack of these enzymes. Fluids of the body are essential for criminological research. For more than three decades, amylase testing has been utilized as a potential method to detect crime scene saliva stains. There was a reduction in human salivary amylase activity in cigarette users; a review research paper report was conducted. This study demonstrated that salivary amylase and lipase enzyme tests may be helpful for saliva evidence when Deoxyribonucleic acid (DNA) investigations for every case may be restricted because to low quantity of evidence and cost issues. This detection would play an important and significant role in examining the lifestyle and habitual conditions of the individual.

KEYWORDS: Cancer, Oral Health, Saliva, Smokers, Tobacco Utilization.

1. INTRODUCTION

Saliva is a biological material secreted in the mouth. With its cleansing, lubricating, and antibacterial properties, it maintains the hard as well as the soft tissues. Normal salivary gland activity is needed for oral mucosal integrity. Salivary gland dysfunction, on the other hand, is thought to predispose the oral mucosa to pathological changes. According to studies, the combustion products of cigarettes cause a substantial decrease in immunoglobulin-A (IgA) levels in smokers. Tobacco use, based on these facts, may have a negative impact on the salivary glands, resulting in a change in the consistency and quantity of saliva. Saliva is a unique natural resource with a variety of functions including digestion, food lubrication and preparation, and tooth and mucous membrane protection [1].

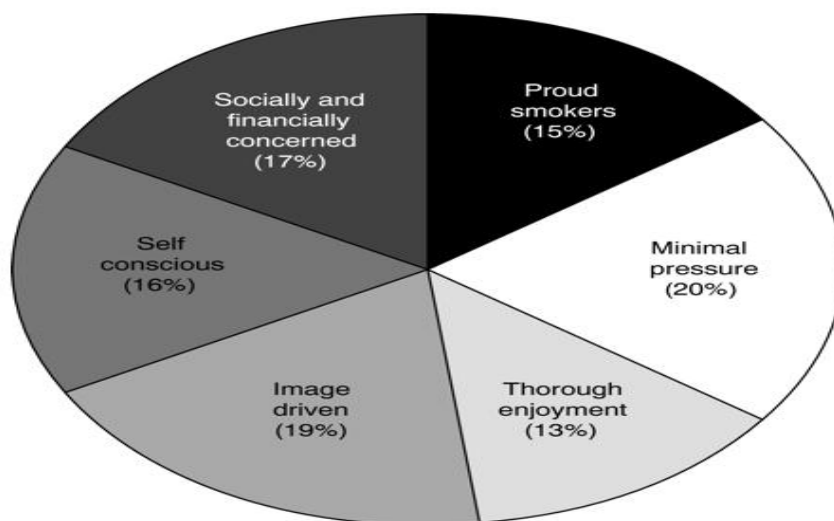


Figure 1: Segments Of The 1994 US Smoker Population Categorized By Views Towards Smoking. Two Of The Parts Self-Conscious And Socially And Financially Concerned Feel Pressure From People Not To Smoke, While One Section, Image Driven Feels Ambivalent About Their Smoking.

Tobacco use in India is primarily in the form of bidis (34 percent), cigarettes (30 percent), chewing tobacco (19 percent), hookah (9 percent), cigars as well as the cheroots (5 percent), as well as the snuff (5 percent). Tobacco usage is the greatest cause of preventable death in the world. In 2005, the World Health Organization (WHO) projected that tobacco usage killed 5 million people worldwide, with half of those deaths occurring in developed countries shown in Figure 1 [2]. More than one billion people smoke every day in India, accounting for approximately a fifth of all adults. Tobacco usage is found in 74 percent of male people as well as the 11 percent of female respondents. Despite the fact that tobacco dependence is declining in developed nations, it is rising in developing countries. Smokers constitute roughly 82 percent of the population of developed countries (analysis using Figure 1) [3].

Tobacco is consumed in two ways i.e. smoking tobacco (via cigarettes, pipes, narghiles, as well as the cigars) as well as the smokeless tobacco (by snuff as well as the chewing tobacco) tobacco use serious public health issues across the world. The incidence of oral cancer has been related to cigarette usage. Oral squamous cell carcinoma has a wide range of incidence rates across the world. It is frequent cancer in India, a male incidence rate of twenty-seven per 100000 per year, accounting for more than half of all malignancies. Oral cancer affects males more often than women across the world, with an of greater [4].

According to Organization for Cancer Research, there is enough data to demonstrate that tobacco is hazardous. Tobacco is ingested in different ways such as smoking, chewing, as well as the snuffing, while being a significant contingent risk factor for the development of oral as well as the pharyngeal cancers, as well as other malignancies in the upper aero alimentary tract. Tobacco's detrimental impact is characterized by the dynamic interaction of different components. Individual components of nicotine, bioavailability, as well as the quantity of intake, habit length, as well as the exposure time per use both contribute to the net physiological impact. Both of these factors may affect the quantity as well as the consistency of saliva [5].

In recent years, the usage of saliva has gained popularity. It is regarded as a trustworthy instrument for hormone detection, opiate management, alcohol as well as the nicotine addiction, as well as the forensic applications. According to studies, the combustion components of cigarettes cause a substantial decrease in immunoglobulin-A levels in smokers. Most of the reasons for the increasing prevalence of mouth cancer in cigarette smoking may be linked to this. Tobacco usage has been linked to significant morphological as well as the functional changes. Grounded upon findings, it's possible that smoking has the consistency as well as the amount of saliva. There isn't a lot of information on these salivary changes in cigarette smokers as well as the chewers in the literature. As a result, the aim of this research is to compare the biochemical components of saliva in cigarette smokers as well as the chewers to those of safe controls.

The aim of this research is to compare the differences cigarette smokers as well as the chewers to those in stable controls. Saliva is a unique natural resource with a variety of functions including digestion, food lubrication as well as the preparation, as well as the tooth and the mucous membrane defense [6].

Saliva's functionality is classified into five categories that assist to improve oral health:

- Defense and the maintenance of tooth integrity Antibacterial qualities
- The perception of taste as well as the digestion.
- Buffering
- Lubrication

Saliva is made up of 99 percent water as well as the 1 percent small alongside large molecules as well as ions. Saliva's hypotonic nature allows taste receptors to detect a variety of flavors. Reduced glucose, bicarbonate, as well as the urea levels in approximated saliva additionally help to control the hypotonic environment along with the improvement in flavor.

Albumin is a blood plasma component. For optimum functioning, IgG, IgA, IgM, vitamins, medications, hormones, water, as well as the ionic components are needed. Acinar cells release organic substances such as crystatins, as well as the others. Lysozyme, which plays a crucial role in defense, is believed to be released by duct cells [7].

1. Organic Compounds:

- Proteins, alpha amylase, lipase, immunoglobins, as well as the other organic components are the most common.
- Protein: salivary proteins make up about 200 mg per 100 mL. It accounts for around plasma protein concentration.
- Mucin is a glycoprotein with a high molecular weight that is produced. Membrane, which protects the oral cavity from drying out.
- Antibacterial proteins such as lysozyme, lactoferrin, as well as the sialo-peroxidase are among them.
- Mucous glycoproteins found in submandibular as well as the sublingual saliva, as well as Praline Rich-glycol Proteins (PRPs) found in parotid products, are the two major classes of glycoproteins.

2. *Other Polypeptides:*

- Peptide with a high histidine content that aids in pellicle formation as well as the bacterial clearance.
- Statherinas well as thesialin are phosphoproteins that play a part in inhibiting the development of hydroxyapatite crystals, as well as using bacteria as well as the forming alkaline end products.
- Alpha amylase present at the highest amounts in saliva. It is involved in the metabolism of starch as well as the polysaccharides. In the polysaccharide chain, it hydrolyzes 1:4 glycosidic bonds between glucose units, but only glucose units.
- Lipase is a digestive enzyme produced.
- Secretory IgA is the most common immunoglobulin, with IgA as well as the immunoglobulin-M (IgM) originating in the strong effect, making it harder for them to adhere to the oral epithelium.

Ions such as Na^+ , k^+ , Cl^- , as well as the HCO^- play a significant role in saliva's osmolality, which is half that of plasma. The main buffer is bicarbonate. Fluoride concentration is comparable to plasma as well as is greater in places where the water supply exceeds the fluoride threshold. Fluorides serve an essential part in fluoride's anti-caries function [8].

2. LITERATURE REVIEW

P. E. Petersen articulated for the last five years, the World Health Organization's (WHO) Global Oral Health Programme has worked hard to raise oral health consciousness around the world, as oral health is an important component of overall health as well as the remains a significant public health issue in high-income countries, as well as its prevalence is increasing in many low as well as the middle income countries. The WHO Global Oral Health Programme established policies as well as the activities for the ongoing development of oral health in the World Oral Health Report 2003. Oral disease prevention as well as the promotion must be integrated with chronic disease prevention as well as the general health promotion, according to the strategy, because health risks are connected. The World Health Assembly (WHA) as well as the the Executive Board (EB) are WHO's exclusive authority, as well as the oral health was addressed for the first time in 25 years in 2007. The Member States cooperated as well as the complete disease prevention at the EB 120 as well as the WHA60, affirming the Oral Health Programmes approach. The approach will be used to develop or modify oral health initiatives at the national level in the future. Person, expert, as well as the environmental preventive strategies have been proven to be effective in decreasing most oral illnesses in clinical as well as the public health research. However, advances in oral health technologies have failing to assist the worlds poor as well as the vulnerable individuals. The translation of awareness as well as the views in oral disease prevention as well as the health promotion into action plans will be one of the major problems of the future. The WHO Global Oral Health Programme urges group to get more engaged in developed nation as well as the increasing efforts to guarantee that research is recognized as the cornerstone of oral health [9].

B. R. Doni et al. claimed that to determine salivary immunoglobulin-A (IgA) levels in the healthy individuals, in tobacco chewers as well as the smokers. There were 80 participants in the

sample (tobacco users), 40 tobacco chewers, as well as the collected from both tobacco consumers as well as a control group of 40 moderate non-tobacco users of comparable age as well as the gender. Based on age, the study as well as the control groups were divided into four categories. A Single Radial Immune-Diffusion (SRID) test was used to evaluate salivary IgA levels. The data was examined using statistical techniques, as well as the single-factor analysis of variance was used to compare the results in three categories. The mean salivary IgA quantity in the test population was 16.76, 1.37 mg/dl (SD); it was 7.89, 0.61 mg/dl (SD) in tobacco chewers as well as the 6.55, 0.99 mg/dl in tobacco smokers (SD). Tobacco chewers as well as the smokers exhibited lower salivary IgA levels than non-tobacco chewers as well as the smokers. When compared to tobacco chewers, tobacco smokers had substantially reduced salivary IgA levels. These results were all highly significant ($P < 0.001$). In unstimulated whole saliva, tobacco chewers as well as the smokers all exhibited lower salivary IgA levels, as well as the consumers, substantially lower salivary IgA levels than tobacco chewers [10].

3. DISCUSSION

Saliva plays a vital role in maintaining tooth hygiene and controlling a simple, method of diagnostics. It is needed for oral mucosal tissue lubrication, teeth demineralization, digestion, and taste sensation, as well as relaxation, washed out impact, pH balance, and phonation. The cervical fluid, all contribute enzymes to human saliva. Salivary diagnosis is expected especially helpful several fluid are required but obtaining blood is either inefficient or unethical. Many systemic illnesses have been discovered to have an effect on salivary gland development and shape. Any change in saliva production or composition, particularly when tobacco is used, may increase mucosal permeability and predispose to oral cancer. Salivary production reduction may have serious consequences for oral and systemic health.

The aim of this research was to investigate the variations in salivary amylase and lipase enzymes in tobacco users and non-users. The research involves reviewing the research report and assessing the findings. To minimize diurnal variation, saliva samples were collected during the morning time period in the analyzed publications. An hour before saliva collection, participants were advised not to eat, drink, or smoke. Subjects were instructed mouth for about 2 minutes before vomiting it into a clean plastic tub. Salivary amylase and lipase enzyme activity were observed to be slightly the sample. This may be due to tobacco-related toxic substances causing damage to the ductal secretory unit. Increased salivary flow has been linked to a drop in salivary amylase, and long-term cigarette smoke consumption has been connected to a decrease.

There was also a substantial reduction of users compared to monitors, which may be due to increased salivary flow, allowing dilution of tobacco products. In smokers, serum lipase was slightly lower than in non-smokers, and there was a substantial variation in the same enzyme between mild smokers, moderate smokers, and heavy smokers. Lipase enzymes exist in a variety of types, with pancreatic lipase being the most common in the human digestive system. The stomach and the liver also contain lipase. Lipoprotein lipase and endothelial lipase are two similar enzymes present in the human body. Deficiency in this enzyme may cause an increase in cholesterol and triglyceride levels in the body, glycosuria despite normal blood glucose levels, and reduced cell permeability, making it difficult for nutrients to reach and waste products to exit the cell.

The following mechanisms have been proposed to explain why smokers' lipid profiles are altered: Nicotine increases catecholamine's, causing lipolysis and a rise in plasma free fatty acids (FFAs), as well as an increase in hepatic FFAs, triglycerides, and relatively Very Low Density Lipoprotein cholesterol (VLDL-c) in the circulation (19-21). Smoking generates a reduction in estrogen, which causes a decline in High Density Lipoprotein (HDL), while hyper insulin causes a rise in cholesterol, Low Density Lipoprotein cholesterol (LDL-c), VLDL-c, and Triglyceride (TG) in smokers due to reduced lipoprotein lipase production according to the findings, tobacco users' salivary amylase and lipase enzyme function was slightly lower than non-users'. The outcome of our research is consistent with those of prior studies conducted.

4. CONCLUSION

Saliva is a biological material secreted in the mouth. Tobacco usage, based on these findings, may have a negative impact on a difference in the consistency. Saliva is a unique natural resource with a variety of functions including digestion, meal lubrication and preparation, and tooth and mucous membrane preservation.

Tobacco addiction is the world's greatest cause of preventable death. Saliva is made up of 99 percent water and 1 percent large and small molecules as well as electrolytes. Saliva's hypotonic nature allows taste receptors to detect a variety of flavors. Un-estimated saliva has lower levels of glucose, bicarbonate, and urea, which helps to control the hypotonic environment and improve flavor. In tobacco smokers and chewers, substantial changes in salivary lipase and salivary amylase were found. The most likely reason is that changes in the oral epithelium enhance mucosal permeability, allowing more irritants and carcinogens to enter the body. The other connection may be produced by tobacco-related harmful substances harming the secretory unit. However, further research with a larger sample size is needed to determine the exact function of maintaining the quality of the in both healthy as well as the ill circumstances.

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A REVIEW STUDY ON VARIOUS TYPES SUGARS& THEIR FUNCTIONAL PROPERTIES

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ABSTRACT

Sugar is a carbohydrate building block that may be found naturally in a variety of foods such as fruit, milk, vegetables, and grains. Added sugar, on the other hand, can be found in flavored yogurt, sweetened drinks, baked goods, and cereals, and it is extensively utilized in industry. Carbohydrates come in a variety of forms, including monosaccharide and polysaccharide, and have a variety of characteristics in the food business and nutritionally. Sugars serve a variety of functions in the food business, including preservation, antioxidants, and the enhancement of color, taste, and texture, in addition to their primary function of sweetness. Many foods rich in added sugar offer energy, but they are also low in other nutrients, affecting the balance of nutrients such as minerals, vitamins, and proteins. As a result, excessive sugar consumption is very hazardous, particularly at crucial periods such as infancy, pregnancy, and aging. To maintain the body healthy, it's critical to limit the amount of high-sugar foods consumed. This page discusses the many kinds of sugars, their role in diet, and their health implications.

KEYWORDS: Added Sugar, Nutrients, Sugars, Health, Functional

1. INTRODUCTION

Sugar, which is typically sucrose, is a natural, nontoxic, sweet tasting, water soluble crystalline carbohydrate that provides the body with 4K.calories per gram. Beet sugar or cane sugar is the most common source of sugar; however, other sources include honey, corn syrup, fruits and vegetables, and so on. Sugar's main purpose in food is to give sweetness and energy; however, sugar also plays a critical part in preservation, fermentation, color, and texture. Because a rise in sugar consumption has been linked to a variety of diseases, including obesity, cardiovascular disease, and type 2 diabetes in recent years, food organizations have established stringent guidelines for assessing sugar intake in diets[1]–[3].

1.1.Sugar's History:

Sugar has been manufactured in India since ancient times; it was once costly, therefore honey was more often used for sweetening throughout the globe. Sugarcane was a tropical South Asian and Southeast Asian plant that was chewed to obtain its juice. By the 1st century, sugar had been

discovered in Europe and was being utilized as an imported medication rather than a food. Sugar remained largely insignificant until the 5th century, when Indians found ways to convert sugarcane juice into granulated crystals, which are simpler to store and transport. Venice was Europe's main sugar refining and distribution center in the 15th century. In the 17th century, China planted its first sugarcane plantations[4–6]. At least two expeditions to India were sent in 647 AD to acquire sugar refining technology, according to Chinese records. When Arab forces invaded the area, they brought with them the expertise of sugar production as well as a passion for sugar as a food, condiment, and medicinal. Islamic forces invaded most of Spain in the early 700s, bringing with them the sugar culture. Sugar became more widely accessible, popular, and regarded a need in the nineteenth century. Sugar's development in taste and demand as a necessary dietary component ushered in significant economic and societal changes.

1.2.Carbohydrate intake:

Carbohydrates are one of the most abundant macromolecules on Earth, and sugar and starch constitute a staple of most people's diets. Carbohydrates serve as energy reserves, fuels, metabolic intermediates, and components of the RNA and DNA structural framework, among other things. Carbohydrates are aldehydes, ketones with numerous hydroxyl groups, and are categorized as monosaccharide (which cannot be hydrolyzed into smaller sub-units), disaccharide, and polysaccharide. They are made up of carbon, oxygen, and hydrogen and have the empirical formula $(CH_2O)_n$. Glucose It's called an aldohexose ($C_6H_{12}O_6$) because it has an aldehyde group and six carbon atoms; it comes in two forms: open-chain (acyclic) and ring (cyclic). Water is soluble in glucose, resulting in a neutral solution. Glucose is the body's main source of fuel for cellular metabolism[1], [3], [7].

1.3.Fructose is a sugar that has a high fructose content:

Fructose may be found in a wide variety of fruits. Plants and certain microorganisms can synthesize fructose from carbon dioxide and water, whereas animals can convert glucose to fructose through sorbitol. Fructose is a hexose monosaccharide that may exist in a non-cyclic, straight chain form and contains a ketone group at carbon-2 in the chain. There are two enantiomers of fructose, L and D, although D fructose is nearly primarily found in nature.

1.4.Galactose:

This sugar, which has six carbons (hexose), is an essential monosaccharide and component of the lactose disaccharide found in milk. D galactose is an epimer of D-glucose, since the only stereochemical difference between the two sugars occurs at carbon 4. It is a source of energy for cell metabolism.

1.5.Carbohydrates are categorized as follows:

Monosaccharides are absorbed without additional chemical degradation in the small intestine. Glucose is absorbed in the intestinal villi as part of a co-transport system with sodium ions; it then enters the capillary blood and travels to the liver. Polysaccharides, oligosaccharides, and disaccharides, for example, must be broken down by different enzymes before being absorbed in the small intestine. Polysaccharides are broken down into oligosaccharides by salivary amylase, which is found in saliva. The acidity in the stomach deactivates this enzyme. Pancreatic amylase breaks down the polysaccharides that make it past salivary amylase in the gut. Brush border enzymes in the intestine further hydrolyze oligosaccharides and disaccharides into

monosaccharides. Dextrinase, glucoamylase, maltase, sucrase, and lactase are examples of such enzymes. Because the colon does not produce digestive enzymes, chemical digestion stops at the small intestine[8–10].

1.6. Sugar Sources and Types:

Fruits, fruit juice concentrate, cane sugar, beet sugar, molasses, nectar, honey, corn sweetener, brown sugar, and invert sugar are just a few examples of sugar sources and kinds. This essay will concentrate on a few of them.

1.6.1. Maple Syrup:

It's produced by boiling down the sap from maple trees; the sap includes 5% sucrose and the rest is made up of other sugars (oligosaccharides). It is made up of 88-99 percent sucrose when it is condensed into syrup form. A serving of maple syrup contains calcium, potassium, and trace quantities of B vitamins, manganese, magnesium, and zinc, among other vitamins and minerals.

1.6.2. Molasses:

It is a by-product of sugar production, consisting of the syrup (plant juice) extracted from raw sugar beet or sugar cane during its processing into sucrose. Sucrose is the most common sugar, and when it is processed, it becomes more invert sugar. Although blackstrap molasses is the result of additional sugar crystallization and has a somewhat larger mineral content, it includes relatively little calcium and iron.

1.6.3. Glucose-Fructose Syrup:

Enzymatic isomerization of glucose produces glucose-fructose syrup. Because only 42 percent isomerization is accomplished, the addition of fructose is required to produce greater concentrations (e.g., 55 percent). By chromatographic enrichment, fructose is extracted from the syrup. HFCS substitute's sugar in many sweet foods due to its similar sweetening power. The most common natural sweetener is sucrose, also known as table sugar. It is a disaccharide composed of one molecule glucose and one molecule fructose that is typically obtained from sugar cane or sugar beets and refined to a white crystalline end product, and is used as a standard for sweetness measurement.

1.6.4. Honey:

Honey is mostly made up of the carbohydrates fructose and glucose, but it also includes around 200 other chemicals (other sugars, enzymes, amino acid and minerals). Several of these enzymes, such as glucose oxidase and bee defensin-1, are linked to honey's antibacterial characteristics. Honey is made from nectar gathered by honeybees from flowers. Honey should never be given to a kid under the age of one year because it may contain spores of *Clostridium botulinum*, the bacterium that causes Infant Botulism.

1.7. Flavour:

The sweetness of sugars like glucose, fructose, and sucrose is the most noticeable sensory characteristic. Lactose (milk sugar) is the least sweet, while fructose is the sweetest sugar. Sugar is used as a sweetener in a wide range of foods.

1.8.Preservation:

Sugar decreases water activity in a food system (e.g. jam) by absorbing free water and raising osmotic pressure, reducing microbial and mold development and prolonging food storage life. Sugar may also be used to preserve fruits, either in syrup with apples and pears or in crystallized form, where the preserved material is boiled in sugar until it crystallizes and then kept dry. Citrus fruit (candied peel), angelica, and ginger peels can all be treated with this technique.

1.9.Taste:

Sugar has a crucial and unique function in food taste by combining with other ingredients to enhance or diminish certain flavors. A little quantity of sugar added to cooked vegetables and meat enhances the natural tastes of the meal without making it seem sugary. It's critical to establish a good balance between sourness and sweetness in sour applications like drinks, jams, and marmalades, which all include sweet and sour components. This is typically accomplished by combining sugar with citric acid. Sugar is often used to mask or reduce the bitterness in bitter applications (chocolate and coffee).

1.10. Antioxidant Function:

Sugar's hygroscopic characteristic reduces the availability of water, which would otherwise be needed by potential oxidants, resulting in a mild antioxidant effect. Sugar's antioxidant action decreases rancidity, discoloration, and degradation of certain foods (e.g. canned fruits and baked goods). Many early stage products of the Maillard reaction (in which sugar is involved) have also been demonstrated to function in tandem with other natural antioxidants (e.g. vitamin E) to prevent lipid and protein oxidation, thus prolonging food shelf life.

1.11. Color:

Maillard reaction and caramelization are two ways that sugar may color food. Browning and flavour are produced by the Maillard reaction, which happens between sugar and amino acids in goods such as bread, coffee, hot sweets, and cakes. Pigmentation, which produces colour and fragrance, is one of the Maillard reaction's end products. When carbohydrates are subjected to high heat, they caramelize. There are no amino groups involved in these reactions, unlike Maillard reactions. This reaction happens often when conventional sucrose syrups and caramels are made, which are widely utilized in soft drinks, beer, confectionery, and pastry goods.

1.12. Texture is number:

Sugar's capacity to interact with water and exist in both amorphous and crystalline forms provided it functional characteristics that allowed it to create desired texture in a variety of foods. Depending on how the melted sugar is processed, the molecules may reform in a crystalline (from a few micrometers to several millimeters) or amorphous (glassy, rubbery, gooey texture) condition. When enough sugar is added to a solution to bind water molecules, it provides mouth feel by raising viscosity, decreases water activity, raises boiling temperature, and lowers freezing temperature, causing proteins, starches, and hydrocolloids to behave differently. Cotton candy is an example of sucrose in its glass state, whereas taffies and caramel sweets are examples of sucrose in its "rubbery" plasticized form. Sucrose may be completely or partly replaced with other sugars or polyols in these sweets.

1.13. Fermentation:

Sugar fermentation is carried out by yeasts under anaerobic circumstances, resulting in the production of carbon dioxide. This step is critical in the production of bread, beer, and wine. Sugar plays an important role in bread making (aside from taste) as a leavening agent by forming carbon dioxide, which causes bread dough to rise before and during baking. Sugar also has a high affinity for binding to gluten, so when dough is kneaded, a gluten structure with high elasticity forms, allowing the dough to stretch without collapsing under the expansion of gases.

1.14. Obesity:

Obesity and overweight are conditions in which an abnormal or excessive amount of fat accumulates in the body and causes impairment. Many factors may contribute to the obesity epidemic, including excessive calorie consumption, easy access to highly appealing foods, and lack of physical exercise. Sugars and refined carbs have been suggested as being more obesogenic than other nutrients, based on little data. Certain foods, such as those with added sugars, may elicit addictive reactions in certain people, leading to compulsive and obsessive overeating.

1.15. Sugar and Diabetes:

Because of the high quantities of high-fructose corn syrup, which promotes fast blood glucose rise, sugar-sweetened soft drinks may raise the risk of diabetes. Sugar-sweetened beverage intake was linked to increased weight gain and type 2 diabetes risk, even when other risk variables were controlled for. Due to the easily absorbable carbs in sucrose sweetened soft drinks and foods, they may raise the risk of type 2 diabetes. Caramel coloring is used in cola-type soft drinks, and it is high in advanced glycation end-products, which may cause insulin resistance.

1.16. Sugar and Lipids:

Sucrose-rich diets generate a lot of fructose and glucose, which is delivered to the liver via the hepatic portal vein. Because fructose bypasses the regulatory reaction catalyzed by phosphofructokinase, it undergoes faster hepatic glycolysis than glucose. This allows fructose to overflow the pathways in the liver, resulting in increased fatty acid biosynthesis, increased fatty acid esterification, increased VLDL secretion, raised serum triacylglycerol, and ultimately elevated LDL cholesterol. Other carbs have less of an impact on increasing blood lipids, especially triacylglycerol, than sucrose and fructose.

1.17. Sugar and Cancer:

The link between high pancreatic cancer and a high-sugar diet was discovered in this research. The short-term increase in pancreatic cancer risk linked to a high accessible carbohydrate and low fat diet may be capturing dietary changes linked to subclinical illness. A high-sugar diet has been shown to encourage cancer formation and to induce the progression of tumors in the colon to malignancy. Added sugars were linked to an increased risk of esophageal adenocarcinoma, whereas supplemental fructose was linked to an increased risk of small intestine cancer.

1.18. Sugar and Dental Health:

Tooth decay, also known as dental caries, is a frequent cause of poor dental health, particularly in youngsters, and is caused by oral bacteria. Nutritional status, oral hygiene, fluoride exposure, dietary habits, socioeconomic position, and overall health are all factors that contribute to dental

caries. Although many people connect dental caries with sweets, all fermentable carbs, including cooked starches, sugars in fruits, and added sugar, contribute to the development of dental caries. Polyols are frequently included in chewing gum because they are not fermentable by bacteria in the oral cavity and therefore do not induce dental caries as sugars do.

2. DISCUSSION

Sugar is the only source of energy for certain bodily tissues, such as the brain and red blood cells. Humans have a sweet tooth, yet sugary foods may be harmful if consumed in excess. Sugar alternatives, such as nonnutritive artificial sweeteners and caloric sugar alcohols, should be used in moderation or avoided altogether. Excessive sugar alcohols, for example, may induce diarrhea. According to a new set of revised dietary recommendations released by the World Health Organization, free sugar intake should be less than 10% of total energy intake, because free sugars threaten the nutrient quality of diets by providing significant energy without specific nutrients, promoting a positive energy balance. Sugars have also been implicated as a cause of a variety of illnesses, including obesity, dental caries, diabetes mellitus, myocardial infarction, dyspepsia, and peptic ulcers. Increased sugar intake has also been linked to an increase in the incidence of insulin resistance and type 2 diabetes mellitus.

3. CONCLUSION

Sugar is required for proper metabolic activity, the prevention of stress on the body, and the preservation of essential cellular components. In light of the above, sugar may serve a variety of functions in food apart from its primary function as a sweetener, and it should be taken in moderation to prevent negative health consequences. Sugar consumption is linked to a variety of illnesses, therefore paying attention to what we eat is critical for maintaining a healthy body, particularly for youngsters who like sweet foods, as well as diabetics and heart patients.

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DEMOGRAPHIC SITUATION IN KASHKADARYA REGION DURING THE YEARS OF INDEPENDENCE (ON THE EXAMPLE OF 1990-2010)

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ABSTRACT

The independence of Uzbekistan has created opportunities for demographic policy, taking into account the ethnic characteristics of the population. Some regions are actively involved in the demographic process. Kashkadarya region still occupies the leading position in the country with a high birth rate. The main reasons for this are the fact that the majority of the population lives in rural areas, the slow pace of urbanization, the small gender gap in the population, the slow pace of migration and other demographic factors. This article discusses these processes.

KEYWORDS: *Kashkadarya, Demographic Policy, Population, Fertility Rate, Mortality Rate, Tendency To Multiply.*

INTRODUCTION

The population of our country has a tendency to increase at different rates. Birth is the basis of population growth in the whole country and its regions. In 1989, the birth rate in Uzbekistan was 33.3 people per thousand population, in 2002 this figure fell to 21.0%, and in these years the birth rate decreased by 12.3%. The decline in the birth rate can also be seen in the regions. For example, in Kashkadarya region (40%), where the birth rate has always been high, this situation has also decreased [1].

In Kashkadarya region, the birth rate varies from 25.0 people per 1,000 people (Yakkabag district) to 28.0 people (Chirakchi district). In Kashkadarya region in 1989-2010 there was a decrease in births. The average birth rate in these years is 1.07 points per year. It can be concluded that despite the high birth rate in the region, its rate of decline is faster than in other regions.

Based on the analysis of available statistics, according to the territorial characteristics of the natural movement of the population, the regions of Uzbekistan are divided into three groups - regions with high birth rates (more than 17.0%) (Kashkadarya, Surkhandarya, Jizzakh). Bukhara, Syrdarya, Namangan regions and the Republic of Karakalpakstan with average rates (15.0 - 17.0%) and low birth rates (less than 15.0%) (Navoi), Fergana, Andijan and Tashkent regions). This means that Kashkadarya region is currently the "leader" in the country in this regard [2].

Improvements in health care, the introduction of new reforms and technologies in the health care system will undoubtedly lead to a reduction in mortality.

Mortality rates in Uzbekistan vary by region. There are specific reasons for this. In particular, the death rate in the country in 1989 was 6.3%, in 2004 it fell to 5.0, ie the death rate decreased by

1.3% during this period. In Kashkadarya region, the mortality rate in 1996 was 5.2%, in 2003 - 4.1%, in urban areas - 5.0%, in rural areas - 5.3%, in 2003 - 4.4%.

At the regional level in Uzbekistan, the mortality rate tends to decrease in almost all regions. In Kashkadarya region, the mortality rate also decreased from 4.63% in 1997 to 4.0% in 2004 and to 3.9% in 2010. In terms of mortality, Kashkadarya region is one of the regions with the lowest mortality rate (less than 5.0%).

In Kashkadarya region, as in our country, despite the absolute growth of the population, the annual growth rate is slowing down. The decline in population growth is mainly due to lower birth rates. Natural increase was 37.7 per 1,000 people in 1991, 17.7 in 1999, 19.1 in 2001, 18.7 in 2002, and 18 in 2003. 8 people, in 2005 it was 18.1 people and in 2010 it was 21.0 people.

In recent years, the natural population growth rate in Kashkadarya region has slightly decreased due to a decrease in the birth rate relative to mortality. The lowest rates of natural reproduction were observed in 1999 at 17.7% and in 2006 at 17.9%.

In recent years, the decline in the birth rate in all regions of Uzbekistan has led to a decline in natural reproduction. In 1989, the natural increase in the country was 27.0%, and in 2003 this figure was 14.5%. During these years, the rate of natural reproduction decreased by 12.5%. This situation is also typical for Kashkadarya region (18.7%).

The decline in the birth rate in recent years has led to a decline in natural reproduction. In 1996, the natural increase in the region was 27.9%, and in 2003 this figure was 19.4%. During these years, the natural rate decreased by 8.5%.

In terms of natural reproduction, Kashkadarya region belongs to the group of regions with the highest natural reproduction rate (Jizzakh, Surkhandarya, Khorezm, Samarkand, the Republic of Karakalpakstan), where the natural population growth rate is 17.2. more than%.

The population of Uzbekistan in 1991 was 20.7 million. At the beginning of 2010 it was 28.08 million people. exceeded one. In the last quarter of 2015, 31.5 mln. reached the man. During these years, the average population growth rate was 400,000 people. Birth rates have risen and deaths have fallen compared to previous years. This is a typical demographic result of the high birth rate in the 1980s. The increase in the birth rate over the next 2-3 years indicates that those born in those years began to marry.

In recent years, the decline in the birth rate in all regions of Uzbekistan has led to a decline in natural reproduction. In 1989, the natural increase in the country was 27.0%, and in 2003 this figure was 14.5%. During these years, the rate of natural reproduction decreased by 12.5%. This situation is also typical for Kashkadarya region (18.7%).

According to the regional characteristics of the natural population movement, the regions of Uzbekistan are divided into 3 groups - regions with high birth rates (more than 17.0%) (Kashkadarya, Surkhandarya, Jizzakh), the birth rate is average. (15.0-17.0%) in Bukhara, Syrdarya, Namangan regions and the Republic of Karakalpakstan and in areas with low birth rates (less than 15.0%) (Navoi, Fergana, Andijan and Tashkent regions). This means that Kashkadarya region is the "leader" in this indicator in the country.

In Kashkadarya region, as in other regions of the country, the birth rate is higher in rural areas than in cities. In 2003, the natural population growth in Kashkadarya region was 20.9% in rural areas and 14.4% in urban areas, in 2008 it was 75.4% in rural areas and 24.6% in urban areas.

Due to the independence of Uzbekistan, there are opportunities to conduct demographic policy taking into account the ethnic characteristics of the population. Population growth in Kashkadarya region in 1991-2010 is due to natural increase. The population of the region in 1999 increased almost 1.4 times compared to 1989 [3]. The population of the region in 1999 was 2123.0 thousand people, in 2001 - 2257.0 thousand people, in 2002 - 2298.0 thousand people, in 2003 - 2339.7 thousand people, in 2004 - 2381.8 thousand people and in 2006 - at the beginning of the year it reached 26,407.8 thousand people. Thus, the average annual population growth in Kashkadarya region was 47.8 thousand in 1979-1989 and 58.0 thousand in 1990-1999, 58.5 thousand in 1999-2004 and 49.8 thousand in 2005-2010. formed.

From 1995 to 2005, the population of the region increased from 1,917.9 thousand people to 2,640.7 thousand people, or increased by about 722.8 thousand people during these years due to natural increase. In 2005-2010, the population of the region increased by 110% or 2671.0 thousand people. Natural increase was 37.7 per 1,000 people in 1991, 17.7 in 1999, 19.1 in 2001, 18.7 in 2002, and 18.8 in 2003. , 18.4 people in 2004, 18.1 people in 2005, and 17.6 people in 2011.

In terms of natural reproduction, Kashkadarya region belongs to the group of regions with the highest natural reproduction rate (Jizzakh, Surkhandarya, Khorezm, Samarkand, Republic of Karakalpakstan), where the natural population growth rate is 17.2. more than% [4].

Thus, migration is a process associated with the development and location of productive forces, the nature of production relations, the process of extended reproduction of labor, its distribution, population distribution, urbanization, social mobility, natural movement and its structure. The study of these relationships allows us to study the mechanism of migration. The role of migration in the development of society as a whole is positive. It not only changes the socio-economic situation of migrants by redistributing them to new areas and sectors for the efficient use of labor, but also has a positive impact on the lives of the people who remain in the areas where they have moved.

Population migration leads to changes in the demographic situation, labor resources and ethnic composition of both the displaced area and the displaced area. The influx of migrants is also reflected in the age and sex structure of the population. As a result, there will be an increase or decrease in labor resources.

Analysis of the data for 2008 shows that among the districts of the region, the migration balance was negative in Mubarek and Yakkabag districts, and positive (0-2%) in almost all other districts. During this period, the balance of migration was negative in both Uzbekistan and the region. A total of 6,108 people migrated from Kashkadarya region to other regions of Uzbekistan (4629 people) and countries (1479 people). At present, 2775 people from the regions of Uzbekistan (2612 people) and other countries (163 people) came to the region. According to Provard, the migration balance was negative, ie the migration growth rate (per 1,000 people) was 1.4, and the migration growth rate was 1,878 people.

The population of Uzbekistan was 20.7 million in 1991 and 28.08 million at the beginning of 2010. exceeded one. During these years, the average population growth rate was 400,000 people. Birth rates have risen and death rates have fallen compared to previous years. This is a typical demographic result of the high birth rate in the 1980s. The increase in the birth rate over the next 2-3 years indicates that people born in those years have begun to get married.

The age and sex composition of the population depends primarily on the demographic situation in society. The demographic situation is reflected in the age and sex composition of the population in the process of marriage and annulment (divorce), birth, death and migration.

Equality of the proportions of women and men in the population creates a favorable environment for their marriage and family formation. However, the share of men and women in society is not always equal. According to statistics, the number of boys born per 100 girls is 104-107. The number of boys is higher than that of girls until the age of 15-20. After the age of 20, the sex ratio begins to equalize This is because boys have a higher mortality rate than boys and girls during childhood and adolescence.

Despite the rapidly developing urbanization process in the world, including the growing role of cities in the life of Uzbekistan, 63.9% of the population and 75.4% of the southern regions live in rural areas.

Because today the economic, social and environmental problems in our country are mostly related to rural areas. Therefore, the scientific study of villages is the most pressing issue of the time. The formation and development of villages depends on the natural and economic conditions of the region, the location of agriculture, transport and the national economy. Therefore, Kashkadarya region has sufficient natural and economic geographical potential for solving the rural problem. The climatic conditions are especially favorable for the development of irrigated and dry farming, vegetable growing in agriculture. During these historical periods, the main part of the population was engaged in agriculture. Therefore, 87.5% of the settlements in Kashkadarya region are villages. The remaining 12.5% are urban destinations.

In the future, industrial enterprises in our country will be built mainly in rural areas. This will have a significant impact on the development of urbanization in rural areas in the coming decades. This increase in the rural population will lead to positive changes in the overall population. As a result, villages with a population of more than 3,000 people can now be transformed into towns and cities.

In the structure of the population of Kashkadarya region, the rural population has always been higher than the urban population. There was also a natural increase in the rural population. In 1990, 1210.7 thousand people lived in rural areas, in 2000 this figure was 1615.7 thousand people, and in 2006 - 1823.1 thousand people, ie in 2006 the share of the rural population i accounted for 75.4% of the region's population.

Natural population growth was also higher in rural areas. In 1990, 1210.7 thousand people lived in rural areas, in 2000 this figure was 1615.5 thousand people, and in 2006 - 1859.0 thousand people, ie in 2006 the share of the rural population i accounted for 75.4% of the region's population. After 119 villages in the region were given the status of towns, the rural population of the region amounted to 1455.7 thousand people or 57.7%.

In terms of population, Chirakchi district is the leader in the region (257 thousand people in 2001, 311.4 thousand people in 2009). This district is home to 12% of the region's population. The population of Shakhrisabz district (including the city of Shakhrisabz) in 2009 was 297.8 thousand people. Chirakchi and Shakhrisabz districts are home to about a quarter of the region's population, or 23.5%. The average population density in Chirakchi district is 110.3 people per 1 km², and in Shakhrisabz district - 173.5 people.

The largest in terms of area of Kashkadarya region - Dehkanabad (4.0 thousand km²), Mirishkor (4.0 thousand km²) and Nisan (4.0 thousand km²) districts have relatively small demographic potential. 115.3 thousand people live in Dehkanabad district, 92.0 thousand people in Mirishkor district and 68.7 thousand people in Nishan district. Thus, the mountainous and desert areas of the region are the least populated.

Guzar (164.6 thousand people), Kasbi (154.5 thousand people) and Karshi (198.2 thousand people) districts have the average population density in the region. Currently, Karshi (0.9 thousand km²) and Kasbi (0.7 thousand km²) districts have the highest population densities at the regional level due to their small land area (220.2 and 220.7 people per 1 km², respectively).⁷

In general, the upper region (Shakhrisabz, Yakkabag and Kitab districts) in many respects resembles densely populated oases and valleys of the Republic. However, it should be noted that the density is much higher in some districts of the region (Kasbi, Karshi), ie 190-200 people.

The population density in Kashkadarya region, excluding the city of Karshi, is 93.4 people per 1 km². In turn, Kashkadarya region has the second highest population density in the country after the Fergana Valley, Tashkent and Samarkand regions.

Thus, the Kashkadarya oasis plays an important role in the demographic processes in Uzbekistan. The high birth rate in this region has played a significant role in the growth of the republic's population since independence.

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HIGHER EDUCATION IN UZBEKISTAN: ACHIEVEMENTS AND SHORT COMINGS

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ABSTRACT

This article discusses the education system in Uzbekistan in the post-independence period, in particular, the reforms in the higher education system and their results, the achievements and shortcomings of the system, as well as the establishment of mutually beneficial relations with international organizations. .

KEYWORDS: *Uzbekistan, Education System, Higher Education, International Organizations, Establishment, Scientific and Pedagogical Centers.*

INTRODUCTION

In connection with the transition to a market economy in Uzbekistan during the years of independence, the creation of a system of higher education in line with the new socio-economic conditions has become a requirement of the times. In this regard, the following words of the President of the Republic of Uzbekistan Sh.M.Mirziyoev should be quoted: "It should be noted that the development of the higher education system in our country is also a priority. Along with new higher education institutions, branches of prestigious universities abroad are being opened, quotas for admission to higher education institutions are being increased, and part-time departments are operating in many areas" [1].

Higher education plays an important role in the socio-economic and cultural development of any country. The level of life and development of higher education institutions helps to determine the state of cultural development in a particular country.

In recent years, Uzbekistan has been taking measures to develop the higher education system, establish new universities, establish educational institutions in cooperation with foreign countries, and increase the number of intellectuals. Today, the number of higher education institutions in Uzbekistan is close to 100. The coverage of secondary education in higher education has been increased from 9-10% to 15%. And in 2019, that's 20 percent. In the experience of developed countries in the world, this figure is 60-70 percent [2].

Higher education institutions have a place in the socio-economic development of the Republic. Today's higher education institutions are becoming scientific and pedagogical centers that can meet the requirements of the highest international standards of academic and professional education services.

In the formation and development of the system of market relations in Uzbekistan, higher education institutions provide ministries, enterprises, educational, scientific and commercial systems with highly qualified personnel.

Over the past period, serious reforms have been carried out in the field of higher education, eliminating the problems and shortcomings of the ideology of the past. Also, during the years of independence, a solid legal framework for the industry has been created and put into practice. Changes were made in the direction of education, and higher education became two-stage.

In recent years, universities have been cooperating with international organizations and foreign educational institutions in training highly qualified specialists.

Several pamphlets and articles on the history of the higher education system in Uzbekistan have been published. On the history of higher education in the years of Soviet rule A.Sadikov, R.H.Agzamov, A.K.Valiev, F.Nuriddinov, F.Sharipov, A.B.Baranov, S.Kh.Kholboev, R.Shamsutdinov, B. Rasulov and others conducted research and wrote works [3].

During the years of independence, new forms and methods have been used to organize the work of the higher education system. In particular, the identification of talented students in higher education is one such new way of working.

On July 10, 1998, the Ministry of Higher and Secondary Special Education adopted the "Regulations on the search, identification and targeted training of gifted students."

Sufficient experience in working with gifted students has been gained in the country.

On September 30, 2002, the Ministry of Higher and Secondary Special Education issued a special order "On improving the work with gifted students of higher education institutions of the Republic of Uzbekistan." This document identifies new areas of work of higher education institutions with gifted students. In the second qualitative stage of the National Training Program, the development of student research work, the establishment of a student scientific society and monitoring the development of research work in order to create a normative and methodological support for this activity.

In order to train future professionals among talented students in higher education, additional training in computer technology, foreign languages and specialty subjects has been organized.

Good measures are being taken to train the President of the Republic, Beruni, Navoi and other state scholarship holders among talented students and prepare them for participation in competitions and science Olympiads.

During the years of independence, Uzbekistan has opened a wide way for cooperation with various international organizations and countries in the political, economic, social and cultural spheres. Uzbekistan's relations with foreign countries have been expanding year by year, and its role and position in the world political arena has been growing.

Particular attention is paid to strengthening the ties of higher education institutions of Uzbekistan with prestigious higher education institutions abroad, attracting foreign investment in education. International cooperation of higher education institutions is aimed at improving the education system and raising it to world standards, training qualified scientific and pedagogical staff, establishing mutually beneficial relations with foreign educational institutions, improving the language and professional skills of teachers, doctoral students, graduate students and students in various fields. was conducted for the purpose of experience exchange.

Indeed, in recent years, the Ministry of Higher and Secondary Special Education has directly cooperated with more than 20 countries in the field of education. Higher education institutions of

the Republic of Uzbekistan carry out mutually beneficial cooperation with universities and other higher education institutions of the CIS countries, Great Britain, Germany, Spain, Austria, Belgium, France, Italy, China, South Korea, Japan. Among them are the United States, Germany, Egypt, England, France, Turkey, Italy, the Czech Republic and other countries. In 1995-1997, 1,960 citizens of Uzbekistan, ie 1,683 students, 115 graduate students, 162 researchers and teachers were educated abroad [4].

During the years of independence, Uzbekistan has established mutually beneficial relations in the field of education with international organizations such as ACCELES, IREX, the Consortium of American Colleges, SARE, the Peace Corps (USA), the Konrad Adenauer Foundation (Germany), the British Council and Tacis.

Thus, during the years of independence, radical reform of the higher education system, as in all spheres of social life, has become a requirement of the times. In the process of reforming the activities of higher education institutions, a new education system was formed that was completely different from the existing system during the years of Soviet rule. As a result, university students began to be educated with the help of programs, manuals and textbooks based on the idea of national independence and a new scientific and methodological theory.

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THE HOUSEHOLD OF YERKURGAN CERAMISTS IN THE 5TH-6TH CENTURIES

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ABSTRACT

This article is the result of archaeological research in the ruins of one of the most ancient cities of Central Asia, the settlement of Yerkurgan is characterized as the ruins of the oldest and largest settlement in the territory of the Karshi oasis. The article provides an in-depth analysis of the surroundings of the Yerkurgan ceramists' quarter. In the course of the study in the quarter of ceramists of the Yerkurgan settlement, 9 separate farms were identified, the members of which from generation to generation during the 5th-6th centuries. engaged in this craft, studied the processes of their activities at home, lifestyle, everyday life, religious beliefs, specialization in the production of ceramic products.

KEYWORDS: Home Ownership; Terracotta Figurines; The Quarter Of Ceramists; Workshop; Ceramic Production.

INTRODUCTION

The archaeological site of Yerkurgan is the ruins of the oldest and largest city in the Karshi oasis, which is mentioned by the chroniclers of the campaigns of Alexander the Great as Xenippus (Rtveladze 2002, 85-94). However, until recently, it was believed that Xenippa was in the upper reaches of the Kashkadarya (Masson 1972; Suleimanov 2000; Isamiddinov 1978, 20-21). The settlement is located 10 km north of Karshi and the Karshi-Kasan main road crosses its double defensive walls. The inner wall of the Yerkurgan settlement was erected in the form of a very large pentagon, from the outer side of which you can see the traces of towers, which were previously located every 17-18 meters from each other. Within the boundaries of the inner defensive wall, the structure of a very densely built-up city is clearly visible. In its central part there were two houses of worship (i.e., the eastern and western sanctuaries), a little southeast - the ruler's palace. The ruins of the rest of the buildings testify to the very active political, economic and cultural life of the city's population. If you look closely at the settlement, you can understand that it is filled with the ruins of buildings of the once public, religious, industrial and military purposes (Isamiddinov, Suleimanov 1984, 7-9). Between the houses of worship in the city center and the eastern wall stretched for more than 600 m a quarter of ceramists, which consisted of a group of households, closely attached to each other. The ceramics' quarter, the total length of which was 600 m and the width - 200 m, occupied an area in the southern part of the ancient city, respectively, from the southern to the northeastern gates, or almost to the fortress of the ruler of the city. A group of archaeologists, including S.K. Kabanov, who noted that they discovered many objects that clearly belonged to ceramists: pottery that did not have

time to undergo firing; slag left over from destroyed kilns; fragments of dishes melted during the firing process; terracotta figurines; molds for making terracotta figurines (Kabanov 1950). Indeed, within the boundaries of the inner defensive wall of Yerkurgan, a large area of the eastern part and a quarter of the total was the quarter of ceramists. In this case, we called a quarter in the eastern part of Yerkurgan, a quarter in the eastern part of Yerkurgan, which is 600 meters long and 200 meters wide. Naturally, each household consisted of separate rooms [3-6].

Household №1 was located in the northern part of the ceramists' quarter, and here only one large, almost square-shaped (6x6.6 m) room was uncovered.

We assume that this special room, located in the farthest, inner part of the household, served as a guest room (mexmonkhona) or a sanctuary. A sufa with a height of 25 cm (room 37) stretched along all four walls. The western and northern parts of the Sufa were about 2 m wide, and in the center of the room an object was discovered, supposedly an otashdon (altar) with a volume of 1x1 m and a height of 25 cm. Later, it was believed that this square-shaped object was part of a support that supported ceiling beam. As for the Sufa, it was most likely intended for relaxation.

Household №2 was one of the largest, combining 8 premises. They are designated by numbers 14-17, 60-61, 36. A narrow passage leading from room 14 connected the household with a large area on the east side. The most characteristic feature of this home ownership was a very dense arrangement of rooms, which were extremely small in size. They were probably more intended for winter conditions. This is confirmed by the found remains of obligatory reed mats, under which there was a dense layer of white organic matter - probably straw or rice stalks. Premises No. 14-15 were residential and were located in the inner part of the household, i.e. connected the outside of the house to the inside. Along the southern and western walls of room 15 there was a sufa, on which three hums were placed one after another, found buried to the rim. They probably stored grain products, water, etc. The presence of white organic matter shows that everywhere mats were laid on top of straw. A coin of the rulers of Nakhshab, minted in the 5th-6th centuries, was found in room No. 15. The ceramic products that were produced in this household were fired in an oven installed to the left of the entrance. The firebox of the stove, in which the fire was kindled, was outside the room, protruding into the wasteland on the east side.

In the course of archaeological work, it was revealed that two kilns were functioning in this farm. Thus, in room No. 1, a two-tiered circular oven was found. However, it should be noted that both ovens were found under the topmost floor covering.

Room 16 of this household was clearly intended for prayers. Along the three walls of the room, there were sufas for sitting, and on the opposite wall - a small square-shaped sufa. They usually put idols made of wood, terracotta or clay on it. The presence of just such idols was noted by Y. Yakubov, who conducted research in settlements of the early Middle Ages in the upper reaches of the Zarafshan River (Yakubov 1996, 11-20).

Household №3 consisted of eight very closely attached premises for economic, residential and religious purposes. At the entrance to the house there was an aivan, under which a large sufa was arranged. There was an entrance from the aivan to the main room of the household. This room, designated as No. 2, was in the form of a square, measuring 5x4.5 m, with one door on the south and one on the west. The entrance to the room was blocked by a not very high threshold. 1.5 m from the threshold in the center of the room, a burnt circle with a diameter of about 60-70 cm is visible - a trace of the hearth. On both sides of the hearth, there are rectangular barriers, 8 cm

high, 20 cm long and 10 cm wide. Barriers for two more hearths and fragments of one cauldron were also found here. A pile of white ash was found to the west of the barrier. The upper part of the rectangular shield is also burnt and has a reddish tint. A clay figurine was found 40 cm west of the hearth. The figurine is 12 cm high and 9 cm wide. The figurine is a depiction of the head of a person; the left side of the face, curls of hair, and the left eye are well preserved. The surface of the figurine is covered with alabaster, there is a large red mole on the cheek, and the eyes are black. According to experts, the statuette has been restored many times. The main reason for this is her constant presence near the fire. That is why the surface of the figurine is covered with soot. Due to the soot, the figurine of the god often needed cleaning and, naturally, the sculptor was doing this. Judging by the surviving layers covering the crack on the obverse, the figurine was repaired at least 10 times. The back of the head was made in the form of a flat surface. Probably, originally, the deity was supposed to be attached to the wall. This is evidenced by the holes in the neck of the figurine. We believe that this clay figurine was an idol, the base of which was probably made of wood. There is written information that these very figurines of idols were widespread on the territory of Sogd (Narshakhi 1897; Biruni 1957, 254-257) [1]. Again, there is information that in the course of archaeological work on the territory of Fergana, Ustrushana and Sogd, just such idols of various types and forms were discovered (Mukhtarov 1982, 5-48; Brykina 1982, 192). [2]

Household №4 consisted of 15 premises and is considered one of the largest households that occupied the southern part of the block. The farm was distinguished by its size, compact arrangement of rooms, and an abundance of ceramics. In the course of the survey, material was obtained related to the expansion of the family of the artisan-ceramist and its subsequent division into separate families. So, if initially the farm consisted of rooms No. 19, 27, 33, 39, 22, 23, 13, 8-9, 18, 28, 35, then in the process of expanding the farm, rooms No. 22-23, 13, 8-9 were separated. and 18.

Pottery is considered to be such a type of craft production that the craftsmen of this craft made not only small jugs, but also a large number of bowls, plates, bowls and even tripod dastarkhans. Near the wall of room No. 23, belonging to the workshop, 11 pieces were lifted from the floor surface. similar terracotta figurines. All of them depicted a ruler with divine power. The terracotta figurine found among others in room 23 of Yerkurgan is very similar to the find made at the Shurtepa settlement of the Chimkurgan reservoir (Kabanov 1981: 100). S.K. Kabanov, who carried out archaeological work there, having found 2 such figurines, immediately determined that they were "terracotta figurines made by city craftsmen". Archaeological work at the Yerkurgan settlement was carried out 10-15 years after S.K. Kabanov, but he probably foresaw the discovery of similar finds in the future. S.K. Kabanov initially assumed that the statuette he found belongs to the Kidarite period, and later expressed the opinion that it dates from the 3rd-4th centuries. and Nakhshab could be related to Parthia (Kabanov 1981, 100-102). After it became known that these terracotta figurines were made in the workshop of household No. 4 of the ceramics quarter of Yerkurgan, we came to the conclusion that they date from the 5th-6th centuries. and can be an image of the "deified ruler of Nakhshab" [7-9].

We assume that the serial production of the image of the ruler is a manifestation of the cult of deification of the early Middle Ages and in practice was carried out through a centralized order. Obviously, the centralized production of such products in large cities of a given territory, with its subsequent sale throughout the country, implied a special organizational nature of this event.

Household №5, which consisted of 7 rooms, was also located in the southern part of the ceramists' quarter. One of the premises, measuring 9x7.7 m, designated by us as No. 19, was clearly intended for handicraft affairs. At the western and northern walls, spacious sufas were built, in several places of which large khums were buried. The presence of a large number of tripod dastarkhans made of clay testifies to the fact that this room was the workshop of a ceramic craftsman. This also indicates the serial production of finished products.

The most important thing is that room 19 resembles a large workshop, built in the form of a large courtyard. The thing is that, despite the large size of the room, there were very wide sufas along the northern and western walls. At the northern edge of the western wall, 1 hum was buried at full height. The same is the case with the hums located in the suf near the northern wall of the room. Thus, if in the northeastern corner there were 2 khums buried side by side, then a little to the west of them you could see a lot of the aforementioned dastarkhans, stacked on top of each other and being ready-made products. At the western edge of the Sufa, an ash-filled hearth was discovered, near which there was another buried hum. In other parts of the Sufa, two more hearths that existed here can be judged by the surviving ash spots.

So, this is a large room in all respects, i.e. its size, arrangement of sufas, equipping with the necessary items was intended for the implementation of craft activities. From this room, through a narrow passage, one could get into room no. 27. Unlike others, it has been well preserved. There was a sufa along the eastern wall. At the southern wall there was a marble base in a kind of a circle, on which a second base of fired clay was installed. This find deserves special attention, because the top of the ceramic base was not suitable for supporting a large support. In our opinion, the assumption that such a base served as a kind of pedestal for a figurine of a deity associated with Zoroastrianism can be considered closer to reality.

In the most southeastern part of the workshop of a ceramic craftsman, room No. 33 has been partially preserved. Since it was located at the exit to the street, there is an assumption that it was a shop for the sale of finished goods.

Thus, in the pottery, which occupied the entire southeastern part of the ceramists' quarter, at first there was one household, which over time, due to the expansion of the family, was divided into two (No. 4 and 5) parts. Workshop No. 5 included at least 6 rooms, of which room No. 19 occupies a special place. Among the products that were produced by this workshop, the item called "dastarkhan", which was widespread in the Middle Ages, is of particular interest. In addition, other products were produced in the workshop, which was separated from the main father's. It seems that this part of the clan specialized in making terracotta figurines.

Household №6. In the process of studying the quarter of ceramists, 9 households were specifically identified, of which only household No. 6 was not provided with information regarding its economic activities. Being the smallest, it consisted of only 3 rooms (nos. 48, 50, 53), and the entrance to the property was on the main road on the west side.

Thus, when examining the warehouse of the ceramic workshop (No. 5) of the household No. 7, the products ready for sale and a whole series of cookware prepared for firing were raised. Most of the pottery production consisted of hums and miniature jugs.

As already mentioned, there is a large place between the western walls of rooms No. 53, No. 59 and the roadside, which was probably a large aivan. The facade of the aivan overlooked the main

road and at the same time served as a retail store for finished products. From an architectural point of view, the aivan connected several premises into one large household.

CONCLUSION

Thus, during the survey of the Yerkurgan ceramics quarter of the early Middle Ages, we got acquainted with the daily life, economic activity, trade, religious beliefs and ritual actions of the inhabitants in the 5th-6th centuries, which was told about by their houses, arrangement of premises and finds.

The study of the structure of ceramists' households showed that they had: a separate workshop, a ceramic oven, a potter's wheel, a prayer room, a drawing-room, an "inner room", a "winter room", etc.

The upper horizon of the quarter, the ceramists, belong to the Hephthalite era, because the complexes found here retain clear ethnic features. That is why this period, which combined the features of the culture of the Sogdians and Hephthalites, we began to call the period of "Sogdian-Hephthalite symbiosis".

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THE IMPORTANCE OF SPORTS GAMES IN THE FORMATION OF A HEALTHY LIFESTYLE

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ABSTRACT

In modern society, the problem of preserving and strengthening the health of college students is more urgent than ever before. This is due to the fact that very high requirements are imposed on them, which only healthy young men and girls can meet. And you can talk about health not only in the absence of any diseases, but also under the condition of harmonious neuropsychic development, high mental and physical performance. It is known that health is formed under the influence of a whole complex of factors. Physical education classes are important.

KEYWORDS: *Education, Physical Education, Physical Activity, Physical Culture, Physical Education Theory, Health, Sports, Upbringing Of A Healthy Generation, Healthy Lifestyle, Modernization.*

INTRODUCTION

The game is a historically formed social phenomenon, an independent type of activity peculiar to a person. The game can be a means of self-knowledge, entertainment, recreation, a means of physical and general social education, a means of sports. The games used for physical education are very diverse. They can be divided into 2 large groups: mobile and sports. [1]

The specific concept that distinguishes sports games from other sports should be taken as "gaming activity". Sports games are independent sports related to the game confrontation of teams or individual athletes, and conducted according to certain rules. Sports games in which two (or more) teams compete are called team sports games. [2]

Physical activity varies with different sports games. For example, it is very high in football, basketball, hockey, water polo; all these games require a lot of activity, these are games for young people. Tennis, volleyball and especially the old Russian game gorodki, as well as croquet require less stress, so they can be recommended not only to young people, but also to elderly and even elderly people. [3]

Physical perfection is interpreted differently as a concept that has its own ideal classification for any historical period that changes historically, because this ideal reflects the economic conditions of the population, the worldview of social life. Physically fit is a historically formed perception of the norm of health and the level of comprehensive physical fitness, which optimally meets the requirements of longevity of labor, public, military and human creative activities. [4]

Physical maturity has a clear meaning and social significance in the harmonious development of the individual. It has been proven in practice that activities performed only to achieve physical maturity lead to one-sidedness during the pedagogical process. [5]

MAIN PART

Sports games are the highest stage of the development of outdoor games. They differ from mobile ones by uniform rules that determine the composition of participants, the size and layout of the site, the duration of the game, equipment and inventory, etc., which allows holding competitions of various scales. Competitions in sports games are of the nature of wrestling and require a lot of physical exertion and strong-willed efforts from the participants. [6]

Young sportsman`s intellectual training in sports games is mentioned in the article. There are also given the most important information about the development of intellectual abilities, with mental functions such as memory, attention, critical thinking, perception and others. They are considered on the main aspects of realizing technical-tactical training in sports games. [7]

The growing competition in the world sports arena, acceleration of the training process, the recognition of athletes' achievements, the development of science in sports, and other facts require strong academic theoretical preparation from sportsmen. [8]

The intellectual training of athletes is understood as the process of understanding the essence of sporting activities and the events associated with it. Now, we see that the gameplay is versatile in the sporting game, and the analysis of this process shows that a number of mental functions that are important for the athlete to play successfully are of great importance. Therefore, a special place is given to the formation and improvement of mental functions that ensure the process of receiving, processing, storing and transmitting information that occurs during the game. During the game, athletes use this information to correct the technical and tactical issues, such as the best place on the pitch, who is with the ball and where the ball, possible opponent's resistance, etc... [9]

For this purpose, the sensory perception parameters, in particular the depth and extent of vision are important. The first determines whether the moving object is capable of detecting distant-action features, such as the ability to detect the distance between the flying ball and the moving player, and the second - determines whether the players are located on the playing field. [10]

RESULTS AND DISCUSSIONS

When starting the attack, the player must see the position of his or her partners, as well as the defender, goalkeeper, and other opponents. The defender should keep the ball in the protective field and be ready to defend his partner at the same time. Often, the athlete controls his focus on the main subject at that time, in the player, and controls the rest of the peripheral vision. Specific features of this activity create a complex perception of athletes during the process. On its basis, the ability to distinguish between different analyzer, *i.e.*: muscular, vestibular, vision, hearing and sensing analyzer, develops. Such perceptions include "perception of the gate", «perception of sports field", " perception of the ball", "and perception of time" and others. However, athletes who have high sporting results can only achieve such perceptions. One of the main tasks of intellectual preparation is to create a high level of gameplay in athletics. [11]

Their memory features are of great importance in successfully improving the technical and tactical skills of athletes. These include the amount of memory, the speed of memory, the retrieval of the data, and the ability to reprint it at the right time. Memory features of the athletes depend on performance of 2-types of memory: long-term and short-term or operative memory. In the work of sportsmen, more attention is paid to memory. RAM memory is used to store data received shortly and reminder a part of the long-term memory in the athlete's mind. [12]

During the training, players have to remember many tactical schemes. Moreover, during the competition, they need to be able to find and apply tactical, tactical, tricks for the young, original, opponent in the performance of the game. All these things need to be kept by the athlete in his own memory and at the right time. [13]

In sports (handball, basketball, soccer, etc.), because of the acceleration of the pace of play, and often with the athlete's partner in the shortest possible time, they develop the mental functions of the athlete who provide the processing of the information that is needed for accurate and fast moving and predicting the future situation in the game level is of great importance. First of all, operative thinking plays an important role in the immediate development of the information received. Operative Thinking Instantly, the actions that are going to take place in the process of combinations cannot be used to think, that is, in time deficiency. Observations show that in most sports games, players apply their most effective technical and tactical methods to the active opponent's resistance. We think that rapidly changing tactical conclusions as a result of the game are the result of an operative thinking process. The player immediately chooses one of several options, which is appropriate for that situation. Often, volleyball players, basketball players and hand-ballers choose the ones that are well known and familiar to all (combinations). [14]

It should also be taken into account that operative thinking includes elements of creative thinking. The process of educating the intellectual abilities that meet the specific needs of the players is based on the knowledge gained and requires a creative approach in practical work. For example, tactical schemes can be better understood and applied without errors. However, practice has shown that athletes need to be actively involved in finding new and new methods that are used in each particular case to develop operational tactical thinking. [15]

Studying and improving technical methods and tactical movements, enhancing physical and theoretical training and creative approach to them are a practical basis for the development of mental functions of athletes. [16]

High results in sports, physical, technical and tactical training of a sportsman are related to his psychic qualities and development of his personal qualities. For example, if the athlete's motion sensitivity, movement memory, and attention are not tailor-made, it is impossible to accomplish any of these techniques. [17]

Athletes have developed a system of special knowledge that encourages a creative approach to the development and improvement of intellectual abilities. These tasks are focused on focusing, and at the same time concentrating on exercises. For example: two players to practice with more than one ball; two players move in different directions in the motion; exercise will be used to develop a complex selection reaction. [18]

A mobile game with rules is "a conscious, active activity characterized by accurate and timely performance of tasks related to the rules that are mandatory for all players." The deep meaning of

outdoor games lies in their full-fledged role in the physical and spiritual life that exists in the history and culture of each nation. Outdoor play can be called the most important educational institution that promotes both the development of physical and mental abilities, and the development of moral norms, rules of behavior, ethical values of society. [19]

Outdoor games are primarily a means of physical education. They make it possible to develop and improve their movements, exercises in running, jumping, climbing, throwing, fishing, etc. A variety of movements require active activity of large and small muscles, contribute to better metabolism, blood circulation, breathing, i.e. increase the vital activity of the body. Outdoor games also have a great influence on the neuropsychic development of the player, the formation of important personality qualities. They cause positive emotions, develop inhibitory processes: during the game, players have to react with movement to some signals and refrain from moving with others. These games develop will, intelligence, courage, quick reactions, etc. Joint actions in games bring students closer together; bring them joy from overcoming difficulties and achieving success. The sources of outdoor games with rules are folk games, which are characterized by the brightness of the idea, content, simplicity and entertainment. [20]

Sports and outdoor games enrich participants with new sensations, ideas and concepts. Games expand the range of ideas, develop observation, intelligence, the ability to analyze, compare and generalize what they have seen, on the basis of which to draw conclusions from the observed phenomena in the environment. Sports and outdoor games develop the ability to correctly assess spatial and temporal relationships, quickly and correctly respond to the current situation in the frequently changing environment of the game. Of great educational importance are the games held on the ground in summer and winter conditions: at recreation centers, on hikes and excursions. [21]

Each game has its own characteristics. At the same time, various sports and outdoor games have initial signs that allow them to be divided into certain groups: team and non-team, with direct contact with the enemy and without contact, with an additional projectile (stick, rocket, bat) and without it. When determining the impact of games on the body of students, as well as their significance in the system of physical education, it is necessary to proceed from the general characteristics of game actions. Various movements and actions are used in sports and outdoor games: walking, running, jumping, sudden stops, turns, various throwing and hitting the ball (puck). The players, expediently using game techniques, strive together with their partners to gain an advantage over the opponent, who is actively resisting. Outdoor and sports games are one of the most effective means to help relieve nervous tension and cause positive emotions. For this purpose, the games are used not only in classes with novice athletes, but also by qualified athletes. [22]

Outdoor and sports games, as a means and method of physical education, are widely used in educational institutions. In physical education classes, they are used to solve educational, educational and health-improving tasks in accordance with the requirements of the program. In games at physical education lessons, unlike other forms of classes, the main attention should be paid to the educational and recreational aspects of the game, as well as to the education of physical qualities. The complex movement included in the game is previously mastered with the students with the help of special exercises. Outdoor games are used in the preparatory, competitive and transitional periods of training, but their scope, nature and methodology of their use change in accordance with the objectives of each stage of training. [23]

The game is a need to restore both physical and spiritual strength. Outdoor and sports games help not only in solving a number of special tasks, but also (bearing in mind the nature of gaming activity) always meets a good reception from those involved, a new interest in classes. The game is a boost to the sport. [24]

It is necessary to select games that bring up the necessary qualities and a correct understanding of life. The importance of mobile and a sports game in the education of physical qualities is also great: speed, agility, strength, endurance, flexibility. Games bring up children's feelings of solidarity, camaraderie and responsibility for each other's actions. The rules of the game contribute to the education of conscious discipline, honesty, endurance, the ability to pull yourself together after a strong excitement, to restrain your selfish impulses. [25]

A variety of movements and actions, usually performed outdoors, i.e. in favorable hygienic conditions, have a healing effect on the players. They help to strengthen the nervous system, the motor apparatus, improve the overall metabolism, increase the activity of all organs and systems of the human body and serve as a useful means of active recreation for many workers, especially for those of them who are engaged in intense mental activity. It is known that the more diverse and intense the movements, the more significant and active the changes they cause in the functions of organs and systems of the body. This multi-sided influence of sports games on the human body is very significant. Depending on the intensity of the gaming activity, the oxygen consumption of tissues increases approximately 8-10 times in comparison with the resting state. At the same time, in trained players, the work of the cardiovascular system and respiratory organs becomes more economical, the body's demand for oxygen and nutrients is better ensured. Exercise and sports games have a positive effect on the development of visual, vestibular, muscular and other analyzers. Under the influence of systematic games, the field of vision of the players' increases, their body tolerates rapid changes in body position better, they develop precision of movements.

CONCLUSION

Of educational importance are games related to the motor structure of certain sports (athletics, gymnastics, wrestling, swimming, etc.). Such games are aimed at consolidating and improving previously learned technical and tactical techniques and skills of one or another sport. The educational side of the game will stand at the proper height if the teacher, the educator will pay due attention to it.

So, outdoor and sports games have educational, health and educational significance.

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FEATURE AND DURABILITY EVALUATION OF NANO-MATERIALS CEMENT

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ABSTRACT

In this study, the cementation matrices used a range of nanomaterials, including multiwall carbon nanotubes and Nano-clays. The properties of were looked at. Nano-kaolin was the subject of the study. Clay platelets were exfoliated using the chemical ammonium chloride. OPC is used in the study. The carbon nanotube was applied at a percent cement ratio, and the OPC was replaced with (NMK) at a percentage cement ratio. In the study, the percentage of mixed cement. A percent cement was used to produce the mixed cement mortar. The novel mortar pastes were cured in water for 28 days after being percent hours. The use of mixed cement is being investigated. In addition to the control combination, replacing OPC with 6 wt. percent NMK increased 18 percent, while mixing percent with carbon nanotubes improved 29 percent. After only 5 grams of nanomaterial is applied to 1 kilogram of cement, the amount of cement needed was decreased by 30 percent. Chemical resistance has increased significantly as a result of the use of MWCNT.

KEYWORDS: Carbon Fiber, Carbon Nanotubes, Cement Mortar, Coarse Aggregate, Compressive.

1. INTRODUCTION

The use of Nano-scale materials such as graphene and carbon nanotubes has grown in recent years with the goal of creating multi-faros cement or concrete composites that surpass traditional concrete or mortar in terms of mechanical, hardness, and other important properties. Concrete is utilized extensively in building, resulting in increased energy consumption and waste generation both during the cement manufacturing process and during construction. Carbon nanotubes have been shown to substantially enhance basic properties of concrete, such as heat and hardness, allowing for the replacement of traditional building materials. In the previous research, the application of a surfactant caused the dispersion of in water. The carbon nanotubes were separated using a centrifuge to prevent them from coagulating. Concrete is constructed consisting of a cement binder and particles. The binder may range from the most commonly used hydraulic cement to less usually used hydraulic cements such calcium aluminates cement. Non-Cementous concretes, such as asphalt concrete with a bitumen binder, which is extensively used for road surfaces, and silicone concretes, which utilize polymers as a binder, are examples of such concrete (Fig. 1) [1].

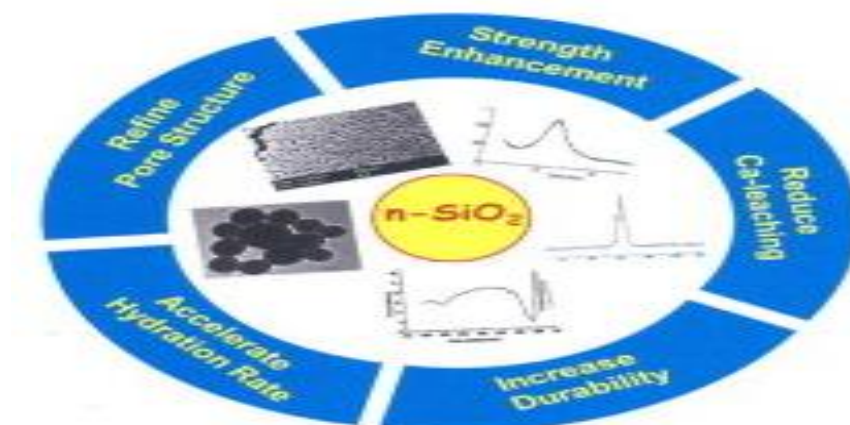


Fig. 1: Nanomaterials Are Receiving Broad Attention To Be Utilized In Building Sector So As To Show Improved Performance Of Materials In Terms Of Smart Functions And Sustainable Characteristics.

Superior consistency tests are performed. This shape is good in terms of resilience and mechanical properties. Cement pastes had carbon fiber additions of 0, 0.29, and 0.58 vol. percent added to them. Carbon fiber showed sensing properties at all dosages, which allowed to determine the test timings. Furthermore, all carbon fiber composites showed a significant increase in resistivity as internal damage started, which happened before any apparent injury signal. As a result, this medication may be used to detect pain or damage [2].

When you combine Portland cement, aggregates, and water, you get. The cement undergoes a chemical reaction, resulting in a composite material for a wide range of applications. (Super plasticizers) are sometimes used to enhance the physical properties of concrete. Reinforcing chemicals are included in most concrete to have tensile strength [3]. Concrete technology dates back to the time of the Roman Empire. The dome of the Coliseum. However, it fell out of favor with the collapse of the Roman Empire, but was resurrected in the mid-eighteenth century. Figure 1 illustrates how the average has risen by 6 percent after 28 days of hydration. If the amount of CNTs rose, the compressive force climbed until it reached a maximum of 0.02 percent, after which it began to decline. As ordinary Portland cement (OPC) is replaced with power, it increases by 18 percent when compared to the control mix. Two mechanisms may be implicated for the increase in NMK inclusion. The strength and density of the material increased as a result of its use as an interior.

It is well-known for its electrical conductivity, multi-functionality, and piezo resistivity-based strain sensing capabilities. Carbon fiber (added with 15 percent silica fume) also enhances the direct current efficacy of carbon black. Carbon black partly (50 percent) replaces carbon fiber, lowering costs and increasing workability while providing adequate electromagnetic interference shielding. Partial replacement, on the other hand, decreases the strain sensing efficiency. While compressive strength is maintained, full replacement decreases efficacy and increases failure. Because of the partial replacement's improved workability, a higher average conductive admixture efficiency may be achieved. Cement provides about 3.5 percent of total mass. Adding lowers compressive strength as compared to fiber replacement, straddling the boundary between fiber replacement and carbon black extension [4].

Inorganic cements based on lime or calcium silicate are widely utilized in building. They are categorized as hydraulic or non-hydraulic depending on their performance. A chemical interaction between the dry components and the water enables hydraulic cements to solidify. Mineral hydrates are formed as a result of a chemical reaction, and since they are not fully water soluble, they are extremely stable in water and chemically resistant. This method, which includes volcanic ash (pozzolana) and lime, allows the hardened material to be set in rainy weather or under water while also preserving it.

Non-hydraulic cement floats in the air rather than in the water. When it is installed, it is chemically resistant. In bulk, Portland cement clinker is a hydraulic aggregate, with aluminum and iron accounting for the remaining MgO material, which must not exceed 5.0 percent by volume.

Pozzolans are natural or manmade compounds that contain reactive silica. Created cementation materials when finely divided. The following components make up Portland Pozzolana Cement:

- Clinker of OPC
- Gypsum is a type of gypsum.

Rapid Hardening Cement is created when OPC contains a higher percentage of finely powdered Tri-calcium silicate (C3S). The total setup period is 600 minutes, including a 30 minute initial setting time.

It produces an increase when NMK is present in mortar pastes. There are also significant grounds for change. As a result, an improvement in phase enthalpy indicates that well-crystalline phases are forming. NMK and CH crystallizations may also fill gaps in cementitious materials, increasing their strength. The proportion of carbon nanotubes is limited. Cement grains were partially detached from the hydration phase at higher CNT concentrations, therefore they were coated with CNT flakes. The formation of hydrates, as well as the cement paste bond resistance, are limited by partially hydrated cement grains.

Fiber has been extensively studied due to its utility as a multifunctional variable. The percolation effect was often observed and simulated since the electrical behavior of such products had to be determined. Among the many applications of multifunctional cement composites, the possibility of a CFRCC to serve as a strain indicator is appealing. This article offers experimental data on the relationship between mechanism and fiber slenderness, which allowed for percolation with less carbon fiber and impacted CFRCC efficiency [5].

It is now possible to incorporate fibers into a material, allowing for defect detection. A drop in resistivity during crack development or propagation has been attributed, as well as a reduction in resistivity after fracture closure. The linearity between the volume resistivity change and the compressive stress was excellent in mortars utilizing carbon fibers and either methylcellulose or latex as dispersants. The linearity of the carbon fiber, methylcellulose, and silica fume mortar was poor, as it had the lowest compressive force for fracture closure, while the other two mortars did not [6].

Where were they put to the test on a standard reinforced concrete (RC) beam? On a four-meter-long fiber the casting conditions, electrical connections, and duty position were all compared. In the examination of reversible (elastic) sensory states. The sensitivity of CNFCC were higher (up

to 191.8 gauge factor), while CFCC only reached gauge factor. Damage-sensing tests were also carried out, in which the applied load was progressively increased until the RC beam failed. Thresholds studies showed little harm in these situations. As a result, these cement composites may be utilized to identify stress in badly damaged structures on the brink of collapse [7].

Made-to-order for use in the production of this sample the potential of various alternatives was evaluated in order to choose the finest. As a result, the new paraffin/diatomite/MWCNTs composite was authorized. The thermal properties of this material were evaluated using the DSC method. The composite PCM's melting temperature was determined to be 27.12 °C, with a latent heat of 89.40 J/g. It is also chemically consistent and thermally stable, according to TGA (Thermo-Gravimetric Analysis) results. Furthermore, substantial increases in thermal conductivity and heat storage/release rates have been achieved without sacrificing thermal properties, chemical compatibility, or thermos-stability [8].

The effect of adding anionic gum Arabic-modified multi-walled carbon nanotubes (MWCNTs) into Portland cement pastes on flexural stability was investigated. The flexural toughness of cement composites was studied, and it was discovered that adding treated nanotubes to Portland cement pastes improved both the fracture energy and the flexural toughness index significantly. MWCNTs function as bridges over fractures and gaps, forming a network that transmits the weight under stress, according to this study [9].

2. DISCUSSION

The compressive force grew as the amount of CNTs increased until it reached an optimum of 0.02 percent, after which it started to decrease. In comparison to the control mix, as ordinary Portland cement (OPC) is substituted with power rises by 18 percent. The rise in NMK inclusion may be explained by two mechanisms. As a result of functioning as an interior, the strength and density of the material increased. During a long period of damp curing, reactions, such as NMK platelet particles, react slowly in the environment but extremely rapidly. Furthermore, the rising % caused the cross linking of CNTs fiber with hydration material, which resulted in the formation of micro cracks. Furthermore, CNTs agglomerated around the cement grains at larger CNT loading ratios, allowing partial hydration of the cement grains as well as the development of a hydrated material with a weak link. Furthermore, the fibers are not properly wetted, resulting in fiber pullout as well as the formation as well as the spread of micro fractures.

The hydrate is represented by the second 174 0C (C_2ASH_8), hydro garnet by the 380 0C (C_3ASH_6), CH by 470 0C, as well as the quartz by the 580 0C. Thermo-grams were characterized by a decrease in as well as an increase in when the NMK was generated. During the hydration process. The use of Nano-scale materials such as graphene and carbon nanotubes has grown in recent years with the goal of creating multi-faros cement or concrete composites that surpass traditional concrete or mortar in terms of mechanical, hardness, and other important properties. Concrete is utilized extensively in building, resulting in increased energy consumption and waste generation both during the cement manufacturing process and during construction. Carbon nanotubes have been shown to substantially enhance basic properties of concrete, such as heat and hardness, allowing for the replacement of traditional building materials. In the previous research, the application of a surfactant caused the dispersion of in water. The carbon nanotubes were separated using a centrifuge to prevent them from coagulating. Concrete is constructed consisting of a cement binder and particles. The binder may

range from the most commonly used hydraulic cement to less usually used hydraulic cements such calcium aluminates cement.

When you combine Portland cement, aggregates, and water, you get. The cement undergoes a chemical reaction, resulting in a composite material for a wide range of applications. Super plasticizers are sometimes used to enhance the physical properties of concrete. Reinforcing chemicals are included in most concrete to give tensile strength. Concrete technology dates back to the time of the Roman Empire. The dome of the Coliseum. However, it fell out of favor with the collapse of the Roman Empire, but was resurrected in the mid-eighteenth century. If the amount of CNTs rose, the compressive force climbed until it reached a maximum of 0.02 percent, after which it began to decline. As ordinary Portland cement (OPC) is replaced with power, it increases by 18 percent when compared to the control mix. Two mechanisms may be implicated for the increase in NMK inclusion. The strength and density of the material increased as a result of its use as an interior.

Cement is rarely used alone in building, but usually in conjunction with aggregates to bond them together. It works as a binder, binding together other materials by setting, adhering, and hardening them. In fact, cement is one of the most commonly utilized materials on the planet. As a result, the development of well-crystalline phases is indicated by an increase in phase enthalpy. In addition, NMK and CH crystallizations may fill gaps in cementitious materials, increasing their strength. The percentage of CNTs is reduced. Cement grains were coated with CNT flakes at increasing CNT concentrations, resulting in partial cement grain isolation from the hydration process. The formation of hydrates and the cement paste bond resistance are also limited by partially hydrated cement grains [10].

When NMK is present in mortar pastes, it causes an increase. In addition, there are reasons for change. As a consequence, an increase in phase enthalpy indicates the formation of well-crystalline phases. Furthermore, NMK as well as the CH crystallizations may fill gaps in cementitious materials, enhancing their strength. CNTs are reduced by the percentage. At higher CNT ratios, cement grains were covered with CNT flakes, resulting in partial cement grain isolation from the hydration process. Cement grains that are partially hydrated limit the formation of hydrates as well as the cement paste bond resistance. Higher CNT ratios, on the other hand, resulted in hydrates with well-crystalline amorphous phases, with CNTs bridging and preventing the development of small cracks.

In contrast to traditional concrete or mortar, the use of Nano-scale materials such as graphene and carbon nanotubes has increased over time for the purpose of achieving multi-faros composites of either cement or concrete that demonstrate changes in terms of mechanical, toughness, and various other critical properties. Concrete is used extensively in building, resulting in an increase in energy consumption and a considerable quantity of waste generated both during the cement manufacturing process and during the construction phase. Carbon nanotubes have been shown to significantly improve the basic properties of concrete, such as temperature and hardness, allowing conventional construction materials to be replaced. The inclusion of surfactant in the previous study resulted in the dispersion of in water. A centrifuge was used to separate the carbon nanotubes, which prevented them from coagulating with one another.

3. CONCLUSION

When compared to the control combination, the following assumptions may be changed. Thanks to NMK, CNT was able to maximize its particle size. CNTs have also been discovered as securely implanted components that improve the compressive strength of composites. The 0.1 percent addition of CNTs decreased compressive power, although the gain was 11 percent greater than a mixed mortar containing 6 percent NMK.

The novel mortar pastes were cured in water for 28 days after being percent hours. The use of mixed cement is being investigated. In contrast to the control combination, substituting 6 wt. percent NMK for OPC enhanced 18 percent, while combining 6 wt. percent NMK with 0.02 wt. percent carbon nanotubes improved 29 percent. After only 5 grams of nanomaterial is applied to 1 kilogram of cement, the amount of cement needed was decreased by 30 percent. Chemical resistance has increased significantly as a result of the use of MWCNT.

Multiwall, as well as other Nano-materials, were used as cementation matrices in this research. The physio-mechanical properties of nanoparticles were investigated. The research focuses on Nano-kaolin. Clay platelets were exfoliated using the chemical ammonium chloride. In the study, the percentage of mixed cement. A percent cement was used to produce the mixed cement mortar.

Remove the cone and clean it. Place on the slump tray after dampening with spray. Clean, solid, level, and non-absorbent slump plates are great. For the slump study, collect a sample of concrete. The cover may be squeezed while standing upright. Rodding is the process of inserting a steel rod into concrete and compacting it into a disc, or slump cone. Starting on the outside and working your way inside over the top board, rod in a particular pattern. Only rodding into the top sheet, fill to the end of the second layer. Cover the cone with concrete before attaching the floor pole. Attach the tip and return it to its original place over the up-turned steps.

Atomic Force Microscopy (AFM), Transmission Electron Microscopy (TEM), as well as the Scanning Electron Microscopy (SEM) are observational methods for measuring the length, diameter, and number of walls of multiwall nanotubes (MWNTs). The temperature at the start of oxidation, as well as the temperature at the maximum oxidation point, are all determined using Thermo-Gravimetric Analysis (TGA). The derivative curve's composition provides qualitative information about the sample's homogeneity in contrast to the content.

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REVIEW STUDY ON EFFECT OF SUGAR OVER HUMAN HEALTH

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ABSTRACT

Sugar is a carbohydrate building block that may be found naturally in a variety of foods such as fruit, milk, vegetables, and grains. Added sugar, on the other hand, can be found in flavored yogurt, sweetened drinks, baked goods, and cereals, and it is extensively utilized in industry. Carbohydrates come in a variety of forms, including monosaccharide and polysaccharide, and have a variety of characteristics in the food business and nutritionally. Sugars serve a variety of functions in the food business, including preservation, antioxidants, and the enhancement of color, taste, and texture, in addition to their primary function of sweetness. Many foods rich in added sugar offer energy, but they are also low in other nutrients, affecting the balance of nutrients such as minerals, vitamins, and proteins. As a result, excessive sugar consumption is very hazardous, particularly at crucial periods such as infancy, pregnancy, and aging. To maintain the body healthy, it's critical to limit the amount of high-sugar foods consumed. This page discusses the many kinds of sugars, their role in diet, and their health implications.

KEYWORDS: Diet, Harmful, Health, Nutrition, Sugar.

1. INTRODUCTION

Sugars are glycans/carbohydrates that are polyhydroxy aldehydes/ketones. Carbohydrates have acquired the status of macronutrients by supplying energy currency, ATP, and other useful physiological functions to the body. They may be found in a variety of meals and drinks. Carbohydrates' primary purpose is to provide energy to the body for its normal functioning and physical activity by using glucose as a fuel source. Sugar consumption provides this immediate energy. Furthermore, Prolotherapy, a treatment for treating persistent back pain, uses sugar (glucose or dextrose) in injections to relieve pain [1–4].

Furthermore, glycans (a kind of sugar) are an important component of many medicines. Glycans are found in medicines including heparin (used to treat and prevent blood clots in veins, arteries, and lungs), erythropoietin, certain anti-flu treatments, and cancer drugs [5–7]. Despite the fact that sugar has numerous purposes, the debate over whether it is a friend or an adversary remains unresolved. Sugar is seen as an adversary in certain ways, yet its total removal from our diet will have a significant impact on our health. As a result, this review emphasizes the impact of sugar consumption (whether helpful or detrimental) on human health.

1.1. Sugar's function in the body and the impact of its consumption on human health:

If we don't eat sugar, our bodies will stop working correctly. Sugars contained in fruits, lactose, milk sugar, and other naturally available sugars create significant profits in our diet. The sugars known as "added sugars," i.e., sugars added during the processing of food, drinks, and other preparations, are detrimental to our bodies, while "essential sugars" are carbohydrates that the body needs to absorb nutrients from their source. Basically, the latter's nutrients are known as glyconutrients, which are found in fruits and vegetables. Fruit sugars do not damage our bodies since they include fibre and other nutrients in addition to fructose [8–10]. Fructose gives our bodies a burst of energy, whereas fibers balance out the fructose's effects, giving us long-lasting energy. Sugars in dairy meals are also good for our bodies since they supply us with additional nutrients. Whole grains and starchy vegetables, for example, include some beneficial sugars as well as other nutritional fibers.

1.2. The following are some of the most prevalent kinds of sugar found in our diets, as well as their impact on our bodies' health:

1.2.1. Glucose:

Glucose consumption causes the pancreas to produce insulin. This rise in insulin signals from the brain tells us to quit eating because we've eaten enough. After eating glucose, our bodies go through a number of processes, one of which happens in the liver and generates very low density lipoproteins (VLDL), which are linked to cardiovascular disease. However, the liver processes approximately 1 out of every 24 calories of glucose we eat and converts it to VLDL.

1.2.2. Sucrose:

Sucrose and high fructose corn syrups (HFCS) are both sugars with a high fructose content. Both sucrose and HFCS have a high fructose content (50 percent in sucrose and 55 percent in the HFCS). Because fructose is processed exclusively by the liver, a significant quantity of VLDL is generated along with lipids when we consume these sugars. Furthermore, since the brain rejects leptin, these carbohydrates cannot be regulated by the brain (a protein for energy intake regulation and to check the efficacy of metabolism). This isn't to say that consuming these sugars is always bad. In the case of athletes, HFCS consumption causes the buildup of glycogen in their liver, which is then utilized during their workouts or other athlete activities. This proves that HFCS consumption is advantageous to those who engage in high-intensity physical exercise and need immediate energy.

1.2.3. Fucose:

It's only found in high concentrations in human breast milk, marine kelp, Brewer's yeast, and even certain mushrooms. Monosaccharide L-fucose (6-deoxy-L-galactose) is present in N- and O-linked glycans and glycolipids produced by mammalian cells. These are crucial in blood transfusion, leukocyte-endothelium adhesion mediated by selection, host-microbe interaction, and ontogenic processes. Pathological diseases such as cancer and atherosclerosis are linked to changes in their expression. This sugar promotes long-term memory, protects respiratory infections, and slows tumor development. They also have the ability to modulate the immune system.

Glycoproteins and glycolipids linked with this sugar are essential for immune system tuning and inflammation management. This sugar is responsible for the functions of antibodies, major histocompatibility complexes (MHCs), platelets, egg-sperm contact, connective tissue health, and the exchange of substances across and within tissues. It also has certain hormonal activities, such as follicle stimulating hormone, whereas the latter conducts cellular membrane tasks, such as substance exchange and cell-cell interactions, such as tissue formation. Rheumatoid arthritis is linked to a lack of this sugar. Low amounts of fucose have been seen in individuals with cystitis fibrosis, diabetes, and hepatic diseases. Fucose is also necessary for the expulsion of the herpes virus from the body. By thickening the skin and increasing its moisture, this sugar minimizes wrinkles.

1.2.4. Galactosamine:

Shark cartilage and crab shells, as well as certain red algae, contain them (Phaeophyceae). Although it isn't absolutely necessary, it aids intercellular communication. These carbohydrates aid in the regulation of the immune system and inflammation. It's also essential for good joint health. Its low levels have been linked to heart and circulatory problems.

1.2.5. Glucosamine:

This glyconutrient aids in the maintenance of joint health. Because it is a precursor of cartilage, it aids in the treatment of osteoarthritis. Galactosamine is found in shark cartilage and crab shells. Administer when part of it is oxidized in our bodies and the rest is transformed into glycoproteins and glycolipids.

1.2.6. Galactose:

Lactose, a disaccharide in conjunction with glucose, makes up this sugar present in milk (nearly 5 percent solids in dairy products). This sugar may also be found in a number of fruits, vegetables, and plants. Galactose assists in the fast healing of injuries, aids in calcium absorption, and improves cognitive capacity.

1.2.7. Mannose:

Our immune system relies on mannose to function properly. Inflammation and certain illnesses are caused by a lack of this sugar. In comparison to glucose, it is absorbed at a slower rate in the body. It enters the circulation immediately after absorption. It may be found in Aloe Vera, sea kelp, beans, capsicum, cabbage, eggplant, tomatoes, turnips, currants, mushrooms, and Aloe Vera, with the latter serving as the primary source.

1.2.8. N-acetyl-neuramic acid (NANA):

The first meal a mammalian receives from his or her mother after birth is a special sugar found in colostrum. This sugar is an important component of gangliosides, which are found in the grey matter of the brain. It's also found in the ovulation hormone Follicle stimulating hormone (FSH). Additionally, this sugar differentiates mammals from other animal groups.

1.2.9. Xylose:

Xylose, an aldo-pentose present in the embryo of most edible plants, is known to help prevent malignancies of the digestive system. Aloe Vera, blackberries, broccoli, eggplant, green beans,

guava, pears, peas, raspberries, sea kelp, and spinach are just a few fruits and vegetables that contain it.

1.3.The body's sugar metabolism:

After sugar molecules reach our body's cells, the HSK route (glycolysis) and TCA cycle, as well as other intermediates, may be used to generate a variety of chemicals that aid in various metabolic processes and storage. Sugar is transformed into glycoproteins and glycolipids after being digested by the digestive system and subsequent metabolism. The cell membrane of animal cells is made up of glycoproteins and glycolipids, as well as carbohydrates and fats. Both of these (glycolipids and glycoproteins) form tiny antennae on cell walls that serve as a means of communication between cells as well as absorb and process nutrients, enzymes, hormones, and other chemicals necessary for heart function, skin healing, bacterial infection treatment, arteriosclerosis, Alzheimer's, and Parkinson's diseases.

Sugar's main purpose as soon as we eat it is to give energy to our brain and neurological system, which control our everyday actions. In addition, there are a number of additional important reasons for us to include sugar in our diet. Here are a few examples:

1.3.1. Metabolizing fats:

This prevents our bodies from using proteins for energy that are otherwise needed as structural components. Energy reservoir: Glucose may be stored in the liver as glycogen, which acts as an energy reservoir. The body expends this energy during activity or when glucose is unavailable as an energy source. Their reservoirs also keep our blood sugar in check. An adult brain needs approximately 140 g of glucose per day to operate, which is nearly half of the total dietary carbohydrate eaten. Studies have demonstrated that drinking a sugar-sweetened beverage or eating a carbohydrate meal improves mental abilities such as remembering power, response speeds, attention span, and arithmetic skills. It also promotes cognitive benefits and decreases tiredness. Driving tests utilizing car stimulators revealed that those who took the exam after eating sweets made less errors than those who took the test after drinking just water.

Furthermore, sugar stimulates two brain hormones/neurotransmitters, serotonin (feel-good hormone) and beta-endorphin, which function as pain relievers and anxiety reducers. Myelin is a sheath that surrounds and protects the axon of a neuron, allowing the nervous system to operate properly. It is made up of 70-85% lipids (glycolipid and galactocerebroside) and 15-30% protein. Glucosamine, a product of glucose, is required for myelin formation.

1.3.2. Monocyte transportation:

Monocytes are the biggest known leucocytes (WBCs) and an important component of the immune system. Sugar consumption aids in their transit.

1.3.3. Muscle formation:

Muscle is a connective tissue found in animals that contains actin and myosin filaments. These glide past one other, providing contraction, posture, movement, and motility, as well as the operation of the internal organs. Glucose and its product glucosamine are required for muscle development and to maintain our muscles lean.

1.3.4. Skin formation:

The skin is our body's exterior protective and sensitive (for touch, heat, and so on) covering. Collagen and elastin, the skin's two major components, need glucose and glucosamine to be formed. Our skin ages prematurely or accelerates as a result of a shortage of sugar in our bodies. Fucose enhances skin elasticity by promoting elastin synthesis, deposition, and density maintenance.

1.3.5. Ageing:

Sugar molecules, together with proteins, enter the bloodstream and create AGEs (Advanced glycosylated end products), which destroy elastin and collagen, making the skin fragile and affecting its firmness. Anti-oxidative enzymes that protect the skin from damaging UV rays are likewise neutralized by AGEs, causing our skin to age.

1.4. Sucrose intolerance is a condition in which a person is unable to consume sugar:

Sucrose intolerance occurs when the sucrase enzyme, which metabolizes sucrose in the body, is not generated in adequate amounts in the small intestine. According to Wikipedia, the latter is shown by stomach pains and bloating, diarrhea and constipation, hypoglycemia and headache, poor development, upper respiratory virus infection, anxiety, and so on.

Alaskans are more susceptible to sucrose intolerance. Congenital sucrose-isomaltase deficit, or sucrose isomaltase deficiency, is another name for it. Other sugar intolerances include fructose intolerance (due to a lack of the fructose carrier enzyme in enterocytes), trehalose intolerance (due to a lack of the enzyme trehalase), lactose intolerance (when a person is unable to digest milk sugar (lactose) due to a lack of the lactase enzyme), and glucose-galactose intolerance (when a person is (a rare disorder, where only fructose is digestible). Sugar malabsorption is another name for it.

2. DISCUSSION

Sugar intake should be limited to 100 calories per day, or 25 g or 6 tsf; nevertheless, greater sugar consumption will have an adverse effect on their health, with more frequent occurrences of illnesses such as breast cancer and increased breast density in women who have not reached menopause. Sugar consumption is linked to increased breast density in both pre-menopausal and post-menopausal women. Excess sugar consumption in women induces toxemia and has an impact on the muscle development and strength of their children. Excess sugar consumption has a similar effect on lactating mothers. It has also been linked to an increase in neural tube abnormalities in embryos, particularly in teenage mothers.

It also has an effect on premenstrual syndrome (PMS), a hormonal imbalance linked to sugar cravings in women. Due to an increase in insulin levels, the latter worsens the condition in women with Polycystic Ovary Syndrome (PCOS). The latter may activate androgen receptors while blocking egg release from the follicle, resulting in hair development on the face, arms, legs, and head, as well as acne. Sugar intake is linked to brain deterioration and pancreatic cancer in pre-diabetic and diabetic women. Unlike males, women's sex lives are affected by excessive sugar intake, which leads to an increase in testosterone and a decrease in the sex hormone binding globulin (SHBG) gene. Infertility, polycystic ovaries, uterine cancer, and a higher incidence of CVDs would arise from low activity of the latter.

3. CONCLUSION

In today's world, sugar is one of the most essential components in culinary items. Sugar intake stimulates the brain's "feel good hormone," but it also has the potential to get you hooked to it. Sugar, no matter how sweet it tastes, has certain detrimental consequences on humans, particularly excessive intake, which outweighs its beneficial benefits on our health. Excess sugar consumption is hazardous even in non-diabetic people, especially in women. As a result, one should not only be cautious about eating too much sugar (beyond the recommended quantity) in one's diet, but also actively avoid it. It's crucial for future research on sugar intake in humans.

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THE BEGINNING OF RELIGIOUS REFORMS IN INDEPENDENT UZBEKISTAN AND THE CHANGES BEING IMPLEMENTED

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ABSTRACT

The article notes that in the first years after independence, with the onset of religious reform, the most dangerous, oppressive and persecuted have not yet left, and the first legal and regulatory reforms in the religious sphere, achieved through independence, have begun to emerge. It led to the creation of freedom of conscience and its protection by law. It was also noted that various symposiums, events, anniversaries of our religious scholars, religious holidays, educational institutions, interethnic harmony and religious tolerance in Uzbekistan and their development have been highlighted and a legal basis has been established for a number of issues given.

KEYWORDS: *Religion, Independence, Religious Freedom, Cleric, Freedom Of Conscience, Proselytism, Pilgrimage, Cabinet, Law, Decree, Interethnic Relations, Religious, Committee.*

INTRODUCTION

Islam and religious values play an important role in strengthening the historical and spiritual foundations of the Uzbek national statehood.

As the first President of Uzbekistan Islam Karimov said, “When asked why culture is ancient in Uzbekistan, I would say: First of all, because of our religion. If it were not for Islam, we would not have any such culture.

People, when people? If it has spirituality, if it has value, if it has a sacred religion, if it has a specific and appropriate, if it has thinking and beliefs formed over thousands of years, if it has consciousness and faith. If it doesn't, nothing will happen” [1].

The process of struggle against atheism in the Soviet era, its role in the implementation of the Soviet government's strict policy of atheism, the negative consequences of unprecedented lawlessness, persecution and oppression ended with independence, religious freedom and the promotion of religion and religious values. An in-depth and consistent study of the area is underway.

The Soviet government's policy of repressing religious scholars, punishing them, and fighting mass atheism against religion and believers have been condemned in the past, and their monuments and religious values have been restored since independence.

The former Soviet state gradually began to decline during the period of “reconstruction” policy. Nevertheless, the CPSU (Communist Party of the Soviet Union) tried not to lose its leading role in the policy of “reconstruction”. In this regard, the Uzbek USSR caused the accumulation of

negative defects. In May-June 1989, inter-ethnic bloodshed took place in Fergana, Tashkent regions and the city of Andijan, which caused a great stir in the republic and the country as a whole, and led to a sharpening of the political situation in the republic [2]. It was not something that happened in a few days or months, but something that was expected to explode sooner or later, which had accumulated over the years. There have been several such explosions in the republic. These events caused national, socio-economic and political problems.

In the early 1990s, as a result of the abuse of opportunities provided by our government, the construction of mosques became a company, and their number increased from 89 to 5,000. Most of them were not fully documented, provided with qualified imams (95.8% without religious education) and did not have the necessary facilities, and various “leaders” tried to turn mosques into small nests.

The leaders of some religious organizations were foreign citizens, who did not have any religious education, and were engaged in missionary activity, leading religious organizations in the territory of the republic at the expense of financial assistance. Their main goal was to expand their small ranks at the expense of the indigenous peoples in various ways and means [3].

For centuries, there have been attempts to mislead our Hanafi people and to spread fanaticism and bigotry among the population. As a result, disagreements arose among the believers. A number of serious crimes have been committed by some citizens who have been influenced by religious extremists. Attempts by some non-Islamic religious organizations to exploit the opportunities created have led to increased missionary activity.

These and a number of other factors include the revision of the Law on Freedom of Conscience and Religious Organizations in terms of addressing pressing issues in the field of religion, ensuring peace and security in the country, as well as conscience. called for a clearer definition of the scope of rights related to freedom. To this end, on May 1, 1998, the Law of the Republic of Uzbekistan “On Freedom of Conscience and Religious Organizations” was amended and a new version was adopted [4].

The new version of the law is an important document that, along with the legal guarantee of freedom of conscience, serves to coordinate the activities of religious organizations and regulate the relationship between the state and religion. The law prohibits “proselytizing” as well as any other missionary activity. “Persons guilty of violating this rule shall be held liable in accordance with the legislation” (Article 5, section 3).

Pursuant to the article of this law, a number of articles related to the prevention of illegal religious activities were included in the Code of Administrative Responsibility of the Republic of Uzbekistan.

On March 7, 1992, the Committee on Religious Affairs under the Cabinet of Ministers was established as a practical mechanism to ensure the implementation and proper control of the Law on Freedom of Conscience and Religious Organizations [5].

In addition, Article 31 of the Constitution of the Republic of Uzbekistan, which is the main encyclopedia of Uzbekistan, states that “Freedom of conscience is guaranteed to all. Everyone has the right to believe in any religion or not to believe in any religion. It is not allowed to forcibly assimilate religious views” [6]. - It is noted. It is obvious that the freedom of religion is strictly enshrined in law for all people living in the Republic of Uzbekistan, regardless of

language, race or social origin. At the same time, it was noted that the promotion of different religions in the country and its forced assimilation among the people should not be allowed.

In the early years of our independence, our first president addressed the issue of freedom of conscience and said: "It is safe to say that this issue is being seriously considered in our country. Despite the fact that our independence has not been achieved for a long time, today there is a real opportunity to develop freedom of conscience in the socio-political sphere. Today, "the right of citizens to freedom of religion is respected. There are 15 religious denominations in the country" [7]

The state promotes peace and harmony among religious denominations. Proselytizing, as well as any other missionary activity, is prohibited.

On October 23, 1998, the 1225th anniversary of the birth of the great thinker Imam al-Bukhari was celebrated, and on the same day a memorial complex was opened in the village of Khartang. His work "Al-jome as-sahih" has been translated into Uzbek.

In addition, the 910th anniversary of Burhaniddin al-Marginani, one of the founders of Islamic law in Margilan, the 1130th anniversary of the birth of Imam Abu Mansur al-Moturudi in Samarkand, the 1200th anniversary of Abu Isa al-Termizi, the 920th anniversary of Mahmud az-Zamahshari, the 850th anniversary of Najmiddin Kubro, the 600th anniversary of Khoja Ahror Wali The anniversary was widely celebrated, and memorial complexes were organized for them, and their works were translated into Uzbek and other languages [8].

On March 27, 1992, the decree of the First President of the Republic of Uzbekistan "On declaring Rose Eid a holiday" was issued. According to him, in order to take into account the wishes of the Muslims of the independent Republic of Uzbekistan and to stabilize the love among citizens, the religious holiday of Eid al-Fitr ("Eid al-Fitr") is celebrated on April 4 this year and the first day of Eid al-Fitr in subsequent years. The appointment was emphasized [9].

During the years of independence, a number of symposiums on religion were held, including events dedicated to the anniversaries of our famous thinkers and scholars. The International Center for Islamic Studies was established in Tashkent on May 19, 1995 to study the rich heritage of Islam. In April 1999, the Decree "On the establishment of the Tashkent Islamic University" was adopted. In 2007, Tashkent was awarded the title of Capital of Islamic Culture by the International Organization for Education, Science and Culture [10].

In 2017 alone, the legal framework for the introduction of several freedoms of conscience was established. For example, on January 17, 2017, the quota for Hajj for citizens of Uzbekistan from 2017 was set at 7,200 (previously this figure was 5,200), and on February 14, 2017, the measures to establish the Imam Termizi International Research Center On May 31, 2017, the quota for Umrah for Uzbek citizens was set at 10,000 people (previously this figure was 6,000 people). On August 2, 2017, the Cabinet of Ministers of the Republic of Uzbekistan adopted a resolution "On the organization of the Center of Islamic Culture in Uzbekistan under the Cabinet of Ministers of the Republic of Uzbekistan." On December 15, 2017, the Decree of the President of the Republic of Uzbekistan "On measures to establish the Islamic Academy of Uzbekistan" was announced. Under the auspices of the Islamic Academy of Uzbekistan began to operate master's (2 years), basic doctoral (3 years) and doctoral (3 years) [11]

Today, interethnic harmony and religious tolerance have become one of the priorities of state policy in Uzbekistan. On May 19, 2017, the Decree of the President of the Republic of Uzbekistan “On measures to further improve interethnic relations and friendly relations with foreign countries” and the Decree of the President of the Republic of Uzbekistan dated April 16, 2018 “Religious Adoption of the Decree of the Cabinet of Ministers of June 22, 2018 “On measures to radically improve the activities of the educational sphere”, “On measures to organize and support the activities of the International Islamic Academy of Uzbekistan” The resolution was another important step towards religious tolerance. Establishment of the Committee on Interethnic Relations and Friendship with Foreign Countries under the Cabinet of Ministers, the Republican International Cultural Center, 138 national cultural centers, as well as the Council of Societies of Friendship and Cultural Enlightenment of Uzbekistan with Foreign Countries, 34 activities of the Friendship Society show that our country has always been faithful to its traditions in the field of interethnic harmony and religious tolerance, and has never deviated from this path [12,13].

CONCLUSION

In conclusion, these facts show that the work to fully guarantee the freedom of conscience of citizens on the basis of democratic principles has been carried out consistently, and as a result, sufficient conditions have been created for the freedom of religion of all religions. Attempts were made to shed light on the creation of a legal, regulatory framework for the introduction of true freedom of conscience in Uzbekistan. At the same time, during the years of independence, religion, first of all, the status of Islam as both a national and universal value was restored, and the dignity of religious scholars was reduced. The policy of a little toughness on religion and believers in the early period was softened over time, the steps in the restoration of religious values were supported and positively received by our people.

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BREAST CANCER

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ABSTRACT

Breast cancer is the most common cancer. According to medical statistics, 10 % of women worldwide are infected with this disease. In most cases, breast cancer is seen in women over 45 years of age. Although various factors contribute to the development of breast cancer, hereditary predisposition and hormonal changes play a major role. The risk of cancer is particularly high as a result of the effects of estrogenic hormones. The development of the disease is slow, without symptoms for a long time, and in some cases the disease can develop rapidly. Effective treatment of breast cancer can only be achieved if it is detected early.

KEYWORDS: Tumor, Hormone, Estrogen, Menstruation, Radiation, Hereditary Predisposition, Menopause, Mutation, Proliferation, Mammography, Chemotherapy, Radiation Therapy, Mastopathy.

INTRODUCTION

In Uzbekistan, as in the rest of the world, breast cancer, followed by cervical cancer, is the most common cancer among women of all ages. In terms of mortality from diseases, breast cancer, stomach cancer and cervical cancer are the third most common among women of all ages. Breast cancer is the most common disease among cancers. According to medical statistics, 10% of women worldwide are infected with this disease. In most cases, breast cancer is seen in women over 45 years of age. [1]

In developed countries, this disease has declined slightly due to the invention of modern tests in the detection of the disease and the effectiveness of treatment measures. [2]

Although various factors contribute to the development of breast cancer, hereditary predisposition and hormonal changes play a major role. The risk of cancer is particularly high as a result of the effects of estrogenic hormones. [3]

The development of the disease is slow, without symptoms for a long time, and in some cases the disease can develop rapidly. Effective treatment of breast cancer can only be achieved if it is detected early. [4]

The following factors cause tumors:

1. Presence of cancer patients among relatives;
2. The onset of menstruation at an early age before the age of 12 or the late onset of the menopause (after the age of 55). These are explained by the activity of the estrogen hormone;
3. Tumors that occur in other organs of the body;
4. Various genetic factors;
5. Radiation exposure, e.g., ionizing light therapy, repeated X-ray examinations, residents and workers in environmentally negative areas;
6. In women with a sedentary lifestyle;
7. Drinking alcohol and smoking;
8. Taking uncontrolled hormonal contraceptives, long-term hormonal therapy;
9. The risk of developing breast cancer is higher in women who have not given birth and in women whose first pregnancy is late (after age 35).

Research shows that tall women and overweight women are more likely to develop breast cancer during menopause.

The risk factors listed above do not directly cause the tumor, but simply increase the susceptibility to cancer. Also, not all tall and obese women get cancer. Of course, not one, but several factors play a role in the origin of breast cancer. [5]

The high tendency to develop breast cancer is associated with dysfunction of hormone-producing organs. Disorders of the ovaries, adrenal glands, thyroid gland, pituitary gland, hypothalamic system play an important role. Early menstruation and late menopause have been found to increase the development of breast cancer. [6]

In recent years, much attention has been paid to genetic disorders in the development of breast cancer. According to the literature, two types of molecular disorders lead to the development of cancer: gene mutation and induction of cell proliferation (Semiglazov V.F.2001).

Mutation occurs in genes responsible for regulating cell growth, differentiation, and cell death. As a result, these genes are activated or inactivated. With the help of proliferation, a tumor-causing effect is created. [7]

Like other cancers, breast cancer is difficult to detect at an early stage because the disease starts without symptoms. If there is pain, swelling, discomfort in the breast, enlargement of the nipples, pathological fluids leaking from the nipples, and the like, it is necessary to immediately see a doctor. [8]

If you have any hardened lumps in your nipples, see a doctor right away, even if the above symptoms are not observed.

Early diagnosis of breast cancer includes a self-examination and a doctor-mammologist examination. After the age of 40, a mammogram should be performed once a year. [9]

It is better to conduct an independent examination of the breast every month, on days 5-7 of the menstrual cycle. During the examination, attention should be paid to the symmetry of the breasts,

the condition of the skin lining and nipples, the size of the breasts. The palpation can be performed lying down or sitting. Each breast should be palpated alternately, from the nipples to the end of the body. Any stiffness and condensed product in the breast is a reason to suspect disease. Attention should also be paid to the lymph nodes in the axillary area. If any suspected product is detected, it is necessary to immediately consult a specialist. [10]

To date, breast cancer is the best studied disease among all cancers. It can be detected early and treated effectively.

Treatment of breast cancer in modern medicine includes surgery, chemotherapy and light therapy, hormonal and immunotherapy. Treatment in this disease is individual for each woman and consists of a complex of several methods. [11]

An important aspect in the treatment of breast cancer is the restoration of the patient's psychological and sociological condition.

Breast cancer prevention is divided into 3:

1. It is the prevention of disease by studying environmental factors and predisposition factors. These include protecting the environment, reducing the effects of carcinogens on the human body, normalizing family life, regular sex, timely childbearing, breastfeeding; [12]
2. Early detection and treatment of precancerous diseases of the breast: various forms of mastopathy, fibroadenoma and other benign tumors, as well as disorders of the endocrine system, diseases of the female genital organs, disorders of liver function. [13]
3. Prevention, early diagnosis, treatment of recurrent, metastatic and metachronous tumors.

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REVIEW ON PREPARATION, CHARACTERIZATION AND APPLICATIONS OF HYDROGEL

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ABSTRACT

Hydrogel products are a class of polymeric materials with a hydrophilic structure that allows them to retain enormous quantities of water in three-dimensional networks. The widespread use of these goods in a range of manufacturing and environmental applications is seen as critical. Natural microgels were progressively phased out in favor of synthetic biomaterials, which have a greater water absorption capacity, a longer service life, and a wider range of basic chemical resources. The literature on this topic is growing, particularly in scientific fields of study. Nevertheless, a number of papers and technical studies working with gel s from an engineering perspective were reviewed in order to get a broad overview of the technological elements of this rapidly expanding interdisciplinary area of study. The main goal of this paper is to examine the literature on hydrogel categorization on several grounds, physical and chemical properties of these products, and technological feasibility of their use. It also included the technologies used in hydrogel manufacturing, as well as process development considerations, block diagrams, and optimum preparation conditions. In addition, a newly developed category of prior decades of methods for generating was described in considerable depth.

KEYWORDS: Applications, Hydrogel, Innovative, Preparation, Processing.

1. INTRODUCTION

In this short overview, the substances of interest are mainly hydrocolloids that are polymer networks that have been heavily inflated with water. Hydrophilic gels, also known as hydrogels, are polymer chain networks that are occasionally found as dispersion gels and have water as the dispersed phase [1].

Hydrogels have been characterized in a variety of ways by scientists throughout the years. The most prevalent is hydrogel, which is a water-swollen, cross-linked polymeric network made by a direct reaction of one or even more monomers. Another description is a polymeric substance that can expand and hold a large amount of water inside its structure but does not dissolve in the water. Due to their outstanding potential in a broad variety of applications, hydrogels have gotten a lot of attention in the last 50 years [2].

Because of their high water content, they have a degree of elasticity that is extremely comparable to real tissue. The hydrophilic functional groups linked to the polymeric backbone provide hydrogels their capacity to absorb water, while cross-links among network chains give them

resistance to disintegration. Hydrogels are made up of a variety of components, both natural and manufactured. Natural hydrogels have progressively been superseded by synthetic hydrogels, which have a longer service life, a higher water absorption capacity, and high gel strength, during the past two decades. Polymer composites, on the other hand, typically have very well structures that may be tweaked to provide custom digestibility and usefulness. Hydrogels may be made entirely of synthetic materials. It is also stable in the presence of both sharp and severe changes in temperature [3].

Hydrogels are two- or multi - component systems that are made up of a four matrix of polymer and liquid that fills the gap between macromolecules. Such structures in balance can contain several different quantities of water, relying on the properties of polymers (polymers) was using, as well as the essence and specific gravity of the network joints; usually in the hydrated form, the weight percentage of water in an alginate is much greater than the mass ratio of polymer. In practice, thermoplastic materials that are water soluble in their non-cross-linked state are often used to produce significant degrees of swelling. Hydrogels may be made in a variety of "traditional" chemical methods. One-step procedures such as polymers and parallel pass of multi - functional monomers, as well as multi-step procedures involving the synthesis of polymer molecules with chemical groups and their subsequent pass, possibly by responding polymers with appropriate cross-linking agents, are among them. Polymer engineers may create polymerized with molecular-scale command over structure, such as cross-linking density, and customized characteristics, such as microbial degradation, good mechanical, and chemical and biological responsiveness to stimuli [4].

DISCUSSION

2.1. Hydrogel product classification:

1.1 Polymeric composition-based classification:

Some significant types of hydrogels are formed as a result of the preparation technique. The following is an example of this:

- a. Homopolymeric hydrogels are polymer networks made up of a single monomer species, which is the fundamental structural and functional unit of every polymer network. Based on the monomer and polymerization method, homopolymers may have a cross-linked skeletal structure.
- b. Copolymeric hydrogels are made up of two or more monomer species, each having at most one hydrophobic component, organized in a random, block, or alternating pattern along the polymer network's chain.
- c. Multipolymer an important type of hydrogels is the interlayer polymeric hydrogel (IPN), which is made up of two separate pass synthetic and/or natural polymer components held together in a network structure. One component of a semiIPN hydrogel is a cross-linked polymer, while the other is a non-cross-linked polymer [5].

1.2 Configuration-based classification:

Hydrogels may be divided into the following categories due to its physical structure and composition:

- a. Amorphous (non-crystalline).

- b. Semicrystalline: A blend of crystalline and amorphous phases with a complex structure.
- c. Crystalline is a term used to describe a substance that is crystal.

1.3 Cross-linking Types and Classification:

The biochemical or physical side of cross-link junctions divides hydrogels into two types. Permanent junctions form in chemically cross-linked networks, while transitory junctions form in physical networks due to polymer chain interconnections or direct interaction such as ionic contacts, hydroxyl groups, or hydrophobic interactions [6].

2. Hydrogel product sensitive to environmental conditions:

As previously stated, three - dimensional cross covalently bonded hydrophilic polymer networks capable of reversibly swelling and de-swelling in water while holding a significant volume of liquid in a swelled state. Hydrogels may be engineered to contract or expand in reaction to variations in external conditions. They may undergo significant volume transitions in response to a variety of physiochemical stimuli, including temperature, electric or magnetic fields, light, pressure, and sound, as well as pH, solvent composition, ionic strength, and molecular species. The degree of inflating or de-swelling in reaction to changes in the hydrogel's external environment may be so extreme that the process is known as volume collapses or phase separation. Hydrated minerals have been the subject of considerable study over the last four decades, and they are still a hot topic in academia today. [7]

3. Technologies adopted in hydrogel preparation:

Hydrogels were polymer networks with hydrophilic characteristics by definition. While most hydrogels are made using hydrophilic monomers, hydrophobic monomers are occasionally employed to control the characteristics of hydrogels for particular purposes. In general, either synthetic or natural polymers may be used to make hydrogels. In comparison to natural polymers, synthetic polymers were hydrophobic and physically stronger. Their tensile characteristics results in a delayed rate of decomposition, but tensile characteristics also offers durability. Through optimum design, the two opposing characteristics should be balanced.

It may also be used to make hydrogels from natural polymers if the monomers contain effective functional groups or been synthesized and characterized with radical polymerizable groups. A hydrogel is essentially a hydrophilic polymer network that has been cross-linked in some way to create an elastic structure. As a result, any method for making a cross-linked polymer may be utilized to make a hydrogel. By reacting hydrophobic monomers with multifunctional cross-linkers, produced in the industry free-radical polymerizations are widely employed to make hydrogels. Water-soluble linear polymers of natural and synthetic origins are cross-linked in a variety of ways to create hydrogels:

- a. Using a chemical process to link polymer chains.
- b. Ionizing radiation is used to produce main-chain free radicals that may recombine to form cross-link junctions.
- c. Dalliiances, electrostatics, and crystallite formation are examples of physical interactions.

Gels may be made using a variety of polymerization methods, comprising bulk, solution, and suspension polymerization. Monomer, initiator, and cross-linker are the three essential

components of hydrogel production. Diluents, including such water or other aqueous solutions, may be employed to regulate the heat of polymerization as well as the characteristics of the resulting hydrogel. The hydrogel mass must next be cleaned to eliminate any remaining contaminants from the preparation procedure. Nonreacted monomers, initiators, cross-linkers, and undesirable compounds generated by side reactions are among them. Opposite polymerization and dilute solution polymerization have been used to produce hydrogels based on acryl, acrylic acid, and its salts. Concentrated form solution polymer of acrylic monomer, which are mainly patented, has received less research.[8]

Chen used potassium persulphate as a thermal initiator to create acrylic acid-sodium acrylate superabsorbent in a saturated (43.6 wt%) solution polymerization. Typically, polar monomers are used to make hydrogels. Biopolymers hydrogels, synthetic rubber hydrogels, and mixtures of the two types may be classified based on their starting ingredients. Graft polymerization, cross-linking polymerization, network creation of water-soluble polymer, and irradiation cross-linking, among other methods, may be used to produce them. Hydrogels come in a variety of forms, but the most common are weakly cross-linked acrylate and acrylic acid copolymers, as well as grafted carbohydrate acid polymers made via reverse suspension, polymerization, and solution gelation.[9]

4. Utilization of hydrogel products:

Since Wichterle and Lim created the first synthetic hydrogels in 1954, hydrogel techniques have been applied to good hygiene products, agricultural production, drug delivery, trying to seal, coal drying, artificial snow, food ingredients, pharmaceutical, biomedical, synthetic biology and regenerative medicines, diagnostics, and tissue engineering and regenerative medicines. Figure 1 Hydrogel that swells in reaction to stimuli. Preparation, characterization, and uses of hydrogels 107 Furthermore, the ever-expanding range of monomer units and macromeres expand their usefulness.[10]

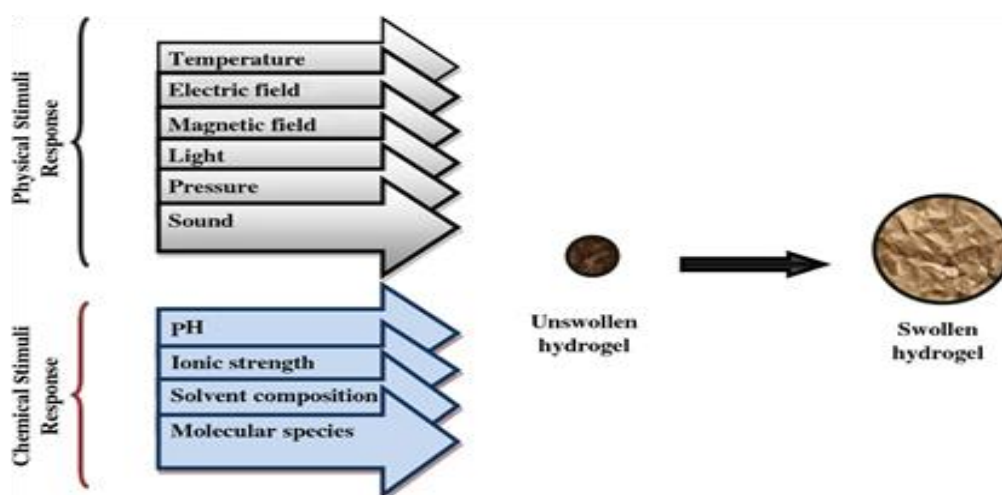


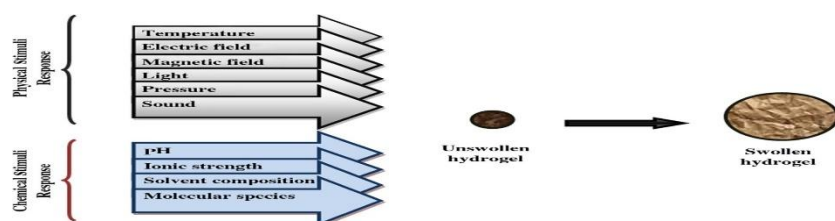
Figure 4: Stimuli response swelling hydrogel[5]

They were first utilized in irrigated agriculture absorbents based on biopolymer, where hydrophilic monomers were grafted onto maize and other polysaccharides. Acrylic acid as well a

its salts are the most common ingredients in sanitary hydrogels. Acrylamide is a key ingredient in the manufacturing of agricultural hydrogels. The synthetic techniques and uses of hydrogels have been extensively explored in a number of papers on the topic. For example, different chapters of a collection published by Peppas provide a thorough overview of the chemistry and different synthetic methods used for hydrogel production. Khoylou just released a paper on hydrogels made via radiation polymerization and grafting. The production and chemical characteristics of hydrogels used in agricultural applications were reported by Mi-Ran Park. The possibility of hydrogels in sensor applications has been explored by Vijayalakshmi and Kenichi. The customization of hydrogels for different medicinal purposes was addressed by Dimitrios et al.

3. CONCLUSION

Many hydrogel-based networks have recently been developed and customized to suit the requirements of various applications. The capacity of these hydrogels to expand when exposed to an aqueous solution is one of their most appealing features. The literature on hydrogel categorization on several grounds, physical and chemical properties of these products, and technological feasibility of their use is given in this study. It also included the technologies used in hydrogel manufacturing, as well as process design considerations, block diagrams, and optimum preparation conditions. In addition, a newly developed class of subsequent generations of methods for generating was described in considerable depth. Super-porous hydrogels are novel materials that quickly expand to a huge size, regardless of their initial size. SPHs have developed throughout time to meet the demands of many applications. Based on the findings of the literature review, batch or semi-batch reactor are appropriate for polymerization operations. Temperature, pressure, batches cycle duration, reactant quantity, and feed addition technique are all factors in batch reactors. Continuous variables having constant values, such as batch cycle duration and reactant quantity, are optimization variables for a batch reactor system that is primarily based on energy and material balance. Three Impellers are known to be effective in high viscosity ranges: ribbon mixer with such a screw all around axis, screw homogenizer with four baffles, and double ribbon mixer.



Superabsorbent polymers (SAPs) were first used in agriculture and diapers about three decades ago, and then their applications were expanded to include other industries that required a high level of water absorption. Superporous hydrogels (SPHs) were first recognized as a distinct class of moisture polymer systems in 1998. SPHs with more useful characteristics, such as good mechanical toughness and elastic properties, were evolved from the original SPHs. The development of SPHs is detailed in this article, as well as the distinctions among SPHs and superabsorbents (SAPs). SAPs, like SPHs, are architecturally cross-linked hydrophilic polymers with the ability to absorb large quantities of water or soluble fluids in a short amount of time (10–1000 times their original weight or volume).

The inflating rate of SAPs varies depending on the production method and the materials employed during preparation. It may vary from a quarter of a minute to many hours. The rapid swelling, on the other hand, is mostly due to the tiny diameter of the SAP samples. SPHs, on either hand, have a rapid swelling kinetics independent of the ultimate product size. Several methods are used to make the porous hydrogels, including freeze-drying, microemulsion production, and phase separation.

Modern SAPs and SPHs, on the other hand, are often made using a gas blowing method that takes advantage of acid-induced breakdown of a bicarbonate molecule. Although both SAPs and SPHs have a porous structure, they are not the same. SPHs expand instantly when they come into touch with water, regardless of size while dry. Depending on the presence of a foaming agent, foaming assist, and foam stabilizer, the same monomer solution may create various kinds of liquid polymer networks, including such nonporous, porous, and super porous architectures.

The synthesis of acrylamide-based SPH in the presence of salt alginate, following by the cross-linking of alginate chains by calcium ions, is an example of SPH hybrids. The gels in SPH hybrids are extremely elastic in their swelled form, which is one of their distinguishing features. SPH hybrids, unlike ordinary SPHs and SPH composites, are not readily broken when stretched. SPH hybrids are a good option for situations where robust gels are desired because of their elastic and rubbery characteristics. The completely waterswollen SPHs' resilience had never been seen before. Tension, compression, bending, and twisting are all possible stresses for elastic water-swollen SPH hybrids. Distinct generations of SPHs have different structural, swelling, and mechanical characteristics.

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A REVIEW STUDY ON MODERN PHARMACOLOGY OF PARACETAMOL

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ABSTRACT

The analgesic and antipyretic properties of paracetamol are widely utilized throughout the globe. Its effect is comparable to that of NSAIDs, and it is especially similar to COX-2 selective inhibitors. Although paracetamol is a lesser analgesic than NSAIDs or COX-2 selective inhibitors, it is often chosen due to its higher tolerance. Despite its NSAID-like properties, the mechanism of action of paracetamol has been debated, but it is now widely recognized that it inhibits COX-1 and COX-2 by inhibiting their peroxidase activity. This inhibits the production of phenoxyl radicals from a key tyrosine residue required for COX-1 and COX-2 cyclooxygenase activity and prostaglandin (PG) synthesis. When modest amounts of arachidonic acid and peroxides are present, paracetamol inhibits the synthesis of PGs and associated components with selectivity, but it has limited action when significant levels of arachidonic acid and peroxides are present. As a consequence, paracetamol does not suppress the severe inflammation associated with rheumatoid arthritis and acute gout, but it does reduce the milder inflammation associated with tooth extraction and is active in a range of inflammatory tests in experimental animals. COX-2 selectivity seems to be a common feature of paracetamol. The low anti-platelet activity and excellent gastrointestinal tolerability of paracetamol demonstrate its apparent COX-2 selectivity of action. Paracetamol inhibits other peroxidase enzymes, including myeloperoxidase, unlike non-selective NSAIDs and selective COX-2 inhibitors. Paracetamol oxidation and reduced production of halogenating oxidants are involved in myeloperoxidase inhibition.

KEYWORDS: Diseases, Health, Medicine, Paracetamol, Peroxides.

1. INTRODUCTION

From birth to death, paracetamol (acetaminophen) is one of the most commonly used non-prescription medications in the world. It is easily accessible and reasonably priced. Paracetamol is a better tolerated analgesic than non-steroidal anti-inflammatory medicines (NSAIDs), but it may be less effective. Because of the link between aspirin and Reye's syndrome, paracetamol became the antipyretic and analgesic of choice in children throughout the 1980s, and it is

currently the standard antipyretic and analgesic in all age groups. Although paracetamol is a valuable and essential medication, the dosage is inconveniently high, and a full dose of 4 g daily necessitates the use of a large number of pills [1–4].

He showed that aspirin and other NSAIDs block the production of prostaglandins (PGs), local factors linked with pain, fever, and inflammation, in his Nobel Prize-winning work on the mechanism of action of these medicines. Despite its effects being comparable to those of NSAIDs, paracetamol did not seem to impede PG production. Paracetamol's fundamental pharmacological actions are just now becoming evident, and it is now known to be an inhibitor of PG production in cellular systems under certain circumstances, with apparent selectivity for one of the cyclooxygenase (COX) enzymes, COX-2.

This article provides a review of paracetamol pharmacology, focusing on its mechanism of action and therapeutic effects, with a focus on recent findings. Although its metabolism by peroxidases and the alleged hepatotoxicity of therapeutic dosages are addressed, certain elements of paracetamol's clinical pharmacology, such as its pharmacokinetics, metabolism, and side effects, are not treated in depth. In recent years, new pharmacological effects of paracetamol have been discovered, including its interaction with haem peroxidases such as myeloperoxidase, which is addressed in this review. These newly found effects were mostly identified *in vitro*, but they may lead to new therapeutic applications for an old medication [5–7].

1.1. Distribution and chemistry:

The chemical paracetamol has a low molecular mass. Because it is such a weak acid (pKa 9.7), it is virtually unionized at physiological pH levels. Its octanol-to-water partition coefficient is 3.2, which is in the region where passive diffusion across cell membranes is probable. Paracetamol binds to plasma proteins in a minimal amount, with a volume of distribution of approximately 50 L following intravenous administration.

Without binding to tissues, paracetamol spreads throughout the body. This absence of binding means that paracetamol concentrations *in vitro* may be directly linked with paracetamol concentrations *in vivo* without any adjustments for tissue absorption or protein binding. After intravenous injection or fast oral absorption, peak plasma concentrations of paracetamol range from about 20 mg/L (130 IM) to 30 mg/L (200 IM), and doses of up to 30 mg/L may be deemed therapeutic. Trough concentrations are on the order of 2 mg/L with a dose of 1 g four times day (13 IM). Paracetamol is a phenol chemically, and like many phenols, it is readily oxidized. This oxidation is crucial to its proposed mode of action as a substrate and inhibitor of COX-1 and COX peroxidase activity. Other haem peroxidases, such as myeloperoxidase, oxidize paracetamol and block it [8–10].

1.2. Actions Both Therapeutic and Toxic:

Paracetamol has a lot of similarities with non-selective NSAIDs like ibuprofen, ketoprofen, and naproxen in terms of pharmacology and toxicity, and also shares a lot of similarities with selective COX-2 inhibitors like celecoxib and etoricoxib (Table 1). Paracetamol, on the other hand, has lower analgesic action than both classes of NSAIDs (see the section on paracetamol's clinical analgesic efficacy). The fact that paracetamol, unlike both classes of NSAIDs, has relatively modest antiinflammatory action is a significant distinction.

Paracetamol does not exhibit much of the toxicity associated with therapeutic dosages of NSAIDs, especially that associated with older non-selective NSAIDs. At therapeutic dosages, paracetamol, in particular, does not produce substantial gastrointestinal damage. In aspirin-sensitive asthmatics, paracetamol is a mild precipitant of asthma, but it may increase the incidence of asthma (see the section on bronchoconstriction and asthma). However, paracetamol has a separate and potentially hazardous "Bronchoconstriction and asthma" section). However, paracetamol has a unique and severe hepatotoxicity that is not observed with NSAIDs (see the "Adverse effects" section). In contrast to aspirin and salicylate, these kinds of NSAIDs do not cause life-threatening responses when taken in excess.

TABLE 1: SUMMARY OF PHARMACOLOGICAL AND CLINICAL ACTIVITIES OF PARACETAMOL, SELECTIVE COX-2 INHIBITORS AND NON-SELECTIVE NSAIDS

Pharmacological activity	Paracetamol	Selective COX-2 inhibitor	Non-selective NSAID
Analgesia	Active	Active	Active
Antipyresis	Active	Active	Active
Anti-inflammatory	Active in mild inflammation	Active	Active
Anti-platelet	Low activity	Inactive	Active
Damage to stomach and small intestine	Low activity	Low activity	Active
Aspirin-induced asthma	Weakly active	Inactive	Active
Blood pressure	Variable data	Increase	Increase
Renal	Lesser effects than both NSAID classes	Impaired function in stressed kidneys	Impaired function in stressed kidneys
Increased risk of thrombosis	Inactive	Active	Active

Both types of NSAIDs have been linked to a rise in blood pressure, with hypertensive patients experiencing it more than normotensive people. Paracetamol's impact has been researched to a lesser degree, with mixed findings. One noteworthy finding was that paracetamol increased the risk of hypertension in women, despite the possibility of bias owing to the use of paracetamol for painful illnesses. Paracetamol had a smaller impact on blood pressure than NSAIDs in trials on individuals treated with antihypertensive drugs. Blood pressure may rise in certain patient groups, and a recent study found that paracetamol raises blood pressure by about 3 mmHg in individuals with coronary artery disease. It is acceptable to monitor for hypertension in patients who use paracetamol on a regular basis in clinical practice. In critically sick individuals, however, a transient drop in blood pressure has been seen following intravenous administration of paracetamol.

1.3.Paracetamol's clinical analgesic effectiveness Acute pain:

The findings of recent reviews and meta-analyses of paracetamol's analgesic activity and combinations with other analgesics are presented. Single dosages of paracetamol have been shown to have analgesic efficacy in a range of acute pain syndromes; nevertheless, paracetamol

is often less efficacious than NSAIDs. Furthermore, like NSAIDs and selective COX-2 inhibitors, paracetamol has greater analgesic efficacy in acute post-surgical pain than in long-term osteoarthritis pain. Paracetamol, on the other hand, is widely used and increasingly administered intravenously as part of multi-modal analgesic regimens.

1.3.1. Cancer-related discomfort:

Paracetamol is often used in conjunction with opioids to relieve cancer-related pain. It's a must-have medication for hospice patients (IAHPC 2007). Non-opioids such as NSAIDs or paracetamol are given first, followed by combination products for moderate pain containing opioids such as codeine, hydrocodone, or oxycodone, and finally, strong opioids such as morphine or transdermal fentanyl, as needed, until the patient is pain-free, according to the WHO Pain Relief Ladder. This three-step method is low-cost and claims to be 70–90% successful. Paracetamol is often given at step 1 and continued at stages 2 and 3 in Europe and Australia, but only at steps 1 and 2 in North America. Opioids should be given to patients with severe cancer pain right away. Depending on the malignancy and its therapy, a number of different medicines and therapies, such as corticosteroids, antidepressants, epidural dosages of analgesics, and neurolytical methods, may be helpful.

1.3.2. Caffeine and paracetamol:

Caffeine increases the clinical analgesic efficacy of single doses of paracetamol by a modest but statistically significant amount. The enhanced rate of absorption of paracetamol following coffee administration may be the explanation. Caffeine has been shown to have contradictory effects in mice, with caffeine causing both less analgesia and a larger decrease of nitric oxide (NO) production in the spinal cord. Caffeine alone has been shown to decrease PG production by one group, although this finding needs to be confirmed.

1.3.3. Paracetamol's effect on diclofenac-induced COX-2:

Diclofenac at supratherapeutic doses causes the production of COX-2 in a macrophage cell line. Even when t-butyl hydroperoxide is added, a therapeutic concentration of paracetamol (10 IM) inhibits PG production by the macrophage cell line, in contrast to the loss of activity of paracetamol when high levels of peroxides are present in other cellular incubations (see "Reasons for the apparent COX-2 selectivity of paracetamol" section). However, there was no concentration–response connection in these trials, with comparable levels of inhibition at 10, 100, and 1,000 IM paracetamol. A difficulty with interpreting these findings is that a single wash of the media eliminated very high quantities of diclofenac from the cells. It's possible that residual diclofenac decreased cyclooxygenase activity enough for paracetamol to limit PG synthesis. The first is a more broad investigation of NSAID-induced COX-2 induction. The impact of paracetamol on this generated COX-2 has clinical implications and should be investigated further.

1.3.4. Analgesia:

There's a lot of evidence that paracetamol's analgesic impact is linked to its suppression of PG production and other variables. In animal models, PGs enhance the pain caused by pain mediators such bradykinin, whereas paracetamol decreases bradykinin-induced pain. Second, paracetamol inhibits PG production while also lowering PGE2 concentrations in vivo, resulting in anti-nociceptive actions in experimental mice. Changes in several neural systems are triggered

by inhibition of the synthesis of PGs and related factors (see “Linkages to other neuronal systems” section), but the data suggest that the primary effect of paracetamol is inhibition of the synthesis of PGs and related factors, with changes in other neural pathways being secondary.

1.3.5. Antipyretic action:

Pyrogens raise PGE₂ levels in the cerebral fluid, which causes paresis. Paracetamol prevents this rise. Paracetamol's antipyretic action, like its analgesic effectiveness, seems to be related to COX-2 inhibition, since paracetamol has no effect in COX-2 knockout mice. In addition, while lipopolysaccharide and interleukin-1b do not induce fever in COX-2 knockout animals, they do in COX-1 knockout mice. Because COX-3 is a spiky variation of COX-1, paracetamol's antipyretic effect cannot be attributed to COX-3 suppression. Also, selective COX-2 inhibitors are antipyretic in man.

1.4. Anti-inflammation properties:

The most notable pharmacological difference between paracetamol and COX-2 inhibitors is paracetamol's lack of impact on rheumatoid arthritis inflammation. Paracetamol is not immediately anti-inflammatory in rheumatoid arthritis. Paracetamol, on the other hand, does not reduce PGE₂ levels in synovial fluid in rheumatoid arthritis patients, while NSAIDs do. Paracetamol, on the other hand, suppresses inflammation in situations when there is less inflammation, such as after tooth extraction, potentially in osteoarthritis, and in a variety of inflammatory tests in experimental animals. Low amounts of arachidonic acid and/or peroxides may be to blame for paracetamol's suppression of low-grade inflammation; circumstances in which paracetamol is a strong inhibitor of PG production. In large dosages, anti-inflammatory action may be feasible in rheumatoid arthritis, but toxicity precludes this.

1.5. Anti-platelet impact:

Another area of similarity between paracetamol and selective COX-2 inhibitors is that it has minimal anti-platelet action. When administered at high dosages, especially those obtained following intravenous administration, paracetamol does decrease the formation of thromboxane A₂ and platelet aggregation at peak concentrations. However, because to paracetamol's short half-life, its action is quickly lost.

Paracetamol has the benefit of non-selective NSAIDs like ibuprofen and naproxen in that it does not interfere with aspirin's antiplatelet action. As a result, paracetamol can be used with low-dose aspirin, a drug that is currently extensively used to avoid heart reinfarction. Aspirin's antiplatelet action is not blocked by selective COX-2 inhibitors. The lack of impact of both paracetamol and selective COX-2 inhibitors contributes to paracetamol's apparent COX-2 selectivity.

1.6. Future possibilities and genetic interactions:

There have been few instances of paracetamol or NSAIDs causing genetic interactions. Paracetamol alters the expression of many spinal systems, including increased expression of the insulin-like growth factor-1 receptor, when it causes inflammation and discomfort in rats in a formalin test. Because an antagonist of the insulin-like growth factor receptor blocks paracetamol's analgesic effect, the growth factor seems to play a role in paracetamol's action. Upregulation of phosphorylated (activated) ERK1/2 occurs as well, and it has been related to paracetamol-induced analgesia. Unfortunately, the effects of nonsteroidal anti-inflammatory

drugs (NSAIDs) and selective COX-2 inhibitors on these pathways have not been investigated, and it is unclear if the upregulation observed with paracetamol is really due to COX-1 or COX-2 inhibition.

2. DISCUSSION

Analgesic and antipyretic properties of paracetamol are utilized all over the globe. Its effect is comparable to that of NSAIDs, and it is especially similar to COX-2 selective inhibitors. Although paracetamol is a lesser analgesic than NSAIDs or COX-2 selective inhibitors, it is often chosen due to its higher tolerance. Despite its NSAID-like properties, the mechanism of action of paracetamol has been debated, but it is now widely recognized that it inhibits COX-1 and COX-2 by inhibiting their peroxidase activity. This inhibits the production of phenoxyl radicals from a key tyrosine residue required for COX-1 and COX-2 cyclooxygenase activity and prostaglandin (PG) synthesis. When modest amounts of arachidonic acid and peroxides are present, paracetamol inhibits the synthesis of PGs and associated components with selectivity, but it has limited action when significant levels of arachidonic acid and peroxides are present. As a consequence, paracetamol does not suppress the severe inflammation associated with rheumatoid arthritis and acute gout, but it does reduce the milder inflammation associated with tooth extraction and is active in a range of inflammatory tests in experimental animals. COX-2 selectivity seems to be a common feature of paracetamol. The low anti-platelet activity and excellent gastrointestinal tolerability of paracetamol demonstrate its apparent COX-2 selectivity of action. Paracetamol inhibits other peroxidase enzymes, including myeloperoxidase, unlike non-selective NSAIDs and selective COX-2 inhibitors.

3. CONCLUSION

Paracetamol is a well-known medication with extensive prescription and non-prescription usage, and there is little question that it will continue to be an effective analgesic in both acute and chronic pain, both alone and in combination with NSAIDs and opioids. It has a very good safety record and has very few medication interactions. Hepatotoxicity is an obvious issue at high dosages, although the evidence for toxicity at doses up to 4 g/day is debatable. Other analgesics have a worse side-effect profile than paracetamol. The argument over how to strike a balance between acknowledging paracetamol's effectiveness while also limiting its side effects rages on. Paracetamol's mechanism of action is firmly related to PG pathways and their interactions with other pain pathways. New uses for it as an antioxidant are being explored, especially effects linked to myeloperoxidase inhibition.

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PRIORITY DIRECTIONS FOR OPTIMIZATION TAX LOAD IN THE ECONOMY

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ABSTRACT

Taking into account the deepening processes of globalization and non-standard economic conditions in the world, a number of measures are being taken to achieve sustainable economic growth by reducing the tax burden on the economy in the context of regulating the economy with taxes, simplifying the tax system, preventing confusion in calculating and transferring taxes to the budget, digitalization accounting and reporting.

KEYWORDS: *Economic Cooperation, Economy, Indicator, Financial Resources, Attracting Investments.*

INTRODUCTION

In particular, over the past ten years, in 37 industrialized countries of the world and the states of the Organization for Economic Cooperation and Development (OECD), “the total tax burden on the economy has decreased by an average of 0.1 percent and amounted to 33.8 percent”[1].

As part of the optimization of the tax burden in the world, scientific research is being carried out in such areas as taxation of the amount not less than the fixed cadastral value of property, the introduction of the "value added" indicator in the reports submitted by taxpayers.

Priority tasks have been identified in Uzbekistan, such as: “... reducing the tax burden, simplifying the tax system and improving tax administration”[2] and “reducing the level of the tax burden on the economy, as well as eliminating imbalances in the level of the tax burden between economic entities that pay taxes under the simplified and the generally established system of taxation” [3].

MAIN PART

The tax burden, which is an effective indicator of the relationship between taxes and tax subjects, in fact, is characterized primarily by the fact that a certain part of the financial resources of the population and the private sector is alienated in favor of the state. Therefore, the scientific discussion about the expression of the tax burden using quantitative indicators has always been relevant.

The fiscal and regulatory functions of tax relations are important for determining and optimizing the tax burden. The fiscal component of the tax burden is manifested in the fact that it serves to centralize the financial resources of the private sector in the interests of society, meanwhile, the function of regulating public relations is the ability to indirectly influence production processes

through the tax mechanism. The tax burden can be recognized as a factor that partially restricts the freedom of taxpayers in the economic sphere, and as a kind of “price” for services rendered by the state.

The problem of studying the impact of the tax burden on the national economy is inextricably linked with the search for an economically justified ratio of taxes and fees levied by the state to the gross domestic product. There are many different methodological approaches to calculating the optimal amount of the tax burden as a solution to this problem, and the scientific results obtained are inherently contradictory. At the same time, the variety of scientific approaches and analytical methods opens up wide opportunities for scientific analysis of the problem of the tax burden at the macroeconomic level.

A rational tax system that meets the needs of the state for financial resources does not have a negative impact on the production and business activities of taxpayers, but, on the contrary, has a positive effect on the search for effective ways of doing business. Consequently, the indicator of the tax burden of the taxpayer will be sufficient to assess the quality of the country's tax system.

As the analysis of world practice shows, the tax burden is an important factor in the location of production in the regions of the country, distribution of investments and ensuring the efficient movement of capital. In Uzbekistan, special attention in the integrated socio-economic development of regions in the context of the implementation of a medium-term development strategy is paid to the development and implementation of road maps with the identification of growth points by establishing the specialization of the territory and identifying driver spheres. In the republic, it is advisable to establish the practice of calculating the tax burden in the context of the levels of the economy, in particular, calculating the amount of taxes and payments levied in the regions in relation to the gross regional product.

The indicators of the tax burden affect the social policy of the state. The state, based on the results of this indicator, develops its social policy. Plans spending on defense, security services, education, medicine, science and education. That is, the state provides various services to the population. Due to this, it collects taxes from taxpayers, population and legal entities. At the same time, the essence of the problem lies in determining the optimal level of the tax amount, since the taxpayer wants to receive services from the state in proportion to the taxes paid to the state. Based on this, the state determines the tax burden and returns these funds to taxpayers through spending on the provision of various services.

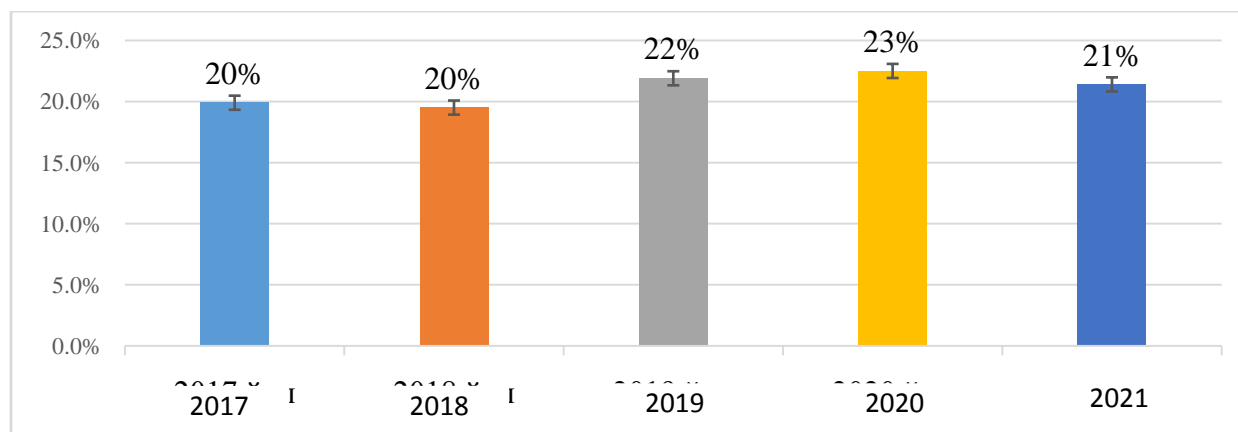
Tax burden indicators are also used to determine the optimal spheres of economic activity of economic entities. They determine the priority directions of capital investments in production. The indicator of the tax burden helps in solving such issues as the development and reduction of production, regulation of the economy, solution of industrial sectoral issues, creation of new jobs, rationing of consumption and savings of business entities, investment orientation. At the macro level, we can divide the tax burden into two parts, that is, the tax burden on the economy as a whole and the tax burden on the population.

As the results of scientific research show, an increase in the tax burden on taxpayers (increase in tax rates, abolition of tax incentives) will initially lead to an increase in tax revenues, but after reaching a peak value, a downward trend begins to appear. As a result, budget revenues will decrease, and a certain part of taxpayers will find themselves in a crisis situation or production

will decrease, while the rest of the taxpayers will evade taxes in various and not always legal ways. The result is a shadow economy.

The impact of the tax burden and tax policy on the macroeconomic situation is so great that the change in the volume of gross domestic product created in the country is directly related to the effectiveness of tax policy. The impact of the tax burden on the macroeconomic situation can be assessed by such criteria as the impact of taxes on aggregate demand and aggregate supply, on the investment climate, consumption, and economic stability.

The dynamics of changes in the tax burden in the republic is analyzed on the basis of the data presented in Fig. 3.



* it does not include targeted state funds.

Fig. 1. Dynamics of the tax burden in the Republic of Uzbekistan[4]

According to fig. 1, the tax burden as of January 1, 2020 is explained by an increase in the number of taxpayers as a result of a decrease in base tax rates as part of tax reforms carried out in the republic. In particular, the number of value added tax payers increased from 4,958 in 2016 to 113,477 in 2020, or by 108,519 over the analyzed period. Also, the number of land tax payers from legal entities increased from 10,300 in 2016 to 155,023 in 2020, or by 144,723 people.

TABLE 1 CHANGE IN THE NUMBER OF TAXPAYERS FOR CERTAIN TYPES OF TAXES[5]

Types of taxes	2016 год	2017 год	2018 год	2019 год	2020 год	Rates of growth (in 2020 compared to 2016)
Value added tax	4 958	5 617	6 796	82 405	113 477	+ 108 519
Income tax	5 752	6 518	7 609	53 051	113 868	+ 108 116
Turn overtax (STP)	156 850	161 310	164 465	177 701	321 638	+ 164 788
Legal entity property tax	8 213	8 987	9 261	58 334	58 856	+ 50 643

Land tax from legal entities	10 300	11 689	12 887	70 046	155 023	+ 144 723
Water resource tax	2 936	3 187	3 443	56 024	136366	+ 133 430
Total:	189 009	197 308	204 461	497 561	899 228	710 219

As can be seen from Table 1, the number of taxpayers for the main types of taxes was 189,009 people in 2016 and 899,228 people in 2020, or the number of taxpayers for the analyzed period increased by 710,219.

In recent years, these tax rates have been reduced by several percent, as the reduction in flat tax rates has had a direct impact on taxpayer income. This, in turn, had a positive effect on the increase in taxpayers' income and their investment activity.

The number of taxes and fees established in accordance with the new edition of the Tax Code of the Republic of Uzbekistan has been reduced from 19 to 15. The rate of corporate income tax is set at 12%, dividend tax –5%, property tax –2%, unified tax payment - 4%. These taxes directly affect the income of taxpayers. The introduction of a single 12 percent tax on personal income had a positive effect on the real income of the population. As a result, wages increased by an average of 6.5 percent and the tax burden on the wages fund decreased.

When implementing tax policy, the tax potential and the tax burden of the regions are interrelated. The study of the distribution of the tax burden by regions is important for determining the directions for the development of regions, the location of production forces, and attracting investments.

The current state of the tax burden by region, calculated using this formula, is shown in Fig. 2.

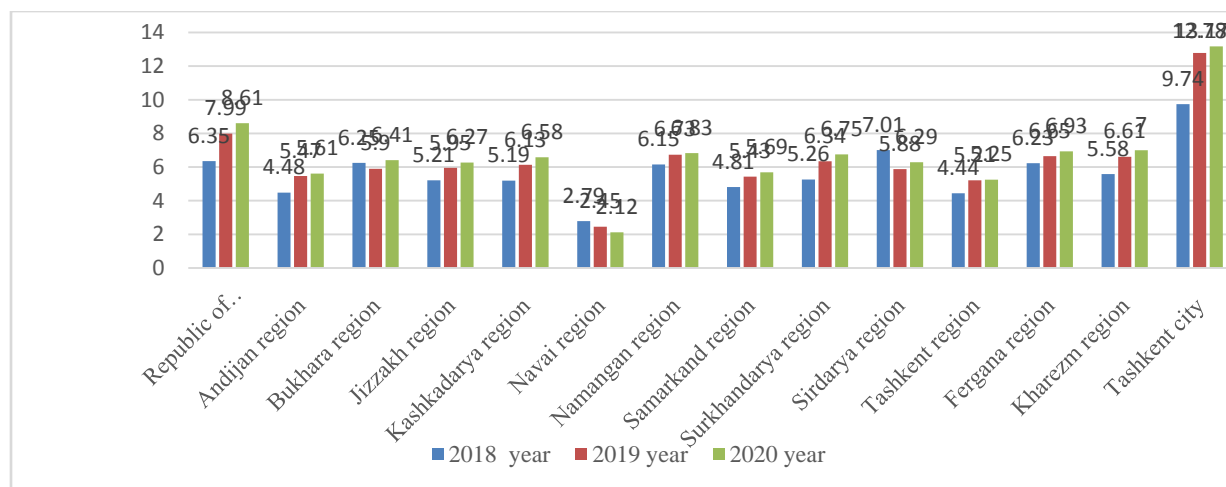


Fig. 2. Dynamics of the tax burden by region, percent[5]

According to fig. 2, the main tax burden is high in 5-6 oblasts, while in other oblasts it is very low. The tax burden in the city of Tashkent in 2018 was 9.74%, and by 2020 it was 13.2%, or increased by 3.43 percentage points. A low level of tax burden is observed in the Navoi region. So, in 2018, the tax burden in this area was 2.79 percent, and by 2020 it fell to 2.12 percent. Also in 2020, a relatively low level of tax burden was recorded in Andijan - 5.61%.

According to the author, the tax burden for business entities in the sectors of the economy differs significantly depending on the tax regime. Also, an analysis of the tax burden in the economy indicates that the tax burden at the macro level differs from the level of individual economic entities operating in the country. That is, contradictory results can be obtained for the industries and spheres, for individual legal entities. If in the economy as a whole, the tax burden is determined by the share of taxes and other payments paid to the state budget in GDP, then by industries and spheres it determines the share relative to the gross value added. At the same time, the average indicator at the macro level can be higher or lower than the average indicator at the meso level.

According to the analysis, the highest level of tax burden falls on the service sector (on average 40.0%) and the information and communication industry (on average 34.0%). That is, the share of taxes and fees paid by these industries in the gross value added is higher than in other industries. Meanwhile, the lowest level of tax burden falls on agriculture, forestry and fisheries (3% on average).

The efficient organization of the tax system and the strengthening of its stimulating role affect the activities of enterprises. In this regard, the simplicity and certainty of the tax system will contribute to the timely and complete fulfillment of their obligations by taxpayers.

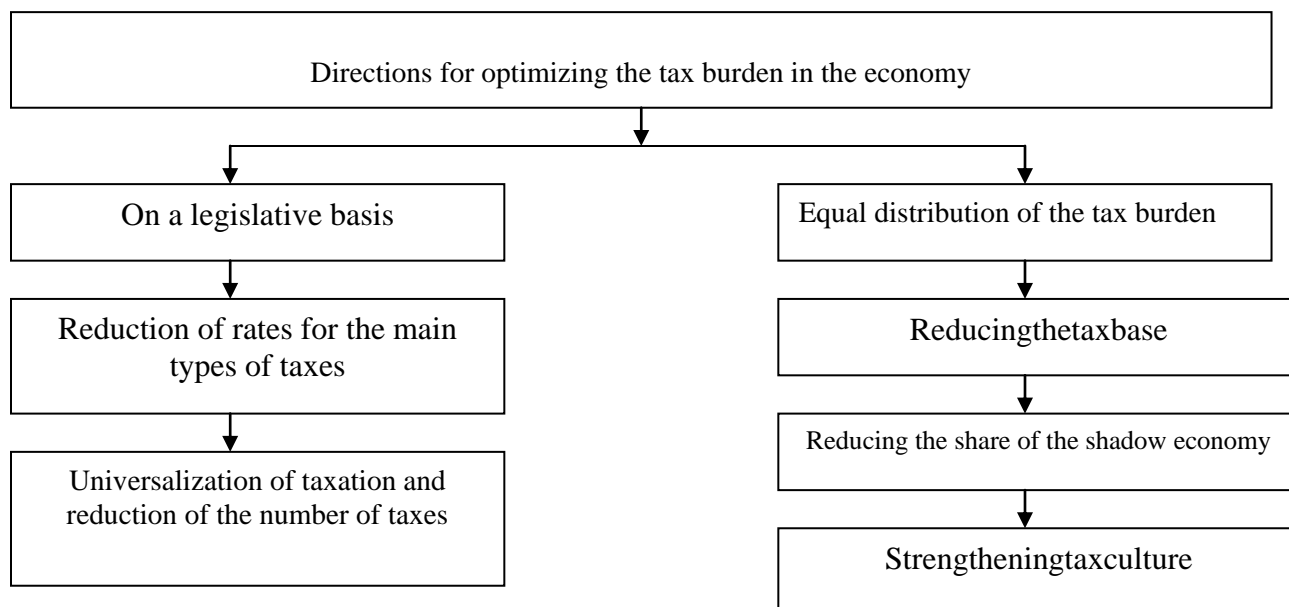


Fig. 3. Priority areas of optimization of the tax burden in the economy[6]

CONCLUSION

In our opinion, when optimizing the tax burden, along with the tax rate, important factors are the taxable base, tax incentives, and the timing of tax payments. An optimal tax burden means that both taxpayers and the state bring equal benefits to the budget. The state, when it sets a certain amount of tax burden, does not aim to have a negative impact on production, but at the same time it must collect funds sufficient to cover the costs of implementing its tasks. No other country in the world has yet found such a level of harmony and optimality. But there are countries that have come close enough to the point of the optimal level of the tax burden.

Priority areas for optimizing the tax burden can be achieved by evenly distributing the tax burden among taxpayers, reducing the tax base and improving the tax culture. A significant share of the shadow economy in the country's GDP also leads to an increase in the tax burden.

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ANALYSIS OF THE CURRENT STATE OF THE PHARMACEUTICAL INDUSTRY IN THE REPUBLIC OF UZBEKISTAN

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ABSTRACT

The article examines the development and current state of the pharmaceutical industry in the Republic of Uzbekistan, increasing the competitiveness of domestic enterprises, as well as government programs aimed at developing the industry in the country.

KEYWORDS: *Pharmaceutical Industry, National Economy, Production Modernization, GMP Standards, Competitiveness Of Enterprises, Production Localization.*

INTRODUCTION

As world practice shows, the pharmaceutical industry is one of the strategically important and rapidly developing sectors of the economy of any modern state. This industry is characterized by stable and high rates of production growth. Pharmaceuticals are considered high-tech and science-intensive production processes due to the fact that it is the level of provision of the population with medicines that is the main indicator of the social development of society and an indicator of well-being.

The advantages of the pharmaceutical industry for the national economy are:

- Reducing healthcare costs;
- Improving the quality of life related to health,
- Increasing the value of all economic production,
- Maintaining existing employment and creating new jobs,
- Enhancing long-term economic growth and international competitiveness (through innovation that is the result of “targeted production of technological knowledge”).

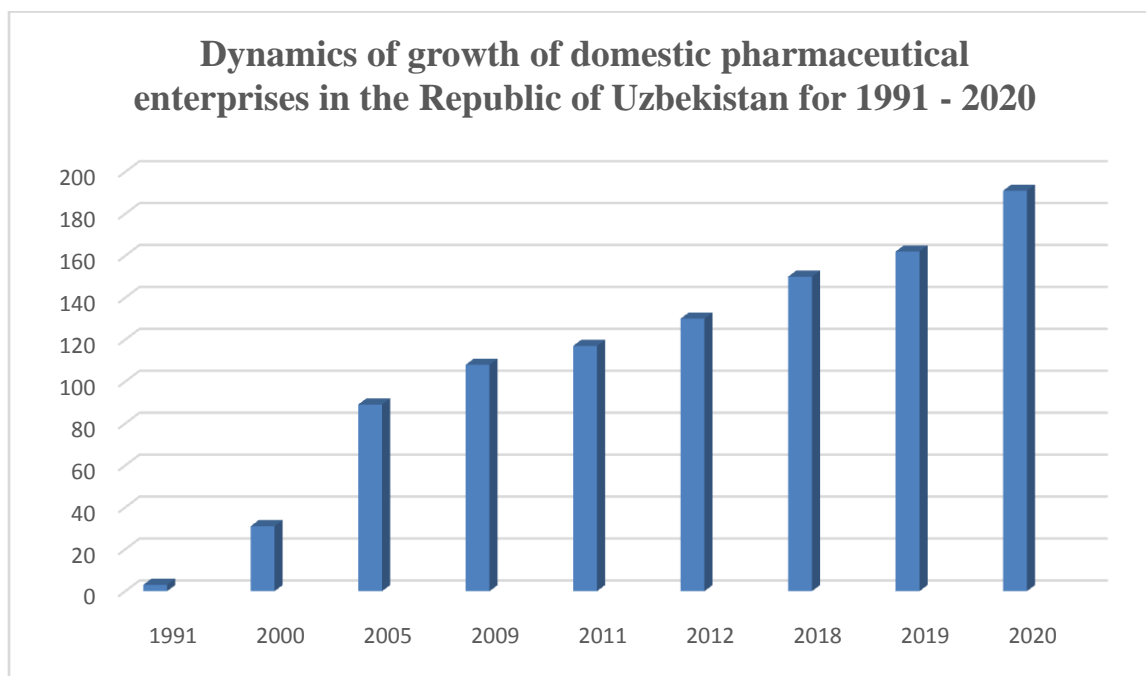
Thus, the pharmaceutical industry is an important sector for the growth and competitiveness of national economies. At the end of 2017, sales amounted to \$ 789 billion. In the period 2018–2024. the Compound Annual Growth Rate (CAGR) of the global prescription drug market will be 6.4%. Sales will reach \$ 1.2 trillion by 2024. [1]

MAIN PART

The pharmaceutical industry occupies a special place in the economy of the Republic of Uzbekistan. Recently, much attention has been paid to reforming this industry: modernizing industrial capacities, innovative development, localizing finished products, expanding export

potential, developing new types of pharmaceutical products, ensuring the quality of pharmaceutical products in accordance with international standards, training highly qualified specialists, attracting investment and advanced technologies into the industry. Also, comprehensive measures are being taken to improve the system of medicines, medical devices and medical equipment, all favorable conditions have been created for the further development of the activities of pharmaceutical enterprises. By the Decree of the Cabinet of Ministers of the Republic of Uzbekistan (No. 993 dated February 18, 2017), the Agency for the Development of the Pharmaceutical Industry under the Ministry of Health of the Republic of Uzbekistan was created, which is responsible for the well-being of the entire pharmaceutical industry of the country as a whole. In Uzbekistan, relevant legislative and regulatory acts have been adopted, which contribute to the development of pharmaceutical activities. Free-economic zones "Nukus-farm", "Andijan-farm", "Kosonsoy-farm", "Bustonlik-farm", "Parkent-farm", "Zomin-farm", and "Boysun-farm", "Sirdaryo" -pharm".

Today, 191 domestic enterprises for the production of pharmaceutical products operate in the Uzbek market. Of these, 95 enterprises specialize in the production of various types of medicines, 62 - medical products and 11 enterprises produce both medicines and medical products, 23 - medical equipment.



Source: Agency for the Development of the Pharmaceutical Industry under the Ministry of Health of the Republic of Uzbekistan

The Main Problems Of The Domestic Pharmaceutical Industry

Analysis of the current state of the pharmaceutical industry in the republic indicates that the pharmaceutical industry is “catching up” in relation to the global industry and has a number of main problematic aspects:

- Inability to meet the needs of citizens in medicines (drugs);

- Unstable state of the process of development, production and promotion of pharmaceutical products;
- Its inadequacy to changes in the internal and external environment. the presence in the portfolio of domestic manufacturers of a large number of obsolete, as well as low-margin reproduced drugs;
- Lack of investment in research programs and a small number of developments of new innovative drugs;
- Insufficient organization of work on the implementation of international standards at domestic enterprises;
- Shortage of highly qualified personnel in the domestic pharmaceutical industry.

These problems hinder the development of the domestic pharmaceutical industry and determine its unstable state at the present stage.

Analysis of the production of medicines by form of release shows that the share of domestic manufacturers is about 45% of the total market volume (for the production of tincture - 100%, ampoules - 85%, solution - 80%, liquids - 60%, concentrate - 51%, suppositories - 41%, syrup - 40%, ointments - 38%, capsules - 33%, suspensions - 29%, tablets - 24%, drops - 23%, powders - 20%, and gels - 4%).

At the same time, anti-inflammatory and diagnostic agents, drugs used in toxicology, gynecology, obstetrics, immunology, hematology, oncology and dentistry are practically not produced (less than 10%).

Today, one of the pressing problems for domestic manufacturers is the transition to GMP standards. The introduction of GMP standards is an important aspect of the development of healthcare, since it solves the problems of drug interchangeability, public procurement, drug insurance, pricing policy in the field of drug provision. To date, 10 out of 95 domestic pharmaceutical companies producing medicines have implemented the requirements of good manufacturing practice - GMP.

Insufficient organization of work on the implementation of international standards at domestic enterprises, including the requirements of good manufacturing practice (GMP), good pharmacovigilance practice (GVP) and ISO 13485, which regulate the quality and safety management system at pharmaceutical enterprises, limits the possibility of producing an efficient and safe pharmaceutical products that are competitive in the foreign and domestic markets. The transition of the pharmaceutical industry to GMP standards will lead to the formation of a market for high-quality drugs, the improvement of the pharmaceutical industry as a whole and movement to the world level in terms of the quality and range of manufactured drugs.

Also important is the introduction of good pharmaceutical practices (GxP) aimed at regulating the quality and safety management system of medicines during distribution (GDP), preclinical (GLP) and clinical trials (GCP), in general, ensuring the effectiveness and safety of products throughout its entire life cycle.

The system of training, retraining and advanced training of workers in the pharmaceutical industry requires further improvement, in particular in such important areas as biotechnology of

drugs, chemical technology of drugs, technology of finished drugs and phytopreparations, management and economics of pharmacy, pharmaceutical chemistry and microbiology. [2]

State Support And Prospects For The Development Of The Domestic Pharmaceutical Industry:

State regulation of the pharmaceutical market is implemented through the adoption of laws and regulations that establish rules and regulations in the field of drug circulation, as well as through state supervision and control of their implementation. In order to effectively operate pharmaceutical activities and provide the country's population with high-quality medicines and medical products, the following legislative acts were adopted that regulate pharmaceutical activities in the republic:

1. Law of the Republic of Uzbekistan "On certification of products and services" (December 28, 1993)
2. Law of the Republic of Uzbekistan "On Protection of Consumer Rights" (April 26, 1996)
3. Law of the Republic of Uzbekistan "On standardization" (August 29, 1996)
4. Law of the Republic of Uzbekistan "On Metrology" (August 29, 1996)
5. Law of the Republic of Uzbekistan "On the protection of citizens' health" (August 29, 1996)
6. Law of the Republic of Uzbekistan "On Medicines and Pharmaceutical Activities" (April 25, 1997)
7. Law of the Republic of Uzbekistan "On Advertising" (December 25, 1998)
8. Law of the Republic of Uzbekistan "On narcotic drugs and psychotropic substances" (August 19, 1999)
9. Law of the Republic of Uzbekistan "On licensing certain types of activities" (May 25, 2000)

The Government of the Republic of Uzbekistan views healthcare as an integral part of the national development program aimed at creating a society where all citizens will lead a healthy lifestyle. Medicines are an important element in the prevention, diagnosis and treatment of diseases, and therefore providing the population with safe and effective medicines is one of the important tasks of public health. In this regard, on May 30, 1999, the national drug policy of the Republic of Uzbekistan was approved. The main goal of which is: ensuring the availability of effective, high-quality and safe medicines for the population, their rational prescription and correct use. The main objectives of the state drug policy are as follows:

- ❖ Ensuring the availability of effective, high-quality and safe medicines for the population;
- ❖ Creation of a unified state system for quality control and registration of medicines;
- ❖ Development of the domestic pharmaceutical industry, job creation in the pharmaceutical sector;
- ❖ Ensuring the rational use of medicines;
- ❖ Improvement of professional training of pharmaceutical personnel [3].

The modernization of the pharmaceutical industry is one of the priority directions in the republic. The reform of the pharmaceutical industry is designed to help ensure the country's drug

safety, modernize the pharmaceutical sector, create new science-intensive and high-tech industries, increase the export of pharmaceutical goods and services, stimulate advanced scientific and technical developments and minimize dependence on foreign markets. In this regard, the regulatory and legal framework is constantly being improved, the decrees of the President of the Republic of Uzbekistan dated December 30, 2019 No. PP-4554 "On additional measures to deepen reforms in the pharmaceutical industry of the Republic of Uzbekistan" were approved, the concept for the development of the pharmaceutical industry of the Republic of Uzbekistan in 2020 - 2024 (hereinafter - the Concept), Resolution of the President of the Republic of Uzbekistan dated January 28, 2020 No. PP-4574 "On the creation of an innovative research and production pharmaceutical cluster" Tashkent pharma park ", the main goal of which is the transition of the pharmaceutical industry to an innovative development model, as well as organization of stable activities of the pharmaceutical industry aimed at ensuring a high level of quality and efficiency of pharmacotherapy and prevention of diseases of the population, and ultimately contributing to an increase in the duration and improvement of the quality of human life. The main expected results of the implementation of the Concept are as follows:

- An increase in the share of domestically produced pharmaceutical products in the domestic market up to 50% in value terms;
- Expansion of the range of production of drugs produced in the republic, including an increase in the share of innovative drugs in the portfolios of local manufacturers up to 50% in value terms;
- Attracting additional direct investments in the pharmaceutical industry in 2020 - 2024 in the amount of USD 100 million;
- An increase in the export of pharmaceutical products by 3 times compared to 2019;
- Application of international experience in the field of personnel training, equipping training centers, developing accreditation and standardization, creating modern laboratories equipped with the latest equipment. [4]

The state also initiates the creation of free economic zones "Nukus-farm", "Andijan-farm", "Kosonsoy-farm", "Bustonlik-farm", "Parkent-farm", "Zomin-farm", and "Boysun-farm" ", "Sirdaryo-farm ". The adoption of the Decree, first of all, will contribute to the development of the pharmaceutical industry, support of manufacturers of medicines and medical devices, saturation of the domestic market of medicines with high-quality local drugs.

The Government of the Republic of Uzbekistan has taken measures of preferential taxation, in particular, drug manufacturers are exempt from paying all taxes for a period of 5 years. Companies implementing projects for the creation of new production facilities and the reconstruction of existing ones are exempted from paying all customs duties when importing technological equipment.

The state regulates the activities of subjects of production and distribution, applying mechanisms such as licensing of pharmaceutical activities and production of medicines, registration of medicines and regulation of prices for pharmaceutical products. In addition, state control in the circulation of medicines is carried out by checking compliance with the rules of preclinical and clinical trials, laboratory practice, and organization of production and quality control of

medicines, wholesale trade in medicines, dispensing medicines, storage and destruction of medicines. [5]

CONCLUSION

In conclusion, it is worth noting that the existing capacities of domestic manufacturers cover only about 27% of the needs of the population and medical institutions for medicines and medical products. At the same time, in developed foreign countries such as the USA, Germany and France, the share of the domestic pharmaceutical industry in the total pharmaceutical market of these countries is more than 75%. Comprehensive, large-scale work is underway in the republic to raise the pharmaceutical industry to a new level of development and create conditions for its transition from an investment to an innovative development model. Along with free economic zones, one of the promising areas of strategic development of the pharmaceutical industry is the creation of clusters that allow organizing a full cycle of drug production on a certain territory, as well as increasing the scientific and human potential of the industry. The Concept "On the creation of an innovative scientific and production pharmaceutical cluster" Tashkent Pharma Park ", adopted within the framework of the Presidential Decree, is aimed at creating a system for the development of educational, research potential in the country's pharmaceutical industry, education and training in the field of pharmaceuticals based on the best foreign educational programs. creation of new science-intensive and high-tech industries.

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MAHMOOD LAMISHI LIFE AND SCIENTIFIC HERITAGE

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ABSTRACT

Mahmud b. Zayd al-Lâmishi, lived in Semerkand at the end of the 5th century and at the beginning of the 6th century (AH), a member of Hanafi-Mâturidi tradition was a theologian and jurist. His works related to theology, law and method of law were read in madrasahs in the periods of Ottoman and Seljukids.

KEYWORDS: : *Lâmishi, Hanafi-Mâturidî, theologian and Jurist, method of law, at-Tamhid.*

INTRODUCTION

The land of Uzbekistan is one of the cradles of human culture. The cultural samples created in the territory of our country play a significant role in the development of world civilization. The penetration of Islam into Central Asia and the conversion of the local population to Islam ushered in a new era in the cultural development of the people of our country. During this period, our great thinkers and ancestors, who made an unprecedented contribution to the development of both the Islamic sciences and the secular sciences, lived and worked. [1]

During the years of independence, the restoration of spiritual and religious values and the understanding of national identity have risen to the level of public policy. In particular, special attention was paid to the study of the enlightenment foundations of Islam, the incomparable scientific heritage of our ancestors. Abus-Sano Mahmud ibn Zayd Lamishi, who was born in Fergana and worked in Samarkand, was one of such scholars who was known as a jurist and scholar of his time. [2]

Although Mahmud ibn Zayd Lamishi is recognized as one of the most famous representatives of the teachings of Moturidiyya and Hanafi jurisprudence, information about the life and scientific activity of the scholar is very rare in the books of the category of layers.

The ratio of "Lamish" given to Alloma is connected with the name of the village "Lamish" located in the Fergana valley [3]. Two other persons with Lamishi proportions are also mentioned in the history books. One of them was Husayn ibn Ali ibn Abul-Qasim Lamishi, who in his work al-Fawa'id al-Bahiya states that he was born in Lamish in 441/1049, traveled to Baghdad in 515/1121, and was recognized as a leading scholar in the field of debate. 522/1128 He died in Samarkand in [4].

The second scholar to be given the Lamishi ratio is Muhammad ibn Musa ibn Abdullah, known as Abu Abdullah Bolasoguni Lamishi. This scholar was a judge in Damascus. The Hanafi sect is known for its firm adherence to the Moturidiyya creed and its opposition to misguided sects. Died in Damascus in 506/1142. Since the period in which the scholar lived and worked was different

from that of Mahmud Lamishi, the information about them is not mentioned in the history books and is not mixed up. However, because Ali ibn Abul-Qasim Lamishi and Mahmud Lamishi lived and worked in the same period and in the same area, the information about them is mixed. Such cases can be traced back to the date of Abul-Qasim Lamishi's death in manuscripts of works attributed to Mahmud Lamishi, as well as to the occurrence of phrases related to Mahmud Lamishi in Abul-Qasim Lamishi's works, such as Waqa'at al-Fatawa and Usul al-Fiqh. [5]

Biographical books on the biographies of Hanafi scholars provide a brief account of Lomishi and his scientific legacy. In particular, Quraysh (d. 775/1334) in his work Jawahir al-Mudiya fi Tabaqat al-Hanafiya mentions Lamishi as Mahmud ibn Zayd Lamishi and states that he has a 40-page work on the science of usul al-fiqh called Muqaddima. leads to [6].

Another source about Lamishi is Haji Khalifa's Kashf az-Zunun, in which the scholar's name is mentioned in the form of Imam Badruddin Mahmud ibn Zayd Lamishi. However, information about Lomishi's life, the year of his death, and his works are not mentioned.

Ibn Qutlubugha also limited himself to mentioning in the Taj at-Tarajim that Mahmud ibn Zayd Lamishi had a forty-page work on the method of al-fiqh [7].

Even in modern research, information about Lomishiy is limited to the above. Conclusions about the life and scientific activity of the scientist can be made on the basis of information in the manuscripts of his existing works. For example, the manuscript of the book "Kitab fi usul al-fiqh" copied by the scholar Abu Hasan Ali ibn Ahmad Abdullah, states that this work was written in 534/1140. Given that the scientist was alive at this time, his period can be limited to the end of the 5th century AH and the first half of the 6th century AH. [8]

We have received 3 works by Lamishi:

At-Tamhid li qawaid at-tawhid or Usul ad-din. This work belongs to the science of theology, and several manuscripts of it are kept in the funds of the world.

In particular, one of the manuscripts of the work is stored in the "Lolali" section of the Suleymaniye Library in Istanbul on pages 138-171 of the source under the number 53658/4. This source was written in 1164/1750. It is unknown who wrote it. The title of the work is "Kitab at-tamhid li qawaid at-tawhid". [9]

There is another copy of the work on pages 205-220 of the source kept under the number № 159/5 in the "Arzinjon" section of the Sulaymaniyah library. This source was copied by Muhammad ibn Haji Ali in 1135/1722. The title of the work is "Aqida fi usul ad-din li Imam Alloma Shaykh al-Islam Lamishiy".

Another copy of the work, Aqidatul-Lomishiy, is kept in the Boyazid Library in Istanbul under the number BDK-7930. This 46-page copy is on the front page of the collection. The last page of the source states that it was copied in 761/1360. [10]

There are 4 manuscripts of the work under archival number 4316 and manuscript number № 236 of the National Library Foundation in Istanbul. This manuscript is a collection of works, written on pages 6b-25a under the title "Aqida fi usul ad-din li Imam Alloma Shaykhulislam Lomishiy". This source was moved to Malatya in 1124/1711. [11]

Another copy of the work, *Aqidatul-Lomishiy*, is kept in the Boyazid Library in Istanbul under the number BDK-7930. This 46-page copy is on the front page of the collection. The last page of the source states that it was copied in 761/1360.

A. of the National Library Foundation in Istanbul. There are 4 manuscripts of the work under archival number 4316 and manuscript number № 236. This manuscript is a collection of works, written on pages 6b-25a under the title "*Aqida fi usul ad-din li Imam Alloma Shaykhulislam Lomishiy*". This source was moved to Malatya in 1124/1711. [12]

Another manuscript of *At-Tamhid* is listed under the number 587 in the Haji Salim Aga section of the Sulaymaniyah Library. This copy of the manuscript was copied by Ibrahim ibn Mahmud Isfarani in 761/1360. The title of the work is given in the form of "*Kitab at-tamhid ma'a sharhi fi mawadi 'at-tajrid*." Each page of the manuscript contains spaces with brief comments. But it is not stated when or by whom these comments were written.

At-Tamhid was studied by Abdulmajid Turki and a modern Arabic edition was published in 1995 on the basis of Lolali and Arzinjon copies. Ahmad Farid Mizyadi also published a modern Arabic edition of *al-Tamhid* in Beirut in 2007.

Usul al-fiqh. Manuscripts of Mahmoud Lamishi's work are now available in Turkey, the United Kingdom and Morocco. In particular, it is stored in the library of Qaraviyin in Fes, Morocco, under the number № 633. This source consists of 156 pages and was donated to the library in 762/1361 by Malik Wahhab Khalifa Mansur. There is also an inscription on the first page of the source that Amir al-Mu'minin was endowed in the library by Abu Abbas Mansur Billah in 1001/1592. In the catalog of the library and in the source the author of the work is mentioned as Abulqasim Husayn ibn Ali Lamishi. [13]

The second copy of the work is kept in the Jarullah Efendi section of the Suleymaniye Library in Istanbul under the number № 438. This source was copied in 730/1329 by Ja'far ibn Mumin Samarkandi in a madrasa near the tomb of Imam Azam in Baghdad. The manuscript consists of 78 pages.

The London copy of the work is the oldest of the manuscripts and is in the Department of Oriental and Arabic Manuscripts of the British Museum, Or.13, - Or. Stored under number 18. This source is a collection of works, pages 54a-97b of which contain "*Usul al-fiqh*". The manuscript was copied by Abu Hasan Ali ibn Ahmad Abdullah. It states that the author of the work was Mahmud ibn Zayd Lamishi and that the work was completed on the 9th day of Muharram 534/1140.

Usul al-Fiqh was also studied by the researcher Abdulmajid Turki on the basis of the Fes and London copies of the work, and was published in Arabic in Beirut in 1995 [14].

Kashf al-alfoz. This work is a small pamphlet devoted to the explanation of some concepts of jurisprudence and theology, and is kept in the Al-Maktaba al-Baladiya library in Alexandria, Egypt under the number № V1345 [15]. The author of the manuscript is cited in the form of "*Abul-Mahomid Badruddin Mahmud ibn Zayd Lamishi Hanafi*." This pamphlet was researched by Mustafa Chalabi. According to Chalabi, this manuscript dates back to the 7th-8th centuries AH, and there are records that the manuscript was founded in 813/1410.

From the above, it can be concluded that Mahmud ibn Zayd Lamishi was active at a time when theology had reached the highest stage of its development. He was diligent in spreading the doctrine of Moturidi, founded by the great scholar Abu Mansur Moturidi. He made a significant contribution to the development of Hanafi jurisprudence and the teachings of the Moturidiyyah with his works such as Kitab fi usul al-fiqh and at-Tamhid li qawaid at-tawhid. In particular, in his work on theology, the scholar discusses the doctrinal issues that play an important role in religion on the basis of the Qur'an and the Sunnah, and refutes the misguided sects and sects that can be encountered at any time. The scientific heritage of our ancestor, who lived nine centuries ago, is very important not only for his time, but also for the present, when the struggle for ideas is in full swing.

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A REVIEW STUDY ON HVDC CIRCUIT BREAKERS

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ABSTRACT

The need for electric control and financial access to distant sustainable power source sources, such as seaward wind control or sunlight-based warm age in deserts, has reignited interest in multi-terminal high voltage direct current (HVDC) frameworks (systems). There was a lot of study done around there, especially in the 1980s, but just two three-terminal frameworks were discovered. Since then, HVDC technology has advanced significantly, and despite a number of technical challenges, the acceptance of large-scale HVDC systems is now widely discussed and debated. The accessibility of HVDC circuit breakers (CBs) will be critical for the recognition and dependability of these systems, making them one of the main enabling advancements. Various ideas for HVDC breaker designs have been disseminated and licensed, but no acceptable solution to intrude on HVDC cutoff has been discovered. This article aims to condense the literature on innovation areas relevant to HVDC breakers, especially in the last two decades. Existing discrepancies are shown by comparing the mainly 20+ year old, cutting edge HVDC CBs with the new HVDC innovation.

KEYWORDS: Circuit Breaker, Distribution, Electric Power, HVDC, Technology.

1. INTRODUCTION

The excitement for HVDC multi terminal frameworks has been reignited in recent years. The ever-increasing need for electric power and the financial accessibility to distant sustainable vitality sources, such as seaward wind control or sun-based warm age in deserts, necessitate an electric vitality transmission framework that can span extremely vast distances with little loss. Traditional HVDC point-to-point structures may assist meet this need and are already available.

Connecting more than two HVDC terminals to form a coordinated multi-terminal HVDC framework (organization) has a number of advantages, including a reduction in the number of terminals (lower costs and losses), the blackout of one dc line does not interrupt the power stream at any terminal, each terminal can work at different power and current, and the power trade with all air conditions. Investigating the acceptance of HVDC systems is thus appealing [1–3].

The HVDC circuit breaker's primary function is to halt high voltage direct current flows in the network. The arc at natural current zero in the AC wave is readily interrupted by an AC circuit breaker. The energy to be interrupted is likewise zero at zero current. To resist natural transient recovery voltage, the contact gap must regain its dielectric strength. The issue is more

complicated with DC circuit breakers because the DC waveform lacks natural current zeros. Forced arc interruption would result in a high transient recovery voltage, restrike without arc interruption, and eventual breaker contact destruction [4–7]. Three major issues must be addressed while constructing HVDC circuit breakers. These are the issues:

- Creating a fictitious current zero.
- Preventing arc restrikes
- Energy stored in the body is dissipated.

During the 1980s, there was a lot of interest in multi-terminal HVDC systems, but only two three-terminal systems were recognized. Advances in HVDC technology have reignited interest in HVDC systems. The main impediment to the implementation of an HVDC control network is the framework's significant vulnerability to DC line interference. The intrusion of a DC blame current into a framework blame condition is more complicated than the intrusion of an AC blame current. Despite the absence of a current zero intersection point, the rate of ascent of DC blame current is astonishingly large due to the low inductance of the DC side of the framework, necessitating extremely fast interference innovation. More attention should be drawn to the improvement of HVDC circuit breakers as a crucial innovation to make HVDC multi-terminal frameworks safely operational and to prepare for the combining of mass measure of seaward wind vitality to AC matrix.

DC circuit breakers, specifically for high voltage applications, are currently neither economically or widely available. The origin of the need for an HVDC circuit breaker is explained in this article, and the basic requirements of an HVDC electrical switch are given. Following that, HVDC circuit breaker advances such as mechanical circuit breakers with snubber, half breed circuit breakers, and unadulterated strong state circuit breakers are audited, and each topology is thoroughly investigated. Furthermore, a comparison of various topologies based on findings from literary works is presented. Finally, suggestions for circuit breaker development are presented [7–9].

VSC-HVDC-based multi-terminal grid clearly, many of the planned seaward wind ranch operations will have a large power limit and will be built far from the coast. As a result, for conveying capacity to a receiving inland network, a long connection length will be required. Transmission of control via normal AC connections isn't feasible due to separations and plant limitations [6].

HVDC transmission technology was first demonstrated in 1954 for enabling the interchange of mass measures of electrical control at high voltage across great distances. HVDC transmission lines are appealing not just from a technical standpoint, but also from a financial one. There are two notable HVDC improvements that are used for point to point control exchange as well as connectivity of different electrical systems these days: current source converter (CSC) based and voltage source converter (VSC) based advancements.

In CSC frameworks, it's necessary to add channels and additional capacitors on the air conditioners side, and the power stream is unidirectional, so inverting the power-stream heading necessitates a hazardous modification in the framework's extremities. VSC frameworks, on the other hand, are built on Isolated Gate Bipolar Transistors (IGBT). In VSC frameworks, dynamic and responsive control streams are freely adjustable, and it is also possible to increase the voltage

and power rating of the system by using staggered VSCs. The proximity of sounds in VSC frameworks is limited to high repetition, which causes the channels to be activated. Furthermore, VSC-HVDC technology transfers dynamic power and can provide the necessary level of receptive control at both the power transmitting and receiving ends. This enables clothes designers to reduce the size of the channel once again.

Many of the proposed offshore wind farm projects will have a high power capacity and will be built far from shore, according to a VSC-HVDC based multi-terminal grid. As a result, significant cable length will be required to transmit electricity to a receiving onshore grid. Transmission of electricity via traditional AC wires is not possible due to distances and plant capacity. In 1954, HVDC transmission technology was proven in practice for transferring large amounts of electrical power across great distances at high voltage. HVDC transmission lines are not only appealing from a technological standpoint, but they are also cost-effective. There are two main HVDC technologies in use today for point-to-point power transmission and asynchronous electrical network interconnection: current source converter (CSC) based and voltage source converter (VSC) based technologies. In CSC systems, filters and extra capacitors must be installed on the ac sides, and the power flow is unidirectional, thus reversing the power-flow direction necessitates a change in the system's polarity, which may be troublesome.

1.1. Circuit breakers for high-voltage direct current (HVDC):

Different types of HVDC circuit breakers are categorized in this section, along with a functional analysis of each topology.

1.2. HVDC circuit breaker (mechanical):

A. Passive mechanical resonance CB are mechanical HVDC electrical switch with separate reverberation circuit is a long-standing innovation that was first developed for CSC-HVDC frameworks. CB is a standard air impact electrical switch with a couple of interrupter components. Current flows via the CB during normal activity, and it is commutated into a substitute route during incursion. It is necessary to examine the current situation during the intrusion operation in order to comprehend the method.

1.3. Hybrid Technologies :

Technologies that combine the best of both worlds. The hybrid switching method involves combining controlled strong state devices with a mechanical breaker or disconnecter in a connected arrangement. Solidstate switches are used to provide the compensation method in most half-and-half electrical switches, and it only functions during the interference phase. All of the switches are integrated circuits. Recent advancements in semiconductor switches, as well as improvements in their qualities such as separate voltage, conduction misfortunes, exchanging time, and dependability, have increased the possibility of using these devices as the primary interrupters in circuit topologies for half and by and large, two main structures.

A fast mechanical breaker is equipped with a set of parallel strong state switches in this topology. This architecture combines the minimal losses of a pure mechanical breaker with the fast exchange response of a pure strong state device. This architecture is faster than conventional circuit breakers since the curve chamber should only produce sufficient voltage for replacement, not a false current zero crossing point. This architecture has been used to create medium voltage frameworks [10].

Another design that has been proposed makes use of a fast strong state device as the main current source and a quick mechanical disconnecter. The parallel path is activated by arranging strong state switches in a certain order. In the most basic sense, an IGBT is a fast strong state device. This IGBT just has to provide a sufficiently high voltage to compensate for the current flowing to the parallel full IGBT breakers, thus it has a lower rating than a parallel way breaker. Normally, it may be recognized by arranging a pair of IGBTs in such a way that the conduction mishaps and voltage drop are kept to a minimum.

The current will simply flow via the detour during normal operation, and the current in the principle breaker will be zero. When a DC fault occurs, the assistive DC Breaker quickly commutates the current to the basic DC Breaker, and the fast disconnecter opens. The main DC breaker cuts the current when the mechanical switch is in the off position. With no current and low voltage stress, the mechanical switch opens. In the aftermath of being in the empty position when the main DC breaker opens, the quick disconnecter will be exposed to the recuperation voltage defined by the defensive dimension of the arrester banks.

1.4. Circuit breaker made entirely of solid-state components:

They are a strong pop interference because of their fast and ultra-quick swapping devices. A pure stop may be faster than any other pure semiconductor base made possible by different combinations of sty subordinate circuits. There are two types of circuit breakers in literary works, and various structures may be constructed within one of these topologies.

In most pure strong state circuit breakers, a huge number of IGBTs, IGCTs, or other semiconductor-based switches are connected in series and parallel to assist the voltage and current of the framework during normal and fault circumstances. Investigations on how to develop and enhance the procedures of strong state circuit breakers are ongoing, and new promises have been made.

1.5. surge arrester paralleled by CB:

A flood arrester R_v is connected in parallel with the semiconductor switch T , which serves as the main breaker. T is on during a normal job and directs current from the source to the heap. T will be killed if a short out is found to be the cause. The heap current commutates to the flood arrester R_v at that point. The surge arrester R_v 's cinching voltage constrains the flood voltage crosswise across T .

1.6. Losses in power:

Among all configurations, mechanical circuit breakers and half-and-half ones with no semiconductor devices in principle path of current have the lowest power misfortunes. An very tiny voltage drop on the metal contacts of the basic electrical switch explains this. These topologies have power misfortunes that are less than 0.001% of the VSC station control misfortunes. Furthermore, in the primary current path, half and half topologies with low evaluating semiconductor switches speak to significant power losses.

The power misfortunes in this kind of electrical switch are less than 0.1 percent of the intensity mishaps in a VSC framework. Unadulterated strong state designs, on the other hand, suffer from high control disasters. Because there are so many IGBTs or other semiconductor devices in the main current path in these topologies, the total voltage drop of the electrical switch is usually

very large. The power losses associated with this invention in examination with a VSC station may be as high as 30%.

1.7. Voltage rating of:

Mechanical HVDC ostensible voltage up to 550kV ar circuit breakers have also been verified by testing up to 120kV voltage rating, and it is required to reach up to 320kV dimension. Pure semiconductor circuit breakers are not available in high voltage tests and have only been designed and built for use in medium voltage applications. However, with advances in semiconductor devices, it is expected that an 800kV voltage rating will be possible.

1.8. Currently rated:

With an aloof reverberation framework, mechanical HVDC circuit breakers can stop flows up to 4kA, and with a dynamic reverberation framework, they can stop flows up to 8kA. The flow incursion dimension of 9kA has been provisionally demonstrated for half breed electrical switch topologies, and a step up to 16kA is theoretically possible. When considering the typical high voltage rating for pure semiconductor circuit breakers, a current interference value of 5kA makes sense.

2. DISCUSSION

With the growing interest in developing, operating, and integrating huge amounts of renewable energy resources such as offshore wind farms and solar production in deserts, a need for multi-terminal high voltage direct current (MTDC) systems has emerged. According to preliminary research, a voltage source converter-based HVDC (VSC-HVDC) system is the greatest choice for implementing future multi-terminal HVDC systems that integrate large amounts of energy across long distances to the AC grid.

The requirement for quick HVDC circuit breakers is the most significant disadvantage of VSC-HVDC systems. The goal of this article is to summarize HVDC circuit breaker technology, as well as recent major efforts to create contemporary HVDC circuit breakers. Each technology is given a short functional examination. Different technologies are also compared based on information collected from literatures. Finally, suggestions for improving circuit breakers are offered.

3. CONCLUSION

The main impediment to HVDC lattices being recognized is the lack of develop HVDC fault current breaking advances. The current state of HVDC circuit breakers has been summarized and discussed in this article. All of the shown breaking strategies have limited capabilities in terms of interfering with the ongoing problem and could be enhanced. When it comes to mechanical circuit breakers, which are the most important devices for preventing fault current interference, efforts should be focused on increasing the size of the components of the reverberation circuit. Furthermore, in order to get a greater current rating, the conductivity of the circular segment chamber should be increased. Because half-and-half circuit breakers have a higher efficacy and acceptable infiltration speed, the development of faster mechanical switches with a higher flood voltage withstand and lower creation disasters may result in further advancements in this area.

New wideband-hole semiconductors such as SiC or GaN based switches should be investigated for application in strong state circuit breakers. Furthermore, dynamic entrance driving innovations may help enhance semiconductor switch execution in pure strong state electrical switches. Furthermore, accurate, strong models for semiconductor switches with validity in high voltage and high flows must be developed for use in constructions and reenactments. The use of DC blame current limiters in HVDC systems may be interesting to think about if you want to increase your chances of detecting permanent problems from transient network events.

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A REVIEW STUDY ON LIGHTNING PROTECTION SYSTEM RISK ASSESSMENT AND APPLICATION

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ABSTRACT

In the blink of an eye, a lightning strike may deliver thousands of mega-amperes of electricity. As a consequence, if the strike is not grounded, it may cause severe damage to household and industrial equipment and devices. As a result, the current transmission system requires a lightning protection system. Lightning is an inevitable natural occurrence. As a result, studying lightning's qualities and characteristics is essential for developing a lightning protection system. Each application has its own set of requirements that must be met. The location and user of the lightning protection system determine the kind of lightning protection system. A public space, transportation system, power system transmission, and generating system, all of which contain renewable energy sources, are examples of various types of locations. Each region may achieve a different degree of security. The potential and probability of transitory effect on all applications, including public areas, power system lines, and producing systems, is assessed in this study. The evaluation included a countermeasure that addressed a few procedures to evaluate the impact of lightning and protective countermeasures.

KEYWORDS: Industrial, Charge, Lightning Protection System, Surge Protection Devices.

1. INTRODUCTION

Lightning is a dangerous yet beautiful natural sky phenomenon. Lightning, as the name suggests, is a dazzling flash of light produced by electrical discharges that occur all over the globe, whether in metropolitan areas, rural areas, or even in open fields. Lightning is caused by a disproportion of charges between thunderclouds and the earth or the clouds themselves, according to hypothesis. The majority of lightning strikes occur between clouds, with the exception of lightning striking the earth, which is a rare occurrence [1–6].

In the blink of an eye, a lightning strike may deliver thousands of mega-amperes of electricity. Lightning is most likely to strike the closest point on Earth to it, which has a large potential for positive charges. In other words, a towering building, structure, electrical tower, or even trees that may discharge electricity to the ground are considered the nearest point. An exterior lightning protection system's job is to safely intercept, conduct, and disperse a lightning strike. The structure of a building, its electrical systems, and the people who work around or inside it are all at danger without such a system. Lightning strikes may harm or kill people in a variety of

ways. Within or around a structure, lightning strikes (or even electrical discharges caused by adjacent lightning) may produce fires, explosions, chemical release, or mechanical disturbance.

Humans (and animals) in close proximity may be injured or even killed by the step and contact voltages produced by a lightning strike. When designing a lightning protection system, we at Furse are well aware that all of these risks must be addressed and mitigated. With over a century of experience, our assistance and skills have helped hundreds of companies, big and small, achieve successful lightning protection. Human activity outfitted with electrical and technological equipment, whether utilized at home or at work, is well known to be extremely vulnerable to a lightning strike. When lightning struck, the resulting overcurrent created a massive transient on the circuit line [7]–[9].

One of the main factors to electrical device damage, failure to function, and destruction is transient or surge. As a result, it is critical to have a protective system in place to withstand the effects of a lightning strike (Figure 1). A lightning protection system (LPS) is frequently built to reduce the potential damage caused by a lightning strike. The main purpose of LPS is to safeguard the structure of the building as well as any important equipment within or on the structure. By channeling the energy and its contents around the cage to the ground, LPS acts as a Faraday Cage, protecting less equipment from the danger of external electric fields. A good LPS seems to offer the lowest resistance route for a surge to go to the ground and dissipate the transient.

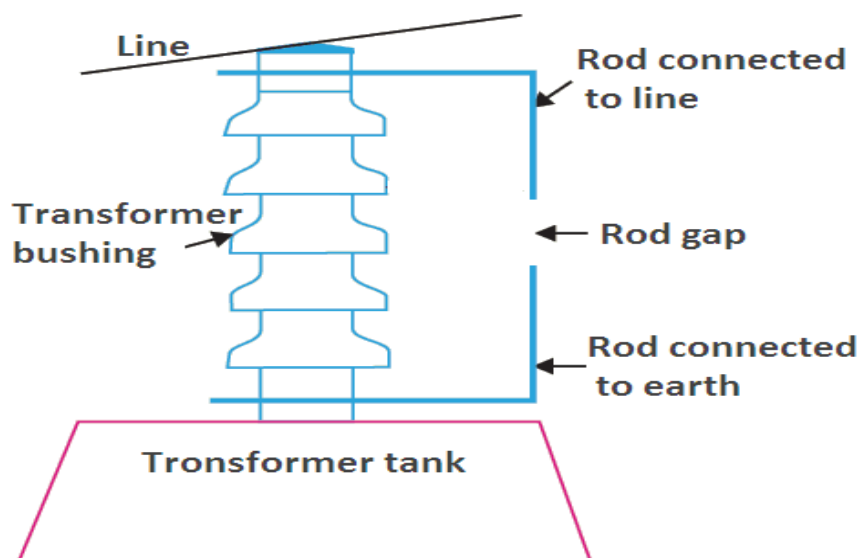


Figure 1: The above figure shows the Rod gap Lightning Arrester [10].

To evaluate a single installation of a protective measure, many factors were taken into consideration, including the likelihood of occurrence, the probability of maximum current of a lightning strike, and, last but not least, the cost. The financial element was important since it would help with the pre-installation and post-installation of any preventive measure. Typical fuses and circuit breakers, on the other hand, are insufficient to inhibit the high conductivity of lightning-induced transients. As a result, a backup solution such as installing a surge protector on a conduction connection becomes critical. Surge protection devices (SPD) are used to help the

whole protection system in the event of a transitory danger, such as voltage or current, caused by lightning or switching.

There are several different kinds of SPDs on the market, depending on their intended use, functionality, and location. However, the primary purpose of SPD is to redirect and safeguard the equipment as well as the surrounding area's safety. Various kinds of intelligent systems, ranging from tiny and cost-effective varistor to bulky based intelligent systems, have been researched for decades. Many research have been conducted in order to find a viable technique for reducing the impact of a lightning strike's surge. Researchers have used a novel technique called the spark gap system in SPD to reduce the impact of transients. As a result, in order to get a better knowledge of SPD in the context of lightning protection, this study examined every SPD currently available commercially and analyzed their properties. This research is also looking at the best protection technique for each application in the generation-to-distribution system electrical connection.

A lightning arrester or surge diverter is a device that is used to safeguard the equipment at substations from traveling waves. To put it another way, a lightning arrester directs an abnormally high voltage to the ground while maintaining supply continuity. It is linked between the line and the ground, in tandem with the equipment at the substation that has to be safeguarded. As illustrated in the diagram below, when a traveling wave approaches the arrester, it flashes over at a certain voltage. Between the line and the ground, the arrester offers a conducting route for low-impedance waves. The line's surge impedance limits the amount of current that may go to ground.

1.1. Lightning Protection System:

As stated in IEC 62305, lightning protection systems (LPS) are now regarded a need for every structure to be installed in order to safeguard both the structure and the material inside it. It covers both the equipment and the people within the building's safety. As previously mentioned, every element of installing the LPS must be considered, including safety, LPS design, and installation costs. Since lightning strikes are unpredictable, economic factors play a significant role for LPS. When compared to total lightning, there is a nearly 5% chance of lightning striking the ground. The LPS were classified in this study based on their location and application. The category area is public area, transportation system, and power system transmission and generation system which include renewable energy source (Figure 2).

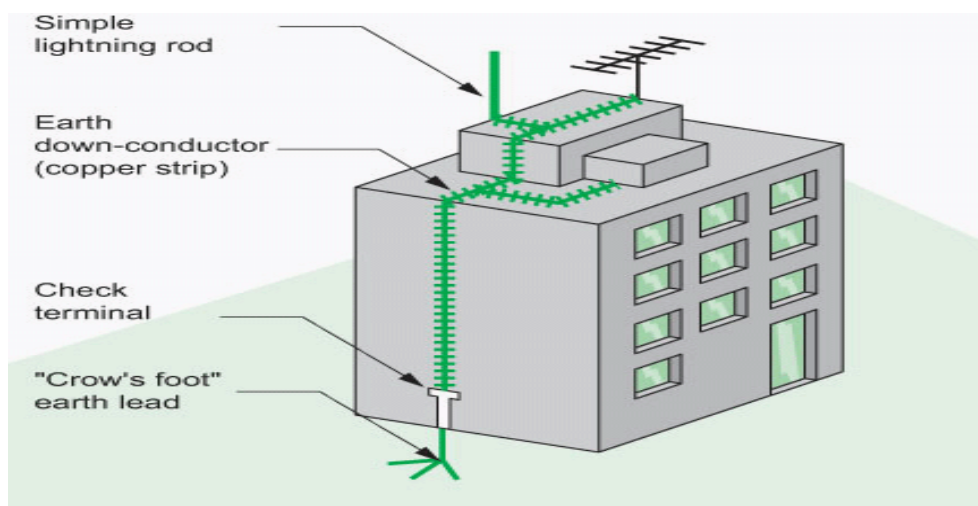


Figure 2: The Above Figure Illustrate the Grounding and bonding are the basis upon which safety and power quality are built [10].

In today's world, the majority of lightning protection in new construction is linked to electronic gadgets, appliances, and equipment such as closed circuit television (CCTV), computer networks, and so on. Due to the vulnerability of electrical equipment to lightning surges and strikes. A lightning countermeasure must be installed in a structure with a well-equipped electrical system, in addition to lightning terminals installed to deflect direct stroke to the ground. Lightning countermeasures include transient diversion and balance, shielding, and grounding. Surge protection devices (SPD) are often installed to help in the protection of the whole system by redirecting overcurrent in a short amount of time and avoiding surge damage to electronic equipment.

A model was created in 2008 to mimic the impact of surges on electrical equipment in a building. The equivalent circuit of the equipment was changed from a typical resistive load to an inductive, capacitive, or a mix of these. Still, the circuit's architecture was cascading all of the loads, but with an SPD in the middle to send the transient to the ground. The findings revealed that various types of total equipment utilized in a facility require varying levels of security. According to the findings, the kind of cable used in a building has a significant impact on the emergence of surge oscillation.

1.2. Transmission of Power in the Power System:

A surge arrester with adjustable ultra-high voltage (UHV). Similar to traditional MOV surge arresters, the UHV controlled arrester was tested on a field with a rating of 828kV. The controllable UHV arrester was linked in series with the fixed arrester, and the controllable UHV arrester is represented by MOV2, which is connected below the fixed arrester and has a rated voltage of 124.2kV, which is 15% of the overall rated voltage for the arrester. The controlled UHV arrester was attached to the control unit in parallel. A group of researchers worked with an energy provider to conduct an experiment to assess the incidence of a short circuit in an air switch on a distribution line. Regardless of the outcome, the air switch in an open position may produce a spark, which, depending on the gap, could cause a short circuit failure (Figure 3). The surge arrester at the air switch, however, cannot be removed for lightning protection.

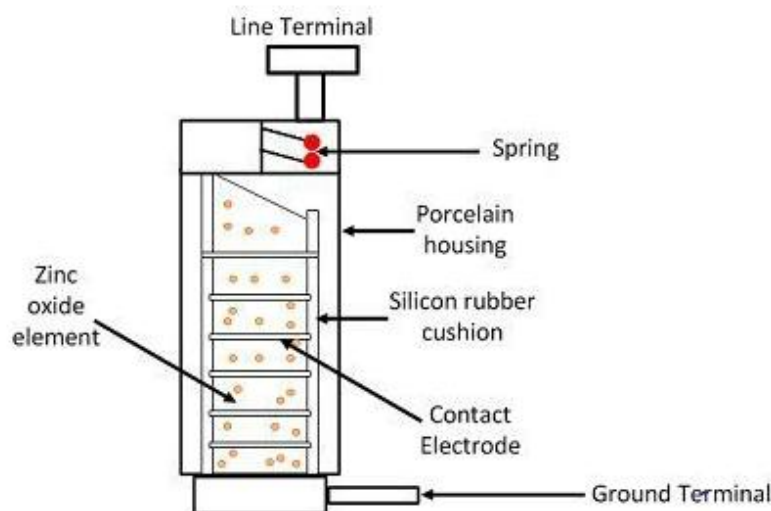


Figure 3: The Above Figure Illustrates the Label Diagram of Metal Oxide Surge Arrester.

In Malaysia, a thorough investigation was carried out to determine the suitability of a surge arrester for a 500kV transmission line. Because a double circuit trip is not permitted at high voltage levels. The installation of a surge arrester, together with increased ground resistance, was required to prevent any unanticipated events caused by a lightning strike. Since 1960, the impact of shielding failure on transmission lines has been studied using an electro geometric model. Until date, the model has undergone a lot of changes, including merging the old model with the leader progression model (LPM). LPM is a sideline acknowledged since the structural model is almost identical to the actual mechanism of lightning. However, owing to shielding failure, the precise solution of the criteria is still unclear. Various initial features to the leader progression model have been suggested in a large number of prior research.

1.3. System of Generation:

Renewable energy is quickly expanding these days, and it has become a significant source of electricity in certain areas. The wind turbine, as a sustainable energy source, has attracted a growing number of academics who want to learn more about it. Because the construction is tall and made of low resistance and conductive materials, wind turbines have attracted natural phenomena such as lightning strikes throughout the nation.

As a result, the protection of wind turbines against lightning strikes has lately attracted the attention of experts and has become spectacular news. The installation of wind turbines requires a large flat region or the open sea. The wind turbine seems to be the lone construction that is 70 meters tall when contrasted to other structures that are much smaller. An observation at a wind turbine in Japan revealed that lightning strikes not just downward, from cloud to ground, but also in the other direction, from ground to clouds. The results of the experiment revealed that the amount of pollution in a certain region has an impact on the likelihood of a lightning strike. This was corroborated by a few researchers who found that towering buildings or structures draw more lightning attention than low structures.

Meanwhile, the danger of exposure was greater on the offshore side, where the grounding and environment were not conducive to the tall construction of the wind turbine. The focus of the simulation is on the distribution of the electric field throughout the blade. According to both findings, installing SPD at a wind farm is a must, although other factors like as lightning stroke must be taken into account. Even if it does not contribute to total destruction, a single wind blade is expensive. The behavior of lightning transients on the wind turbine was studied via a monitoring study. The casing was tested at a current of approximately 16kA. However, a lightning strike produces considerably more amperes. The polarity of the lightning that was tested was negative, indicating that it might do the least amount of harm. Because the polarity of lightning is a completely different level, which may be bipolar or positive, they said that a high preventive measure must be implemented to avoid significant harm.

2. DISCUSSION

In today's world, a lightning protection system is both necessary and obligatory for buildings to meet the stated standards. As a result, this article explains how to assess the requirements of any LPS, especially when installing a surge protection device. From the reviewed article, a few important issues stood out, such as the need to plan for any building, particularly one that is open to the public, while also considering public safety. The chance and possibility of a lightning strike are still in the early stages. On the junction of the equator line, there have been many lightning strikes. As a result, any structure that may be deemed tall near the equator line, such as in Malaysia, should have adequate safety protection. Apart from constructing an air terminal to disperse lightning to the ground, an SPD is also required, especially when the grounding system is overburdened with high resistivity soils.

The equipment, particularly electrical and digital gadgets, is next considered in the second section. Because it was already shown in the reviewed article that electrified wires attract more lightning strikes. As a result, any electrical equipment installed now or in the future must be approximated. The computation is almost certainly a prerequisite for SPD implementation. Finally, the position of the electrical equipment placed inside the building, so that any SPD that needs to be installed is put at the proper area. The SPD's distance from the rest of the equipment determines how well it is protected. The closest equipment to SPD is given the greatest level of protection.

3. CONCLUSION

This article discusses a few recent advances in lightning protection systems (LPS) for common applications. Public area, power system line, generating system, and transportation are the categories in which the applications are separated. Each application consists of a location and any associated lightning research. The LPS is a necessity in the public space, which includes people's safety, even if some individuals are irresponsible. Except in rare instances, the usual procedure was followed for power system lines. However, if there is a risk of lightning strike failure, the safeguard is still in place. So, if a new type or extra installation is required, implement it. The same may be said about the producing system. The demand is determined by the renewable energy source's environment.

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A REVIEW ON IMPORTANCE OF YOGA IN CARDIAC HEALTH

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ABSTRACT

The effectiveness of yoga in the main and secondary prevention of ischemic heart disease, as well as post-myocardial infarction patient rehabilitation, is investigated in this study. Yoga is an unusual type of physical training that has been performed in the Indian subcontinent for a long time. It has become very popular as a form of leisure all around the globe. Its potential benefits to healthy living have been investigated, with numerous intriguing findings. Yoga's benefits in the reduction of cardiovascular risk factors and the rehabilitation of post-myocardial infarction patients are both substantial. It's essential to consider the practical implications and appropriateness of include yoga in a complete cardiac rehabilitation program. The majority of rehabilitation professionals think that integrating nontraditional types of physical exercise, such as yoga, will significantly improve effectiveness and value. The purpose of this article is to look at the history and science of yoga, as well as to assess its impact on cardiovascular health.

KEYWORDS: Cardiac Rehabilitation, Exercise Ischaemic Heart Disease, Prevention, Yoga.

1. INTRODUCTION

Yoga is characterized as a treasure trove of physical and mental methods that may be utilized to successfully promote physical and mental well-being. It is a long-standing custom that may be traced back to the early civilizations of Central Asia. Its impact may be observed in many different nations' cultural traditions. It thrived and developed as a lively way of life and spiritual practice in India.

Traditional exercise, especially moderate-intensity aerobic exercise, is well-known for its role in the primary and secondary prevention of ischemic heart disease. After a myocardial infarction, gradually increasing activity speeds up the healing process. Though not widely practiced, there is mounting evidence that types of exercise such as yoga, which have been practiced in the East since the dawn of time, are helpful in the treatment of ischemic heart disease. These advantages are not limited to the main and secondary prevention of ischemic heart disease, but also include symptom treatment, risk factor reduction, and atherosclerotic plaque regression in diseased arteries. In an age where there is a growing reliance on pharmacotherapy for the treatment of

ischemic heart disease, which is costly and not necessarily without side effects, the introduction or integration of other kinds of exercise such as yoga may be very beneficial. There is no doubt that such a strategy would complement current treatment regimens while also helping to substantially decrease therapy-related costs. Yoga entails adopting a variety of basic to complicated bodily positions (asanas) and holding them for a specified amount of time. Yoga also involves regulated breathing, deliberate mental focus (meditation), and/or the repetitive recitation of mantras. Yoga has grown in popularity as a supplement to healthy living since its introduction into mainstream western culture. It has even become a fashion statement among the urban middle classes in certain cases [1], [2].

1.2. YOGA History:

Yoga is a 5000-year-old lifestyle, health, and spirituality practice that originated on the Indian peninsula. Its rudiments are said to have come from the Indus valley region's oldest known human civilizations (current day Pakistan). The Yoga Sutra, which is the canonical book on the theory of classical yoga, is where the yoga tradition's recorded history begins. Patanjali, a historically known yoga instructor and Hindu philosopher, wrote this book, which is thought to have been composed somewhere between 200 BC and 300 AD. Swami Vivekananda promoted Eastern Hindu philosophy in the late nineteenth and early twentieth century, and his work helped yoga reach the Western mainstream [3], [4].

1.2. The body postures (Asanas) and breathing:

The adoption and maintenance of particular bodily postures, as well as the accompanying regulated breathing methods, are the cornerstones of yoga practice. According to the Gherananda-Samhita, an old Indian classic on the practice of yoga, there are 840,000 asanas, but only one tenth of them, or 84, are utilized in modern general practice. Only 32 of them are suggested by this old book as being beneficial for daily practice. Each asana should be held for 5–20 breaths, according to the ancient scriptures. Pranayama is a yogic breathing practice that includes taking a slow, deep breath while focusing on the abdominal muscles and diaphragm. The breath is held in full inspiration for a little time within the boundaries of comfort before being permitted to exhale slowly and naturally. In complete exhalation, breathing is stopped within the boundaries of comfort once again.

1.3. Yoga in the primary prevention of ischaemic heart disease:

Urban and modern-day stressors have long been thought to be significant factors to a variety of illnesses, including ischemic heart disease. Mindfulness-based stress reduction (MBSR), such as yoga, has been found to reduce the frequency of visits to the primary care physician among middle-class people in inner-city regions of the United States. This finding indicates that yoga may benefit overall health and, in particular, heart health in those who are under a lot of stress.

Reduced heart rate variability and baroreflex sensitivity are both strong indicators of poor prognosis in heart disease. Slow breathing, as used in yogic practice, improves heart rate variability and baroreflex sensitivity by re-synchronizing the body's natural rhythms. The recitation of the Holy Rosary, as well as yoga mantras (chanting), has been found to reduce respiration to nearly precisely six breaths per minute, while simultaneously improving heart rate variability and baroreflex sensitivity. Not only in respiratory signals, but also in ECG RR intervals, systolic and diastolic blood pressures, and transcranial blood flow signals, this down-

regulatory impact has been found. Although the positive effects of recitations such as yoga on physiological parameters have been shown, the long-term advantages of such alterations in the prevention of ischemic heart disease have yet to be proved, necessitating additional research and evaluation [5].

1.4. Yoga effects on body physiology in modifying coronary risk factors:

1.4.1. Hypertension:

In today's clinical practice, medication is the backbone of hypertension treatment. Many antihypertensive drugs have been linked to a slew of negative side effects. In hypertensive individuals, several non-pharmacological interventions, such as reducing salt consumption by 100 mmol/day, have been linked to a drop in blood pressure of approximately 5–7 mmHg (systolic)/2.7 mmHg (diastolic). Furthermore, moderately vigorous activity at 40–60 percent of maximal oxygen intake, such as 30–45 minutes of brisk walking four to five times per week, has been shown to decrease blood pressure. Although regular aerobic exercise has a positive impact on high blood pressure, it is considerably less effective than medication. In a randomized controlled trial, it was shown that even a short time (11 weeks) of daily yoga practice at 1 hour per day is as beneficial as pharmacological treatment in lowering blood pressure in hypertensive patients. Yoga, like calisthenic exercise, has been shown to have a compelling antihypertensive impact when combined with relaxation, biofeedback, transcendental meditation, and psychotherapy [6]–[8].

Yoga's positive benefits on autonomic neurological function may be the mechanism behind its blood pressure-lowering effects. Impaired baroreflex sensitivity is increasingly being proposed as one of the main causes of essential hypertension. Yoga poses have been proven to help restore baroreflex sensitivity. In this case, yogic asanas that are comparable to a head-up or head-down tilt have been shown to be especially helpful. A battery of tests, including cold pressor reaction at 41°C water (CPR), alpha index of EEG (AI), blood catecholamines (CA), and plasma renin activity, were used to test and show that three weeks of particular yogic posture may bring about substantial autonomic readjustments (PRA). Yoga practice resulted in a gradual decrease in sympatho-adrenal and renin–angiotensin activity, according to these studies. The restoration of baroreceptor sensitivity induced by yoga practice resulted in a substantial decrease in blood pressure in patients who engaged in yoga activity.

Yoga has been shown to be effective in the management of secondary cardiac problems caused by persistent hypertension. Chronic hypertension-induced left ventricular hypertrophy is a predictor of a number of chronic cardiac problems, including myocardial ischaemia, congestive heart failure, and diastolic dysfunction. Head-down-body-up posture exercise (Sarvangasana) has been found to be especially helpful in preventing and treating hypertension-related left ventricular hypertrophy and diastolic dysfunction. In one research, practicing sarvangasana (one of the three most well-known asanas) for two weeks substantially reduced resting heart rate and left ventricular end diastolic volume. In addition, as shown by echocardiography, there was a little reduction in left ventricular mass.

1.4.2. Serum lipid profile and body weight:

Ischemic heart disease is linked to obesity, which is a significant independent risk factor. Other than age, weight has the greatest independent connection with the risk of hypertension. Weight

loss has proven to be a difficult and sometimes fruitless endeavor for many individuals. Yoga has been shown to be very beneficial in the treatment of obesity. A year of yoga practice resulted in substantial increases in optimum body weight and body density, according to a randomized controlled research.

Participants in another research demonstrated substantial decreases in body mass index, total serum and LDL cholesterol, and fibrinogen in those with high levels after participating in a complete residential 3-month yoga and meditation training program. Yoga has been found to enhance blood lipid profiles in both individuals with established ischemic heart disease and healthy participants when practiced regularly.

Because asana practice does not result in increased, fast big muscular activity and energy production, the mechanism of yoga's positive impact in the treatment of hyperlipidemia and obesity cannot be described by simply extra caloric expenditure. Yoga's effectiveness in the treatment of hyperlipidemia and obesity, on the other hand, is significant [9], [10].

1.4.3. Intrinsic adverse neurohormonal activity:

Increased intrinsic neurohormonal activity has been linked to an increased risk of heart attack and stroke. This may explain why life's overall stress leads to a higher risk of cardiac disease. Specific indicators in serum and urine may be used to assess the level of unfavorable neurohormonal activity. Regular yoga asana practitioners showed a significant reduction in markers of intrinsic neurohormonal activity such as urinary excretion of adrenaline, noradrenaline, dopamine, aldosterone, and serum testosterone and luteinizing hormone levels, as well as serum testosterone and luteinizing hormone levels. They also found an increase in cortisol excretion in the urine in one experiment. Reduced sympathetic activity was associated with decreased heart rate, skin conductance, oxygen consumption, and increased breath volume - clinical indicators of neurohormonal activity aiding protection against ischemic heart disease and myocardial infarction.

1.4.4. Diabetes Mellitus:

Yoga has been proven to be a simple and cost-effective treatment technique that may be used as an adjuvant therapy for NIDDM patients. There was a substantial decrease in the frequency of hyperglycemia and the area index total under the oral glucose tolerance test curve in a group of diabetics who practiced yoga on a regular basis. The requirement for oral hypoglycemics to maintain sufficient blood sugar control was also reduced in the group who practiced yoga, according to this experimental research. The mechanism of yoga exercise's antiglycaemic effect has yet to be discovered. It's still possible that insulin and glucagon activities have a role in neurohormonal regulation.

Although no scientific studies highlighting the impact of yoga in the management of cigarette smoking were identified in the literature review, the psychological calming effect of yoga may be helpful in this respect. There is a clear need for randomized research to investigate into the positive benefits of yoga as a smoking cessation aid, if any exist.

1.4.5. Prevention of coronary artery disease via a yoga lifestyle intervention:

Patients with angiographically confirmed coronary artery disease who practiced yoga exercise for a year had fewer anginal episodes per week, increased exercise capacity, and lost weight,

according to a randomized controlled trial. In comparison to control groups, serum cholesterol levels (total cholesterol, LDL cholesterol, and triglyceride levels) exhibited higher decreases. In the yoga group, revascularization operations were used less often. One-year follow-up angiography revealed that the yoga group had substantially more lesions retreat (20% vs. 2%) and much fewer lesions advance (5% vs. 37%) than the control group. As a result, yoga practice promotes atherosclerotic regression and slows development in individuals with severe coronary artery disease. However, the mechanism of yoga's impact on atherosclerotic plaques is still being researched. Yoga seems to provide comparable lipid-lowering and plaque-stabilizing benefits as statin medications (HMG CoA reductase inhibitors). It's crucial to conduct biochemical and immunological research among yoga practitioners to determine whether it has comparable mechanisms of action as statins, which have beneficial effects on atherosclerosis and vascular characteristics other than cholesterol reduction. Statin action is linked to an increase in nitric oxide generation in the vascular endothelium, which has local vasodilator characteristics as well as anti-atherogenic, antiproliferative, and leukocyte adhesion-inhibitory capabilities. Endothelin-1, a strong vasoconstrictor and mitogen, is known to promote endothelium-dependent relaxation, decrease platelet function, and reduce the action of endothelin-1. Inflammatory cytokines are also reduced by statins. There may be some similarities between the pharmacophysiological effects of statin treatment and the internal changes brought about by yoga practice. Yoga practice may cause a shift in the internal environment that is mediated by a neurohormonal mechanism.

2. DISCUSSION

Yoga has been proven to aid in the recovery of those who have had a myocardial infarction. It has improved sleep, appetite, and overall well-being in patients, as well as lowered physiological arousal.

Yoga's potential to enhance patients' functional capability may be beneficial in the post-myocardial infarction rehabilitation process. Subjects who practiced pranayama, or regulated yogic breathing, were able to accomplish greater work rates while using less oxygen per unit of labor and having lower blood lactate levels. This finding held true in both submaximal and maximum activity. At rest, their blood lactate levels were likewise abnormally low. Another research supported the previous findings by showing substantial increases in cardiovascular endurance and anaerobic power after a year of yoga practice. In healthy young males, one hour of yogic exercise per day for six months resulted in an increase in maximum oxygen consumption (VO₂max) and substantial increases in effort tolerance. The benefits of practicing yogic postures on a regular basis were considerably greater than the benefits of traditional calisthenic exercise training. Oxygen intake, carbon dioxide output, pulmonary ventilation, respiratory rate, pulse rate, and the subjective exertion score were all assessed physiologically. When compared to those who did conventional exercise, yoga practitioners showed a reduced felt effort following maximum activity. Although these results come from young healthy people, they are likely to be relevant to postmyocardial infarction patients, at least to a lower extent.

The evidence for yoga's positive benefits on cardiac patients is overwhelming. Yoga's function in cardiac patient treatment, on the other hand, should be seen as a supplement to the scientifically established traditional modalities of comprehensive cardiac care. In post-myocardial infarction patients, basic yoga practice including simple postures, relaxation exercises, and respiratory exercise coupled with conventional medication and physiotherapy demonstrated better clinical

advantages over those who did not practice yoga. Exercise tolerance and psychosomatic conditioning were also improved as a result of these advantages.

Excess sympathetic activation has become a key component in the treatment of both ischemic heart disease and congestive heart failure. Through pharmaceutical methods, beta-blocker treatment offers this capability. Yoga has also been found to be able to regulate sympathetic overdrive, simulating beta blockage. Despite a lack of increase in minute breathing, yogic practitioners subjected to acute hypoxia under experimental circumstances were able to sustain higher oxygen saturation than controls. During such hypoxia, their sympathetic activity was reduced. Yoga trainees' partly sustained oxygen saturation under hypoxia is thought to be related to the more efficient style of breathing associated with yogic practice. Yoga breathing's physiological adjustments may be beneficial in the treatment of individuals with cardiovascular illnesses, especially ischemic heart disease and chronic heart failure. The significance of sympathetic activation related to respiratory failure in cardiovascular disease and hypertension is now well understood. Improved breathing methods used in yoga practice may help to alleviate the persistent hypoxia caused by chronic heart failure. Dyspnoea and exercise capacity may both be improved by strengthening respiratory muscles. Similarly, in hypertension, where sympathetic activation has been related to altered breathing patterns and increased chemoreflex activity, the reduction in sympathetic activity observed with slow breathing may be helpful.

3. CONCLUSION

Yoga, for example, combines prolonged physical exertion with inwardly focused concentration, resulting in a brief state of self-contemplation. Yoga, for example, has been proven to offer substantial mental and physical benefits. It is possible that yoga practice activates neurohormonal processes that result in health advantages. As previously mentioned, the reduction of sympathetic activity linked with yoga practice demonstrates this. However, more focused scientific research is needed to clarify the effects and processes of yoga on the human body in health and illness. Given the scientific data shown so far, it is reasonable to infer that yoga may aid in the primary and secondary prevention of cardiovascular disease, and that it can serve as a main or secondary preventive tool. In cardiac rehabilitation circles, there is a lot of excitement for incorporating alternative types of exercise treatment, such as yoga, into the standard practice. Infrastructure, experience, and money seem to be the biggest roadblocks to change implementation. As a result, more research into the benefits of complementary physical exercise modalities such as yoga is needed at leading rehabilitation centers, as well as a push for more funding, once there is unequivocal evidence of the benefits of its incorporation into mainstream post- and pre-event cardiac rehabilitation.

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A REVIEW PAPER ON AIR POLLUTION CONTROL

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ABSTRACT

Considering on simplicity or complication of air pollution issue, the single or complex technological devices and even combination of various process equipment may be utilized for the goal of reducing/eliminating output of emissions into the atmosphere. The market (i.e. investment, operating and maintenance costs), government oversight, space constraints and allocation of pressure gauges in the market are some of the possible limitations, which define choice, and installation of the adequate technical equipment (BREF) (BREF). An effective response to the issues of air pollution includes a deep understanding of the causes of pollution, as well as knowledge of current and future trends in air quality, as well as the effects on people and ecosystems. This chapter examines the complexity of air pollution and provides an overview of various technological procedures and equipment for air pollution management, as well as the fundamental principles that govern their operation. The problems of air protection as well as safeguards of other ecosystems can be solved only by the concerted endeavours of various scientific and subject areas, such as chemistry, physics, biology, medicine, chemical engineering and social sciences. The majority of the engineering contribution is focused on the creation, design, and operation of equipment for reducing hazardous emissions into the environment.

KEYWORDS: Air, Chemical, Environment, Pollutant, Pollution.

1. INTRODUCTION

1.1 Controlling Air Pollution:

1.1.1 Choosing an air pollution control strategy and method:

From an engineering standpoint, excellent air quality may be accomplished via a variety of methods. The following are some of the potential methods to air pollution control:

- The main or preventive strategy, all control actions used to prevent pollutants from forming immediately on the probable emission source.
 - The secondary method, which involves the use of technological equipment to remove contaminants from the gas stream before it is released into the environment.
 - The integral approach (or process-integrated techniques) – a combination of different engineering approaches and methods of control, as well as the identification and application
-

of specific measures for simultaneous removal of various air pollutants across various process plants, in order to meet environmental targets at the lowest possible cost.

Depending on the complexity of the air pollution issue, single or multiple technological devices, as well as a combination of various process equipment, may be utilized to reduce or eliminate pollutant emissions into the atmosphere. Some of the potential restrictions that determine the choice and installation of suitable technical equipment include the economics (i.e. investment, operating, and maintenance expenses), regulation, space constraints, and the availability of control equipment on the market (BREF). The European Commission's Joint Research Centre prepared the best available techniques (BAT) reference document (BREF) for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector (BREF) as part of the implementation of the Industrial Emissions Directive (2010/75/EU) and because of information exchange between EU Member States [1]. This paper offers basic information about wastewater and waste gases, as well as methods for preventing or reducing their negative effect on the environment [2]. An overview of the control methods available for typical waste gas treatment in the chemical industry. Figure 1 shows a strategy to air pollution management that is primarily preventive

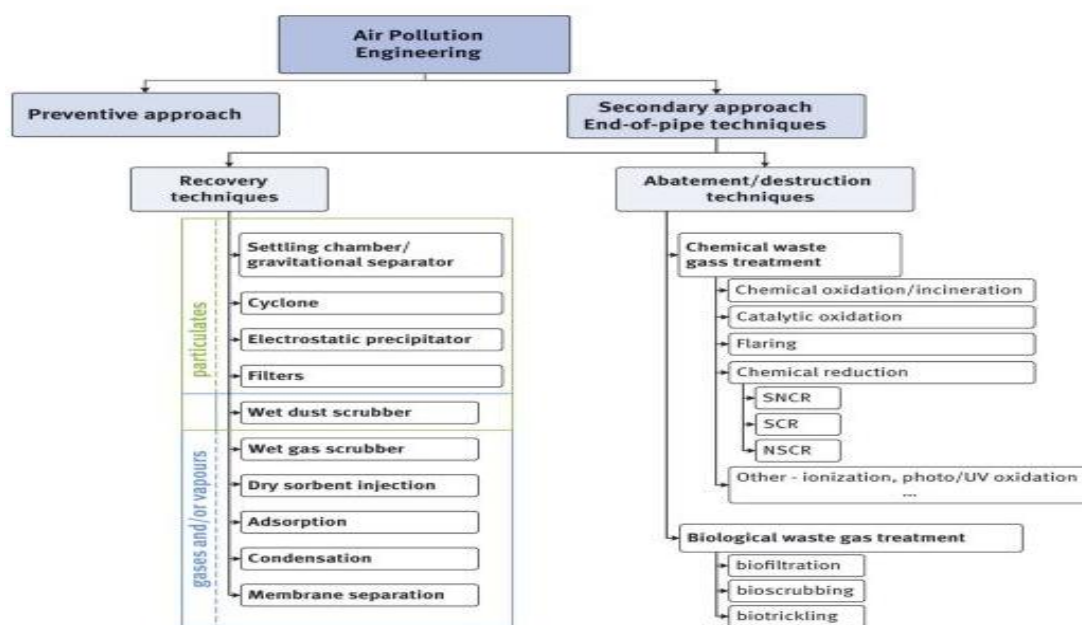


Figure 1: The above figure shows the Air pollution control techniques for removing harmful gases.

1.1.1.1 A strategy to air pollution management that is primarily preventive:

A thorough understanding of the air pollutants and the source of their emission is required for effective air pollution management. When at all feasible, it is preferable to avoid the production of pollutants. One of the main or preventive strategies for controlling emissions of air pollutants released by businesses is to change or eliminate process stages that are fundamental sources of pollution. Operational changes, minimizing the volumetric flow rate of the stream to be treated, substitution of raw materials or fuels, and use of efficient filtration systems are examples of such control measures to meet emission standards based on consideration of source reduction

opportunities, careful planning, and process optimization to minimize pollutants and carrier fluid generation at the source. In contrast to the more known fossil fuel-fired facilities, which release a lot of pollutants (carbon oxides, nitrogen oxides, sulphur dioxide, hydrocarbons, and fly ash), contemporary nuclear power plants seem to be comparatively pollution-free alternatives. However, issues with waste and spent-fuel disposal may restrict the apparent benefits. The most significant improvement in air quality in most US and European Union cities was achieved by replacing coal with natural gas, switching vehicles from gasoline to unleaded gasoline, compressed natural gas, and other more environmentally friendly fuels, adding oxygenated compounds to motor fuels, and using low-sulphur fuels, among other things. Additional preventive measures to minimize air pollution include appropriate industrial design and placement, development of new technology and regulatory restrictions, and the use of administrative controls. Through government laws that compel businesses to minimize pollutant discharge and encourage new technological advances, the government plays a critical role in preventing all types of environmental pollution [3]–[8].

1.1.1.2 The alternative strategy for reducing air pollution:

The recovery or abatement of pollutants from waste gas streams, as well as the use of end-of-pipe treatment equipment, are used in the secondary air pollution management strategy. This entails the placement of a control mechanism (or equipment) between the pollutant production source and the discharge of the pollutant into the atmosphere. In such scenario, pollution control may include removing or degrading the pollutant, converting it to a less harmful form, or recovering economically useful waste products. These solutions are mainly aimed at well-defined (or controlled) sources of emissions and are focused on particular air quality goals or emission limitations. Only ducted emissions may be treated using end-of-pipe treatment devices, which implies that collecting hoods and a ventilation system are needed upstream of the end-of-pipe abatement system. All technical and mechanical engineering equipment, techniques, and technologies that may assist reduce the amount of pollutants released into the atmosphere are referred to as abatement. Devices (or equipment) for decreasing particulates and devices (or equipment) for lowering emissions of gaseous and vaporous pollutants are separated into two categories, but certain devices may be used to remove both types of pollutants at the same time. In many instances, the gaseous effluent must be heated or cooled before entering the appropriate control device [9].

Environmental engineers must understand gas laws, thermodynamic characteristics, and all reactions in order to build a suitable control mechanism. The process conditions, the physical-chemical and other essential properties of pollutants and the benefit of the released compound are generally taken into account when designing air pollution control equipment. The total gas flow rate (or velocity) and volume of the waste gas to be treated, temperature limitations, allowable pressure drop, degree of variability depending on operating and process conditions (i.e. variation in pollutant concentration, gas flow rate, and temperature), power/energy requirements, removal efficiency requirements, and so on are all part of the process conditions.

Aside from the nature of the air pollutant and its concentration (including minimum and maximum values), typical properties of pollutants that are usually considered during the design of an air pollution control system are:

- solubility
- flammability
- toxicity
- reactivity (if pollutants are gaseous)
- size range and distribution
- particle shape
- agglomeration tendencies
- corrosively
- abrasively
- hygroscopic properties

The benefit of the emitted product is also significant, and it may influence the selection of appropriate air pollution control equipment or the decision between recovery methods (e.g., fabric filter, cyclone, adsorption, condensation) and abatement or destruction techniques (e.g. thermal or catalytic oxidation, chemical reduction, bio filtration). VOCs from solvent vapours and vapours of low-boiling compounds, NH₃ (to recycle in the production process), SO₂ (converted into H₂SO₄, sulphur, or gypsum), dust containing higher amounts of solid raw products or products are examples of air pollutants for which recovery techniques are economically feasible. Some of the recovery methods described above may be utilized to reduce odour emissions, which are also highly volatile chemicals [10].

1.1.1.3 Integral thinking (or process-integrated techniques):

To meet all of the rigorous air quality standards, it is often essential to combine several engineering techniques and control systems, i.e. an integrated strategy and complete solution to environmental pollution caused by specific human activities. Some waste gas treatment methods (such as scrubbing, adsorption, and electrostatic precipitation) require additional treatment of the wastewater or solid waste generated during the air purification process. Unfortunately, waste disposal costs may account for a substantial portion of the overall cost of air pollution management. Engineers working in the field of air pollution control have a variety of duties, one of which is the design of air pollution equipment in order to meet emission limits and regulatory criteria.

The following are the major obstacles to utilizing suitable technology for air pollution control:

- Pollutant amount and concentrations in air streams (including physical and chemical properties of the effluent from the emission source).
- The amount of space available and the placement of the equipment.
- Contribution of air pollution control systems to wastewater and land pollution, as well as waste recovery and disposal.
- Cost-effectiveness (investment and installation costs of process equipment, maintenance expenses).

- Security

1.1.2 Particulate air pollution control

Several preventative strategies, such as reducing or eliminating PM generation, are relevant particularly to PM emissions. This can be accomplished in a variety of ways, including switching to a process that does not require operations like crushing, grinding, milling, sharpening, pulverizing, or spraying, switching from solid to liquid or gaseous material, switching from dry to wet solid material, changing solid particle size, or switching to a process that does not require particulate material. There are two types of secondary particulate control devices: dry dust removal apparatus and wet dust collection equipment.

Gravity settling chambers (or gravity settlers), centrifugal settlers (cyclones), electrostatic precipitators (ESP), and bag houses (fabric filters) are examples of dry dust removal equipment, whereas wet dust removal equipment includes scrubbers (such as packed column scrubbers, vortex scrubbers, and Venturi scrubbers) and some configurations of so-called wet ESPs. The best device for controlling particulate air pollution is always linked to a specific particulate removal problem and is based on two groups of criteria: gas-stream specific criteria and a device-specific criterion (particle concentration, particle size distribution, gas temperature, and tendency).

It is crucial to note that various separation devices work with different particle sizes. These control devices can be classified further into processes where an external force is applied to the substance (mechanical collectors and ESP) and processes where the gas stream is forced to pass through a barrier that the dispersed particles cannot pass through, such as holes smaller than the particles or a droplet cloud (different kind of filters and scrubbers). Gravity and centrifugal forces may be extremely efficient in removing bigger particulates (greater than 10 μ m). It is beneficial to employ an electrostatic force in conjunction with particle charging (ESP) or Venturi scrubbers for small particles (less than 2 μ m). Even for the filtration of solids as small as a few micrometers, venturi scrubbers are extremely effective. Filters have extremely high efficiency across a broad range of sizes, making them highly versatile in contrast to other separation methods, but they do have certain drawbacks, as will be discussed later. In the design of materials, as well as the expenses of generated wastewater and waste solid treatment, cost and energy requirements are critical.

2. DISCUSSION

The author has discussed about the air pollution control, A thorough understanding of the sources of pollution, as well as present and future changes in air quality, as well as the impacts on people and ecosystems, is required for an effective response to air pollution problems. This chapter looks at the complexities of air pollution and gives an overview of the different technical processes and equipment used to control air pollution, as well as the basic principles that govern their functioning. Only a coordinated effort of different scientific and topic fields, including as chemistry, physics, biology, medicine, chemical engineering, and social sciences, can address the issues of air protection and other environmental protections. It is desirable to prevent the generation of pollutants wherever possible. Change or elimination of process steps that are primary causes of pollution is one of the major or preventative methods for reducing emissions of particulate matter produced by companies. Operational changes, such as reducing the flow rates of the stream to be treated, substituting raw materials or fuels, and employing efficient

filtration systems, are examples of emission control measures based on source reduction employment options, careful planning, and optimizations to reduce pollutants and carrier fluid era at the source.

3. CONCLUSION

The author has concluded about the air pollution control, Cutting or degrading the polluting, transforming it to a less hazardous form, or recycling socially beneficial waste products are all examples of pollution control. These solutions are primarily aimed at well-defined (or controlled) sources of emissions, with specific air quality goals or emission limitations in mind. End-of-pipe treatment devices can only handle ducted emissions, which means collecting hoods and a ventilation system are required above of the end-of-pipe abatement system. Abatement refers to all technical and mechanical engineering machinery, processes, and technologies that can help minimize the amount of harmful gases released into the atmosphere. Devices (or equipment) for reducing particle emissions and devices (or materials) for reducing emissions of gaseous and viscous liquid emissions are divided into two categories, although some devices may remove both kinds of pollutants simultaneously.

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ALISHER NAVOI'S INTERPRETATION OF GLOBAL IDEAS ON HUMAN PERFECTION

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ABSTRACT

Alisher Navoi's global ideas for the development of the young generation and their national significance are analyzed. The path to such human perfection is a must begin in school, in primary education. The "I" in a person speaks only when he has an independent mind. Thought is the product of the inner self. The methods widely used in national pedagogy today are aimed at achieving high results in a short period of time without spending too much mental and physical effort on the student-teacher. When using this method, the teacher is required to record the opinion of each student working on the issue, to ensure the freedom of each participant, to require substantiation of the opinion, and to continue the discussion until the end of the opinion. His indescribable verses, his verses, his concern for man, the people, his humanity, his tireless struggle for justice, fairness, and righteousness, how great love is boiled in this sensitive heart, how high is this bright ideas in the brain, thoughts and others.

KEYWORDS: *Human Maturity, Way Of Thinking, Global Idea, People Of The World, Universal Friendship, Independent Thinking, Personal Responsibility, Planetary Prosperity, Human Wisdom, Principles Of Equality And Harmony.*

INTRODUCTION

Saving the universe from today's global human and celestial threats has become the salvation of man. As the virtues of the human mind lead to heaven, while the prejudice increases sorrow. That is why the poet says:

Olam ahli, biling'izkim, ishermasdushmanlig',

Yoro'lungbir-biringizgakim, eruryorlig' ish

(People of the universe, know that hostility is not good work.

Be friendly to each other, that is a good work) (1).

Take into consideration that: "People of the universe..." Who are they? They are the children of Adam and Eve (2). Who is AlisherNavoi, calling all humanity in the world to befriends? AlisherNavoi is a great thinker, poet, public figure of the XV century, a humanist with unique qualities, a true patriot. He came out among the Uzbek people and introduced the name of the

nation to the world (3). According to the poet, word - dictum makes a person worthy of heaven. If he reaches this level, let him live a thousand years, as the words of Navai:

Magar hikmatqabo'lsailtifoting–

Ki bo'lsunNuhumrichahayoting

(If you have appreciation toward dictum -

May you live likewise the life of Noah) (4).

In fact, Noah lived for almost 1,000 years (5). On the contrary, it is emphasized that if there is no politeness of Noah in the person, it is better for him to leave early. So, collecting the prophets' wisdom and character will make the world prosperous:

Aqlilaolamyuzinobodqil,

Xulqilaolamelini shod qil

(Make the world a better place with your wisdom,

Rejoice people of the world with your behavior) (6)!

The face of the universe, the people of the planet, the peace, harmony, and survival of the universe and the creatures depend on the human mind, character, and therefore to knowledge:

Ulug'lardinnasibistaesang, kasbikamoletgil,

Nedinkim, anbiyog'ailmlikinsonerurvoris

(If you want to be one of the great ones, become professional of your work,

As a successor of a prophet is wise person) (7).

In fact, Navoi considered human perfection in the appropriate and effective use of the requirements of humanity, the divine miracle that God has given to man - the mind:

Kamoletkasbkim, olamuyidin

Senga farzo'Imag'ayg'amnokchiqmoq.

Jahondinnotamomo'tmakbiaynih

Erurhammomdinnopokchiqmoq

(Make perfection your profession, as in the world

It is obligatory upon you not to grieve before you die.

Living the life in unfullment as like

Coming out of the bathroom dirty) (8).

Perfection is the key to peace and prosperity. How does the human child understand this perfection and how does he achieve it? One of the Navoi scholars says: "If a person does not purify himself from such inclinations as greed, taste, lust, ignorance, he will never be perfect. Perfection requires a huge human heart, unquenchable love that illuminates it, and comprehensive thinking. Without them, one cannot speak of spiritual perfection and mental maturity. If one of them is missing, it's like going to the bathroom and going out of it dirty. To

live in 'the House of the Universe' is to become its citizen" (9). The path to such human perfection is a must begin in school, in primary education. The "I" in a person speaks only when he has an independent mind. Thought is the product of the inner self. It is the task of the school teacher to create the conditions for self-awareness, self-expression and independent thinking in the emerging person. That is why the task of an elementary school teacher is to be able to put the problem correctly in the lesson, to be able to interest the student, to disturb his feelings"(10). The following proverbs of AlisherNavoi, which we are analyzing in primary education, are given in primary textbooks, and these works play an important role in developing the beautiful moral qualities of students. AlisherNavoi valued and sponsored science. The poet understands that the spiritual maturity of a person is, first of all, in his ability to acquire knowledge and wisdom. He believes that science does not come by itself, that one can acquire knowledge only through passion and passion. The poet's proverbs have a universal meaning. In his wisdom, issues such as knowledge, compassion, and humanity are central. Here are some things to keep in mind as you share these lessons with your students.

The methods widely used in national pedagogy today are aimed at achieving high results in a short period of time without spending too much mental and physical effort on the student-teacher. Delivering the necessary knowledge to a student in a short period of time, building skills and competencies in a particular activity, as well as monitoring and evaluating knowledge, skills and competencies, requires a high level of pedagogical skill on the part of the teacher. Some of the methods used today in a number of developed countries, such as "Brainstorming", "6x6x6", "Cluster", "Decision Tree" can also be used in the analysis of works of art in the process of primary literary education. In fact, these methods are not much different from logical methods in education. At the heart of it all are elements of a problematic method.

It is known that the purpose of the method of "intellectual attack" is to increase the activity of students in the classroom, to encourage them to think freely, independently, to save everyone from thinking in the same way, to gather different ideas on a particular topic and develop a creative approach. When this method is used in elementary literature, students are brought out of indifference and balance with urgent, unexpected questions or assignments, and they "attack" the artistic problem, the assignment, with an anxious mood. Within this, each student begins to solve it at the level of their knowledge, abilities, talents, worldviews and capabilities. Elementary students reflect on specific issues to the best of their ability. When using this method, the teacher is required to record the opinion of each student working on the issue, to ensure the freedom of each participant, to require substantiation of the opinion, and to continue the discussion until the end of the opinion. Students are not allowed to evaluate, criticize or laugh at the opinions expressed.

Brainstorming is a widely used method of solving learning problems. It focuses on the participants' imagination, knowledge and opportunities. This method allows the student to find a large number of solutions to any problem. The following rules apply to the use of "intellectual attack" in order to effectively organize primary literary education:

Each student is allowed to make very different comments on the same issue. Unless students come up with unexpected ideas, participants will have to repeat each other.

The amount of ideas and opinions is encouraged. As you know, quantity usually increases with quality. Participants should be given the opportunity to imagine. This freedom gives rise to unique and powerful ideas.

Each student can build on the ideas of others and change them. Because thought comes from thought. Changing previously proposed ideas often results in stronger, better ideas than the original idea.

Evaluations are not allowed when using this method. If ideas are evaluated in the process, participants are more likely to defend themselves and avoid new ideas.

The process of using the method of "intellectual attack" in primary literature is carried out in the following stages:

- students are placed freely;
- a blackboard or worksheet for writing ideas and thoughts;
- the problem to be solved is identified;
- the work process is defined: a) ideas are not evaluated; (b) full freedom of thought; c) tends to have a lot of ideas; (g) Student activities are organized on the basis of calls such as "catch", "learn", "build on ideas", "add", "expand", "change";
- feedback on the problem is asked and recorded;
- laughter, sarcasm, and orally bullying are not allowed;
- when the sheets are full of ideas and thoughts, they are hung in a conspicuous place;
- work will continue until the ideas are completed;
- Then new, strong, valid and original ideas are encouraged and evaluated by the teacher.

This kind of work takes students out of emotional apathy, forcing them to think for themselves, to express their attitudes. It is also true that not all students in the class have to answer all the questions used in this method. Intelligent, thoughtful children will answer, and the rest will think about them, and even if they do not answer, they will come out of intellectual indifference, which is a great event for primary literary education. In elementary education, we explored the meaning and analysis of Navoi's wisdom and what to look for in a lesson.

Birovkinqilsaolimlargata'zim,

Qilurgo'yokipayg'ambargata'zim.

(If anyone does bow to the scientists,

It is as if he were bowing to the prophet.)

The poet respects and honors the people of science. He says that bowing to the scholars is the same as bowing to the prophet. Including:

Oz-ozo'rganibdonobo'lur,

Qatra-qatrayig'ilibdaryobo'lur.

(You will become wise learning little by little,

Drop by drop it will flow and become a river.)

Navoi writes that in order to acquire knowledge, one should to learn little by little, that knowledge can accumulate and acquire certain skills, and this is like a drop of water accumulating and turning into a river.

Haqyo'lindakimsengabirharfo'qitmishranjila,

Aylamakbo'lmas ado aninghaqinyuzganjila.

(Who in the way of truth has taught you a letter with willingness,

It is not easy to give his work back even with a hundred treasures.)

These sentences refer to the first teacher. The first teacher helps the student to become literate, thus defining his way of life - the right path. In these two verses, Navoi explains that he could not pay for his services with hundreds of treasures.

Bordururinsonzotidaonchasharaf,

Kim yamonaxloqinetsabartaraf.

(There is so much honor in the human race,

Who eliminates whoever's committed immorality.)

Whoever renounces bad habits and gets rid of his bad behavior will be applauded, and this is the highest honor for a person. In this wise saying, the poet encourages the awakening of good human qualities, emphasizing that it is an honor to get rid of bad morals in our character.

Tengrikinsonniqilibganjiso,

So'zbiilahayvondinangaimtiyoz.

(Allah created humans in privilege from animals

Giving them ability to talk.)

God created man to be perfect in every way. He gave him a tongue and made him different from an animal in this respect. The poet skillfully uses words to express these philosophical ideas. This ensures that the ideas contained in the proverbs are eternal, that they exist, and that they exist among the people.

Boshnifidoaylaatoqoshig'a,

Jismniqilsadqaanoboshig'a

(Surrender your head to the Creator, and let your body be alms to his head.)

In this verse, Navoi states that one must be ready to sacrifice one's life in the face of the greatness of Allah, that one believes in Allah, and that Allah deserves it. Navoi expresses the following invaluable philosophical thoughts about life:

Xushdururbog'ikoinotguli,

Barchadinyaxshiroqhayotguli.

(Every flower of the universe is great on its own

The flower of the life is better from them all.)

Navoi teaches that the flowers of the whole universe are unequal, but that life itself is better than all of them, but with impressive sentences.

This verse is written in a language that everyone can understand, that if there is no love in the world, then there is no world, there is no world, and even the soul does not need love. When we say two worlds here, we mean the mortal world we live in and the Hereafter.

AlisherNavoi is a statesman who lived in the interests of the people with the pain of the people. The following four words of wisdom are from Navoi:

To hirs-u havasxirmanibarbodo‘lmas,

To nafs-u havoqasribaraftodo‘lmas,

To zulm-u sitamjonigabedodo‘lmas,

El shod o‘lmas, mamlakatobodo‘lmas.

(Untill lust dies,

Until the tower of desire dies,

Until oppression and tyranny die,

The people will not rejoice, the country will not prosper.)

Navoi writes that there is no greed and lust in man, that the palace of lust and adesire will not collapse, that it will not be destroyed, that it will be able to withstand oppression and tyranny, and that the country will not prosper if the people are not happy. For the country to be prosperous and flourishing, first of all, there must be peace and harmony among the people.

Every rebuke, verse or continent in “Mahbubul-Qulub” has risen to the level of life wisdom, which is based on the content of proverbs and sayings that the people have accumulated over the centuries of life. “Only the Creator is Innocent”, “The Saint Who Knows His Fault”, “There is a mistake, it is impossible not to correct it”, “Every perfectism has a guilt”, “There is no guilt in the one who goes with ruined clothes If he closes his skirt knowing that he should close .” These proverbs teach a person not to get lost in the face of all the riddles and problems of life. Words of wisdom and proverbs echo the eternal call of our wise people to correct human morality.

Social relations and views on human behavior have always been in the center of attention of the wise. The works of such scholars as Aristotle, Farobi, Beruni, Ibn Sina, and Hussein WazKashifi also provide valuable insights into the characteristics of the human child, their causes and consequences.

A worthy place in the development of moral thought, Farobi in his “City of Noble People” says, "Only a man who combines the twelve innate qualities in himself will be moral," and enumerates them one by one. According to him, the attainment of goodness depends on the wisdom and intelligence of each person. Farobi believes that people who are faithful, conscientious, proud, noble, enlightened, justiciable, truthful, wise, imaginative, and faithful are moral. In fact, all of these concepts are closely intertwined.

In elementary education, the same moral norms are reflected in the wisdom. Based on his life experiences, the writer teaches him the science of humanity by observing human behavior as a wise coach.

The wise man of folklore made extensive use of folk sayings and proverbs, and he himself created many wise sayings in the tone of folk proverbs, many of which became proverbs. Caring for a person, directing him only to the good, is the essence of the wisdom of elementary education. "I want to be a better person, to be clean and pure, and to be honest and not stupid. He is clean, and his eyes are clean. The tongue is thin and the heart is thin. If I am a Muslim, let the Muslims be sure of his tongue and bones, and let him be sure of his heart. "

The Word of Allah, this exemplary idea of righteous deeds, has been tested and confirmed a thousand times in the life of the people. "Speak the truth, even if a sword comes to your head," "If you are as right as the alphabet, there is no harm in you," "The right word is sharper than a sword," "Even if you are crooked, speak the truth." "Prayer falls on the crooked, calamity falls on the crooked." such as the content of hadiths.

AlisherNavoi evaluates a person first of all by his deeds in life. The criteria of humanity are piety, chastity and truthfulness. In the eyes of an awakened person, only a person who is able to speak the truth in any situation and act on the side of truth deserves the name of a person. On the contrary, it is a sign of unbelief to change one's circumstances, to protect one's identity, and to be afraid to speak the truth. It is an example of hypocrisy to claim the good and become a partner in the evil.

"It simply came to our notice then. There is a big difference between good and evil, there is a sinking of two ships, if you appear with the moon of each nation, you will be alarmed, if alarm is bad, you will be bad, and if alarm is good, you will be good. So, it is better to hide among the good and to hide in the foothills, and the danger is far away.

It should be noted that Navoi's criticism of people is based primarily on his own observations. Pure faith is a matter of social opinion. Concluding remarks from the life experiences of a great human thinker - the people's comments "Follow the good, avoid the bad", "You walked with the good, you reached the goal, you walked with the bad - you are ashamed", "A good man is known by his companion", "If you say whose your friend, I will say who you are. "

Another way to increase the effectiveness of AlisherNavoi's reprimands is that they are nourished by the wisdom of the Koran. While admonishing man about the consequences of good and evil deeds, the writer likens those who harm the discipline of the world with their irreversible delusions to the devil. He sometimes warns us not to go near the devils. Do not forget the opposition of man and the devil, do not make your father a friend of the enemy, and make your father a paradise. The years have come and gone. Mankind's main enemy is the devil. This enmity has been passed down from generation to generation.

The writer draws attention to the narration of Safiullah and warns that all the evils of the human race are caused by the temptations of the devil. It reminds us that because of Satan's wickedness, mankind has been reduced to the dust of paradise.

In the eyes of the awakened soul, the concept of a good person or goodness is very broad, it combines the beautiful qualities that adorn the human race, such as faith and belief, habit and modesty. The criterion of humanity is to live not only for oneself, but also for the benefit of

others, for the concern of the people. Therefore, the next rebuke of the propagandist is about goodness:

"I wish Greedy person would have all his belongings in reserve, and his morning and grave would be as good as his house today. Zuhdu piety is always pleasing and more arrogant in the eyes of the elders. Whoever did good or evil was not punished. Salah and the corrupt seed did not grow. "

The poet further clarifies his idea of human flaws and qualities with the following verse and contributes to the story:

To hirs-u havasxirmanibarbodo'lmas,
To nafs-u havoqasribaraftodo'lmas,
To zulm-u sitamjonigabedodo'lmas,
El shod o'lmas, mamlakatobodo'lmas.

(Untill lust dies,

Until the tower of desire dies,

Until oppression and tyranny die,

The people will not rejoice, the country will not prosper) (11).

AlisherNavoi is known to have used folk proverbs and sayings in almost all of his works. This method has reached the level of sophistication, especially in the textbooks of primary education, reading, upbringing, my books, my mother tongue. In some places, proverbs are quoted in their original form, while in others, only the content of popular folk wisdom is absorbed into a series of lines. The content of the above reprimand is also common among the people.

Dozens of proverbs, such as "Bakhl's garden will not grow", "He will rise to the heavens, he will be buried in the earth without mercy", and hadiths such as "al-hayouminaliman" - "haya is a sign of faith" are interconnected within their meaning. Each of AlisherNavoi's teachings is based on sharp truth. At the heart of these proverbs are great ideas aimed at correcting human morality and purifying it spiritually. His indescribable verses, his verses, his concern for man, the people, his humanity, his tireless struggle for justice, fairness, and righteousness, how great love is boiled in this sensitive heart, how high is this bright ideas in the brain, thoughts and others. If humanity, the "people of the world", rises to the way of life that Navoi dreamed of, the world would be a prosperous, mother planet, a place of contemplation. That is why the great Navoi scholar Ibrahim Haqqul laments: "It is impossible to eradicate the roots of ignorance, illiteracy, muteness and evil without following the lessons of Navoi. When young people are shown how to understand Navoi, they will learn all the truths they need to know"(12). As long as there are young people in the world who understand and accept Navoi in this controversial and interesting global world, humanity, with deep thinking and wisdom, will lead to joy in the hearts and to the sky of perfection.

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NATURAL MONOPOLIES IN UZBEKISTAN

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ABSTRACT

The paper aims to dispute the issue of efficiency of natural monopolies in Uzbekistan. Despite the implementation of natural monopoly concept in economies of different countries the need for reformation on infrastructural branches is rising. The specificity of natural monopolies is that the minimum costs for them are achieved in the absence of competition, and the demand for their services is inelastic, i.e. little dependent on price changes. The article presents the existing models of reforming natural monopolies. The factors that make it possible to build an adequate model of optimal reform and development of enterprises in this area are highlighted.

KEYWORDS: *Natural Monopoly, Infrastructural Area, Economic Fiction, Competition, Public Utility.*

INTRODUCTION

According to the statistical data of Antimonopoly committee of Uzbekistan 2021, 130 business entities are registered in the State Register of Natural Monopolies [1]. These entities provide the country with the basic necessities of life: energy, transportation, gas, water, post office services and at al.

Unfortunately, their efficiency is not so high and some of them in dotation support by the government. Records in the annual financial statistics of 2020, 40 % of the inefficient entities in Uzbekistan belong to natural monopoly sector [2].

Competition law is an exciting area of law, working at the confluence of law and economics, its purpose is to protect the process of competition in a free market economy. Competition is ordinarily a beneficial process, because when firms compete for customers, they are encouraged to produce the best quality products (works or services) at the minimum price, which is good for consumers [3].

Calling the conception of natural monopolies as the economic fiction was grown at the end of XIX and beginning of the XX century in the USA. Due to the tough competition in infrastructural areas manufacturers with the support of some economists created the institution of natural monopolies (DiLorenzo, 1996[4]. To the best of our knowledge, Di Lorenzoi is the one of the first published papers that investigates the real genesis of natural monopolies, using real examples for proving the artificial ‘necessity’ of them.

The aims of this study are (1) explaining the inefficiency of the conception of natural monopoly and (2) evaluating the strategy of step by step reformation the railway system where natural monopoly still exists.

Does Uzbekistan need natural monopoly in the railway system? This is main questions of the manuscript.

In Uzbekistan the issue of natural monopolies has not been researched so far by lawyers or economists. The mindset of ex-Soviet Union countries steel remains the dominance of the government where most developed countries prefer the strong activity of private sector. Public utility sector needs to be transformed to new forms with the help of privatization, public private collaboration and etc. At present Uzbek lawyers and scholars feel a real need to study experience of foreign countries on the matter in order to create effective legislation and mechanisms for creating competitive mood in public utility spheres.

Natural monopolies have been remained as one of the historical institutions of post-soviet countries. The absence of private companies in USSR and the mindset against private property had made the institution of natural monopolies actual. Postal service, energy producing, transportation of oil, oil products and gas by pipeline, production and transportation of electrical and thermal energy, railway transportation, plumbing and sewerage services, air navigation services are steel remaining as the natural monopolies. Most of these services are in dotation of government and the quality of them is not satisfying. Governmental control on the mentioned services does not permit to the private entrepreneurs to make investment on the spheres and not all the regions of the country are provided with public utility services. Even in some cities there is the lack of public utility services. Moreover, the country's legislation does not permit the public sector to participate in improvement of them.

Law No. 815-I "On Natural Monopolies", which is adopted by the Republic of Uzbekistan on August 19, 1999, directly regulates the issues of natural monopolies. National legislation defines the areas in which the activities of natural monopolies are regulated by the state, which include:

- pipeline transportation of oil, oil products and gas;
- production and transportation of electricity and heat;
- Transportation by railways, including railway infrastructure;
- Public postal services;
- Water supply and sewerage services;
- air navigation, airport services.

The existence of competition in such areas is considered unjustified, so the existence of monopolies in these areas is considered appropriate.

Due to the impossibility of this form of alternative competitors, such areas are called as "natural monopolies"[5].

The origin of the concept of natural monopoly is based on the concept of monopoly. In general, natural monopoly is a form of monopoly. The difference is that people have accepted natural monopolies as "natural."

According to the legislation, natural monopoly is condition of the commodity market in which, due to technological features or for economic reasons it is impossible to create competitive conditions in meeting the demand for certain types of goods (works, services).

A natural monopoly occurs when the most efficient number of firms in the industry is one. A natural monopoly will typically have very high fixed costs meaning that it is impractical to have more than one firm producing the good[6].

The activities of natural monopolies are regulated and controlled by the state, and the sectors in which they exist are determined by the state. The subjects of natural monopolies are purposefully established by the state, which "creates" them.

The government directly assists and "sponsors" the activities of natural monopolies. This is because the state considers that the functions performed by natural monopolies in the private sector are not technologically feasible for other entities, or that the existence of another competitor is useless and unjustifiable.

Despite that we recognize natural monopoly as an economic fiction, this institution should still live in the economy of our country. Because strict transformation of natural monopoly sectors can have bad affects.

The following problems may arise while reforming natural monopoly sectors:

First, prices for goods and services may rise;

Second, the need for professional staff is likely to increase.

That's why the step by step transformation is the most comfortable way for creating competition in natural monopoly sectors. Public-private partnership and selling governmental shares to the investors are the best two ways for reformation.

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POULTRY FARM AS A SOURCE OF ENVIRONMENTAL POLLUTION

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ABSTRACT

The article describes the main problems of the poultry industry that affects environmental pollution. Recommendations to minimize waste generation and protect the environment are made. The main type of waste from poultry farms is bird droppings, waste hazard class 3 and 4. Feed in poultry farming mainly consists of corn and soy, but other legumes, root crops, as well as fat substances can be added-animal origin (for example, dairy products, fish meal, etc.). The litter storage is a source of release of methylamine, phenol, methanol, fur dust, microorganisms. The most significant pollutant in the list of released harmful substances by mass of emission is suspended solids.

KEYWORDS: *Poultry Farm, Environmental Pollution, Waste Products, Harmful Substances.*

INTRODUCTION

Today, in our country, poultry farms and large poultry enterprises are engaged in the production of edible eggs. A poultry farm is a specialized enterprise that produces poultry products on an industrial basis. Poultry farms have a high level of mechanization of production processes. Egg-oriented poultry farms are considered more efficient and cost-effective. There are about 1 million laying hens in large poultry factories, which produce about 450 million eggs per year.

Materials and methods of research

According to environmental legislation, enterprises must develop an environmental safety system aimed at reducing the negative impact of their activities on the environment.

The first thing that is necessary is the assignment of the enterprise to a certain category of negative impact on the OS. It is from this category that the requirements for regulatory and permitting documentation of the enterprise, types of mandatory reporting, environmental payments and environmental protection measures necessary for development will depend.

Poultry farms, depending on the number of poultry farms, belong to the objects of the 1st or 2nd category of NWOS. In the first case, the company is obliged to introduce the best available technologies (BAT) into its activities and develop a comprehensive environmental permit (CER). For objects of category 2 it is permissible, but not necessarily the introduction of BAT. In addition, the company provides a declaration of the negative impact on the OS.

Environmental problems in poultry farming primarily include the following types of pollution:

- feed waste;

- Animal waste;
- Bird carcasses;
- Waste water;
- Emissions into the atmosphere.

The structure of the CER and the declaration includes PDV, VAT and NOOLR. Any enterprise must define a sanitary protection zone.

Poultry farms are most often located outside the city limits or on the outskirts of the city. According to the Sanitary Classification of industrial facilities and productions, poultry farms, depending on the number of chickens, may belong to the 1-3 hazard class of enterprises. The size of the sanitary protection zone, respectively, can be 1000, 500 or 300 m.

On the territory of the enterprise there are usually located: poultry houses, a slaughterhouse, a meat and bone flour workshop, an egg-laying, a feed mill, a litter storage, a laboratory, a laundry, a compressor room, a grain store, warehouses of cake, meal, sawdust. As a rule, the company has its own machine and tractor park, RTM, carpentry site, boiler room, coal and slag warehouse, gas station, car wash, canteen.

Waste management should be reflected in the draft waste management standards and limits on their placement (NOOLR).

Environmental protection measures are being carried out in relation to waste at poultry farms. The main type of waste from poultry farms is bird droppings, waste hazard class 3 and 4. Feed in poultry farming mainly consists of corn and soy, but other legumes, root crops, as well as fat substances can be added-animal origin (for example, dairy products, fish meal, etc.). Feeds are usually supplemented with amino acids, enzymes, vitamins, mineral supplements, while they may contain hormones, antibiotics and heavy metals. Most often, birds are kept indoors, but some of them are sent to open areas. When the content is closed, the bird is fed using manual or mechanical feeders, continuously, or at certain intervals. Feed can turn into unusable waste if it is spilled during storage, loading and unloading, or when feeding poultry. Feed waste together with additives can contribute to additional pollution of storm drains, primarily due to the organic substances contained in them.

During the production of poultry products, a significant amount of animal waste is generated, mainly manure, which also includes other substances, such as litter material.

The litter contains nitrogen, phosphorus and other substances excreted from the bird's body, such as hormones, antibiotics and heavy metals that are part of the feed. These substances can lead to the release of ammonia and other gases into the air and to the risk of contamination of surface reservoirs and groundwater due to leaching and runoff. In addition, the litter contains bacteria and other pathogenic microorganisms that can also potentially have impact on soil, water and food resources, especially if the manure has not been properly treated before being applied to the soil as fertilizer [3, 4]. Accordingly, it is necessary to promptly remove bird carcasses, since they are a significant source of diseases and unpleasant odors and can become carriers of infections [5, 6].

An important criterion in assessing the impact of an enterprise on the environment is the characteristic of discharges. When breeding poultry, liquid waste is generated from various

sources, including effluents from poultry facilities, as a result of their feeding and watering, as well as from waste storage and disposal facilities. Waste management measures, such as the introduction of manure into the soil, can create sources of discharges into water bodies from polluted areas. Both types of liquid waste are potential pollutants of surface reservoirs and groundwater with biogenic substances, ammonia, sediments, pesticides, pathogenic microorganisms and feed additives such as hormones and antibiotics, as well as heavy metals. Liquid waste from poultry breeding usually contains organic substances in high concentration, so they are characterized by high biochemical oxygen consumption and chemical oxygen consumption, as well as the content of biogenic substances and suspended solids [7, 8].

VAT as part of the CER or declaration is necessarily developed by an enterprise that discharges wastewater into a water body, usually surface. The permissible discharge standard must be established for each pollutant in each wastewater outlet and for the enterprise as a whole.

When wastewater is discharged into the urban sewerage system, a contract is concluded with the organization serving the collector and a permit for the discharge of pollutants is agreed upon, which, among other things, regulates the amount of discharge.

Poultry farms located in rural areas most often discharge into a water body. Enterprises located in the city limits, wastewater drainage is carried out in the city collector.

Emissions into the atmosphere from poultry facilities include pollutants released (when birds are kept): ammonia; methane, nitrous oxide, hydrogen sulfide, methylamine, phenol, methanol, propionic aldehyde; capronic acid, dimethyl sulfide, ethyl formate, fur dust, microorganisms.

During the operation of the boiler house and the waste incineration plant, nitrogen dioxide, nitrogen oxide, carbon oxide, benzopyrene are formed. Coal and slag depots are sources of dust emission [9, 10]. Released pollutants of garage, RTM, car wash: hydrocarbons, nitrogen dioxide, soot, sulfur dioxide, carbon oxide. The litter storage is a source of release of methylamine, phenol, methanol, fur dust, microorganisms. The most significant pollutant in the list of released harmful substances by mass of emission is suspended solids. These are fur dust, coal dust, ash, soot [11, 12].

Ammonia and other odour sources are formed primarily during the denitrification of manure and can be released directly into the atmosphere at any stage of the manure processing process, including through emissions through ventilation devices of buildings and at manure storage sites. The level of ammonia emissions is also affected by ambient temperature, ventilation rate, humidity, stored volume, litter quality and food composition (raw protein) [13, 14].

Dust can impair visibility, cause respiratory problems and contribute to the spread of odors and diseases.

Pesticides can be applied directly to birds or premises and used to control pests (for example, parasites and vectors of infections) using antiparasitic baths, sprayers and aerosol generators. Pesticides can also be used to control predators. Possible pollutants from pesticides include active and inert ingredients, diluents and resistant decomposition products. Pesticides and their decomposition products can penetrate into surface and groundwater in the form of solutions, emulsions or combining with soil particles. In some cases, pesticides can interfere with the use of surface and groundwater [15].

Results

As a result of the increased activity of poultry farms, there is a problem of unreliable environmental protection.

The negative impact of poultry farms can lead to an environmental problem with negative consequences for residents of settlements, to the death of flora and fauna not only near enterprises, but also neighboring territories.

Almost all poultry farms of the Russian Federation found themselves in a difficult ecological situation, as the accumulated bird droppings became a serious source of environmental pollution, because poultry farms do not have even the simplest sets of equipment to dispose of such volumes today.

CONCLUSION

To achieve maximum production efficiency and minimize waste generation, the following measures should be taken:

1. Carry out environmental protection measures.
2. Identify the sources of pollution.
3. Maintenance of storage systems, transportation of feed and feeders in proper working condition.
4. Consideration of the possibilities of mixing feed waste with other recyclable materials for subsequent use as fertilizers.
5. Use of control measures to minimize the amount of animal waste received and minimizes the migration of pollutants into surface reservoirs, groundwater and the atmosphere.
6. Providing structures of industrial premises and manure storage facilities that do not allow manure contamination of surface reservoirs and groundwater.

When identifying sources of pollution, quantifying harmful factors, carrying out environmental protection measures and maintaining environmental impact in accordance with established standards, organizing industrial environmental control, the environmental safety system of a poultry farm can be considered sufficient.

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AN OVERVIEW ON TRANSGENIC ANIMALS AND NUTRITIONAL RESEARCH

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ABSTRACT

The biological functions of proteins, particularly secondary gene products generated by protein catalysts, may be studied using transgenic mice. Their use as comparison models for normal and abnormal metabolism is beneficial to nutrition and associated studies. Although transgenic animal-derived food, nutritional products, and components have yet to reach customers, the technology to make them is improving and yielding encouraging results in lab or farm animals. Regulatory government bodies have already made recommendations and regulations in preparation of the introduction of these products and components. This research examines existing methods for generating transgenic animals, assesses their scientific and commercial potential, and considers nutrition-related issues.

KEYWORDS: *Nutrition, Transgenic Animals, Transgene, Targeted Mutants.*

1. INTRODUCTION

Animals that are transgenic or mutants with particular traits Transgenic animals (TA) express proteins that are expressed by cDNA or genes that are usually linked to heterologous transcriptional regulatory elements, or they may express them if they are properly activated (TRE). These fusion genes are often referred to as transgenes. It's worth mentioning that a TA's only acquired features may or may not be the synthesis of proteins, which are the primary gene products. If the transgene-encoded protein is an enzyme, and its substrates are accessible within the cell, secondary gene products will be generated. These compounds may build up in tissues and body fluids where they aren't normally present. Peptide hormone such growth hormone induces substantial changes in carcass composition as well as systemic physiologic alterations in TA. Mice that generate GH, for example, are larger, have higher insulin levels, as well as die sooner due to liver and kidney damage than their nontransgenic littermates. Furthermore, transgenic hydrolytic enzyme synthesis may cause chemicals present in animal tissues or biological fluids to disappear or alter [1], [2].

1.1. Animals that have undergone genetic modification:

Biological assemblages The state of the art in TA production has been reflected in many assessments throughout the years. These studies look at a variety of key technologies, including molecular biology¹⁹, pharmaceutical production in TA^{20,21}, and also the general use of TA as research tools, as well as biotechnology, agriculture, and nutrition. All of the aforementioned

studies contain sections on two important aspects of transgenic technology: the synthesis of transgenic recombinant DNA and the techniques for introducing it into animals. Methods for detecting TA and propagating transgenic embryos are also included in several of these publications [3].

1.2. Regulative elements:

Transgenes include TRE, which controls the expression of protein-coding DNA sequences. These elements direct the transcription of adjacent DNA into mRNA, which is subsequently translated into protein. TA has been proven to be effective in finding TRE like promoters, enhancers, and silencers, as well as establishing if their effects are comparable across species. It's worth mentioning that the term "promoter" has been used to describe TRE. Tissue-specific TREs are those in which the expression of adjacent DNA is limited to certain tissues or organs.

1.3. Nutritional issues or transgenic animals:

TA may be studied from a number of perspectives depending on their present and future contributions to the field of nutrition. The use of TA as experimental systems, models, or manufacturing prototypes for scientific study is discussed in the bulk of scientific papers. TA only makes protein therapeutics on a commercial or near-commercial scale a few times a year. In terms of diet and related areas, TA may be classified as follows: study models for nutritional phases or metabolic diseases genetically modified food sources.

1.4. Bioreactors generate the ingredients for healthy foods.

As the following example shows, the difference between mammals used as bioreactors as well as animals used as suppliers of modified food products may be subtle at times. Milk from a TA that produces a high amount of k-casein may be consumed immediately or used to create cheese. The product is acquired from the TA in this case with no more processing than is usually done with food. When k-casein is isolated from milk and utilized as an ingredient to improve the function or nutritional qualities of food or nutritional products, the TA is used as a bioreactor. The latter is the favored technique for producing medications in milk [4].

1.4.1. Milk and milk components that have been modified:

Milk is a meal that has been heavily changed via the expression of particular transgenes and, in many instances, genetically engineered. without having a negative impact on the TA milk already produces a number of medicinal proteins. and are at various phases of development, from idea to completion. From preclinical through clinical testing, we've got you covered. a few examples. Human a-antitrypsin is found in sheep, human plasminogen activator is found in goats, human protein C is found in pigs, and human plasminogen activator is found in humans. Rabbits were given human IGF-I.

1.4.2. Milk may be enhanced or changed from a variety of angles:

- As a significant factor.
- As a raw nutritional component for large consumption.
- As a source of components.
- As a raw material for dairy products for baby formula and other nutritional items

- The basics of transgene expression in lactating mammalian cells glands and the finer details of gene expression.

1.5. Nutritional research using transgenic animals or transgenic mutants:

Several reviews describing TA as a disease including biochemical models have been published. We'll go through a couple of them in this section. Barrett and Mullins⁵² discussed cardiovascular disease models based on renin-angiotensin system and other systems alterations. Some of these models may be useful in the study of diet-induced hypertension, cardiac hypertrophy, including thrombosis. Stewart investigated a variety of models for understanding endocrine disorders, such as diabetes. ⁵³ Breslow⁵⁴ investigated the metabolism of TA and TM lipoproteins as well as atherosclerosis models. This research covers mice with altered lipoprotein transport proteins, lipases, as well as receptors, and is likely one of the most insightful studies on TA's nutritional potential. Stewart⁵³ addressed transgenic models for metabolic disorders, whereas Bray and Ryan⁵⁵ explain the history and reasoning for animal models used to research obesity, enabling readers to compare models produced using conventional genetic techniques to models created using transgenic technology [5], [6].

1.6. These animals' glucose levels are normal, but their insulin levels are high:

Even if they are not diabetic, they have a high insulin sensitivity. This is a situation that is comparable to that which happens in diabetics. GH antagonist-expressing animals have normal glucose levels but decrease insulin levels in the same manner. Nutritional status, as well as increased or decreased levels of GH, may help predict glucose/insulin levels in people with type 2 diabetes. TAs, which were originally developed to study muscle growth and development rates, have also proved to be effective nutritional models [7].

The applications listed in this section are only a few of the nutrition-related domains where TA or TM models are being researched. Because of their role as examples, TA and TM have surpassed scientists' expectations. Furthermore, ectopic transgenic expression in the developing embryo may be deadly, or the TA could struggle to survive after birth if it occurs. Even in these cases, TA helps to our knowledge of gene product function and encourages new study fields [8].

1.7. Transgenic animals as bioreactors or functionally changed food suppliers:

The production of transgenic tomatoes⁶⁵ is one of the most intriguing recent discoveries in the area of food research. TA products would be accessible at the same time as transgenic tomatoes, according to a business intelligence report⁶⁶. As of June 1998, there were no TA products on the market. A variety of reasons may explain the apparent delay in the commercial introduction of TA devices, but a few stand out:

- Unlike plants, TA were designed to be used as bioreactors for pharmaceuticals, and these products must go through lengthy regulatory processes.
- Certain transgenes' expression in farm animals has had detrimental effects.
- While medications have been developed from a variety of sources, including genetically modified organisms, the regulatory hurdles for a transgenically produced food or nutritional product are yet unknown.

- It's possible that the current state of technology, along with the particular features of animal systems, may need longer development periods.

1.8. Alternatives to transgenic technology:

Science and industry are equally interested in transgenic organisms. Biotechnology, on the other hand, has advanced in a variety of areas. Given the usually long development timeframes for transgenic food products and components, other approaches for resolving specific problems may be investigated. One example is the synthesis of human b-casein. Phosphate groups attached to serine and threonine residues range from zero to five in this human milk protein, which occurs in a variety of forms and variants. Bovine phosphorylated b-casein with all variants has been produced in TA's milk.

1.9.. Legal and regulatory issues:

The use of TA to produce food and ingredients on a commercial scale does not seem to be viable in the near future. It's difficult to predict how long it will take for this to occur. Meanwhile, the technology has already been exposed and discussed outside of the specialized press. It's conceivable that medications made in TA bioreactors will be the first to hit the market, even ahead of food. Regulatory agencies and consumer advocacy groups are already taking steps to prepare for a situation like this. In the United States, the United States Food And drug (FDA) issued a warning titled "Points to Consider in the Manufacture or Testing of Therapeutic Products for Humans Use Produced from Transgenic Animals [9].

This notification is a necessary first step in beginning a discussion regarding TA regulatory issues, and it shows the FDA's stance toward this technical tool. Regulatory actions, on the other hand, do not happen by themselves. Consumer attitudes about biotechnology as well as political factors impact government actions that may affect the development of TA applications. Furthermore, the Dutch government has put limitations on cloning research that aims to spread TA. The time it takes to create a viable herd is obviously a current TA limitation. Cloning already existing TA may be used to get around this limitation. The impact of the aforementioned government decision on companies in the Netherlands may be significant. Even regulatory definitions may be a source of disagreement. It is feasible to skip the long wait for spontaneous or forced lactation in transgenic cows by expressing transgenes in the lactating gland using viral vectors. At the absolute least, this technique may be used to determine whether or not it's worthwhile to begin germline integration research for a certain transgene.

Nutritionists may now explore ways to improve the nutritional content of milk, meat, and eggs thanks to the advent of TA. Foods may now be substantially altered without the need for lengthy genetic selection thanks to Mendelian genetics-guided crossbreeding cycles, providing an unrivaled environment for future generations. It is now possible to picture or see the ideal milks for different applications, such as cheese production, infant formula manufacture, or products for undernourished children, as well as the ideal meat for large-scale ground beef production. These functional characteristics may be among the first modifications to animal tissues and fluids to reach the market due to their obvious economic significance. These possibilities force academic and industry researchers to reconsider prior concepts and standards based on current manufacturing methods' inherent limitations.

2. DISCUSSION

Transgenic animals may be used to investigate the biological roles of proteins or secondary gene products produced by protein catalysts. Their usage as models to contrast normal and abnormal metabolism benefits research in nutrition and related areas. Although transgenic animal-derived food, nutritional goods, and components have yet to reach consumers, the technology for their manufacture are developing and producing promising results in laboratory and farm animals. In anticipation of the arrival of these goods and components, regulatory government agencies have already issued recommendations and laws. This study outlines current technologies for producing transgenic animals, analyzes their scientific and economic possibilities, and looks at related problems in the area of nutrition. One of the study's main objectives was to provide a comprehensive overview of the technologies used in the manufacture of TA. It was also an aim to give examples and point the reader to more detailed explanations of the technology to show its current status and potential. Scientific literature was the primary source of information. Since it was decided that these concerns would inevitably influence the development and dissemination of transgenic technology, three research on regulatory and commercial issues were suggested. A variety of interesting experiments and simulations are included in patent applications, which may represent some of the most advanced aspects of the technology. It was chosen not to include the repetition and breadth of the occurrences in this assessment since they are seldom addressed.

3. CONCLUSION

Transgenic mice may be used to investigate the biological activities of proteins, including secondary gene products produced by protein catalysts. Nutrition and related disciplines benefit from their usage as models for comparing normal and abnormal metabolism. According to the reviewers, TA are already useful models for researching metabolic pathways, diseases, and infirmities, and that traditional approaches like as dietary management may now benefit from their inclusion. "Unfortunately, this area of study has received less interest in laboratories than it has in review articles," they say in their evaluation of transgenic dairy cows.

Although this is true, it is important to note that the thin boundary between science and technology is often crossed in areas like the one under consideration. Companies and universities do not disclose all of the advances in the area because scientific transparency takes a second seat to the filing of patent applications. Furthermore, scientific publications function as a marketing tool for developing technologies, therefore it's important to be able to tell the difference between facts and recommendations or too optimistic future possibilities. The following judgements, like prior biases, may also permeate the review: Some aspects of transgenesis technology, including such transcriptomic control, are still being investigated in basic research. most TA described to this point are prototypes. each process required its own evaluation, as obtained results in animal experiments do not always predict those obtained in farm animals; and TA and TM are effective tools for studying the effect of nut allergies.

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AN ANALYSIS OF E HADOOP/MAPREDUCE/H BASE FRAMEWORK AND ITS CURRENT APPLICATIONS IN BIOINFORMATICS

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ABSTRACT

High-performance computing (HPC) has become more essential in bioinformatics data processing as a result of new computational difficulties. Work is usually distributed over a cluster of computers that connect to a shared file system housed on a storage area network. The Message Passing Interface (MPI) and, more recently, Hadoop's MapReduce API have been used to achieve work parallelization. Cloud computing is another computer architecture/service model that is currently being investigated. In a nutshell, cloud computing is HPC with a web interface plus the flexibility to scale up and down quickly for on-demand usage. Remote clients upload potentially large data sets for analysis in the Hadoop framework or other parallelized environments running in the data center, with the server side deployed in data centers working on clusters. The present use of Hadoop, a toplevel Apache Software Foundation project, and related open source software projects in the bioinformatics field is discussed. The principles underlying Hadoop and the HBase project are explained, as well as the existing bioinformatics software that uses Hadoop. The emphasis is on next-generation sequencing, which is now the most popular application area.

KEYWORDS: API, Hadoop, H Base, Map Reduce, Pig.

1. INTRODUCTION

1.1 Hadoop:

Hadoop is a software framework for large-scale distributed data processing that may be deployed on a commodity Linux cluster. Other than potential adjustments to satisfy minimum suggested RAM, disk space, and other requirements per node, no hardware modifications are required. Doug Cutting (named after his son's pet elephant) developed the first version of Hadoop in 2004. In January 2008, Hadoop was designated as a top-level Apache Software Foundation project. There have been numerous academic and commercial contributions (Yahoo being the biggest), and Hadoop has a huge and fast expanding user community [1].

a) Components:

Hadoop includes a Java-based API that enables parallel processing across cluster nodes using the MapReduce paradigm, as well as the robust, fault-tolerant Hadoop Distributed File System (HDFS), which was influenced by Google's file system. Hadoop Streaming, a tool that enables

users to build and execute jobs using any executable as the mapper and/or reducer, lets users to utilize code written in other languages, such as Python and C. Hadoop also has Job and Task Trackers, which monitor the execution of applications throughout the cluster's nodes [2].

b) Data locality:

Hadoop attempts to synchronize the data with the compute node automatically. Hadoop schedules Map jobs near to the data they'll be working with, with "close" implying the same node or, at the very least, the same rack. Hadoop's performance is heavily influenced by this. A Hadoop application operating on a 910-node cluster set a world record in April 2008, sorting a terabyte of data in under 3.5 minutes. As Hadoop has evolved, it has continued to increase its speed.

c) Map Reduce paradigm:

Hadoop implements its fault-tolerant distributed computing system across huge data sets stored in the cluster's distributed file system using a Map/ Reduce execution engine. This MapReduce technique was pioneered by Google, was recently patented for usage on clusters by Google and licensed to Apache, and is currently being developed by a large group of researchers. There are distinct Map and Reduce stages, each of which operates on sets of key-value pairs and is performed in parallel. As a result, program execution is split into two stages: Map and Reduce, which are separated by data transfers between cluster nodes. A node performs a Map function on a portion of the input data in the first stage. The map output is a collection of records stored on that node in the form of keyvalue pairs. The records for each particular key, which may be distributed over many nodes, are gathered at the node that runs the Reducer for that key. This entails machine-to-machine data transmission. This second Reduce step can't start until all of the data from the Map stage has been delivered to the correct computer. As a final result, the Reduce step generates a new collection of key-value pairs. This is a basic programming paradigm that just uses key-value pairs, yet it can accommodate a surprising amount of jobs and algorithms [3].

d) HDFS file system:

There are several disadvantages to using HDFS. HDFS isn't as good as a conventional relational database management system at handling continuous changes (write many). Furthermore, HDFS cannot be mounted directly on a current operating system. As a result, transferring data into and out of the HDFS file system may be difficult. There are many open source projects developed on top of Hadoop, in addition to Hadoop itself [4].

1.2 Hive:

Hive is a Hadoop-based data warehouse architecture that was created at Facebook and is used for ad hoc querying using a SQL-like query language as well as more sophisticated analysis. Tables and columns are defined by the users. These tables are used to store and retrieve data. To generate summaries, reports, and analytics, Hive QL, a SQL-like query language, is utilized. Map Reduce jobs are launched by Hive queries. Hive is built for batch processing rather than online transaction processing, and unlike HBase (see below), it does not support real-time queries.

1.3 Pig:

Pig is a high-level data-flow language and execution framework whose compiler generates Map/Reduce program sequences for Hadoop execution. Pig is a program for batch data processing. Pig's infrastructure layer consists of a compiler that converts Pig Latin programs into Map Reduce program sequences. Pig is a Java client-side program that customers install locally the Hadoop cluster is unaffected. Pig's interactive shell is Grunt [5].

1.4 Mahout and other expansions to Hadoop programming capabilities:

Hadoop isn't only for processing huge amounts of data. Mahout is an Apache project for creating scalable machine learning libraries, with the majority of the algorithms being based on Hadoop. Clustering, classification, data mining (frequent itemset), and evolutionary programming are some of Mahout's current algorithm emphasis areas. The Mahout clustering and classifier algorithms have obvious applications in bioinformatics, such as clustering huge gene expression data sets and using classifiers to identify biomarkers. In terms of clustering, we should mention that M. Ngazimbi and K. Heafield at Google, among others, have looked at Hadoop MapReduce-based clustering. The "R and Hadoop Integrated Processing Environment" (RHIFE), S. Guhi's Java program that connects the R environment with Hadoop so that MapReduce algorithms may be coded in R, may be of interest to the many bioinformaticians who use R. Pydoop, a Python MapReduce and HDFS API for Hadoop that enables entire MapReduce applications to be built in Python, is now accessible for the expanding community of Python users in biology. These are just a few examples of the huge number of people working on Hadoop extensions. In this limited area, one last example: Clojure, a new programming language that is primarily a functional language (e.g., a version of Lisp that targets the Java Virtual Machine), has been provided a library to assist in the creation of Hadoop tasks [6].

1.5 Cascading:

Cascading is a Hadoop project that provides a programming API for designing and running fault-tolerant data processing processes. Cascading is a lightweight Java library that sits on top of Hadoop's MapReduce layer. Cascading is a query processing API that enables programmers to work at a higher level than MapReduce, allowing them to more rapidly build and plan complicated distributed processes based on dependencies [7].

1.6 H Base:

Finally, HBase, which is based on Google's Big Table database, is a significant Apache Hadoop-based project. Built on top of the HDFS file system, HBase provides a distributed, fault-tolerant, scalable database with random real-time read/write access to data. Each HBase database is saved as a multidimensional sparse map of rows and columns, with a time stamp in each cell. HBase has its own Java client API, and via TableInput/TableOutputFormat, tables in HBase may be utilized as both an input source and an output target for MapReduce tasks. There is no single point of failure in HBase. HBase manages partial failures using Zookeeper, another Hadoop subproject. The main key is used to access all tables. Additional index tables may be used to create secondary indexes; programmers must de normalize and duplicate. In HBase's basic version, there is no SQL query language. However, there is a Hive/HBase integration project that enables Hive QL expressions to read and write data into HBase databases. There's also the separate HBql project, which adds a SQL dialect and JDBC connectors for HBase. Regions are

the components of a table. Each region has a startKey and an endKey, may reside on a separate node, and is made up of multiple HDFS files and blocks that are all duplicated by Hadoop. Only the parent column families are specified in a schema, thus columns may be added to tables on the fly. Each cell is labelled with the column family and column name so that programs can always tell what kind of data item is in that cell. We may notice the simplicity of integrating diverse data sources into a small number of HBase tables for creating a data workspace, with different columns potentially created (on-the-fly) for different rows in the same database, in addition to being able to grow to petabyte size data sets. It is also necessary to have such a facility. (For more on biological integration, see the section below.) Other scalable random access databases, in addition to HBase, are now accessible. HadoopDB is a combination of MapReduce with a traditional relational database system. HadoopDB's database layer is PostgreSQL (one PostgreSQL instance per data chunk per node), the communication layer is Hadoop, and the translation layer is an enhanced version of Hive. There are other non-Hadoop scalable alternatives, such as hyper table and Cassandra that are based on the Google Big Table idea. Other so-called NoSQL scalable databases that may be of interest include Project Voldemort, Dynamo, and Tokyo Tyrant, among others. These non-Hadoop and non-Big Table database systems, on the other hand, are beyond the scope of this article [8].

1.7 Use of Hadoop and HBase in Bioinformatics:

1.7.1 Use in next-generation sequencing:

For SNP identification and genotyping, the Cloudburst program links next-generation short read sequencing data to a reference genome. Michael C. Schatz of the University of Maryland developed Cloudburst. In May 2009, Schatz's Cloudburst article placed Hadoop "on the map" in bioinformatics. Following the publication of Cloudburst, Schatz and colleagues at the University of Maryland and Johns Hopkins University (e.g., B. Langmead) created a set of algorithms for analyzing next-generation sequencing data using Hadoop:

- 1) For whole genome resequencing analysis and SNP genotyping from short reads, Crossbow relies on Hadoop.
- 2) Contrail scales up de Bruijn graph building by utilizing Hadoop for de novo assembly from short sequencing data (without needing a reference genome).
- 3) Myrna utilizes R/Bioconductor to calculate differential gene expression from huge RNA-seq data sets, as well as Bowtie, another UMD tool for rapid short read alignment. Myrna utilizes Hadoop when operating in a cluster. Myrna may also be used on the cloud using Amazon Elastic Map Reduce.

1.7.2 Cloud computing results:

Amazon Elastic Compute Cloud (EC2) and Amazon Elastic MapReduce are cloud computing services that offer scalability. They provide Hadoop, among other batch processing tools. Myrna was built to work on both Elastic Map Reduce and on a local Hadoop cluster. Langmead et al. clearly think that cloud computing is an useful computing architecture, as shown by the fact that they publish their findings in. Schatz has also tried Crossbow on EC2 and thinks that it may be very cost efficient to operate on EC2. (Researchers may also use non-commercial services such as the IBM/Google Cloud Computing Initiative.) In addition, Indiana University (IU) researchers compared MPI, Dryad, Azure (Microsoft), and Hadoop MapReduce, evaluating relative

performance using three bioinformatics applications. Judy Qui of Indiana University summarized this work at BOSC 2010. The IU testing shows that clouds and MapReduce have a lot of flexibility, implying that “they will become favored approaches.

1.7.3 Use in other bioinformatics domains:

Hadoop and HBase have been used in bioinformatics applications other than next-generation sequencing. M. Gaggero and colleagues from the Center for Advanced Studies, Research and Development in Sardinia's Distributed Computing Group have published a paper on implementing BLAST and Gene Set Enrichment Analysis (GSEA) in Hadoop. To create an executable mapper for BLAST, a Python wrapper for the NCBI C++ Toolkit and Hadoop Streaming were used. For the MapReduce version, GSEA was developed utilizing rewritten Python routines and Hadoop Streaming. They're now working on Biodoop, a Hadoop-based suite of parallel bioinformatics applications that includes three qualitatively distinct algorithms: BLAST, GSEA, and GRAMMAR. They call their findings "extremely promising," describing MapReduce as a versatile architecture.

1.8 Use in scientific cloud computing, biological data integration and knowledgebase construction:

The Magellan project [67], a collaborative research effort of the National Energy Research Scientific Computing Center (NERSC), Lawrence Berkeley National Laboratory, and the Leadership Computing Facility at Argonne National Laboratory, is looking into scientific cloud computing (ANL). At NERSC, Hadoop and HBase were deployed on a cluster (40 nodes designated for Hadoop, shortly to double), and BLAST calculations were performed using Hadoop in Streaming mode. On the Hadoop nodes, NERSC is investigating the usage of solid state (flash) storage. The DOE Joint Genome Institute has also used Hadoop to extend contigs on the NERSC cluster. In late 2010, the Hadoop cluster at ANL, which is now undergoing testing, will be accessible to researchers. Fill out the Magellan Cloud Computing statement of interest form if you're interested in utilizing clouds for your study. We want to build a scientific data management system that can scale into the petabyte range, store data acquired from our various instruments accurately and reliably, and store the output of analysis software and relevant metadata at the Environmental Molecular Sciences Laboratory, a national user facility at DOE's Pacific Northwest National Laboratory (PNNL). Work on a prototype data repository, i.e., a workspace for integrating high-throughput transcriptomics and proteomics data, began in August 2010 as a pilot project for such an endeavour. This database will be able to hold massive quantities of data from both mass spectrometry-based proteomics studies and next-generation high-throughput sequencing technologies. The prototype database is being built by the author (RCT) on a 25-node cluster utilizing Hadoop and HBase as the framework. We may consider utilizing Hadoop and HBase for the construction of big knowledge bases running on a cluster across the distributed file system in addition to such data warehousing / data integration activities. The US Department of Energy is funding research into large biological knowledge bases, and Kandinsky, a 68-node, 1088-core Linux cluster (64 GB RAM, 8TB disk per node) running Hadoop (Cloudera distribution, under CentOS 5) and HBase, was set up as an exploratory environment at Oak Ridge National Laboratory in 2010. Cloudburst has been deployed as a prototype Hadoop-based application, and the cluster is available for researchers to use for early work on knowledgebase creation and grant proposal assistance.

2. DISCUSSION

Since its release in late 2006, Hadoop has been the best solution for big data processing and storage. Hadoop data processing is based on a master-slave model, which divides a large file job into several small files so that they can be processed separately. This technique was used instead of pushing one large file into a costly super machine to extract some useful information. Hadoop performs well with huge files of big data, but when dealing with tiny files of big data, it may have performance issues such as processing slowdowns, data access delays, excessive latency, and even cluster shutting down. In this article, we will focus on one of Hadoop's constraints that has an impact on data processing speed. One of these restrictions, known as "big data in tiny files," arises when a large number of small files are pushed into a Hadoop cluster, causing the cluster to completely shut down. This paper discusses several aspects of Hadoop, MapReduce and Hive.

3. CONCLUSION

As shown by the huge number of applications listed above, Hadoop and its related open source projects have a broad and expanding bioinformatics community of both users and developers. Researcher provides a concluding point based on early work for the Hadoop/HBase-based PNNL project. That is, for most bioinformatics work, the simplicity of integrating and analysing multiple big, diverse data sources into one data warehouse under Hadoop, in relatively few HBase tables, is just as essential as the scalability provided by Hadoop and HBase. The new generations of mobile devices have high processing power and storage, but they lag behind in terms of software systems for big data storage and processing. Hadoop is a scalable platform that provides distributed storage and computational capabilities on clusters of commodity hardware. Building Hadoop on a mobile network enables the devices to run data intensive computing applications without direct knowledge of underlying distributed systems complexities.

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A REVIEW ON BIOETHANOL FROM CELLULOSIC MATERIALS: A BIOMASS-BASED RENEWABLE MOTOR FUEL

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ABSTRACT

The most commonly utilized liquid biofuel is ethanol. It's an alcoholic beverage that's made from sugars, starches, or cellulosic biomass. Bioethanol may be made from cellulosic resources. Bioethanol is a significant renewable liquid fuel for automobiles. Bioethanol production from biomass is one method to decrease crude oil use while also reducing pollution. Conversion methods for generating ethanol from cellulosic biomass resources including forest materials, agricultural leftovers, and urban wastes are still in the works and have yet to be commercialized. A pretreatment procedure is used to decrease the sample size, break it down the hemicelluloses to sugars, or open up the framework of the cellulose component in order to generate bioethanol from cellulosic biomass. Acids or enzymes undergo hydrolysis the cellulose to produce glucose sugar, which is fermented to produce bioethanol. Hemicellulose sugars are also fermented to produce bioethanol. The usage of bioethanol as a motor fuel dates back to the invention of the automobile. It all started with the introduction of ethanol into internal combustion engines.

KEYWORDS: Bioethanol, Biomass, Ethyl Alcohol, Fermentation, Hydrolysis, Sugar.

1. INTRODUCTION

Given the ever-increasing expense of petroleum or our reliance on fossil fuel supplies, alternative energy sources have received a lot of attention. The ethanol production, also known as ethyl alcohol ($\text{CH}_3\text{CH}_2\text{OH}$), from biomass is one method to decrease both crude oil use and pollution. The manufacture of ethyl alcohol from renewable resources is a primary issue, as is determining the economic and technological viability of utilizing alcohol as an automobile fuel mixed with gasoline. Ethanol is a significant renewable liquid fuel for automobiles. For a variety of reasons, the usage of gasohol (a combination of ethanol or gasoline) as an alternative motor fuel has been gradually growing throughout the globe. Domestic ethanol production and usage as a fuel may help to minimize reliance on foreign oil, reduce trade imbalances, generate employment in rural regions, reduce air pollution, or reduce global warming carbon dioxide accumulation. Ethanol, unlike gasoline, is a 35 percent oxygenated fuel, which lowers particle and NO_x emissions during burning. When fermented ethanol is burnt, there is no net increase in carbon dioxide in the environment. It's an octane-booster that also eliminates free water, which may clog gasoline lines in cold weather [1].

The most commonly utilized liquid biofuel is ethanol. It's an alcoholic beverage that's made from sugars, starches, as well as cellulosic biomass. Because starches and cellulosic biomass need

costly pretreatment, the majority of commercial ethanol production comes from sugar cane or sugar beet. It is utilized as a renewable energy source, as well as for the manufacturing of cosmetics, medicines, and alcoholic drinks. Ethyl alcohol is not only the oldest but also one of the most significant synthesized organic chemicals utilized by humans. An previous research looked at the physiological effects of inhibitors on ethanol produced from lignocellulosic materials and fermentation methods. For example, yeast-based fermentation has produced ethanol from sugar or crops. The commercial manufacture of ethanol from sugar fermentation is well established, but new research may lead to advancements in reactors or separation systems. At the demonstration as well as industrial scales, hydrolyzing lignocellulosic materials before fermentation is required to generate ethanol. Enzymatic hydrolysis is still in its infancy, necessitating much basic study [2].

Conversion methods for generating bioethanol from cellulosic biomass resources such as forest materials, agricultural leftovers, and municipal wastes are still in the works and have yet to be commercialized. Private investment in such facilities is hampered by uncertainty about commercial scale performance and profitability, as well as an uncertain market forecast in the long run. In 1998, the global ethanol output was projected to be 33.3 billion liters. Synthetic ethanol accounts for around 9% of total ethanol production, thus fermentation accounts for 91 percent of worldwide ethanol production. Brazil is the world's largest producer of alcohol, with 16.1 billion liters produced in 1998. Bioethanol manufacturing on various continents. The goals of this research are to identify the kinds of biomass that may be utilized to make bioethanol, assess biomass-to-ethanol possibilities, and explore the sugars that can be converted to bioethanol through fermentation from both cellulose and hemicelluloses [3].

1.1. Resources for Cellulosic Biomass:

Cellulosic materials, such as paper, cardboard, wood, agricultural wastes, and other fibrous plant material, are common and plentiful. Forests, for example, account for about 80% of global biomass. Ethanol may be made from a variety of different basic sources. The agricultural raw materials are separated into three categories: simple sugars, starch, and cellulose. Cellulosic biomass materials may be obtained at a cheap cost from a number of sources. Based on the kind of resource, they may be divided into four categories: wood, municipal solid waste, waste-paper, and agricultural residual resources. Different kinds of cellulosic biomass materials have different structural compositions [4].

Cellulosic materials are very cheap feedstock for ethanol production since they are plentiful and outside the human food chain. Lignin, hemicelluloses, and cellulose make up cellulosic materials, which are also known as lignocellulosic materials. Cellulose molecules, like starch molecules, are made up of long chains of glucose molecules (6-carbon sugars), but their structural arrangement is distinct. Cellulosic materials are more difficult to hydrolyze than starchy materials due to their structural features and lignin encapsulation. Hemicelluloses are made up of long chains of sugar molecules, but instead of glucose, they include pentoses. In the carbohydrate fraction of wood, the relative quantity of particular sugars [5].

1.2. Bioethanol is being used as a transportation fuel:

The use of ethanol as a motor fuel has a lengthy history, almost as old as the automobile itself. It all started with Nikolas Otto's invention of the internal combustion engine in 1897. (Rothman et al., 1983). Since the invention of the car, alcohol has been utilized as a fuel. Alcohol is a word

that has been used to refer to either ethanol or methanol as a fuel. Following the oil crisis of the 1970s, ethanol gained traction as a viable alternative fuel. Many nations have begun research and development projects to produce fuels from readily accessible basic materials in a cost-effective manner (Paul, 1979). The attention faded as the price of oil fell, until 1979, when another oil crisis occurred. Ethanol has been explored as an alternative fuel in several nations since the 1980s. Brazil and the United States have long supported local bioethanol production. Aside from the energy considerations [6].

In the United States, ethanol/gasoline blends were marketed as an ecologically friendly technique, first as an octane booster to replace lead in gasoline. Ethanol is also useful as an oxygenate in clean-burning gasoline, which helps to decrease car emissions. Ethanol works effectively as a vehicle fuel, either on its own or in combination with gasoline. Aside from ethanol/gasoline blend markets, ethanol has several other motor fuel applications, including: (1) use as E85, which is 85 percent ethanol and 15 percent gasoline; (2) use as E100, which is 100 percent ethanol with or without a fuel additive; as well as (3) use as oxy-diesel, which is typically a blend of 80 percent diesel fuel, 10% ethanol, and 10% additives and blending agents.

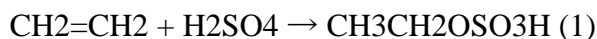
Concerns about the greenhouse effect are one cause for interest in renewable energy sources. The development of ethanol as a vehicle fuel may help to meet this goal. Reduced greenhouse gas emissions should be calculated on a yearly basis. Where the values vary substantially from year to year, they should be stated on a yearly basis. When bioethanol made from biomass is used to power a light-duty vehicle, the net CO₂ emissions are less than 7% of those produced by the same vehicle when reformulated gasoline is utilized [7].

1.3. Methods of Ethanol Production:

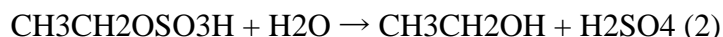
The simple alcohols that form the backbone of aliphatic chemical synthesis may be obtained in three ways (Morrison and Boyd, 1983). These are: (a) hydration of alkanes derived from petroleum cracking; (b) hydrolysis of cellulosic materials; and (c) carbohydrate fermentation.

1.4. Processes for Making Synthetic Ethanol:

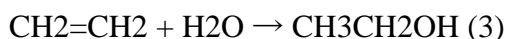
The hydration of ethylene is the oldest of the two main ethanol manufacturing techniques from ethylene (CH₂=CH₂), having been developed over a century ago. Using sulfuric acid, ethanol is made from ethylene in a three-step process (H₂SO₄). In the first stage, 35–95 percent ethylene hydrocarbon feedstock is exposed to 95–98 percent sulfuric acid in a column reactor to produce mono-sulfate:



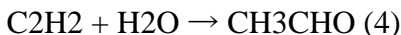
It is subsequently hydrolyzed with enough water to give 50–60% aqueous sulfuric acid solution:



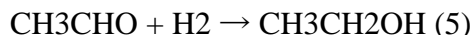
In a stripper column, the ethanol is separated from the dilute sulfuric acid. The sulfuric acid is then concentrated and recycled back into the process as the last stage. In the direct hydration method, an ethylene-rich gas is mixed with water and passed through a fixed-bed catalyst reactor, where ethanol is produced using the reaction described below.



The ethanol is then recovered in a distillation system. Ethanol can be obtained from acetylene process in the presence of the proper catalysts such as H_2SO_4 and HgSO_4 , ethylene reacts with water to yield acetaldehyde:



Acetaldehyde can be readily reduced by catalytic hydrogenation to ethyl alcohol:



The classical catalyst is octacarbonyldicobalt, $\text{Co}_2(\text{CO})_8$, formed by reaction of metallic cobalt with carbon monoxide.

1.5. Carbohydrate Fermentation for Bioethanol Production:

All five main biomass sugars will be used in fermentation utilizing genetically modified yeast or bacteria: glucose, xylose, mannose, galactose, as well as arabinose. Direct fermenting of sugars or other carbohydrates that could be converted to sugar, including such starch and cellulose, may be used to make bioethanol. The earliest synthetic chemical process utilized by man, yeast ferment of carbohydrates, is still crucial for the production of ethyl alcohol. The sugars originate from a number of sources, mainly molasses from sugar cane or starch from different grains; ethyl alcohol is known as a "grain alcohol" because of this. Simple sugars from sugar cane, sugarcane, molasses, including fruit; starch from grains, potatoes, and root crops; as well as cellulose from wood, agricultural residue, waste papers, municipal solid wastes, or crop leftovers are the three types of agricultural raw materials. Although certain sugars may be converted directly to bioethanol, starch and cellulose must first be hydrolyzed to sugar before being converted to bioethanol. The majority of polymeric raw materials are less expensive than refined sugars [8].

The fermentation technique typically involves three steps: (a) forming a solution of fermentable sugars, (b) fermenting these sugars to bioethanol, and (c) separating and purifying the ethanol, usually via distillation. Fermentation is a process in which bacteria utilize fermentable carbohydrates as food and create ethyl alcohol as well as other byproducts. The 6-carbon carbohydrates, of which glucose is one of the most prevalent, are usually used by these bacteria. As a result, cellulosic biomass materials that contain a lot of glucose or glucose precursors are the simplest to convert to ethanol. Ethanologens are microorganisms that convert a small percentage of the carbohydrates in biomass to ethanol. Although fungi, bacteria, and yeast microorganisms may be used to ferment glucose to bioethanol, a particular yeast (*Saccharomyces cerevisiae*, commonly known as Bakers' yeast) is usually employed [9].

1.6. Hydrolysis of Cellulosic Biomass Materials to Produce Bioethanol:

Pretreatment techniques relate to the solubilization and separation of one or more of the four primary components of biomass (hemicellulose, cellulose, lignin, and extractives) so that the remaining solid biomass may be treated chemically or biologically. The hydrogen bonds in the hemicellulose and cellulose fractions are broken down into their sugar components, pentoses and hexoses, during hydrolysis (saccharification). After that, the sugars may be fermented to produce bioethanol. There are two kinds of methods for hydrolyzing cellulosic biomass for fermentation into bioethanol after the pretreatment procedure. Chemical hydrolysis (both dilute and concentrated acid hydrolysis) and enzymatic hydrolysis are the two most frequently used techniques. There are also several additional hydrolysis techniques that do not need the use of

chemicals or enzymes. Lignocellulose may be hydrolyzed by gamma-ray, electron-beam, or microwave irradiation, for example. Those procedures, however, are irrelevant in terms of business. Pretreatment is required for both enzymatic or chemical hydrolyses to improve the sensitivity of cellulosic materials. The pretreatment and hydrolysis may both be done in one phase using chemical hydrolysis. There are two main kinds of acid hydrolysis procedures that are frequently used. dilute acid and concentrated acid, each of which have their own set of advantages and disadvantages [10].

2. DISCUSSION

The use of enzyme or acid-catalyzed hydrolysis to produce compounds like ethanol, reducing sugars, and furfural from biomass leftovers accessible from agricultural and forest processes is a possibility. Domestic cellulosic biomass resources such as herbaceous and woody plants, agricultural and forestry leftovers, and a significant part of municipal solid waste and industrial waste streams may all be used to make bioethanol. Researchers are looking at specialized energy crops, timber, and grass species that have been chosen for high yields to guarantee that a low-cost energy feedstock is available. A pretreatment procedure is used to decrease the sample size, break down the hemicellulose to sugars, and open up the structure of the cellulose component in order to generate bioethanol from cellulosic biomass.

3. CONCLUSION

Enzymes hydrolyze the cellulose component into glucose sugar, which is fermented to produce bioethanol. The hemicellulose sugars are also fermented to produce bioethanol. The drive to decrease greenhouse gas emissions across the globe will lead to a surge in interest in renewable energy sources. Among the possibilities for utilization as a renewable resource are cellulosic biomass materials. Ethanol offers excellent qualities for use as a fuel, either alone or in combination with gasoline. Bioethanol is a liquid fuel made in the United States from cellulosic biomass resources. It's a high-octane gasoline that can make a significant contribution to the automobile fuel supply. Ethanol has the potential to be a clean-burning fuel that lowers pollution and carbon monoxide emissions. For a variety of reasons, the usage of gasohol (a combination of ethanol and gasoline) as an alternative motor fuel has been gradually growing throughout the globe. Domestic ethanol production and usage as a fuel may help to minimize reliance on foreign oil, reduce trade imbalances, generate employment in rural regions, reduce air pollution, and reduce global warming carbon dioxide accumulation. Ethanol, unlike gasoline, is a 35 percent oxygenated fuel, which lowers particle and NOx emissions during burning.

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AN EXAMINATION ON HIV AIDS: A SUBSTANTIAL THREAT TO MANKIND

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ABSTRACT

HIV/AIDS has long been one of the world's most widespread illnesses. HIV infection and AIDS are caused by the human immunodeficiency virus (HIV), which is a lent virus. AIDS is a human disease in which the immune system gradually fails, allowing life-threatening infections and malignancies to flourish. HIV infection is spread via the transmission of blood, sperm, vaginal fluid, and breast milk. HIV is found in various body fluids as free virus particles as well as virus inside infected immune cells. HIV infects important immune cells such as helper CD4 T cells and macrophages. Through a variety of processes, including pyro ptosis of contaminated T cells, HIV infection causes low numbers of T cells. The manifestations of AIDS are mainly caused by diseases that do not occur in people who have a sound immune system. The majority of these infection caused by bacteria, viruses, fungi, and parasites that are usually regulated by immune system components that HIV destroys. When a couple with one infected partner uses condoms on a regular basis, the risk of HIV infection is less than 1% per year. Female condoms may offer an equal degree of protection, according to some research.

KEYWORDS: AIDS, HIV, HIV Infection, Highly Active Antiretroviral Therapy (HAART), Antiretroviral Therapy (ART).

1. INTRODUCTION

AIDS (acquired immunodeficiency syndrome) is a disease acquired immune deficiency syndrome virus (HIV). Infection with HIV is a contemporary danger that may easily be described as a curse on humanity. Following an upsurge in the frequency of extremely uncommon opportunistic infections and malignancies among apparently healthy gay men, the research community first observed and acknowledged the existence of AIDS as a disease. Soon after the first formal identification of HIV patients in the United States, HIV-1 was recognized as the pathogenic organism. HIV-2 was originally discovered in Africa in 1985, and it differs significantly from HIV-1. It looks a lot like a simian virus that infects captive macaques. Simian viruses, which normally infect African monkeys, are thought to have transmitted HIV 1 and

HIV-2 to humans through numerous cross-species transmissions. Despite improvements in antiretroviral therapy, the worldwide incidence of HIV has increased since its discovery and has already spread throughout the globe (ART). Because of food poverty and malnutrition, the mortality and morbidity rates associated with HIV infections keep rising in developing nations. Other factors contributing to the widespread spread of HIV in the general population include long-term concurrent sexual partnerships and high pathogenicity during the early stages of HIV infections. [1], [2]

1.1 The Disease:

The immune system, particularly CD4 T-lymphocytes, is the primary target of the assault (CD4 cells). Once infected, the virus gradually and quietly overpowers the host's defensive systems, causing opportunistic infections and malignancies that would otherwise be uncommon. CD4 cells that have been activated and differentiated play a critical role in the activation of both the cell-mediated and humoral immune systems. CD4 cells in the peripheral blood are depleted as a consequence of HIV infection. The depletion persists in untreated patients for many years until the patient finally succumbing to AIDS.

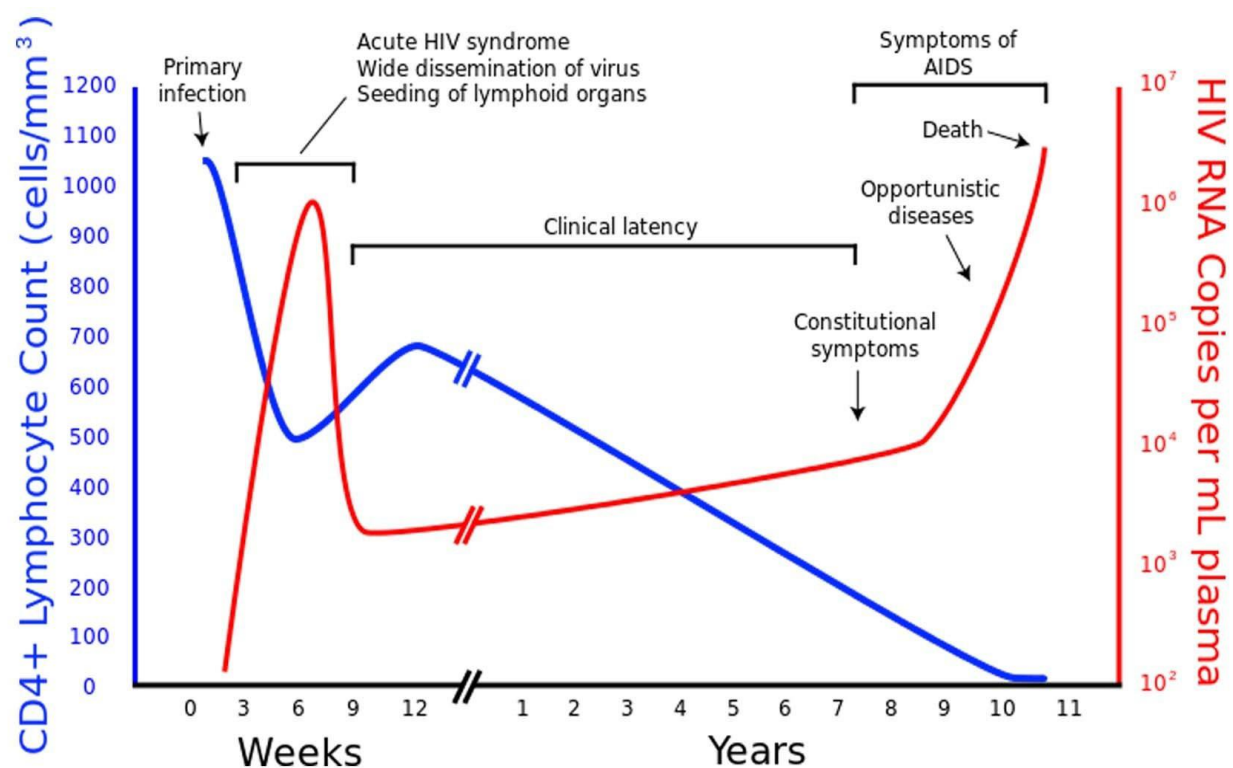


Figure 1: HIV time course.

The following Figure 1 represents the timeline of HIV infection from the initial infection to the expression of AIDS defining symptoms. (Figure 1) It is the last stage of HIV infection, and it may appear at between two and fifteen years after infection. [3], [4]

1.2 HIV subgroups:

1.2.1 HIV-1:

The wide genetic diversity of HIV-1 is well-known. HIV-1 is divided into four distinct lineages: M, N, O, and P. Group M is the most frequently reported HIV virus worldwide. Group N is less common and has only been recorded from Cameroon. Group O is responsible for 1% of all HIV-1 infections and is mostly prevalent in Cameroon and Gabon. Group P is the rarest of all, having been discovered in a pregnant Cameroonian lady in France. It accounts for just 0.06 percent of all HIV infections.

1.2.2 HIV-2:

HIV-2 is most frequently recorded in West Africa, with the greatest rates in Guinea-Bissau and Senegal. There are eight distinct kinds of HIV-2, referred to as HIV-A through HIV-H. Group A has been detected all across Sub-Saharan Africa. In the Ivory Coast, Group B is more frequently recorded. C to H transmissions are classified as "dead-end" transmissions because they generate no following infections due to the irregular nature of the illness and frequency. [5], [6]

1.3 Current HIV infection status and death rate:

1.3.1 Western, Central, and North American regions:

In this area, about 2.4 million people are HIV-positive. In 2014, an estimate 85,000 new HIV transmissions were recorded, with the United States accounting for more than half of all infections. During the same time period, about 26,000 AIDS-related fatalities were recorded.

1.3.2 Asia and the Pacific:

In Asia and the Pacific, about five million people had already been infected, with up to 340,000 new HIV diagnoses occurring that year. With approximately 240,000 fatalities, China, Indonesia, and India account for about 78 percent of the overall new global burden of disease in Asia and the Pacific. Patients taking antiretroviral therapy (ART) account for around 36% of HIV patients, with 3.2 million HIV patients without access to ART.

1.3.3 Pakistan:

The first incidence of HIV infection in Pakistan was recorded in 1987. The prevalence of HIV has been rising since it was first recorded, according to the Pakistan National AIDS Control Program's yearly report. According to UNAIDS, the joint United Nations program on HIV/AIDS, there are about 94,000 people living with HIV infection. Adults have a prevalence rate of between 0.1 percent and 0.2 percent. Roughly 26,000 women, ages 15 and up, and about 2,100 children, ages 14 and up, are presently living with HIV. In the year 2014, there were 2,800 AIDS-related fatalities in this area [7]–[9].

2. DISCUSSION

2.1 Treatments options for HIV:

HIV infection has a complicated etiology that differs greatly across individuals. As a result, it's easy to classify it as a highly host-specific infection. Various combinations of available medicines may be used to effectively control HIV infection. Antiretroviral therapy is the name given to this kind of treatment (ART). HAART (highly active antiretroviral treatment) is a combination of at least three medications used in standard antiretroviral therapy. Effective antiretroviral therapy (ART) may help limit HIV multiplication and raise CD4 cell counts in

infected individuals, extending the asymptomatic period of infection, delaying disease development, and lowering the risk of dissemination [10].

2.2 Invasion of human cells:

HIV is the only virus capable of replicating itself inside human cells. This process starts when the virus infects a cell that has the cd4 protein on its surface. The HIV virus binds to the cd4 receptor, allowing it to merge with it. HIV primarily affects immunological cells, such as T-helper cells, which make up the body's immune system. As HIV infects more cells, the immune system weakens.

2.3 Reverse transcription:

Reverse transcription is aided by the enzyme reverse transcriptase. Reverse transcriptase is responsible for converting viral RNA into DNA. After that, DNA is carried to the nucleus of the cell, where it is inserted by the enzyme integrase.

2.4 Transcription and translation are two of the most important aspects of any project:

The transcribing process is now underway. The HIV virus transforms itself into messenger RNA.

2.5 Constructing, budding, and maturing:

Copies of HIV combine with freshly synthesized HIV protein and enzymes to create new viral particles that bud out from the original CD4 cell. Protease is an enzyme that breaks down large chains of HIV protein into smaller chunks. The newly discovered virus has the capacity to infect and target additional CD4 cells [11]. While there is a growing corpus of research on HIV and how it affects individuals with disabilities, there are still many gaps in our understanding. According to studies, the level of HIV awareness among individuals with disabilities is usually poor. We do, however, need to learn more about how this information is used in practice. Although several studies have looked at the incidence of unsafe sex and other risk factors, there are major gaps in understanding the various HIV risk factors across different handicap groups. We need to learn more about HIV risk in people with all kinds of disabilities, as well as the problems and obstacles that come with them.

The bulk of current research has focused on individuals who have mental health issues, learning/intellectual disabilities, or who are deaf or hard of hearing. The wide spectrum of HIV risk among individuals with physical disabilities, such as those who are blind or have visual problems, albinism, or who are physically handicapped, is much less well understood. More data is required not just on the incidence of unsafe sex, but also on how disability interacts with the many variables that promote sexual risk, such as poverty, drug addiction, and gender inequality. We also need to learn more about how disability, gender, stigma, social isolation, and risk behaviors interact. While there is research on similar topics including susceptibility to violence and sexual abuse (e.g., Groce, 2005b; Grossman & Lundy, 2008; Sullivan & Knutson, 2000), these studies do not explicitly connect these problems to HIV risk. Furthermore, there are vast areas of the globe, such as South America, Asia, and Europe, where there is little or no data on these problems.

On the prevalence and habits, good statistical data is required. Antenatal clinic monitoring or population-based surveys are often used in national HIV and AIDS prevalence research (usually household surveys). However, the same barriers that prevent persons with disabilities from

receiving HIV and AIDS care also prevent them from being included in prevalence studies. According to studies, females with impairments encounter many physical and psychological obstacles to obtaining fertility and prenatal care.

3. CONCLUSION

Historically, HIV prevention efforts have mainly focused on creating risk reduction strategies for those who are at high risk of contracting the virus. Only 18 (32.7 percent) of 55 state and municipal submissions to the CDC for funding for HIV prevention programs identified HIV-infected people as a target group for HIV prevention initiatives, according to a 1999 study. Despite the fact that millions of individuals in the United States are at "behavioral risk" for HIV infection, the virus can only be transmitted between infected persons. As the number of people living with HIV continues to rise as a result of antiretroviral therapy (ART), so does the need for lifetime preventive measures tailored to them.

The nature and course of HIV/AIDS have changed significantly as a result of recent breakthroughs in HIV therapy. If infected individuals get appropriate ART, it may be safely classified as a "chronic" illness. Unfortunately, current HIV burden data reveal a different story: one of a constant incidence of HIV-related fatalities. When antiretroviral therapy (ART) is administered correctly, more individuals died due to complications and the progression of HIV to AIDS than should be the case. The most significant challenge a physician confronts with ART is the occurrence of negative side effects, which cause patients to stop taking the medication. Poverty, a lack of knowledge, and the social stigma associated with the illness all add to the complexity of an already difficult situation. Appropriate adjustments in treatment regimens and medicines may assist patients in overcoming the disease's negative symptoms and possible consequences. Additionally, adequate counseling for medication adherence and mental health support should be provided to patients and their close family members.

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ISSUES OF DEVELOPMENT OF THE ANALYSIS OF BUSINESS ACTIVITY IN JOINT-STOCK COMPANIES OF UZBEKISTAN

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ABSTRACT

This article describes the concepts of business activity, operational cycle, financial cycle as one of the most comprehensive methods of assessing the effectiveness of companies used in international practice. The content of the analysis of business activity and the ratios determined during the analysis are indicated. The data of the analysis of the business activity in the presented information system are up-to-date, and the article develops ratios in the analysis of business activity, which is determined based on the speed and period of turnover of working capital. The content of these ratios is described, a calculation mechanism is developed based on the existing annual financial reporting forms, and the procedure for calculating the operating and financial cycle based on business activity ratios is indicated. During the analysis, the factors influencing the coefficients representing business activity were classified.

KEYWORDS: *Business Activity, Turnover Rate, Turnover Period, Ratios Of Business Activity, Working Capital Turnover, Operating Cycle, Financial Cycle.*

INTRODUCTION

Today, in the economic practices of all countries of the world, the expansion of international relations, the processes of economic globalization, the development of transnational corporations and a number of other important reasons have begun to require speaking a single financial language and developing common financial rules. And these requirements ultimately served to shape and develop international financial reporting standards. International Financial Reporting Standards (hereinafter IFRS) is a system of international requirements for accounting and preparation of financial statements. The introduction of new indicators in the analysis of financial statements based on international standards, and the need to develop a mechanism for recalculating existing indicators with the elements of financial statements presented on the basis of IFRS. One of such indicators identified during the analysis is the indicators of business activity.

So, what are business activity indicators and how are they calculated? The concept of business activity first appeared in the practice of Russian (former USSR) companies in 1990-1992. It was during these years that positive shifts in the foreign economic activity of economic entities

began. Entering the international market required a quantitative and qualitative study of the effectiveness of companies, as well as an assessment of their position in the international market. Accordingly, the assessment of business activity in the early nineties of the last century was applied only to companies whose products have the access to the international markets, and its need stems from the presence of interests, desires and requirements of foreign buyers in the activities of companies. Due to the nature of that period, business activity was interpreted differently by the authors as a new economic term. In particular, according to the author Y. Brigham [1], an enterprise's business activity index is assessed by quality factors in asset management. The author focuses on comparing the determinants with the industry average. J. K. Van Horn [2] sees business activity as a methodology for evaluating entrepreneurial activity in decision-making in external financing. In his work, V.V. Kovalev [3] argues that the indicators of business activity of a commercial enterprise are reflected in the dynamics of its development. The authors A.D. Sheremet [4] and G.V. Savitskaya [5], in their works, defines business activity through liability and asset turnover. According to L.V. Dontsova [6], the business activity of a company is the efficiency of production and commercial activities of the enterprise and the speed of turnover.

Method

The analysis of financial statements is a very large set of works, and the application of the coefficient method in the analysis process can increase the quality of analytical work, the level of understanding and, most importantly, save time. In general, although there are many types of coefficients in the economic literature, most of them give the same result in terms of content, and the fact that these coefficients are not studied on the basis of a certain structure can create some confusion for users. In this context, we recommend that analytical entities classify and interpret the coefficients that need to be identified and studied based on the purpose, objectives, and results of the analysis, and the goals of the users.

In accordance with the Resolution of the President of the Republic of Uzbekistan dated February 24, 2020 No PP-4611 "On additional measures for the transition to international financial reporting standards" From the end of 2021, it is planned to prepare financial statements on the basis of international financial reporting standards (hereinafter - IFRS). As a participant in the process of global economic integration, the transition of the country's accounting and economic analysis system to IFRS was not only economically necessary, but also the creation of its legal framework to accelerate the process of preparation and submission of IFRS financial statements by our national companies. allows.

In national and international practice, coefficient analysis is recognized as an important factor in drawing quick conclusions and making optimal decisions as an effective method in the analysis of financial statements prepared on the basis of IFRS. There are 4 main types of financial ratios studied in our foreign and national literature:

1. Financial stability ratios;
2. Solvency ratios;
3. Profitability ratios;
4. Ratios of business activity

Results

From the ideas in the introductory part of our article, it is clear that the representatives of the analytical school have different interpretations of business activity. In our opinion, based on the definitions given by the authors that A.D. Sheremet, G.V. Savitskaya and L.V. Dontsova, it is expedient to give the following definition of business activity. **The business activity** is the determination of the efficiency of business entities by assessing the state of turnover of working capital, based on the speed and period of turnover. It is well known that the application of the coefficient method in the process of economic analysis can increase the quality of analytical work, the level of understanding and, most importantly, save time. Accordingly, in assessing business activity, we recommend the organization of analytical work on the basis of the following coefficients based on the turnover rate and period of working capital (Figure 1).

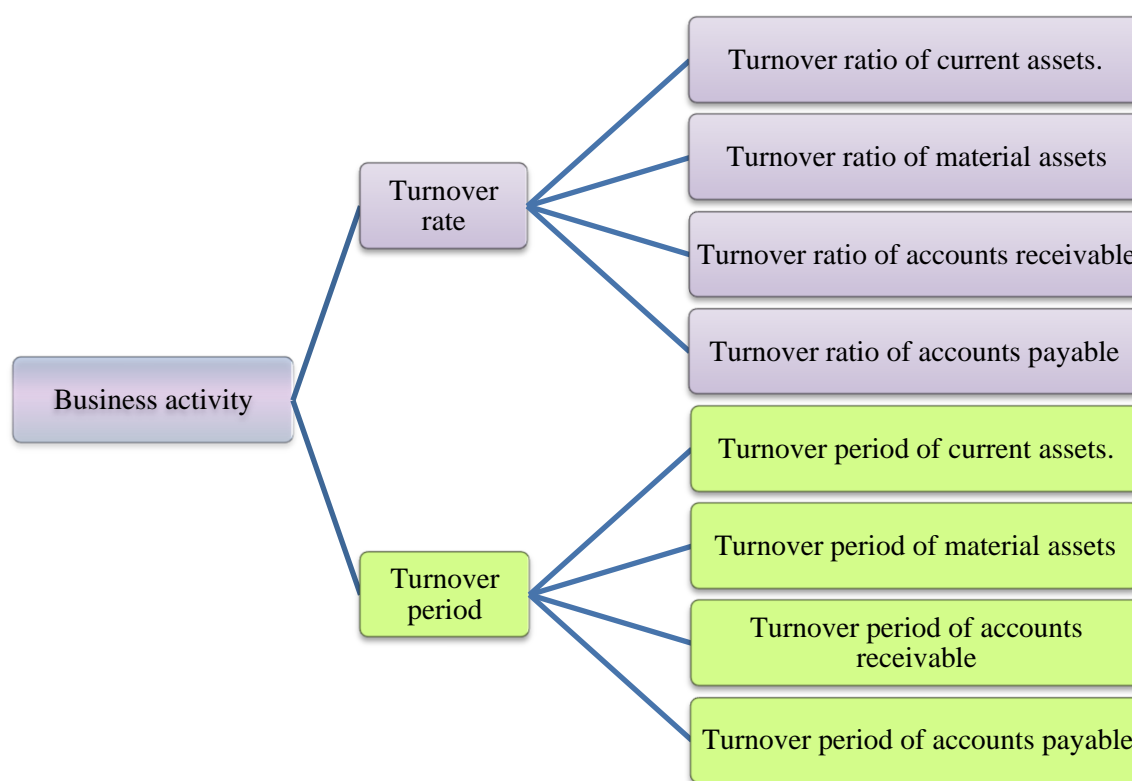


Figure 1. Proposed ratios of business activity

One of the most comprehensive ways to assess the effectiveness of companies operating in our country is the analysis of business activity indicators, including quantitative and qualitative indicators of the company's operational efficiency. In a free market relationship and high level of competition, the importance of assessing an organization's business performance is particularly important in studying its financial condition, forming a strategic plan and development prospects. The relevance and necessity of the analysis of business activity can also be determined based on the information needs of stakeholders directly (Table 1).

TABLE 1: STAKEHOLDERS IN THE ANALYSIS OF BUSINESS ACTIVITY AND THEIR NEED FOR INFORMATION

№	Stakeholders	Needs for Information
1	Investors	Risks, associated with this investment, the amount and period of profit
2	Shareholders	Information that allows a company to assess its ability to pay dividends and determine whether to buy, hold, or sell stock.
3	Customer and purchasers	Information about the business entity's continuing operations, especially if they have a long-term agreement or affiliation with the business entity
4	Banks and credit institutions	Information that allows you to determine the repayment of loans, liabilities and interest on time or with a delay in time
5	Administrative staff and workers	Information on the assessment of the ability of business entities to secure their wages, remuneration and guaranteed employment opportunities in relation to the stability and profitability of their operations
6	State management and control bodies	Information on the distribution of resources and the activities of subjects. Information as a basis for the regulation of the activities of the economic entity, the definition of taxation policy, the identification of national income and other statistical data
7	Foreign investors, international organizations and international rating agencies	The versatility of the activities of economic entities is taken into account. As the financial statements do not provide users with all the information they need to make economic decisions, the administration prepares supplementary financial statements, financial results and financial position information.

An increase in the rate of turnover of working capital and a decrease in the period of turnover in business entities is a positive situation. These two indicators are logically related to the fact that an increase in rotational speed shortens the rotation period or, conversely, a decrease in rotational speed increases the rotation period.

While net income from sales, inventory value, accounts receivable and accounts payable are the factors that directly affect the business activity ratio, we can classify external and internal factors as indirect factors (Figure 2).

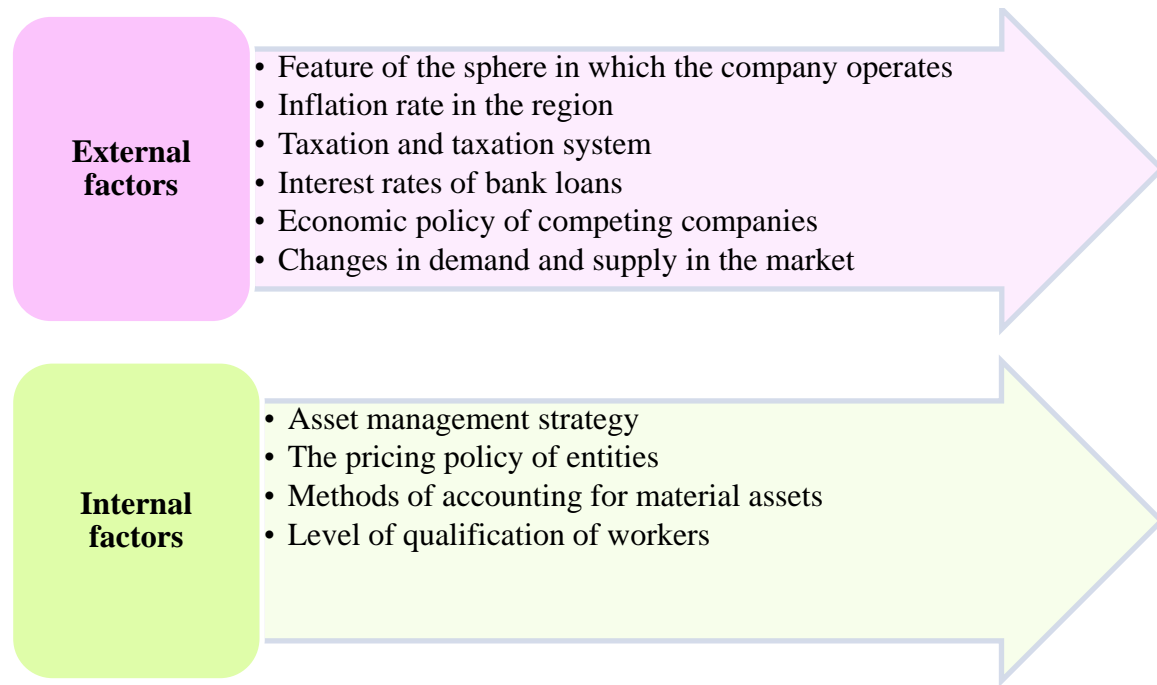


Figure 2. Factors affecting the indicators of business activity.

The need to study the indicators of business activity can be explained by the fact that it is possible to identify the following analytical indicators in addition to the indicators of business activity:

- operating cycle
- Financial cycle.

The operating cycle is the period from the receipt of materials in the production of a product to the conversion of materials into a finished product and the receipt of receivables arising from the sale of the finished product. The operating cycle is calculated as follows:

$$OC_{(\text{on account of the day})} = D_{(MA)} + D_{(\text{accounts receivable})}$$

Here are:

OC – operating cycle;

$D_{(MA)}$ – turnover period of material assets;

$D_{(\text{accounts receivable})}$ – turnover period of accounts receivable.

Financial cycle – the period of full circulation of funds belonging to the enterprise aimed at financing commodity and material reserves.

The financial cycle is calculated as follows:

$$FC_{(\text{on account of the day})} = D_{(MA)} + D_{(\text{accounts receivable})} - D_{(\text{accounts payable})}$$

Here are:

FC – financial cycle;

$D_{(\text{accounts payable})}$ – turnover period of accounts payable.

DISCUSSION

As the analysis of business activity is a relatively new concept in the practice of our country, there is no single methodology for organizing, conducting this analysis and determining the coefficients studied during the analysis. Although in the introductory part of our article the coefficients determined by the mentioned authors on business activity are given, these coefficients cannot be accepted directly due to the national characteristics of the accounting system. In addition, the authors have different views on the definition of business activity and the organization of business activity analysis, which requires an approach based on the characteristics of the national accounting system in the analysis of business activity and determining the coefficients of business activity.

Accordingly, the coefficients of business activity, developed and proposed in the results section of our article, are given in Annexes 1 and 2 to the Order of the Minister of Finance of the Republic of Uzbekistan dated December 27, 2002 No. 140, registered by the Ministry of Justice of the Republic of Uzbekistan on January 24, 2003 No. 1209. We recommend that you define the current financial reporting forms in the following order in accordance with the Balance Sheet (Form 1) and the Statement of Financial Performance (Form 2).

TABLE 2: RATIOS OF BUSINESS ACTIVITY AND THE ORDER OF THEIR CALCULATION

Turnover rate			
№	Ratios	Calculation procedure	On current financial reporting forms
1	Turnover ratio of current assets.	$\frac{\text{Net sales revenue}}{\text{Current assets}}$	$\frac{\text{Form 2. 010-line}}{\text{Form 1. 390-line}}$
2	Turnover ratio of material assets.	$\frac{\text{Net sales revenue}}{\text{Material assets}}$	$\frac{\text{Form 2. 010-line}}{\text{Form 1. 140-line}}$
3	Turnover ratio of accounts receivable	$\frac{\text{Net sales revenue}}{\text{Accounts receivable}}$	$\frac{\text{Form 2. 010-line}}{\text{Form 1. 210-line}}$
4	Turnover ratio of accounts payable.	$\frac{\text{Net sales revenue}}{\text{Accounts payable}}$	$\frac{\text{Form 2. 010-line}}{\text{Form 1. 601-line}}$
Turnover period			
№	Ratios	Calculation procedure	On current financial reporting forms
1	Turnover period of current assets	$\frac{\text{Current assets} * 365}{\text{Net sales revenue}}$	$\frac{\text{Form 1. 390-line} * 365}{\text{Form 2. 010-line}}$
2	Turnover period of material assets	$\frac{\text{Material assets} * 365}{\text{Net sales revenue}}$	$\frac{\text{Form 1. 140-line} * 365}{\text{Form 2. 010-line}}$
3	Turnover period	$\text{Accounts receivable} * 365$	$\text{Form 1. 210-line} *$

	of accounts receivable	<i>Net sales revenue</i>	$\frac{365}{\text{Form 2. 010-line}}$
4	Turnover period of accounts payable	$\frac{\text{Accounts payable} * 365}{\text{Net sales revenue}}$	$\frac{\text{Form 1. 601-line} * 365}{\text{Form 2. 010-line}}$

Appendix 7 to the Order of the Minister of Finance of the Republic of Uzbekistan dated December 27, 2002 No. 140 “On approval of financial reporting forms and rules for their completion” should provide additional information. Accordingly, in order to assess the status of working capital, the level of utilization of own funds and business activity on the basis of the coefficients developed in the article, I recommend to include the following analytical table as an explanation in the financial statements (Table 3).

TABLE 3: THE RESULTS OF THE ASSESSMENT OF BUSINESS ACTIVITY

№	Indicators	Unit of measurement	Beginning of period	End of period	Difference
1	2	3	4	5	6=5-4
1.	Turnover ratio of current assets.	unit of ratio			
2.	Turnover ratio of material assets.	unit of ratio			
3.	Turnover ratio of accounts receivable	unit of ratio			
4.	Turnover ratio of accounts payable.	unit of ratio			
5.	Turnover period of current assets	unit of time			
6.	Turnover period of material assets	unit of time			
7.	Turnover period of accounts receivable	unit of time			
8.	Turnover period of accounts payable	unit of time			
9.	Operating cycle	unit of time			
10.	Financial cycle	unit of time			

The table provides explanations based on the condition and dynamic changes of these ratios. The conclusions are summarized based on the optimal intervals of these ratios or on the average indicators

CONCLUSION

1. In this article, based on the results and experiences of leading foreign think tanks, we have defined the concept of business activity in international practice and in assessing the effectiveness of new companies in our national economy.

2. Entrepreneurial activity is important in accelerating the process of providing transparent and understandable information to foreign investors by our companies engaged in foreign economic activity and potential business entities, and the analysis of business activity based on the needs of stakeholders is revealed.
3. The article develops the content of the analysis of business activity and the coefficients classified according to the rate and period of turnover of working capital during the analysis. The content of these coefficients is described and the order of calculation based on the annual financial reporting forms in force in the Republic is indicated.
4. The procedure for determining the indicators of the operational and financial cycle, based on the recommended indicators of business activity. The content of the operational and financial cycle indicators is highlighted.
5. On the basis of the coefficients developed in the article, an analytical table was developed to assess the status of working capital, the level of utilization of own funds of the enterprise and business activity. It was suggested that this table be included in the annual financial statements as an explanation of the financial statements.
6. The article classifies the internal and external factors influencing the coefficients which are representing business activity based on the characteristics of our national economy.

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ON OBTAINING COMPOSITE FABRICS AND PRODUCTS

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ABSTRACT

There are described the possibilities of creating unconventional materials, targeted functional paintings, and value-added products through the use of basalt raw materials in this article. The chemical composition of basalt is mainly: SiO₂ - 45-60%, Al₂O₃ - 12-19%, Fe₂O₃ and FeO - 5-15%, Na₂O - 6-12% MgO - 3-7%, TiO₂ - 0.9-2%, Na₂O and K₂O - 2.5-6% and other compounds - 2-3.5%. The strength of basalt fiber, in accordance with the existing dimensions of the diameter of elementary fibers: 5.0 microns - 215 kg / mm²; 6.0 microns - 210 kg / mm²; 8.0 microns - 208 kg / mm²; 9.0 microns - 214 kg / mm²; 11.0 microns - 205 kg / mm². Basalt fabrics and products have high strength, non-flammable and flammable, maintain their integrity up to +980 ° C, are resistant to electromagnetic radiation, moisture, corrosion, resistant to chemical influences (acidic, alkaline media and salts) and have electrical insulating properties. The article is devoted to the prospects for creating functionally oriented products, innovative composite materials aimed at localizing and creating additional value and research on the use of basalt.

KEYWORDS: *Basalt, Basalt Fiber, Roving, Cord, Twisted Reinforced Roving, Woven, Bedding, Knitwear, Sleeve, Composite.*

INTRODUCTION

Decree of the President of the Republic of Uzbekistan of 2019 Resolutions PQ-4277 of April 10 “on additional measures for the organization of the development of fiberglass, fiberglass products, composite materials, energy-saving heating equipment and modern energy-saving systems”[1], PQ-4198 of February 20, 2019 “On measures for the radical improvement and integrated development of the Building Materials industry”[2] are aimed at further development of the production of building materials, increasing the range of modern building materials based on local raw materials and secondary resources. special attention is expected to be paid to.

As a logical continuation of the large-scale reforms being carried out in the country, the distinguished President, at a meeting held on January 31, 2020, devoted to the development of science and education, as well as during visits to research institutions in the field of geology, put issues on the development of science on the agenda areas of mathematics, chemistry, biology, and geology, to bring the cooperation of the Ministry of Science with production and the national economy, educational institutions to a new level of quality.

LITERATURE REVIEW

In the world, basalt was first used as a filler for concrete foundations, in the formation of railway tracks, and then continuous basalt fibers were obtained, from which specific threads, woven fabrics, semi-finished products and composites reinforced with them quickly penetrated. aircraft construction, shipbuilding and other industries.

At the beginning of the XXI century, with the advent of several new enterprises in Russia, Austria, China, Ukraine, the production and use of basalt fiber has further improved [3].

It has been established that, according to the resistance of crystalline structures to intense mechanical stress, basaltic silicates are arranged in the following order: hydro silicates -> framework aluminosilicates (plagioclases) - "chain silicates (pyroxenes) -" orthosilicates (forsterite). The low mechanical resistance of hydro silicate is explained by the presence of large interplanar distances along which the destruction of the structure begins. The greater stability of pyroxenes than plagioclases indicates that the chain framework is more mechanically resistant than silicon-aluminum [4].

Today, basalt fiber is of great interest in the market of composites, experts consider it one of the most promising materials with a unique combination of properties. Basalt fiber has excellent mechanical properties and is intermediate between fiberglass and carbon fiber in terms of low cost. Serious studies of the industrial production of continuous basalt fiber began simultaneously in the 1960s in the United States and the USSR. Initially, the main goal of the work was to obtain high-quality basalt fiber, necessary for rocket science. However, in the 70s, experts abandoned this idea and focused on its use in the production of special high-modulus glasses, as a result of which S2 glass was created [3].

Scientific research on the production of basalt fiber, which began in the 60s, was carried out in the territory of the former Soviet Union until the end of the 90s, mainly in Ukraine. The first military enterprises were opened in Georgia and Kazakhstan. In 1991, central funding for these purposes was discontinued. Compared with existing knowledge, technology, and investment, it was impossible to obtain basalt fiber, which at the same time was cheap and had high mechanical properties. It is also known that the cost of electricity and labor has a large share in the cost of producing basalt fiber, which, in addition to technological problems, makes it inefficient for producing this fiber in regions with expensive natural gas, electricity, and labor.

In 2000, a large enterprise was established specializing in the production of continuous basalt fiber-based on new technologies, and all of its products were sent to the TOYOTA engineering company. Later, with the involvement of experts from the former Soviet Union, these processes were widely developed in China [5].

Currently, there are a number of technical conditions for obtaining basalt fiber, usually the technological parameters and properties of the fiber correspond to the technical requirements of the final product: fibrous heat-insulating fabric, sandwich panels, multi-turn reinforced threads, special reinforcing. castings or nets (construction, automobile, etc.), fittings, heat-insulating cord (obtained by the method of "cord-braided" machine roving from very thin fibers wound with twisted basalt threads) [6]. Attention is paid to the linear density of basalt fibers (microns) and roving (tex), their treatment with special surfactants (lubricant), and in the production of twisted yarn, the twist coefficient, direction (S and Z) and the number of complex threads in it.

D.D. Dzhigiris, M.F. Makhova conducted research on the production of basalt fibers, as well as on their practical application [7-9].

V.P. Shevchenko studied the fundamental laws of the formation of insoluble eutectics in silicate systems of concentration intervals based on basalt, limestone, phosphorus components and studied the technology for obtaining fiber from them[10].

According to F.M. Rozanov and L.A. Chernikina [11], complex indicators of the structure of the fabric take into account the ratio of filling the base and back, this factor takes into account the type of weaving, changes in cross-sectional shape and the size of the threads in the fabric. With their help, the filling ratio is defined as the ratio of the actual filling of the tissue to the maximum level.

A.A. Kurbanov studied the structural parameters of basalt rocks and recommended the production of filter materials from their fibers [12].

According to the analysis of the scientific literature, one-sided (unidirectional), two-sided (biaxial), three-way (triaxial) or multilayer fabric obtained from reinforced basalt fibers is also deposited. The above-mentioned textures, used for special purposes, were the result of the interaction of specialists from several industries, which allowed us to obtain relatively inexpensive innovative products, such as various non-traditional (sports goods, some parts of cars and motorcycles, boat and boat hulls, parts with a complex profile, various construction panels, heat, sound insulation and refractory materials, building structures, wind wings). At the same time, in most cases, there are no cases in the literature when basalt fiber can be observed even in production processes that violate environmental requirements, and the enterprise can become a source of environmental pollution [7, 10]. Therefore, along with the expansion of the range of basalt fiber and products made from it, the improvement of production technology is also an urgent issue today.

Various surfactants are used today depending on the intended use of the basalt fiber. Surfactants used in textiles protect yarns from abrasion and abrasion during processing into textiles (fabrics, geonets, sewing materials). The function of direct surfactants is to improve the adhesion of fiberglass surfaces to polymers in composites and fiberglass. The fibers can be processed directly during the production of surfactants or during processing after thermochemical treatment.

Surfactants must meet the following general requirements: ensures the adhesion of the individual fibers coming out of the fillet, i.e. the formation of a primary single thread, while at the same time preventing the threads from sticking to each other; facilitate the process of unraveling and twisting of the primary individual threads; protection of primary single threads from friction and mechanical damage when passing through numerous thread-cutting organs of textile machines; prevention of static charging; forms a strong, elastic and abrasion-resistant film evenly distributed over the diameter and length of the yarn.

"Paraffin emulsion", which is a multicomponent water-based dispersion containing paraffin, stearin, vaseline, transformer oils, OC-20 preparation, DTSU fasteners and water, is one of the most common surfactants in the textile industry.

Surfactants are used in the manufacture of complex filaments of various compositions intended for the production of various reinforcing materials from basalt fibers. The main dangerous and

harmful factors in the preparation of surfactants are physical (electric shock) and chemical (poisoning through the skin) if the concentration norm is not observed.

A number of scientific studies by K.L. Kuzmina, D.E. Zimin, S.I. Gutnikova, B.I. Lazoryaka, A.N. Selezneva is devoted to surfactants used in the manufacture of products from basalt fiber.

Theoretical research

«Uzmetkimbinat» JSC in Bekobot, Tashkent region (7-8 thousand tons), «Mega Invest Industrial» LLC in the Forish district of Jizzakh region (1-1.5 thousand tons) and « Elektroizolit» LLC in Tashkent (0.2 - 0.25 thousand tons) associated its activity with basalt.

JV LLC "Mega Invest Industrial" manufactures a range of products from basalt fiber: rebar, mesh, geogrid, geotextile, roving, fiber..

“Geobasalt” LLC was established in December 2020. The company produces corrosion-resistant, durable geonets made of basalt fibers (600, 1200, 2400 tex). The new geosynthesis, in contrast to the metal mesh, does not require corrosion resistance and dryness, lies flat on the surface, is safe to use, can be easily cut with construction scissors, does not lose the strength of alkaline concrete, conducts little heat, and provides high adhesion when using special alloys. allows [13].

The development of production in the country, an increase in the standard of living of the population contributes to the rapid development of inter-sectoral relations. The main factor that determines the specificity of any fabric or functional product is the type of raw material. For example, in world practice, the use of high modulus yarns has led to the expansion of the range of technical textiles [14].

The aforementioned enterprises of the country produce building materials from basalt stone, such as basalt fiber, fiberglass, high heat-retaining slabs, composite reinforcement, composite mesh. However, today's need is to strengthen theoretical and practical research on the use of this type of raw material in the production of textile and composite materials.

It is aimed at creating a classification related to the production and use of continuous basalt fibers, as well as the development of basalt fibers in this area and the creation of not only textiles, but also new types of shaped products, and the improvement of existing technologies.

RESULTS AND DISCUSSION

If we look at world experience [5], firstly, the chemical composition of basalt is mainly: SiO₂ - 45-60%, Al₂O₃ - 12-19%, Fe₂O₃ and FeO - 5-15%, Na₂O - 6-12% MgO - 3-7%, TiO₂ - 0.9-2%, Na₂O and K₂O - 2.5-6% and other compounds -2-3.5%. This is a natural raw material, more ready for fiber than glass.

Secondly, the strength of basalt fiber is several times higher than that of other similar fibers, that is, in accordance with the existing dimensions of the diameter of elementary fibers: 5.0 microns - 215 kg / mm²; 6.0 microns - 210 kg / mm²; 8.0 microns - 208 kg / mm²; 9.0 microns - 214 kg / mm²; 11.0 microns - 205 kg / mm².

Thirdly, basalt fabrics and products have high strength, non-flammable and flammable, maintain their integrity up to +980 ° C, are resistant to electromagnetic radiation, moisture, corrosion, resistant to chemical influences (acidic, alkaline media and salts) and have electrical insulating

properties. Compared to fabrics and products made of glass yarn, their tensile strength is more than 25%, the operating temperature range is from -260°C to $+820^{\circ}\text{C}$ (maximum $+980^{\circ}\text{C}$).

BalFat series basalt fiber fabrics are made from basalt fiber, which is interwoven in a special way on a loom. According to the weaving method, they can be classified as simple fabrics, diagonal weave fabrics, satin weave fabrics and unidirectional fabrics. Basalt fiber fabrics are widely used in the manufacture of laminated plastic with copper foil, fire-resistant materials, to strengthen building structures and bridge structures, the production of sports equipment, as the basis of composite materials, etc. [4]. The following table shows the general characteristics of basalt fabrics (Table 1).

Characteristics of basalt fabrics

Code	Type of weaving	Density, g/m^2	Thread diameter, μm	Width, mm	Thickness, mm
BWP200	Plain	200	9	1000	0.18
BWP200	Plain	200	13	1000	0.19
BWP700	Plain	700	13	1000	0.53
BWP900	Plain	900	13	1000	0.82
BWT350	Twill	350	13	1000	0.25
BWT750	Twill	750	13	1000	0.75
BWU200	Unidirectional	200	9	1000	0.11
BWU300	Unidirectional	300	13	1000	0.16
BWU400	Unidirectional	400	13	1000	0.18

As mentioned above, the type of raw material, its properties determine the specific properties of both the final fabric and the product. But every aspect related to the structure of non-woven material, fabric, or knitwear upon receipt of a specifically targeted fabric or finished product requires a scientific approach by a specialist in this field.

TITLI Leading scientists of the Department "Technology of Textile Fabrics", Jizpi, the Institute of TKT, specialists of the joint venture "Mega Invest industrial" LLC jointly found it expedient to send to the relevant sectors of the national economy developments related to further improving the quality of basalt fiber using continuous basalt fibers, obtaining **functional target fabrics and products, as well as the production of new composite materials**. At the same time, it was decided to conduct the following theoretical and practical studies:

The improvement of basalt fiber production technology is associated with the multiplication of basalt fiber types (microns) and linear density roving (tex); production of reinforced basalt filaments in accordance with the requirements of the textile industry; preparation and processing of basalt filaments with surfactants of the appropriate linear density in accordance with the requirements of use; weaving, knitting, production of nonwovens; investigation of the possibilities of obtaining a thermal insulation cord ("braid cord" in a machine) filled with a very thin (ultra-thin) roving fiber; how to get a fabric and piece product using knitting; obtaining composites with specific properties, reinforced with fabric and seamless sleeves.

At the same time, two different approaches to obtaining winding products were considered appropriate: development of basalt threads treated with a special surfactant, with a linear density

corresponding to the class of sock looms, and the formation of the best product from them; in two-needle knitting machines, the basis of the motor product is the formation of basalt (or other synthetic, artificial) yarn, as well as the use of bulk base yarn in the form of a filler.

At the joint venture of “**Mega Invest Industrial**” LLC, the largest sample was taken from basalt yarn treated with a special surfactant with a linear density of 85 tex, which was made in the form of an experimental sample wrapped in a single-needle sock of the “Soosan 604” automatic machine [15,16,17].

CONCLUSION AND RECOMMENDATIONS

The conditions of a cluster development system, which require innovation, industry and intersect oral knowledge, require a comprehensive study of world experience, the production of basalt fibers, the creation of functional fabrics and products, the production of functional composite materials and their targeted use in cooperation with experts in related fields. Effective innovative cooperation, in-depth research, and analysis of scientific databases will accelerate innovation processes and ensure economic growth.

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DETERMINATION OF CHEMICAL COMPOSITION AND ANTIOXIDANT ACTIVITY OF LEMON VARIETIES GROWN IN THE NATURAL CLIMATE OF UZBEKISTAN

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ABSTRACT

Chemical methods were used to determine the amounts of minerals, essential oils and carbohydrates of Meyer, Uzbek fertility, Uzbek Senior and Messen lemons cultivated in the Republic of Uzbekistan. Samples L1, L2, L3 and L4 showed that the preparations have antioxidant properties compared to the standard antioxidant quercetin and the antioxidants glycoside.

KEYWORDS: Meyer, Uzbek fertility, Uzbekistan Senior, Messen, mineral, carbohydrate, glycoside, antioxidant.

INTRODUCTION

Citric acid is one of the main preservatives and antioxidants and plays an important role in the metabolism of living organisms as well as in the food industry. Citric acid has a mildly acidic taste and does not have a strong effect on the mucous membranes of the gastrointestinal tract. [1]. The salts and esters of citric acid are used in the manufacture of products as acidifiers and colour stabilisers. Citric acid in citrus fruit and lemon juice has a concentration of up to 9%, and in some species up to 6-9%. Citric acid is also extracted from sugar-containing raw materials using industrial-scale micro-organisms. Lemon peel is now used to make a number of food additives. [2]. One of these is citric acid E-330, which is widely used as a natural antioxidant.

The purpose of the study is to determine the chemical composition and antioxidant properties of lemons grown in the country, such as Meyer, Uzbek fertility, Uzbekistan Senior, Messen lemon.

Experiment section. *The following lemon varieties were obtained by extraction from aqueous extracts of Meyer's, Uzbek fertility, Uzbekistan senior and Messen lemon. Minerals were determined by quantitative analysis [3].*

Determination of antioxidant activity of lemon using the method of autooxidation of adrenalin in vitro. Execution: 2.0 ml of 0.2 M sodium carbonate (Na₂CO₃-NaHCO₃) buffer with pH = 10.65, 56 µl of 0.18% solution of adrenalin (epinephrine) hydrochloride were obtained. 30 µl of antioxidant preparation (lemon) was added and tested on a spectrophotometer (Cary 60 UV-Vis Agilent Technologies) at a wavelength of 347 nm at intervals of 30 seconds to 10 minutes. The

amount tested (concentration of 1 mg of solution in 1 ml) was used as standard. 2.0 ml of buffer with 0.2 M and 0.18% 56 µl (5.46 mM) of adrenalin were used as control. [4].

RESEARCH DISCUSSION

In our research, the amount of minerals in the natural climate of Uzbekistan Meyer, Uzbek fertility, Uzbekistan senior, Messen lemon was determined using analytical methods [5]. The results obtained are presented in Table 1 below.

TABLE 1 THE AMOUNT OF MINERALS IN LEMON VARIETIES GROWN IN UZBEKISTAN, (RELATIVELY 100 MG)

Lemon type	Potassium	Calcium	Magnesium	Phosphorus	Sodium
Meyer	163	40	12	22	11
Uzbek fertility	158	38	11.4	21	10
Uzbekistan senior	147	41	12.8	22	9.8
Messen lemon	160	39.2	13.2	23	9.6

From the data presented in Table 1, it was found that the study of Meyer, Uzbek fertility, Uzbekistan senior, Messen lemon varieties growing in our natural climate is rich in minerals containing sodium, potassium, magnesium, phosphorus and calcium [6].

Comparative analysis of essential oils of Meyer, Uzbek fertility, Uzbekistan senior, Messen lemon varieties. In our research, a comparative analysis of essential oils from the peel of Meyer, Uzbek fertility, Uzbekistan senior, Messen lemon varieties was made. As a result, they were found to contain the common limonene and b-pinene. The results obtained are presented in Table 2 below.

TABLE 2 THE AMOUNT OF SOME ESSENTIAL OILS IN THE PEEL OF LEMON VARIETIES GROWN IN UZBEKISTAN, (RELATIVELY 100 GR)

Lemon type	Limonen, %	b-pinene, %
Meyer	72,5-76,4	11,3-18,7
Uzbek fertility	72,3-76,4	11,7-18,6
Uzbekistan senior	72,7-76,9%	11,3-18,1
Messen lemon	72,3-76,5%	11,7-18,5

The results shown in Table 2 show that in the Meyer lemon peel, the content of limonene was 72.5-76.4%, while that of b-pinene was 11.3-18.7%. In the Uzbek fertility bark, limonene accounted for 72.3-76.4%, while b-pinene accounted for 11.7-18.6%. In the first lemon peel of Uzbekistan, the content of lemons was 72.7-76.9%, and b-pinene was 11.3-18.1%. Messen lemon contained 72.3-76.9% of lemon in lemon peel, while b-pinene accounted for 11.7-18.5% [7].

During our research, it was found that a number of carbohydrates, triterpene, a-pinene and mirsen are present in the peel of Meyer, Uzbek fertility, Uzbekistan senior, Messen lemon varieties. The results are presented in Table 3.

TABLE 3 THE AMOUNT OF CERTAIN CARBOHYDRATES IN THE PEEL OF LEMON VARIETIES GROWN IN UZBEKISTAN, (RELATIVELY 100 MG)

Lemon type	a-pinen	mirsen	triterpene
Meyer	1.4-1.6	0,93-1,12	2.72-8.27
Uzbek ferileness	1.5-1.4	0,97-1,15	2.88-8.26
Uzbekistan senior	1.6-1.7	0,98-1,14	2.79-8.33
Messen lemon	1.5-1.6	0,94-1,13	2.68-8.42

From the data presented in Table 3, it can be seen that in the Meyer lemon peel, the content of α -pinene was 1.4–1.6%, while that of Mirsen was 0.93–1.12 and that of triterpene was 2.72–8.27. In Uzbek fertility bark, a-pinene was 1.5-1.4%, mirsen was 0.97-1.15 and triterpene was 2.88-8.26. In the first lemon peel of Uzbekistan, the content of a-pinene was 1.6-1.7%, mirsen 0.98-1.14 and triterpene 2.79-8.33. In the composition of Messen lemon peel, a-pinene was 1.5-1.6%, mirsen was 0.94-1.13 and triterpene was 2.68-8.42.

In determining the antioxidant activity, we studied the antioxidant activity of extracts from the peel of Meyer, Uzbek fertility, Uzbekistan senior and Messen lemon varieties growing in our natural climate [8].

Antioxidant activity of lemons L1 (Meyer), L2 (Uzbek fertility), L3 (Uzbekistan senior) and L4 (Messen lemon) was determined by phytochemical examination. The antioxidant activity of lemon is determined by the inhibition of the autooxidation reaction of adrenaline in vitro and prevents the formation of the free form of oxygen. The method is based on the inhibition of the autooxidation reaction of adrenalin, expressed in percent (%) due to the formation and autooxidation of adrenaline over time in the in vitro conditions of drugs.

Antioxidant activity was calculated by the following formula for inhibiting the autooxidation of adrenalin.

$$AA\% = \frac{D1 - D2 \times 100}{D1}$$

Here,

Optical density of adrenalin hydrochloride solution added to D1-buffer;

Optical density of the test extract and adrenalin HCl added to D2-buffer.

The preparations tested used water as solvent. 100/250/500/750/1000 μ g/ml were used in in vitro experiments [4]. The results are presented in Table 4.

The antioxidant activity of the preparations was determined by in vitro adrenaline auto-oxidation. Antioxidant activity was assessed by phytochemical studies of the preparations under study.

When the antioxidant activity of the drugs was detected by inhibiting the adrenaline auto-oxidation reaction in vitro, the samples inhibited the formation of the free form of oxygen. L1, L2, L3 and L4 samples were compared with the standard antioxidant glycoside antioxidant. The results showed that preparations derived from lemon have antioxidant properties [9].

CONCLUSION

The results of chemical analysis showed that Meyer, Uzbek fertility, Uzbekistan Senior, Messen lemon varieties were found to be rich in minerals sodium, potassium, magnesium, phosphorus and calcium. In addition, essential oils were found to contain limonene and *b*-pinene, as well as triterpene and *a*-pinene from hydrocarbons. Samples L1, L2, L3 and L4 showed that the preparations have antioxidant properties compared to the standard antioxidant quercetin and the antioxidants glycoside.

TABLE 4 RESULTS OF ANTIOXIDANT PROPERTIES OF LEMON SAMPLES

№	Matter	Control	Experience	%
1	L1 (10%) 100 mg/ml	0.2890	0.2541	11.28
2	L1 (25%)250 mg/ml	0.2305	0.2122	13.34
3	L1 (50%)500 mg/ml	0.1054	0.1640	13.97
4	L1 (75%)750 mg/ml	0.20551	0.1810	15.54
5	L1 (100%)1000 mg/ml	0.27024	0.2319	16.34
1	L2 (10%) 100 mg/ml	0.2046361	0.1822	14.56
2	L2 (25%)250 mg/ml	0.23685	0.1940	17.19
3	L2 (50%)500 mg/ml	0.20312	0.1657	17.32
4	L2 (75%)750 mg/ml	0.24545	0.1704	17.65
5	L2 (100%)1000 mg/ml	0.23652	0.2245	18.68
1	L3 (10%) 100 mg/ml	0.2345	0.2564	11.43
2	L3 (25%)250 mg/ml	0.2409	0.2122	13.34
3	L3 (50%)500 mg/ml	0.1234	0.1867	13.65
4	L3 (75%)750 mg/ml	0.2051	0.1254	15.39
5	L3 (100%)1000 mg/ml	0.2865	0.2683	16.94
1	L4 (10%) 100 mg/ml	0.2041	0.1462	14.67
2	L4 (25%)250 mg/ml	0.2356	0.1304	17.35
3	L4 (50%)500 mg/ml	0.1902	0.2957	17.65
4	L4 (75%)750 mg/ml	0.2645	0.2594	17.23
5	L4 (100%)1000 mg/ml	0.7834	0.7642	18.78
	Glycoside			10,0%

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A REVIEW ON PLANT HORMONES PRODUCING MICROORGANISMS

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ABSTRACT

Plant hormones, also known as phytohormones, are divided into five categories: auxins, abscisic acid, cytokines, gibberellins, or ethylene. Many more phytohormones have now been discovered. The capacity to generate phytohormones is found in a wide range of microbial species, with the greatest information gathered on the synthesis and function of auxin. The function of various phytohormones in the interaction with the plant is addressed in this chapter, as well as microbial biosynthesis, control, and regulation of microbial production. Microbial phytohormone synthesis is a powerful method for changing plant physiology, resulting in a variety of effects ranging from disease to plant growth stimulation. However, there is currently a paucity of genetic evidence for the involvement of several phytohormones in microbe-plants interactions, casting doubt on the relevance of microbial synthesis. Plant studies in an agronomic context, along with targeted methods focused on genetic evidence for the function of phytohormones, will enable uncovering the significance and potential of this interesting microbial feature.

KEYWORDS: *Auxins, Cytokinins, Ethylene, Microbe, Plant Hormones.*

1. INTRODUCTION

Hormones are chemical substances generated in tiny quantities in a specific tissue that govern and regulate different processes in the receptive tissue such as growth, metabolism, or reproduction. Plants generate a variety of hormones, also known as phytohormones, but their structures are relatively basic compared to animal hormones, as well as the components are not synthesized and stored in specialized glands. Auxins, abscisic cytokinins, gibberellins, acid, or ethylene are the five classic phytohormone classes. Phytohormones such as strigolactones,

salicylic acids, brassinosteroids, jasmonate, polyamines, as well as nitric oxide have just lately been identified [1].

The physiological activities of these hormones have been researched extensively in recent decades, but the molecular processes by which they exert their effects have only lately been discovered. The dose-response curve for auxins illustrates how changes in hormone concentrations may dramatically affect growth and development of plants both in a positive and negative manner. Furthermore, since most phytohormones do not operate alone on a specific growth or developmental component, hormonal balances across various classes may be critical. The conjugation of the active hormone to other molecules like as sugars and amino acids, which (reversibly) inactivates the hormone, is another neglected component of phytohormonal activity [2].

1.1. Microbes and Phytohormones:

Many soil as well as plant-associated bacteria and fungi have also been shown to produce phytohormones in the supernatant of their culture media. Phytohormones do not cause normal hormonal or significant physiological changes in these species. Changes in root architecture and plant growth promotion have been related to microbial phytohormone production. However, depending on the phytohormone and the investigated microbial strain, the degree of evidence for their participation may vary greatly. The presence of a phytohormone in a microbial culture's supernatant is insufficient to establish a functional role for this molecule in its interaction with the plant. The association of plant growth responses with hormone levels measured in the culture media or on/in colonized plant tissues may be used as further proof. The final evidence is inoculation with a bacterial mutant strain that is deficient in phytohormonal production, demonstrating the phytohormone's participation directly. Many microorganisms produce phytohormones, which may be detected in their culture media. However, several of the reported instances lack the required follow-up studies to prove their involvement in plant growth enhancement [3], [4].

1.1.1. Auxins:

In the subapical area of the stem, this group of phytohormones may cause cell elongation. Auxins are involved in virtually every aspect of plant growth and development, including shoots and roots elongation, cell division stimulation, lateral and adventitious root initiation, apical dominance, vascular tissue differentiation, gravitropism, and phototropism, to name a few (Davies 2010). Indole-3-acetic acid is the most common auxin found in nature (IAA). Other active auxins include indole-3-butyric acid and phenylacetic acid, but their biosynthesis routes and functions have not been well investigated.

1.1.2. Microbes' IAA Biosynthetic Pathways:

Until far, only six biosynthetic routes in microorganisms have been identified, with the majority of them predicated on the presence of metabolic intermediates in the culture. Because there is no genetic evidence for many pathways, the existence and significance of these pathways must be discovered. The aromatic amino acid tryptophan is used as a precursor in most routes. Despite the many routes, there seem to be two main microbial pathways based on both abundance and genetic evidence: one through intermediate indole-3-acetamide (IAM) and the other via intermediate indole-3-pyruvate (IIP) (IPyA). Tryptophan is transformed to IAM by a tryptophan

monooxygenase, which is subsequently catalyzed to IAA by an IAM hydrolase in the IAM route. The Many phytopathogenic bacteria, as well as certain rhizobia, have been studied extensively. Other microbial routes for IAA production have been suggested in addition to the two mentioned above, although genetic evidence for the majority of these processes is missing. Tryptophan is decarboxylated by a tryptophan decarboxylase before being converted to IAAldehyde by an amine oxidase in the tryptamine route. A route through indole-3-acetonitrile has been proposed, based on the conversion of indole-3-acetonitrile to IAA directly or via IAM by nitrilases or nitrile hydratase in plants. It's worth noting that several IAA biosynthesis routes may exist in a single organism, as shown by *Pantoea agglomerans*, whose genome encodes both the IAM and the IPyA pathways. Microbes have storage products and conjugates similar to plants, but their function is unknown [5].

Biosynthesis of IAA is regulated. IAA biosynthesis in bacteria is carefully controlled because it is expensive to manufacture, owing to the high expense of synthesizing tryptophan. Pathogenic *Agrobacterium* strains are the only exception. Strong (plant-specific) constitutive promoters regulate the IAA biosynthesis genes. The tryptophan pool of the plant is utilized to generate large quantities of IAA, inducing gall development in conjunction with a high level of cytokinins, since this DNA region is transmitted to the plant following infection (Jameson 2000). Expression is mainly related to other virulence factors such as the type III secretion system in other phytopathogens (those that do not transfer DNA to plants) (TTSS). Auxin biosynthesis is decreased in a TTSS mutant in *Ralstonia solanacearum*, whereas the expression of TTSS genes is reduced in an IAA mutant in *Erwinia chrysanthemum*. mutation in biosynthesis Microbial IAA's Impact on Plants and Microbes [6].

Auxin synthesis (usually in conjunction with abnormal cytokinin production) by phytopathogens has a significant impact on plants (gall and tumor formation). The connection between bacterial IAA and plant disease is explicitly shown when auxin production is inactivated, resulting in decreased or no gall development. Both the IAM and IPyA pathways are found in the gall-inducing bacteria *P. agglomerans* pv. *Gypsophilae*, enabling researchers to investigate their roles. The IAM route is inactivated, resulting in a substantial reduction in gall size without compromising colonization capacity, while the IPyA pathway is inactivated, resulting in no significant reduction in gall size but a loss in epiphytic fitness as assessed by colonization capacity [7].

Auxins impact not just plants, but also microorganisms, causing physiological changes as well as altered gene expression. IAA has been found to shut off gene production in *Agrobacterium tumefaciens*, which may be a signal for the bacterium to complete a successful plant transformation. In yeast, IAA causes adhesion and filamentation via the surface protein FLO11, which is mediated by YAP-1. It was proposed that IAA may arise at wounding areas on plants and function as an appealing signal for yeast. IAA protects cells in *Escherichia coli* from harmful stress conditions. Genes encoding cell envelope components and stress-resistance proteins are also elevated in response to IAA therapy. IAA seems to function as a signal molecule in beneficial bacteria, causing gene expression to change in response to the presence of the plant environment. IAA-regulated genes are involved in flavonoid signal processing, root attachment, and motility switching in *Rhizobium* [8].

Degradation of Auxin The enzyme responsible for IAA degradation are encoded by the *iac* locus in *P. putida*. IAA is degraded to catechol, which may then be degraded to -ketoadipate in a three-

step process. In addition, a MarR-type *iac* gene expression repressor was discovered, which is likely released in the presence of IAA. Despite this genetic understanding of IAA degradation, the ecological role of auxin degradation in plants interactions is unclear, however it has been speculated that this activity may disrupt plant auxin homeostasis for the bacterium's advantage. Auxin breakdown by bacteria, on the other hand, may offer a nutritional advantage [9].

1.2. Ethylene, Cytokinins, Gibberellins, Absciscic Acid are Plant Hormones:

Cytokinin Biosynthesis and Function The majority of naturally occurring cytokinins (CK) are generated from adenine and are changed at the N6 position, including the ribosides, ribosides, and glycosides. In both plant roots and shoots, CKs stimulate cell proliferation and differentiation in meristematic tissues. They also play a role in senescence deferral, organ creation, root and root hair growth, and leaf expansion (Davies 2010). The transfer of an isoprenoid moiety (usually dimethylallyl pyrophosphate) to adenosine phosphate, mediated by adenosine phosphate-isopentenyl transferase, results in isopentenyl adenosine-5'-phosphate in plants.

Gibberellin Biosynthesis and Function Gibberellins (GAs) are a family of over 100 chemicals that are categorized as tetracyclic diterpenoid acids and have the backbone ent-gibberellane. During nearly all phases of plant development, GAs are engaged in developmental activities such as cell division and elongation (from seed germination to fruit growth). In addition, the function of Gas is influenced by the balance of other phytohormones. GA synthesis has been found in both fungus and bacteria, and biochemical routes have been suggested and/or unraveled. GA biosynthesis (beginning from the precursor GA12-aldehyde) has developed separately from plant routes in the fungal rice disease *Gibberella fujikuroi*, which is exploited to commercially generate GA3. It varies particularly at the stage when the 3- and 13-hydroxylation occurs. The biosynthetic genes in *G. fujikuroi* are grouped together in the genome. In bacteria, there is just a small amount of genetic evidence for GA production. In certain *Rhizobium* and *Bradyrhizobium* strains, operons comprising genes encoding for potential GA biosynthetic enzymes were discovered.

1.3. Absciscic Acid is a kind of astringent.

Abscisic acid (ABA) slows seed germination and promotes stomatal closure and fruit ripening. It also plays a role in bud dormancy as well as defensive responses to abiotic stressors including drought, salt stress, and metal toxicity. The "indirect pathway" is the method for ABA production in plants. In brief, the carotenoid lycopene is converted to violaxanthin, which is then split into xanthoxin by a dioxygenase. In two enzymatic processes, the latter chemical is transformed to ABA. Although the biosynthesis routes for *A. brasilense* and *B. japonicum* strains have been described, the biosynthetic pathways remain unclear. Bacterial ABA production may interfere with cytokinin levels in plants because ABA inhibits cytokinin biosynthesis. Furthermore, under stress circumstances, bacterial ABA synthesis may help plants maintain their internal ABA pool, reducing the detrimental consequences of the imposed stress.

1.4. Microbes Change Ethylene Levels:

Physiological and developmental processes like as seed germination, cell growth, senescence, and abscission are all affected by the gaseous phytohormone ethylene. It's also known as the

ripening hormone since it causes fruit to mature. Ethylene also has a role in pathogen defense responses in plants. By working synergistically with jasmonate on one branch of the route leading to resistance to necrotrophic infections, it may influence the outcome of jasmonate-dependent defensive responses. Ethylene, on the other hand, inhibits the MYC branch of the jasmonate pathway, making you more vulnerable to insect assaults. In abiotic stress situations, ethylene plays a function. Elevated ethylene levels under stressful situations may have inhibitory effects.

1.5. Impact on the development of plants:

The synthesis of ethylene by bacterial infections such as *Pseudomonas*, *Xanthomonas*, and *Erwinia* has been documented. By causing hormonal imbalances in the plant, ethylene production contributes to bacterial pathogenicity. The metabolic routes proposed by bacteria differ from those proposed by plants. Methionine is the precursor in the first bacterial process, whereas 2-oxoglutarate is the precursor in the second. The potential ethylene biosynthesis routes and the function of ethylene production in illness are still poorly understood. Because ethylene accumulates in plants under stress (such as drought and wounding), lowering ethylene levels may help to relieve stress-induced growth retardation. Some helpful bacteria use one of these strategies.

Methionine is used to make ethylene in plants. S adenosylmethionine (SAM) is transformed to 1-aminocyclopropane-1-carboxylate (ACC) and 5'-deoxy-5'-methylthioadenosine by the activity of a SAM synthase and also an ACC synthase. Finally, ACC oxidase breaks down ACC into ethylene, carbon dioxide, and cyanide. Bacteria that reduce ethylene levels produce the enzyme ACC deaminase (AcdS), which converts the direct ethylene precursor ACC to -ketobutyrate and ammonia, reducing plant ethylene production.

2. DISCUSSION

Drought, high temperature, salt, or heavy metal are among abiotic stressors that plants face. Abiotic stressors cause abnormalities in the genetic control of cellular processes, which have a detrimental effect on plant physiology as well as morphology. Plants use a variety of tolerance mechanisms or pathways to counteract the impacts of stressors that arise when their metabolism is disrupted. Phytohormones are one of the most essential growth regulators; they have a significant effect on plant metabolism and are also crucial in the activation of plant defense response systems in response to stress. Supplementation with exogenous phytohormones has been used to enhance growth and metabolism in stressed animals. Phytohormones generated by root-associated microorganisms have recently been shown to be significant metabolic engineering targets for developing host tolerance to abiotic stressors. Phytohormone biosynthesis routes have been discovered using a variety of genetic and biochemical techniques, and there are many reviews on the subject. We discuss current information on the role of phytohormones in improving abiotic stress tolerance and defense response in plants subjected to various stressors in this paper. We concentrate on recent breakthroughs in determining the functions of microbial phytohormones in stress tolerance, particularly in agricultural plants.

3. CONCLUSION

The synthesis of phytohormones by bacteria is a powerful method for microorganisms to influence plant physiology. The production and function of phytohormones in plant interaction

are extensively researched and supported by genetic data, as described above. However, in so many cases, this is not the case, raising doubts about the phytohormone's role in microbe-plant interactions. More research is needed to determine if microbial production is a genuine effector in the relationship or just a by-product of microbial metabolism with no significant function. Plant trials in an agronomic context are also required. The imported organisms will have to compete with the indigenous microflora in these circumstances, which may explain the poor repeatability and high variability.

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AN ANALYSIS REGARDING SEVERAL ASPECTS OF WEEDS

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ABSTRACT

Weed issues are expected to grow and become more complicated in contemporary agriculture, as greater focus is placed on high input systems. With increased knowledge of the negative effects of herbicide residues on human health and the evolution of herbicide-resistant weed biotypes, weed research has turned its emphasis to the development of eco-friendly technologies that rely less on herbicides. Furthermore, with the widespread use of herbicide-resistant crops and the uncertainty of climatic optima as a result of climate change, weed science issues have multiplied. To deal with these complex weed issues, a multi-disciplinary strategy is needed, which includes changes to technology, managerial methods, and laws. For creating sustainable weed management methods, more understanding of weed ecology, biology, genetics, and molecular biology is required. Furthermore, judicious use of sophisticated technology, such as site-specific weed management systems and decision support models, will play a key role in lowering weed control costs. In addition, better connections between farmers and weed researchers will be required to promote the adoption of technology advances. To address these difficulties, research objectives must be established, and the weed science education system must be reoriented. Closer cooperation between weed scientists and other disciplines, in particular, may aid in identifying and addressing the complex weed management problems of the twenty-first century. This agreement will allow for more flexible and diversified approaches to creative teaching and training methods, which will be required to educate future weed science graduates to handle the expected weed science problems in modern agriculture. Additional funding for both weed research and weed management education is required to develop this capability.

KEYWORDS: Agriculture, Crop, Herbicides, Science, Weed.

1. INTRODUCTION

Weeds are a continuous issue in agricultural productivity because of their dynamic and tenacious character. The extent of weed infestation in the field is determined by agronomic practices (such as crop type and cultivar competitiveness, crop rotation, type of tillage, fertilization method and timing, row spacing, seeding densities, and herbicides), soil type and fertility status, and prevailing environmental conditions. Weeds are botanical pests that share the same trophic level as crop plants, resulting in significant agricultural production losses due to weed-crop competition for light, water, and nutrients. In order to decrease weed densities in future years, a

good weed management program usually combines two goals: limit yield loss due to weed competition in the near term, and avoid adding weed seed/vegetative propagules to the soil seed bank. The introduction of a wide range of herbicide compounds for selective weed control has transformed modern agriculture, which has become more productivity-oriented than ever before. The use of herbicides for weed control in agricultural crops has simplified and reduced the cost of production, allowing farmers to expand their operations. However, with the increasing availability of selective herbicides for weed control, ecologically sustainable weed management as a component of agricultural systems seems to be overlooked. Although herbicide-based agricultural methods have helped farmers in many ways, continued usage and excessive dependence on herbicides has resulted in the development of herbicide-resistant weeds, changes in weed flora, and pollution of the environment, mostly via water movement [1].

As a result, there is a growing agreement that designing weed control methods with less dependence on herbicides is critical to overcoming the negative consequences of overuse of herbicides. As a result, weed scientists confront a challenge in developing creative, environmentally sound, cost-effective, and long-term weed control methods that can be incorporated into current and future cropping systems to provide a more varied approach to weed management. Weed control strategies are now considered a continuous activity within agricultural systems due to the genetic variety and developmental flexibility of weed populations. Herbicide-resistant biotypes, invasive plant species, and climate change have all forced weed scientists to create cutting-edge technology. Weeds' multi-faceted nature will continue to offer multi-dimensional difficulties for researchers, and the hunt for novel answers to these problems may once again transform agriculture [2].

Another complicating issue in this crucial activity is that the objectives and directions of weed research, which were formerly well-defined and generally accepted, seem to have shifted in recent years. Several academics have questioned whether weed science is progressing in the correct way, and if it has been able to have a practical effect on present emerging issues as a consequence. Indeed, several writers have stated that the contribution of weed biology and ecology research to sustainable weed control programs is inadequate, and that more systematic and focused effort is required. Similarly, a subsequent research found that, even in the chemical era, weed biology knowledge seems to be essential and may serve as the foundation for effective weed control. In this respect, a variety of methods that may link weed biology research to practical weed control are required. Cousens stated that, although weed threshold values are an essential part of weed science research, they are seldom used in practice. The author blasted a slew of phenomenological research and an over-reliance on replicating repeated case studies, claiming that they had turned marijuana science into weed technology. The findings echoed Wyse's call for a better understanding of the fundamental concepts underlying marijuana science, as well as a paradigm change in key research topics, shifting from recording "what happens" to "why things happen." Ward et al. highlighted two main elements for development of the weed science field in their criticism of agricultural weed research: scientific investigations must be reoriented toward a knowledge of weed biology, and management initiatives to reduce the harmful effect of herbicides. These writers critiqued current weed research as being repetitious, with an overabundance of merely descriptive studies that fail to connect new hypotheses to known ecological and evolutionary data. The authors argued that agricultural weed research should be revisited in a more holistic way, with a wider perspective, a deeper theoretical rationale, and an inter-disciplinary approach [3].

It has been suggested that the field of crop protection, which includes weed science research, should shift from technology-oriented to system-oriented strategies, which recognize innovation as a perfect blend of technological and non-technological (institutional and social) advancements at multiple levels, ranging from the field to the farm and the region. In this regard, a thorough introspective examination of decided objectives, available resources, orientations, progress assessment, and distribution of findings to the target audience are important concerns for weed science in the near future, so that the field emerges stronger and more focused. We intend to highlight and prioritize current issues in weed science research and education, identify challenges and issues, and critically assess what can be done to push the frontiers of weed science research and embrace horizons of quality oriented weed science education in a positive and constructive manner here. We want to stress that the material in this post is intentionally broad and not customized to a certain climate or nation [4].

1.1 Emerging Issues in Weed Science:

1.1.1 Herbicide Resistance and Weed Plasticity:

Herbicide-resistant weeds have evolved as a result of an over-reliance on herbicides as the primary instrument for weed management, as well as the continued use of herbicides with similar modes of action (MOA). Herbicide-resistant species such as the *Amaranthus* complex in maize and soybeans, as well as grass weeds in cereals and cereal-based rotations, have severely restricted herbicide choices. Another notable example is the development of glyphosate resistance in *Sorghum halepense*, as well as the spread of resistant biotypes through seeds and rhizomes, first in Argentina and later in the United States. In reality, just 17 MOA are covered by 270 herbicides on the worldwide market, with almost half of them acting as acetolactate synthase (ALS), photosystem (PS) II, and Protox inhibitors. Weed management has been hampered by the lack of new/novel herbicide MOA development in the past 20 years, which has resulted in herbicide resistance. Since the mid-1990s, the broad adoption of glyphosate-resistant crops and the extensive use of a single herbicide (glyphosate) for weed management has slowed the search for a new herbicide MOA. From 11 in 1995 to only 1 in 2002, the number of active chemicals utilized in at least 10% of the soybean area in the United States has dropped significantly. Old herbicides are occasionally deregistered for unscientific reasons, reducing the variety of chemicals accessible for weed control and increasing dependence on fewer active components, resulting in greater selection pressure. The most common causes for de-registration include loss of effectiveness owing to increasing resistance by the target weed species, and undesirable environmental impacts due to high persistence, leaching characteristics, or endocrine disruption in animal species. Due to the loss of existing herbicides and the absence of new herbicide molecules, general weed issues in specialty crops/vegetables are on the rise [5].

1.1.2 Gene Flow from Herbicide-Resistant Crops:

Crop-related weed species are already a problem in herbicide-resistant crops in places like the United States, where these crops have been used for a long period. These species, on the other hand, are becoming a problem in nations that are increasingly embracing herbicide-resistant crops, such as Malaysia. Weedy/red rice in direct-seeded rice, *Aegilops cylindrical* and *Elytrigia ripens* in wheat, cruciferous weeds in rapeseed, *Helianthus annuus* in sunflower crop, *Sorghum halepense* and *Sorghum bicolor* (shatter cane) in sorghum are some examples of these species. Weedy rice has now become a significant problem in rice production systems all over the world.

Because of the development of imidazolinone-resistant weedy rice, the introduction of imidazolinone-tolerant rice has resulted in a massive weedy rice infestation. A significant issue is the possibility of gene transfer from herbicide-resistant crops to wild/weedy cousins through pollen. In the United States, for example, weedy rice has developed resistance to herbicides used in herbicide-resistant rice. Herbicide-resistant volunteer crops in rotation with cross-pollinated crops, such as corn with soybeans and oilseed rape/canola with sugar beets, may enhance the likelihood of gene flow even more. The number of scholarly publications condemning the dangers of gene flow from transgenic crops to wild weedy cousins significantly outnumbers those describing "how to cope with this problem."

1.2 Misconceptions about Integrated Weed Management and Neglected Areas of Research in Weed Science:

The idea of IWM has been misunderstood, and the method has not been implemented in its entirety. Rather of depending only on herbicides, the implementation of true IWM programs requires more efficient and varied methods (e.g., sequential application and tank mixtures). Herbicide research is now increasingly focused on weed research, and more funding is being given in this area. Several opponents have claimed that weed science is more of a study of pesticides than of weeds. The scientists looked at weed research papers from 1995 to 2012 and discovered that there were more publications on chemical control than an integrated strategy. The United States had the most weed scientific papers of any country. Switzerland, the Netherlands, New Zealand, Australia, and Canada have generated a disproportionately high number of publications on IWM when compared to their population sizes. Rather of depending on a single weed management technique, IWM emphasizes variety of weed control strategies. In its purest form, IWM entails lowering the selection pressure for the development of resistance to any one weed management technique. Tillage, sowing time, planting pattern, cover crops, row spacing, fertilizer, and water management are examples of cultural manipulations in IWM that may supplement and replace herbicides by providing "many tiny hammers" on weeds. Advanced understanding of weed ecology and biology is required for successful IWM techniques. Weed biology and ecology (knowledge of weed species and their roles in agro-ecosystems) has been neglected for a long time, particularly in developing nations, due to the effectiveness of chemical weed management. Weed seed dormancy is an essential issue for IWM programs, as it has consequences for seed bank dynamics and periodicity. However, owing to the complex nature of functional connections between biological processes and environmental factors, predicting it remains a difficult job. This problem has had an impact on the overall forecast of weed emergence extent and time in agricultural settings. Herbicide resistance has been linked to increased seed dormancy and delayed germination. Glyphosate resistance and temperature-mediated seed dormancy in certain glyphosate-resistant populations were recently found to represent coselection of resistance and avoidance enforced by decades of intense cropping techniques, according to a recent research. In oilseeds and pulses, true IWM alternatives are few. The majority of the study papers recommended IWM with manual weeding for these crops [6].

1.3 Herbicide Related Contamination:

Herbicide residues in crops, soil, and ground water pollution are causing increasing concern. Herbicides are known to interfere with soil enzymatic and microbiological activities, which are necessary for many of the reactions and transformations that regulate soil health. The effect of herbicide treatment on soil function was recently investigated. The authors speculated that

herbicide use may have a substantial impact on soil function, citing changes in earthworm ecology in soils exposed to glyphosate and atrazine, as well as site-specific increases in disease caused by a range of herbicides. At approved or slightly higher application rates, sulfonylurea herbicides may influence N-fixation, mineralization, and nitrification, according to the authors [7].

1.4 Opportunities:

1.4.1 New Avenues of Weed Science Research:

Weed surveying and mapping methods must be updated in order to comprehend changes in the geographic distribution of weed species. For each area, weed prediction maps and decision-making tools should be created. Weed scientists and crop consultants should be taught about drones so that they may utilize this technology to create decision-making tools. Remote sensing technologies allow for the development of fast and accurate scouting and prescription maps, allowing for better weed management choices and environmental protection via the use of more site-specific control methods (hand-weeding, targeted tillage, or spot spray). Advanced optical-sensor-based sprayer technology for site-specific herbicide treatments is still in its infancy. Similar to the present practice of broadcast herbicide treatments, hyperspectral imaging to distinguish between crops and weed biotypes is a relatively new idea. It would be a step ahead in attaining precision weed control objectives by administering herbicides just where they are required. To decrease herbicide load and limit herbicide runoff in furrow-irrigated cropping systems, further study is required on alternative precision herbicide application methods, such as the use of shielded sprayers or herbicide bands. It's also possible to look into the use of nanoherbicides and field robots for precision weed control. For example, an Australian university has created a completely autonomous weed-killing robot that it claims would reduce weed management costs by 90% and save the agricultural industry \$1.3 billion per year. Its capabilities include scouting, weed removal, spot spraying, and the precise delivery of pesticides and fertilizers [8].

1.4.2 Implementation of Need-Based Weed Research:

As part of precision weed management, it is necessary to determine weed threshold values in key crops so that weed control techniques can become sustainable even with lower pesticide loads. Precision weed control technologies may help mitigate herbicide-resistant weeds by enabling site-specific weed management and weed seed prevention from survivors, reaching zero seed thresholds, and therefore helping to optimize the use of herbicides. In order to develop long-term weed management methods, modelling research on crop-weed competition should be investigated [9]. Long-term research in weed science are unavoidable, particularly in weed ecology, weed resistance evolution, and herbicide-resistant crops. As a result, private businesses should contribute to the financing of student and young scientist initiatives. Diverse weed management methods are required for long-term weed control, according to our findings. To reduce the usage of pesticides, IWM, such as cover crops, tillage, row spacing, and crop density, should be investigated for long-term weed control in various crops. At the same time, weed science research must be geared toward farmers' requirements and incorporate their input in order to offer cost-effective weed-control solutions while also safeguarding future generations via a commitment to genuinely and long-term weed-control methods. Farmers' involvement in

weed science research has to be increased on a practical level in order to guarantee the development of practical and sound decision-making tools [10].

2. DISCUSSION

Exotic weed proliferation is now well-known as a consequence of increasing global commerce, possibly generating worrisome new scenarios in the wake of climate change. As a result, sophisticated weed science expertise will be needed to develop new methods for dealing with such complicated developing weed management issues in the twenty-first century. Weed scientists will need to rethink the idea and methods of IWM as a direct result of this situation, since its non-chemical components are presently being given less importance by both public research institutions and the agricultural community, with continuing dependence on synthetic pesticides. We believe that new and varied teaching methods should be created to better educate weed science graduates for the difficulties that the future of agriculture will bring. Weed science research, education, and extension now fall behind the priority requirements of weed management in natural, agricultural, and urban environments, and this condition is anticipated to deteriorate as climate change takes hold. In this respect, more resource mobilization and financing may be helpful. The number of jobs dedicated to weed science research, teaching, and extension should be expanded, particularly in regions where there are severe shortages (such as natural ecosystems and non-cropland weeds, and invasive plant management). Weed science should be pushed to be a significant department of all agricultural institutions, providing new graduate and post-graduate degree programs, in the same manner that other plant protection fields (plant pathology and agricultural entomology).

3. CONCLUSION

Weed science integrates fundamental and applied sciences to better understand and control weeds as an applied and integrative scientific field. Weed control that is done correctly ensures food security by increasing productivity and profitability while also protecting the natural resource base. One method for increasing production and closing yield gaps is to successfully identify and eliminate weed threats. Weed scientists have a difficult task in dealing with a slew of issues that, although important, go unexplored. Plant physiologists, molecular biologists, and invasion ecologists are currently tackling complex vegetation management issues and challenges that require weed scientists to look beyond the herbicide efficacy/fate box and investigate basic and applied research pertaining to complex vegetation management in both natural and managed ecosystems. Site-specific weed management systems, herbicide-resistant transgenic crops, drones to monitor weed population dynamics, omics, novel herbicides, molecular biology tools, Nano herbicides, and simulation and decision support modelling have all been developed in recent decades to overcome various technical challenges. The human component is more difficult to address, and weed scientists must deal with problems such as farmers' inability to recognize the magnitude of the weed threat, particularly when the harm and losses are not immediately evident. The evaluation of the environmental effect of weed control methods has emerged as a new and important field of weed science study. Advancements in engineering and computer sciences, along with precision identification and application modules, may assist rapidly identify and manage weeds in the context of precision agriculture. Weed research will need more worldwide cooperation with biological science, computer science, engineering, economics, and sociology in order to flourish and react to future weed issues. Channelling and leveraging multidisciplinary cooperation and weed scientist training, along with information

sharing, may assist solve complex problems with more varied and flexible methods, as well as reach more agreement eliminating uncertainties and criticisms.

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A REVIEW ON PSYCHO-PHYSIOLOGIC EFFECTS OF HATHA YOGA

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ABSTRACT

Yoga has grown in popularity as a form of exercise and fitness training in Western countries, but it is still seen as fashionable, as shown by a Time magazine cover article on "The Power of Yoga" in April 2001. Yoga seeks to free a human being from the dualism (body-mind) conflicts that exist in all living things, as well as the impact of the gunas, universal energy characteristics that are present in all physical things, via its practices. Yoga needs to be more acknowledged by the medical profession as a complementary treatment to traditional medicine. An increasing number of research studies over the past ten years have demonstrated that Hatha Yoga may increase strength and flexibility, as well as aid regulate physiological factors like blood pressure, respiration, and heart rate, as well as metabolic rate, to improve total exercise capacity. This study summarizes medically supported evidence on the health advantages of yoga for both healthy individuals and those with musculoskeletal and cardiovascular illness.

KEYWORDS: Asthma; Blood Oxygenation; Blood Pressure Regulation; Breathing; Cardiovascular Disease; Cardiovascular Function; Carpal Tunnel Syndrome; Chronic Bronchitis, Hatha Yoga

1. INTRODUCTION

The Sanskrit root yug, which meaning "union," is the source of the term "yoga." Yoga, in a spiritual sense, refers to the mind's connection with the universe's divine intellect. (Universal energy contains three characteristics, known as gunas, that exist in balance: Sattva [purity], Rajas [activity, passion, change], and Tamas [darkness, immobility].) Simply said, a yoga practitioner learns to work as a partner with the forces and processes of life, rather than in conflict and discomfort with their own nature.

Hatha Yoga, for example, is focused on the understanding, development, and balancing of psychophysical forces in the body, and therefore may be referred to as "psychophysical yoga." The body, man's physical portion; the mind, man's subtle part; and the ingredient that connects the body and mind in a unique manner, the breath, are the three primary elements utilized in Hatha Yoga to achieve its goals. Hatha Yoga has distinct methods for each of these aspects. It

includes asanas (“postures”), kriyas (“actions”), mudras (“seals”), bandhas (“locks”), and methods for complete and conscious bodily relaxation for the physical component, or body. Although kriyas, mudras, and bandhas are just a minor component of yoga practice, their ability to enhance awareness and consciousness should not be overlooked.

A kriya is an action or effort that directs energy movement up and down the spine, transforming the meditator's state of being until spiritual realization occurs; a mudra is a gesture or seal, a body movement that holds energy or concentrates awareness; and a bandha is an energy lock that uses muscular constriction to concentrate awareness. Because of their distinct advantages, each of these methods is examined individually. Hatha Yoga focuses on particular areas of the body, subtle forms, or abstract concepts for the mental or subtle component. Finally, Hatha Yoga has created a number of specialized methods known as pranayamas for the connection between the body and the mind that is breathing. (Physiologically, pranayama entails breath control [inhalation, expiration, and suspension] that strengthens respiratory muscles and improves ventilation.) These are methods for bringing the prana (“energy”) contained in the breath to life.

Prana is the term used in yoga to refer to the universe's whole life-energy. As a result, in Hatha Yoga, prana is absorbed by the breath, which is done via breathing. The way we breathe generates energy vibrations that have an impact on our whole existence. In the practical meaning of Hatha Yoga, understanding and regulating breathing will regulate energy flow. The mind will monitor and manage the whole cleansing process via its powers of contemplation, judgment, and willpower [1]. They have a positive impact on the human body's four main systems: movement (through the musculoskeletal system), oxygen supply (via the cardiopulmonary system), and neurological and endocrine control (by the nervous and endocrine control systems). As a result, the psychophysiologic benefits of Hatha Yoga, as explored in this review of the available medical research, are based on a natural combination of body, mind, and breath control.

1.1. Musculoskeletal Status: Hatha Yoga Effects:

Arthritis and other musculoskeletal diseases (such as spondylarthropathies, systemic lupus erythematosus, scleroderma, polymyalgia, fibromyalgia, and low-back pain) are the main cause of disability in those 65 and older, as well as a frequent source of impairment linked to work (Lawrence et al., 1998). Although the majority of illnesses are self-limiting and respond to basic treatments, some individuals have severe and complicated issues for which prompt treatment is critical to a positive result. The type of joint-associated pain, including its severity, distribution, and site of origin, affects the course of therapy and follow-up in most instances. The utility of Hatha Yoga as a therapy for musculoskeletal problems of the hand and wrist was examined in the following controlled trials.

Patients with hand osteoarthritis were randomly allocated to either yoga methods, overseen by the same teacher once a week for eight weeks, or no treatment (control group). Pain and discomfort, strength, mobility, joint circumference, and hand function were all measured throughout the research. In terms of pain during exercise, tenderness, and finger range of motion, the yoga-treated group outperformed the control group considerably. Yoga methods were also preferred by other improvement trends, giving alleviation from hand OA.

The following yoga poses were utilized to relieve symptoms of OA of the hands and carpal-tunnel syndrome: Dandasana, UrdhvaHastasana, Parsvottanasana, Garudasana, Bharadvajasana, Tadasana, half Uttanasana, Virabhadrasana (arms only), PSYCHO-PHYSIOLOGIC EFFECTS

OF YOG Physical therapists have modified them to assist with the problems associated with repeated, repetitive movements. The commenters pointed out some of the flaws in research on carpal-tunnel syndrome in a series of letters to the editor after the publication of the latter piece. They cited, for example, the small number of subjects per group, the dubious use of a splint as an adequate control intervention, the clinical significance of "categorical data" (i.e., plus or minus for symptom presence), and the observation that simple improvements in standing and sitting posture may, by themselves, relieve potential repetitive motion effects. Despite these reservations, the commenters largely praised the intriguing and hopeful nature of the findings, emphasizing the need for bigger, multicenter investigations including more objective nerve conduction testing [2]–[4].

1.2. Cardiopulmonary Status: Hatha Yoga Effects:

Hatha Yoga has been proven in published research to enhance baseline cardiopulmonary state in healthy, normal individuals. The researchers next used standardized spirometric methods to assess lung function and contrasted yoga posture instruction in participants over time in a series of experiments.

Breath control exercises alone were shown to enhance some, but not all, parameters of ventilation in early trials. For example, during yoga breath-control activities, lung function was measured in 75 men and females with an average age of 18.5 years. They reported significant increases in forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1), peak expiratory flow rate (PEFR), and maximum voluntary ventilation (MVV) after 6 weeks of practice, as well as a significant decrease in breathing frequency (fB) and a significant lengthening of breath-holding time.

Other studies have shown that practicing yoga postures alone or in combination with other yoga methods improves lung function. In ten healthy males aged 25 to 37, an energetic Hatha Yoga position (Virasana or Warrior pose) was compared to chair-sitting and a resting, supine posture (Savasana). In comparison to either the chair-sitting or resting postures, the active posture produced a hypermetabolic state, as shown by increased minute ventilation, heart rate (HR), and oxygen consumption (V.O₂) [5]–[7]. The same authors observed the same findings in a comparable research comparing an active sitting posture (Siddhasana) to chair-sitting and supine rest, suggesting that the yoga "activity" rather than the bodily "posture" was essential for cardiovascular "training."

1.3. Effects Of Hatha yoga On Obstructive Airway Disease:

The benefits of enhanced lung function and breathing training by Hatha Yoga on the clinical state of patients with chronic bronchitis and asthma were investigated in the following series of research [8]–[10].

1.3.1. Bronchitis (chronic):

Patients (n 5 15) who received yoga treatment for four weeks, which included breath control and eight different kinds of asanas, showed improvement in shortness of breath and lung function measures. The patients, who were 48 to 75 years old (58.9 6 11.1 years), received a baseline evaluation of their chronic bronchitis history, which included spirometry, drug strategy, and activity tolerance. For one week, they were taught yoga and breathing methods (e.g., Vajrasana, Simhasana, Sarvangasana, Chakrasana, Matsyasana) and were encouraged to practice everyday

with follow-up yoga sessions each week. Throughout the research, all patients continued to take their medications. After the second and fourth weeks of yoga activities, the clinical state and pulmonary function were reevaluated. FEV1 and PEFr had both improved significantly by the second week. There were substantial improvements in VC and PEFr by the fourth week, as well as a patient-reported, perceptual reduction in shortness of breath. The quantity of medicine taken remained same. However, this was just a preliminary research, with only a few individuals assessed over a short period of time. Unfortunately, no additional research on the potential advantages of yoga for chronic obstructive pulmonary disease have been published, and it is difficult to make any conclusions based on just one published study in this patient group.

1.3.2. Asthma:

In controlled clinical trials, the use of an integrated approach to yoga therapy has been proven to be helpful in the therapeutic treatment of asthma. When compared to an age-, gender-, and clinically matched control group, a 65-minute daily yoga practice for 2 weeks reduced PEFr, medication usage, and asthma episode frequency in 53 patients. Asanas (yoga exercises and postures for 25 minutes), breath control (slow, deep breathing for 10 minutes), meditation (slow mental chanting for 15 minutes), and a devotional session were all part of the daily program. Following a comparable training regimen consisting of asanas, breath control, and meditation, 570 individuals with asthma demonstrated overall substantial improvement in PEFr after a long-term, follow-up (3 to 54 months) prospective research. Patients who practiced yoga the most often and intensely saw the most improvement: about 70% of them were able to decrease their asthma medication.

In a randomized, double-blind, placebo-controlled crossover study, the effects of two pranayama yoga breathing exercises on lung function, airway reactivity, respiratory symptoms, and medication usage were evaluated in 18 individuals with moderate asthma. Because conducting a double-blind research on the potential benefits of yoga methods is typically challenging, this study is unusual in the health effects literature. The participants were taught pranayama breathing using a Pink City lung (PCL; Pulmotech, Jaipur, India) exerciser that could be utilized with a matching placebo breathing equipment in this research. Through the use of chosen breathing apertures and a one-way valve, the PCL device enforces slow breathing and a 1:2 inspiration-to-expiration ratio; the placebo device had the same appearance but contained a hidden, unvalved aperture that did not impose breathing limitations.

Following a baseline evaluation phase, the participants practiced calm deep breathing for 15 minutes, twice a day, over two consecutive 2-week periods, randomly rotating the breathing devices. The PCL device improved measured lung function measures (FEV1, FVC, PEFr), symptom ratings, and medication usage, although the improvements were modest and not statistically significant. The dosage of histamine needed to induce a 20% reduction in FEV1, a provocative airway test widely used to evaluate lung responsiveness to nonspecific bronchoconstrictors, increased statistically significantly. The results suggest that pranyama-like breathing may help people with moderate asthma improve their overall health.

The ability to do regular day-to-day activity is essential for asthma sufferers, but the result is subjective and difficult to quantify. Two early studies documented the positive impact of different yoga activities on one's quality of life. The effects of daily yoga activities, mainly breath control and postures, on 41 individuals with proven asthma during a 6- to 8-week period.

Although the authors observed a general improvement in asthma symptoms, objective lung function measures indicated improvement in some, but not all, of the patients, with some even showing a decrease in function. Yoga treatment had a comparable overall impact on exercise capacity in 46 asthmatic individuals. In a 12-minute walking test, a modified Harvard step test, and a more subjective exercise tolerance index, the patients improved. However, it remained unclear if the benefits were partly attributable to a placebo effect. The placebo effect in complicated intervention comparison studies is discussed.

In the more recent research (after 1995), breath-control and relaxation methods have been found to improve some, but not all, measures of lung function (e.g., PEF, MVV, FEV₁, and FVC), reduce medication use, and enhance exercise tolerance in both children and adults with asthma. The effects unique to a particular relaxation method are further complicated by the large heterogeneity in the subject population, dubious compliance in the yoga therapy groups, and possibly negative results in some individuals. More research is required to better understand the mechanisms of response to yoga intervention and to see whether it is therapeutically beneficial for asthma patients.

1.4. Hypertension: effects of hatha yoga:

Because of its great frequency and link to an elevated risk of cardiovascular disease, high blood pressure is another important health issue in the United States and other industrialized nations. Interventions such as lifestyle modification and pharmacologic therapy have been demonstrated in clinical studies to result in significant decreases in blood pressure, similar to those seen in individuals with CAD. Long-term advantages of blood pressure management have also been shown in the general population. For example, in the well-known Framingham Heart Study, higher rates of antihypertensive drug usage were linked to lower rates of hypertension (defined as a blood pressure of 160/100 mm Hg). These results indicate that rising antihypertensive drug usage may account for some of the significant decrease in CVD mortality seen in the United States since the late 1960s. The aim of antihypertensive therapy is to avoid the main cardiovascular consequences of excessive blood pressure (e.g., CAD, stroke, congestive heart failure). Similarly, lifestyle modifications such as appropriate exercise and relaxation, alone or in combination with prescription medications, may be beneficial.

The benefit of whole body relaxation poses, particularly Savasana, was explored in early research on yoga intervention for hypertension. The authors observed BP reductions that were comparable to medication treatment or biofeedback control; however, the trials only used a limited number of participants, and there were no intervention control groups. More recent trials were well-controlled and included a sufficient number of participants.

2. DISCUSSION

Hatha Yoga definitely offers extra advantages for cardiopulmonary endurance in healthy individuals, as well as potential benefits in certain patients with cardiopulmonary illness and patients with cardiovascular disease, via body and breath control, including relaxing methods. Enhanced lung capacity, greater oxygen supply, reduced V. O₂ and respiration rate, and a lower resting heart rate are all clinical indicators of improved exercise capacity. There are many physiological variables at play.

Increased vascularization, increased intramuscular oxygen and glycogen stores, increased oxidative enzymes, or increased numbers of mitochondria may all contribute to increased skeletal muscle oxidative capacity and decreased glycogen utilization as a result of the intense stretching and muscle conditioning associated with achieving and holding yoga postures. Furthermore, in animal models, passive muscle stretching for as little as 30 minutes per day has been linked to enhanced muscle development and contractile strength.

The gradual increase in lung capacity (e.g., FEV1, FVC) associated with well-practiced yoga breathing recruits usually unventilated lung and aids in better matching ventilation to perfusion, resulting in increased oxygen supply to highly metabolic tissues (e.g., muscle). Intermittent deep lung inflations or sighs have been proposed as a technique for lung volume recruitment in the past, particularly in patients with acute respiratory distress syndrome. Variable tidal volume ventilation has also been found to enhance oxygenation in animal models of acute lung damage.

Slow breathing rates associated with yoga breathing have been shown to significantly reduce the chemoreflex response to hypoxia, most likely due to improved oxygen delivery to tissues and possibly as a result of acquired hypoxia tolerance (e.g., increased CO₂) caused by a change in the chemoreflex threshold. Yoga breathing while practicing postures, particularly relaxation poses (such as Savasana), has also been proven to substantially reduce the physiological consequences of stress (i.e., increased HR, fB, and BP). Some of these physiological advantages may be self-controlled (psychologic); nevertheless, there is evidence that yoga breathing practices have an impact on the autonomic nerve system in healthy individuals.

3. CONCLUSION

Yoga is an ancient body, mind, and spirit discipline that has been Westernized and practiced for its health advantages, much as alternative medicinal (herbal) therapies, as a supplement to more traditional medical care. Hatha Yoga utilizes stretching and develops muscle strength and flexibility by holding static physical postures (asanas). As a result, it is likely to be helpful for certain musculoskeletal disorders. In fact, two small trials of yoga in osteoarthritis of the hand and carpal tunnel syndrome found that participants had less discomfort than those in control groups. Hatha Yoga has shown some modest help in various musculoskeletal-related pain treatment, including back pain and the management of multiple sclerosis, when combined with breath control, which adds additional neuromuscular benefits. Yoga poses have been used in most sports programs across Western cultures for many years to both prevent and cure musculoskeletal problems, thus these new results should come as no surprise. Anecdotal studies from non-Western cultures, where local people have adopted yoga posture naturally for sitting and sleeping, find very few musculoskeletal issues (e.g., lower back pain and joint stiffness).

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AMBIENT AIR POLLUTION, LUNG FUNCTION, AND AIRWAY RESPONSIVENESS IN ASTHMATIC CHILDREN

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ABSTRACT

Although pollution has been related to decreased lung function in healthy children, longterm studies evaluating pollution's impact in asthmatic patients are limited. In a longitudinal asthma research, we wanted to look at the impacts of pollution and how controller drugs changed those effects. In a four-year clinical study including 1003 asthmatic children, researchers looked at the relationships between lung function and meth choline responsiveness (PC20) and ozone, carbon monoxide (CO), nitrogen dioxide, and sulphur dioxide concentrations. Cleaner mobility, energy-efficient housing, power generation, industry, and better garbage - control policies and expenditure may all help to reduce significant causes of ambient air pollution. The author had also looked at how budesonide and nedocromil affected pollution impacts. Pollutant concentrations were connected to residents' ZIP/postal codes on a daily basis. Adjusting for seasonality and covariates, linear mixed models were used to investigate correlations between within-subject pollutant concentrations and FEV1 and forced vital capacity (FVC) percent predicted FEV1/FVC ratio, and PC20.

KEYWORDS: Air, Asthma, Carbon, Environment, Pollution.

1. INTRODUCTION

Evidence has collected over the last 30 years demonstrating that ambient air pollution has negative impacts on asthmatic and no asthmatic children's respiratory health. Higher short-term exposures to air pollution have been linked to greater symptoms, increased need for reliever medicine, hospital admissions, lung function declines, and airflow blockage in asthmatic children in observational studies. Figure 1 shows the Air Pollution in India [1].

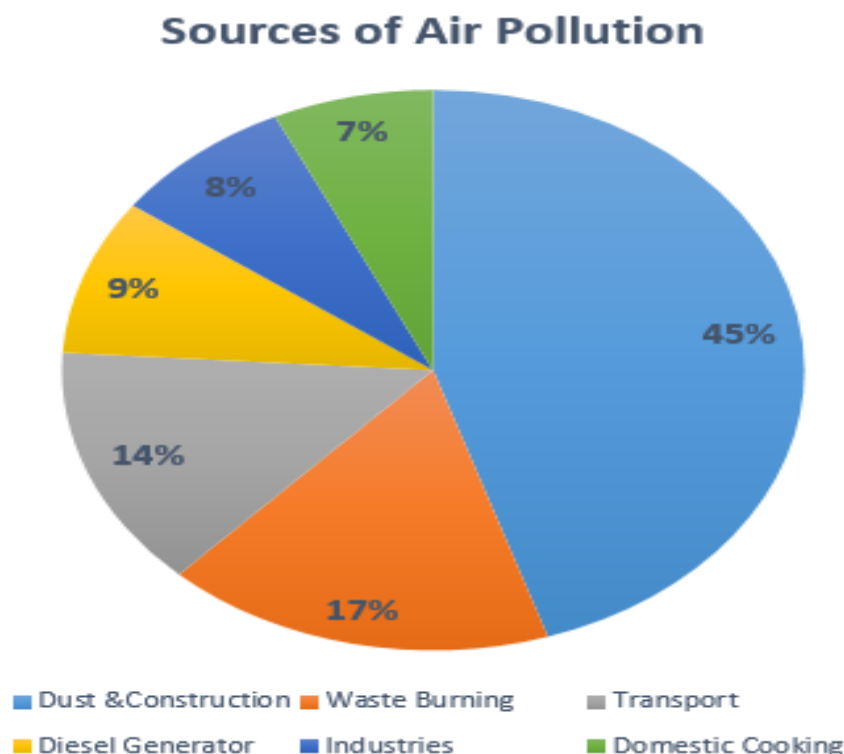


Figure 1: The above figure shows the Air Pollution in India.

The presence of chemicals in the atmosphere that are detrimental to human and other living creatures' health, or that damage the climate or materials is referred to as air pollution. Gases (such as ammonia, carbon monoxide, sulphur dioxide, nitrous oxides, methane, carbon dioxide, and chlorofluorocarbons), particles (both organic and inorganic), and living molecules are all examples of air pollution. Air pollution may cause illnesses, allergies, and even death in people; it can also affect other living creatures including animals and food crops, as well as impact the natural environment (such as climate change, ozone depletion, and habitat destruction) and the built environment (for example, acid rain). Air pollution may be caused by both human activities and natural causes [2].

A variety of pollution-related illnesses, including as respiratory infections, heart disease, COPD, stroke, and lung cancer, are all linked to air pollution. A growing body of data indicates that exposure to air pollution is linked to lower IQ scores and an increased risk of mental illnesses including depression. Poor air quality has a wide range of consequences on human health, although it mostly affects the respiratory and cardiovascular systems. Individual responses to air pollutants are influenced by the kind of pollutant, the degree of exposure, as well as the person's health and heredity. In the 2008 Blacksmith Institute World's Worst Polluted Places report, indoor air pollution and poor urban air quality are recognized as two of the world's worst hazardous pollution issues. Each year, outdoor air pollution causes 2.1 to 4.21 million fatalities. Each year, air pollution kills approximately 7 million people across the globe, making it the world's most serious environmental health threat. The scale of the air pollution problem is massive: 90% of the world's population breaths polluted air to some extent. Despite the serious health implications, the issue is often addressed in a haphazard manner. Air pollution is projected

to cost the global economy \$5 trillion a year in productivity losses and reduced quality of life [3]–[5].

To decrease air pollution, a variety of pollution control technologies and methods are available. Both international and national laws and regulation have been established to minimize the negative effects of air pollution. Cities with well-enforced local regulations have seen significant gains in public health. Some of these efforts have been successful at the international level, such as the Montreal Protocol, which succeeded in reducing the release of harmful ozone depleting chemicals, or the 1985 Helsinki Protocol, which reduced sulphur emissions, while others, such as international action on climate change, have been slower to implement [6].

Although air pollution has been related to decreased lung function in healthy children, long-term studies evaluating the impact of air pollution on asthmatics are limited. For example, there are no clinical studies that have looked at the effects of long-term pollution on lung function, airflow obstruction, and airway hyperresponsiveness (AHR), as well as the impact of controller drugs on suspected pollution effects. Pollutants cause harm by disrupting oxidant signalling pathways and causing airway inflammation. It has been demonstrated that inhaled corticosteroids (ICSs) decrease oxidative stress and enhance airway function and asthma symptoms. However, recent observational studies indicate that asthmatic children who use inhaled corticosteroids (ICSs) are more susceptible to the negative health consequences of air pollution than children who do not take inhaled corticosteroids. Because children with more symptoms asthma are more likely to take an ICS, these results may be due to confounding by indication. Only in the context of a clinical study can it be determined if an ICS would enhance or reduce sensitivity to air pollution.

Stroke, heart failure, lung cancer, and chronic respiratory illnesses are estimated to be the cause of 4.2 million fatalities per year owing to ambient air pollution. Approximately 91 percent of the world's population lives in areas where air quality exceeds WHO standards. While both rich and developing nations are affected by ambient air pollution, low- and middle-income countries withstand the worst of the load, with the largest toll in the WHO Western Pacific and South-East Asia areas.

1.1 Cleaner mobility, energy-efficient housing, power generation, industry, and better garbage - control policies and expenditure may all help to reduce significant causes of ambient air pollution. Air Quality and Health: A Global Platform:

The WHO-led Global Platform on Air Quality and Health, in partnership with nearly 50 other humanitarian groups and research institutions, aims to improve global capacity for air quality monitoring, as well as the assessment of related health impacts in a straightforward and harmonized manner. The Platform seeks to encourage policies that decrease exposure to air pollution, as well as the deaths and diseases that result from it.

The Childhood Asthma Management Program (CAMP) is a randomized clinical trial that is taking place in eight cities across North America (Albuquerque, New Mexico; Baltimore, Maryland; Boston, Massachusetts; Denver, Colorado; San Diego, California; Seattle, Washington; St Louis, Missouri; and Toronto, Ontario, Canada). The study's primary aim was to assess the long-term efficacy and safety of daily inhaled anti-inflammatory medicine in children with mild-to-moderate asthma. We found that short-term air pollution exposures enhanced asthma symptoms and use of relief medication⁶ using prerandomization observational data from

this study, with carbon monoxide (CO) and nitrogen dioxide (NO₂) having the greatest correlations.

In the same CAMP study, the current article investigates whether short- and long-term exposures to four of the US Environmental Protection Agency's criteria air pollutants (ozone, carbon monoxide [CO], nitrogen dioxide [NO₂], and sulphur dioxide [SO₂]) are linked to lung function and AHR in asthmatic children. In addition, we want to see whether anti-inflammatory therapy with an ICS or a nedocromil changes the way pollution affects asthma outcomes.

The design and methodology of the CAMP research have been published elsewhere. In addition, the Techniques portion of this article's Online Repository at www.jacionline.org has information on all of the methods utilized in this study. In summary, children enrolled in CAMP ranged in age from 5 to 12 years old and were hyperactive responsive to meth choline at the time of enrollment. In the randomization phase, 1,421 children were assigned to receive budesonide, nedocromil, or placebo, with 311, 312, and 418 receiving budesonide, nedocromil, and placebo, respectively. All of the patients were treated and monitored for four years, with visits at two and four months following randomization and at four-month intervals after that. Participants aged 7 and up signed an assent form authorized by each clinical center's institutional review board. Each parent or guardian signed a permission form, and participants aged 7 and up signed an assent form approved by each clinical center's institutional review board[7]–[9].

1.2 Measures of outcomes:

Spirometry before and after bronchodilator administration was performed according to American Thoracic Society Standards during randomization and follow-up visits (n 5 13). As part of our investigation of the short- and long-term consequences of air pollution, we used both pre-bronchodilator and post-bronchodilator FEV₁ and forced vital capacity (FVC) percentage predicted values. The percentage ratio of FEV₁/FVC was also employed as a marker of airflow restriction. During the therapy period, a methanacholine challenge was conducted using the Wright nebulizer/tidal breathing method. After each challenge, spirometry was repeated 90 seconds later until FEV₁ had dropped by 20% or more (PC₂₀).

1.3 Assessment of Air Pollution Exposure:

For each metropolitan region, monitoring data on 24-hour average concentrations of four gaseous pollutants (ozone, CO, NO₂, and SO₂) were collected. Participants were linked to daily concentrations from the closest monitor within 50 km that did not have missing data on that day using ZIP or postal code centroid coordinates (December 1993 through June 1999).

1.4 Analytical statistics:

To assess the correlations between lung function (FEV₁ and FVC percent predicted and FEV₁/FVC ratio %) and (log-transformed) PC₂₀ and same day, 1-week, and 4-month moving averages of pollution, we fitted a linear mixed model with random intercepts for each participant. The time trend of the model was the number of days since randomization. Confounding variables were carefully examined, with covariates chosen based on previous CAMP experience. The author built a model-using city as a covariate to estimate associations across all cities, but we also compared results from this model with study-wide estimates from meta-analyzing city-stratified models. We used the sine and cosine functions of time¹⁹ and their interactions with the city to adjust for “season.”

We also separated daily pollution concentrations into between-subject and within-subject exposures. Estimates of within-subject exposure effects are presented (on interquartile range [IQR] scale) [10]. We included a pollutant concentration by treatment interaction into the models while excluding the baseline (randomization) measurements to assess potential effect modification of the pollution-outcomes associations by treatment, and used the ANOVA likelihood ratio to test effect differences across the three treatment groups. IBM SPSS and R programming language tools were used for statistical analysis.

1.5 Pollution and PC20 are linked:

Overall, the 4-month baseline SO₂ concentrations was the only component that was substantially linked to PC20 (change per IQR, 26 percent [95 percent CI, 21.1 percent to 31.5 percent]). For all averaging periods, CO showed a modest overall impact on PC20. With same-day and 1-week average CO exposures, children receiving budesonide and nedocromil showed a larger reduction in PC20 than children receiving placebo (P 5.04 and .08, ANOVA, respectively). This was particularly noticeable in the case of nedocromil. The treatment had no effect on the correlations between SO₂ concentrations and PC20. Tables E10 and E11 in this article's Online Repository at www.jacionline.org illustrate the relationships between all contaminants and PC20, as well as the outcomes of treatment interactions.

The associations between asthma outcomes and ozone concentrations throughout the summer months (May–September) were not statistically significant. Pollutant asthma result relationships were comparable in two-pollutant models as in one-pollutant models. CO was the pollutant with the strongest and most significant associations with lung function in our study, and it was also the only pollutant that showed associations with both prebronchodilator and post-bronchodilator lung function with both short-term (same-day to 1-week) and longer-term (4-month) exposures.

To see whether longer-term impacts were independent of shorter-term effects, we combined 1-day or 1-week averages with 4-month CO averages in the same model. Because the same-day and 1-week average data were included in the initial 4-month average estimate, the correlation between the measures was increased, and collinearity was incorporated into our model. We ran additional analyses with newly created 4-month averages (i.e., calculating the 4-month average by leaving out the same-day measurements and calculating the 4-month average by leaving out the 1-week average), adjusting for same-day and 1-week average CO concentrations, respectively, to disentangle the shorter- and longer-term averages and their organizations with our outcomes.

2. DISCUSSION

Pollution's short-term negative impacts on children's lung health have been thoroughly researched, meta-analyzed, and carefully evaluated. The studies show that short-term exposure to air pollution may cause airflow blockage in asthmatic and non-asthmatic children, as well as that long-term traffic pollution can cause incident asthma and decrease lung function in children in general. Fewer studies have looked at the effects of long-term pollution exposure on asthmatic children's lung function, and none that we are aware of has looked at the long-term effects of pollution on lung function and AHR in asthmatic children in the setting of a clinical trial.

Increases in average long-term (4-month) amounts of ozone, CO, and NO₂ were all linked with decreases in lung function consistent with airflow obstruction and with some drop in vital

capacity represented by a fall in FVC in this unique asthma intervention study. There are few studies of air pollution that include post-bronchodilator measures against which we may evaluate our results. A recent research of the Manchester Asthma and Allergy Study birth cohort found that long-term pollution (NO₂ and particulate matter up to 10 µm in size) had a larger impact on post-bronchodilator FEV₁ percent anticipated than prebronchodilator FEV₁ percent predicted. Their results prompted the idea that bronchodilator medication may decrease the impact of changing circadian and day-to-day bronchodilator tone on FEV₁ determination, possibly boosting the study's ability to detect pollution-related lung function changes.

3. CONCLUSION

The author has discussed about the ambient air pollution, lung function, and airway responsiveness in asthmatic children. Exposure to three aspects of smog, particles in the air matter, nitrogen dioxide, and ozone, associated with cardiac and respiratory disease even at levels lower than those deemed acceptable by US authorities. Air pollution was a major risk factor for a variety of pollution-related illnesses, including viral disease, heart disease, COPD, stroke, and lung cancer, in Europe in 2020. Breathing difficulties, wheezing, coughing, asthma, and aggravation of existing respiration disorders are all possible health consequences of air pollution. More drug usage, increased doctor or incident hospital visits, more hospital admissions, and early mortality are all possible outcomes of these impacts. Poor air quality has a wide range of health consequences for humans, although it mostly affects the respiratory and cardiovascular systems. Individual responses to air pollutants are influenced by the kind of pollutant, the degree of exposure, as well as the person's health and heredity. Particulates, ozone, nitrogen dioxide, and sulphur dioxide are the most frequent causes of air pollution. In terms of overall fatalities due to indoor and outdoor air pollution, children under the age of five years in poor nations are the most susceptible group.

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ETIOLOGY, PREVENTION AND TREATMENT OF RHEUMATIC INFLAMMATION HOOF IN HORSES

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ABSTRACT

This article provides information on the basis of an analysis of the literature on rheumatic inflammation of camels, their etiology, diagnosis and treatment, prevention measures, among sport and working horses. This article presents data based on an analysis of the literature on the adverse effects of breast tumors on the activity of the dog immune system and measures to eliminate it, which are common among dogs today.

KEYWORDS: *Horses, Rheumatic Diseases Of The Hoof, Clinical Signs, Acute Diffuse Pododermatitis, Complex Treatment, Prophylaxis.*

INTRODUCTION

Resolution of the President of the Republic of Uzbekistan "On additional measures for the development of horse breeding and equestrian sports in the Republic of Uzbekistan" No. PP-3057 dated June 15, 2017, "On additional measures for further development of horse breeding and equestrian sports and popularization of modern management and polo" 2021 Resolutions No. PQ-5024 of March 11, 2019, Resolution of the Cabinet of Ministers "On measures for the integrated development of horse breeding and equestrian sports in 2017-2021" No. 517 of July 17, 2019 Improving veterinary services for horses , requires a new modern approach to protecting horses from various diseases.

In recent years, in most countries of the world, the main part of non-communicable diseases among animals is surgical pathology, including the proportion of animals that are excluded prematurely due to foot diseases is 4.0-15.3% [1,5]. Therefore, taking into account the regional conditions of the country, the incidence of rheumatic diseases of horses' hooves, analysis of morphological and biochemical changes in the body of infected animals, early diagnosis, identification of etiopathogenesis, development and improvement of effective methods and means of treatment and prevention. The research is topical.

Analysis of the obtained results. Rheumatic inflammation of the hooves (pododermatitis reumatica) is a diffuse, mainly aseptic inflammation of the suckers and vascular layers of the base of the hoof skin in the anterior half of the hoof [1,3,5]. The disease can be acute and chronic and is accompanied by displacement of the hoof bone and deformation of the hoof horn capsule. The disease usually affects both forelegs of horses, sometimes four, and rarely one foot [4].

Diseases such as rheumatic inflammation of the hoof in horses are very common and occur as primary and secondary disease. In many cases, this disease develops and leads to negative consequences or serves as a basis for the occurrence of very serious complications. Therefore, timely prevention and treatment of this disease is very important [2,6].

At the onset of the disease, abrupt changes in external temperature and feeding regime during the seasons, metabolic processes that contribute to the onset of diffuse aseptic pododermatitis in horses during puberty, most often occur in horses 4-10 years, including 4-6 years of mares and 7-9 years of stallions. factors such as deformity of the legs and hooves as a result of excessive weight gain of horses, the presence of defects in the structure of the hooves and changes in the shape of the hoof, the result of mistakes in cutting and care of the hooves play an important role. However, the main etiological factor in the origin of the disease is a violation of the acid-base balance in the body of horses, cardiovascular, renal and endocrine pathologies that lead to blood clotting. These pathologies occur mainly under the influence of chemical-toxicological and mechanical-traumatic factors. Chemical and toxicological changes are mainly due to feeding horses with foods rich in difficult-to-digest proteins and carbohydrates, an unbalanced diet, malnutrition, and the feeding of uncooked cereals. The sensitization of the body and the effect of histamine play an important role in the development of this inflammatory process [8,9]. Irrigation of horses with contaminated and cold water, feeding tired and sweaty horses immediately after exercise with whole grains, unripe alfalfa, rotten and moldy foods also lead to rheumatic inflammation of the hooves as a complication of colic. Excessive use of horses under the influence of mechanical and traumatic factors leads to hyperemia of the blood vessels and capillaries of the hoof, resulting in increased vascular permeability and an increase in internal pressure from the infiltration of serum into the hoof. This leads to the onset of the disease [7].

The origin of the disease is also due to the fact that horses suffer from infectious diseases (influenza, contagious pleuropneumonia, diarrhea, mango, etc.), which are accompanied by an increase in body temperature, complications of the difficult birth process [10].

Clinical signs of the disease. In the acute course of the disease for the first 12-36 hours there is an increase in body temperature to 40 ° C, rapid breathing, impaired heart function, muscle tremors, hyperemia of the mucous membranes, and then a decrease in body temperature.



A)



B)

Figure 1. The position of the horse's legs in the acute course of the disease.

A) when the front legs are sick, B) when the hind legs are sick

The main clinical sign is a basic lameness, if both forelegs are diseased, the patient puts the forelegs forward and the hind legs under the body (Fig. 1). If both hind legs are diseased, the forelegs are also placed under the chest and the horse's head is bent downwards.

This paralysis is under the influence of intense pain in the hooves, and if the hooves are pressed with special test clamps, the pain can be seen to increase further. This is accompanied by an increase in local temperature in the hooves and an increase in pulsation.

Acute course of the disease, if favorable conditions are created and fully cured, the horse will recover in 8-10 days. If the disease is not treated in time, the disease becomes chronic. This causes morphofunctional changes in the hoof (Figure 2)



Figure 2. Hoof deformity in chronic course of the disease

Diagnosis. Diagnosis of the disease is based on clinical signs.

Treatment. Once the diagnosis is based on the acute course of the disease, the animal is transferred to a thick and soft bed, initially placed in a cold bandage on the hooves, or kept in running water for 12 hours. To prevent intoxication, blood is drawn to reduce the concentration of toxins in the blood (up to 8-9 l in large horses). Antihistamines - diphenhydramine 0.3-0.4 g subcutaneously, intravenous 0.25% Novocain in the amount of 1 ml / kg. The animal is restricted in movement and kept in a quiet place. Calcium gluconate, sodium bicarbonate, diuretics Lasex, urotropin, furosemide is also injected. Gyrocortisone, the hormones dexamethasone and phenylbutazone also work well. Feed and coarse hay are excluded from the horses' rations. Water supply is limited. To maintain the balance of sodium and potassium in the body, the diet is given potassium chloride in the amount of 30 g per day. To strengthen the hoof wall, methionine, biotin and zinc are added to the diet on a regular basis.

In order to prevent the disease, it is necessary to eliminate the above factors in a timely manner.

CONCLUSION

1. Rheumatic inflammation of the hooves is a common disease among horses, leading to their early demise, loss of ability to work, and economic damage to farms.
2. The origin of the disease can be caused by violation of the requirements for storage and feeding of animals, improper exploitation and the consequences of various diseases.

3. Timely detection and treatment of the disease in the acute form of the disease can lead to recovery in 8-10 days, otherwise the disease will develop into a chronic form, causing morphofunctional changes in the hooves.

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DAMAGE OF MOROCCOAN LOCUSTS (*DOCIOSTAURUS MAROCCANUS* THUNB., 1815) IN UZBEKISTAN AND USE OF MICROBIOLOGICAL PREPARATIONS AGAINST IT

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ABSTRACT

*The article about the results of the experiment, which provided to definite of biological efficacy the microbial preparations - Kiloca, Fast Kiloca, based on the fungi metarrhizium anisoplia. The experiments carried out in laboratory condition to control of Moroccan locust (*daciastaurus moroccanus* Thunb.) where collected from pastures of Guzar and Nishan provinces of Kashkhadarya region of the Republic of Uzbekistan.*

KEYWORDS: *Experiment, Laboratory, Preparations*

INTRODUCTION

In the world, harmful locusts require constant attention from industry experts. Only in the countries of the Caucasus and Central Asia, failure to control harmful herd locusts, such as Moroccan, Italian and Asian locusts, by causing damage to pasture lands on an area of more than 25 million hectares, as well as agricultural crops, leads to loss of received from them products. As a result, more than 20 million people could left without agricultural products.

The development and improvement of evidence-based control measures against these pests and their timely implementation in foothill, pasture and steppe zones is one of the most important tasks of almost all countries of the world where locusts are common. In particular, studies have conducted in the United States, Europe, Australia, China, the CIS countries, Africa and various regions of other Asian countries where harmful locusts are common. However, studies on the creation of conditions for microbiological control of harmful locusts, the creation of a complex for the application of modern methods and means against them, the determination of the causes of the spread of non-herd locust crops around crops, and the development of effective control measures against them.

In the Republic, some types of harmful locusts are dangerous not only for pasture plants, but also for all crops. To constantly ensure, the needs of the population in dairy and meat products, an important task is to protect the vegetation of foothill, pasture and steppe zones from harmful locusts. The Development Strategy of the Republic of Uzbekistan in 2017-2021 noted that the priority tasks of agriculture are "... the development and implementation of measures to protect plants from diseases and pests." In this regard, in order to prevent mass reproduction and create a danger to crops, it is necessary to identify the main harmful species of locusts found in the

foothills, pasture and steppe zones, study the features of their development, as well as create and implement a set of effective, environmentally friendly measures and means.

Currently, the focus in the control against pest locusts is the use and spread of ecologically safe biopesticides. In particular, it has been studied that the microbiopesticides of Green Guard SC Premium against moroccan locust and Italian locust (*Calliptamus italicus* L.) has a biological effect controlled near 80.0%, this is effectively score in Uzbekistan and Georgia [1,4,5].

In Tibet, $2,3 \times 10^5$, $2,3 \times 10^6$, $2,3 \times 10^7$, $2,3 \times 10^8$, $2,3 \times 10^9$ colonization of pests, when controlled *Metarrhizium anisopliae* against *Locusta migratoria tibetensis*, it was 71%-100% effective [4,6].

Material and methods

One such biopesticide is Xin Jiang MOER Chemscaence Co., China. Ltd., Kiloca m.sus.k based on *Metarrhizium anisopliae* fungi produced by Consumption of biopesticide (1: 20x108) 1.0-1.5l / ha as well as in order to increase the initial effect of this biopesticide, the chemical-acting compound *betacypermetrhin* belongs to the group of pyrethroids of the *Metarrhizium anisopliae* fungus (1:20x108) + 1% Fast Kiloca o.s.c.k. the experiments were carried out to study the biological effectiveness of biopesticides in laboratory conditions against Moroccan locust, which produces a pile of the main pest locusts spread in the Republic in 2013 in the amount of 1,0 l/ha. The study of the biological efficacy of biopreparates used in experiments was calculated in [2] method and make a dispersion analysis of the results of the conducted experiments by the method [3].

RESULTS AND DISCUSSION

Our experiments were conducted with the creation of natural conditions for locusts in specially made boxes. On average, each of the box put nymph of healthy II-III young Moroccan locusts of 30-40. For the template, the Green Guard SC-0,5 l/ha biopesticide was used (2-table). During the accounting period of our experiments, temperatures were also monitored and the average temperature was 28-30°C. In experiments with Kiloca biopesticide-spreading on 1,0 l/m in the 2 day of the calculation observation in the variant used in 52,1%, If on 4 day gave 55,3%, on 6 day 62,5%, on 8 day 69,7%, on 21 day 83,4% biological effect, in the variant used to spend 1,5 l/ha, the calculation gave a biological effect of 64,6% on the 2 day of observation, 71,8% on the 4 day, 74,0% on the 6 day, 75,0% on In the variant applied to the Green Guard SC-0,5 l/ha, it was found that the calculation gave a biological effect of 29,6% on the 2 day of observation, 36% on the 4 day, 41,0% on the 6 day, 45,7% on the 8 day, and 92,0% on the 32 day.'

1-TABLE KILOCA SC. (METARRHIZIUM ANISOPLIAE) BIOLOGICAL EFFICACY OF BIOPESTICIDE AGAINST MOROCCAN LOCUST NYMPH (LABORATORY EXPERIENCE, HAND SPRAYER (120 L/HA), 25.04.2013)

Options	Preparation consumption norm l / ha	Number of nymph.										
		Processing up to 25.04.13	Observations after treatment with Biopreparat, n days after									
			27.04.2 days	29.04.4 d.	01.05.6 d.	03.05.8 d.	05.05.10 d.	07.05.12 d.	10.05.15 d.	14.05.19 d.	21.05.26 d.	27.05.32 d.
Kiloca (<i>Metarrhizium</i>)	1,0	32,0	15,3	14,3	12,0	9,7	9,3	9,3	8,3	8,3	5,3	3,7
Kiloca (<i>Metarrhizium</i>)	1,5	32,0	11,3	9,0	8,3	8,0	7,7	7,3	5,7	5,7	3,7	1,0
Green Guard SC (template)	0,5	30,0	21,1	19,2	17,7	16,3	12,5	12,0	11,7	10,0	5,7	2,4
Control	-	30,0	29,0	29,0	28,7	28,3	27,7	26,7	25,3	24,7	22,7	19,0
biological efficiency, %												
Kiloca (<i>Metarrhizium</i>)	1,0	32,0	52,1	55,3	62,5	69,7	70,9	70,9	74,0	74,0	83,4	88,4
Kiloca (<i>Metarrhizium</i>)	1,5	32,0	64,6	71,8	74,0	75,0	75,9	77,1	82,1	82,1	88,4	96,8
Green Guard SC (template)	0,5	30,0	29,6	36,0	41,0	45,7	58,3	60,0	61,0	66,7	81,0	92,0
Control	-	-	-	-	-	-	-	-	-	-	-	-

LSD₀₅=

11,2 13,6 12,4 9,7 9,3 7,6 7,9 8,1 5,1 4,8

2-TABLE FAST KILOCA M.SHUT UP.THE G. (METARRHIZIUM ANISOPLIAE +1% BETACYPERMETRIN) BIOPESTICIDE TO MOROCCAN LOCUST'S NYMPH INJECTION BIOLOGICAL EFFICIENCY. (LABORATORY EXPERIENCE, HAND SPRAYER (120 L/HA), 25.04.2013)

Options	Preparation consumption norm l / ha	Number of nymph.										
		Processing up to 25.04.13	Observations after treatment with Biopreparat, n days after									
			27.04.2 days	29.04.4 d.	01.05.6 d.	03.05.8 d.	05.05.10 d.	07.05.12 d.	10.05.15 d.	14.05.19 d.	21.05.26 d.	27.05.32 d.
Fast Kiloca (<i>Metarrhizium</i> +1% <i>beta cypermethrin</i>)	1,0	36,7	3,3	2,3	2,3	2,3	2,0	2,0	1,3	1,3	0,7	0,0
Green Guard SC (template)	0,5	30,0	22,0	19,3	18,0	16,4	13,3	12,0	11,3	10,7	5,8	2,7
Control	-	30,0	30,0	29,6	29,0	28,6	28,0	27,3	26,7	25,0	23,6	21,0
biological efficiency, %												

Fast Kiloca (<i>Metarrhizium</i> +1% <i>beta cypermethrin</i>)	1,0	36,7	91,0	93, 7	93, 7	93, 7	94, 5	94, 5	96, 4	96, 4	98, 0	100
Green Guard SC (template)	0,5	30,0	26,6	35, 6	40, 0	45, 3	55, 6	60, 0	62, 3	64, 3	80, 6	91, 0
Control	-	-	-	-	-	-	-	-	-	-	-	-

LSD₀₅=

10,6 8,4 8,2 7,9 6,9 5,5 5,1 6,3 6,6 5,2

As well as, in experiments with biopesticide treated with a chemical compound Fast Kiloca 1,5 l/ha biopesticide, the calculation was made on 2 days of observation 91,0%, on 4 days 93,7%, on 6,8,10 days 93,7% -93,7% -94,5% biological efficiency, it gained 26% biological efficiency in 98,0 days, 32% in 100 days. The Green Guard SC-0,5 l/ha variant used in variant was found to have a biological effect of 26,6% on the 2 day of the follow-up, 35,6% on the 4 day, 40,0% on the 6 day, and 91,0% on the 32 day of the follow-up (2- table). In both experiments, locust's nymph did not controlled, which were put under control, was not observed.

CONCLUSIONS

According to the results of the experiment, the maximum biological effect of using Kiloca biopesticide at 1.0l / ha in the control against Moroccan locusts was 88.4%, with the highest biological efficiency of 1.5 l / ha.,8%.

Fast Kiloca also records the highest 100.0% bio-efficiency of microbiological and chemical pesticides at 1.0l / d to accelerate initial effects to improve microbial biopesticides effects.

At the expense of these Kiloca-1.0-1.5 l / ha and Fast Kiloca-1.0 l / L, it is recommended to use these biopreparations against common locust for the purpose of saving ecological environment.

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METHODOLOGICAL BASIS OF MANAGEMENT STRATEGY FOR EXTERNAL MARKET ACTIVITIES

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ABSTRACT

The article examines the processes related to the essence and methodological basis of the enterprise foreign market activity management strategy. Factors influencing the formation of the management strategy of the enterprise's external market activities and opportunities to increase their operational efficiency are analyzed. External market activity management strategy is based on optimization-oriented actions and ways to implement them. Scientific proposals and practical recommendations aimed at improving the management strategy of the enterprise's external market activities have been formed.

KEYWORDS: Foreign Economic Activity, Management Structure, Market Conjuncture, Strategic Management, Strategic Management System, Export Potential, Market Mechanism, Target Market, Strategic Position.

INTRODUCTION

The process of consistent implementation of reforms to ensure the globalization of the Republic of Uzbekistan in the world economy requires the formation of mutually beneficial economic cooperation and the formation of a systematic program of measures to increase their efficiency. In this regard, it is necessary to pay special attention to the management strategy of foreign market activities, which effectively influences the formation of a complex system of economic development.

As the efficiency of industrial enterprises depends on a long-term development strategy, there is a need to create opportunities for a stable and strong position in the market. At the current stage of modern market relations and globalization, many strategies used in the activities of industrial enterprises still do not allow to adapt to the changing conditions of the external and internal environment. In particular, this situation plays an important role in the activities of the automotive industry.

The Action Strategy for the Further Development of the Republic of Uzbekistan for 2017-2021 identifies a number of priorities, such as "deepening structural changes, increasing the competitiveness of enterprises and increasing export potential." This system of targeted actions and measures aimed at them is reflected in the Resolution of the President of the Republic of Uzbekistan dated July 18, 2019 No PP-4397 "On additional measures for the accelerated development of the automotive industry of the Republic of Uzbekistan." In accordance with this

decision, to ensure the rapid development of the automotive industry and increase its investment attractiveness,

Ensuring the effective implementation of the above priorities is important to study the retrospective indicators in the strategic management system of the automotive industry, to identify the conditions and factors affecting the future sustainability of the enterprise.

LITERATURE REVIEW

Research aimed at optimizing the management strategy of foreign market activities of industrial enterprises, adapting the production of industrial products to the level of demand, the selection of an excellent management strategy and the development of methods for its implementation were conducted by foreign economists S.V.Petrov, O.V.Strelkovas [3]. D.M.Dolmatov's research examines the conditions and factors for the formation of a management system aimed at increasing the competitiveness of the enterprise in domestic and foreign markets. ng role, aspects related to the role of information technology development in adapting the management system of automotive enterprises to the requirements of the consumer market are studied [4]. A.Burinskien's research studies the process of developing the organizational and economic mechanism for the development of foreign economic activity of enterprises, to determine the ability of enterprises to develop international trade, to ensure the adequacy of the management mechanism, taking into account the new conditions for enterprises [5]. It is important to assess their ability to respond and adaptP.V.Mikhailushkin, N.P.Gusakov, N.A.Volgina, I.N.Belova, A.S.Lukyanets. The research conducted by the study of the conditions and opportunities for the coordination of external market activities of the enterprise in ensuring the priority of the market economy, in this process is recommended to ensure the stability and reliability of all obligations of the enterprise. It is also recommended to expand foreign market opportunities by expanding international action programs and projects related to external market risk [6]. N.Khalipova, A.Bosov, A.Progonyuk study the processes of maintaining the company's share in the domestic market, expanding export trade and increasing its competitiveness, creating an institutional framework for adapting the management system to the requirements of the consumer market in integration [7].

The above research examines the processes associated with the coordination of internal and external market activities by ensuring the innovative development of the strategic management system of enterprises, which is characterized by the lack of formation of the essence and methodological framework of management strategy of external market activities.

RESEARCH METHODOLOGY

The article used a number of research methods such as structural analysis, logical abstraction, induction and deduction, logical reasoning, and scientific observation.

ANALYSIS AND DISCUSSION OF THE RESULTS

The process of managing the external economic activity of the enterprise has a complex structural nature, and the structural structure of the management structure affects the external market conditions. The conditions of modern market relations require enterprises to form an independent strategy of foreign market activity. The need for this strategy can be explained by:

- as a result of the influence of the number and diversity of factors in the implementation of the foreign economic activity of the enterprise, the external environment is beyond any internal control;
- deep and rapid changes in the process of industrial production in the modern world economy affect the competitive environment;
- a competitive environment with a hypercompetitive nature enhances innovation and integration processes on a global scale. As a result, business requires new approaches inherent in modern strategic management;
- uncontrolled activities of industrial enterprises under the influence of the external environment, affect the external context of the conditions of the enterprise, etc.

The creation of the concept of the organization's external market activity management strategy shows the need to develop advanced knowledge, experience, authority, availability of necessary resources and wide-ranging interaction with business partners in order to gain a worthy competitive position in the foreign market. The concept of strategic management of the external economic activity of the enterprise requires that functional, situational, risk and systemic approaches work together, not autonomously. This takes into account the company's promising development strategy to enter foreign markets.

The complex feature of the concept has a synergistic effect, allowing to increase the effectiveness of strategic management in enterprises engaged in foreign economic activity. Approaches to the management of foreign economic activity of the enterprise depend on the factors influencing the implementation of strategic management of foreign economic activity. However, among these factors, it is necessary to identify the most important ones that threaten the activities of the enterprise. does not allow to show. The development and consistency of foreign trade operations requires the effectiveness of strategic management.

The risk-based management strategy of foreign enterprises is not fully taken into account. The risks that may arise in this process allow us to identify the threat factors that are considered the most important for the enterprise. However, the enterprise does not allow to ensure consistency in the formation of foreign economic activity strategy.

The functional approach to the management strategy of the external market of the enterprise focuses on building the course of development of the enterprise, the correct organization of the activities of its various departments. The systematic approach ensures the interdependence between the departments of the enterprise, the consistency of all departments in the context of the problem to be solved. It is necessary to take into account the whole list of factor attributes in the enterprise complex. The enterprise establishes a clear system that balances the importance of a functional approach, situation and risk factors in the management strategy of external market activities.

The company's external market management strategy is based on the following approaches:

- functional approach;
- situational approach;
- risk-based approach;

– systematic approach.

Features of the functional approach in the strategy of foreign economic activity of the enterprise; to operate successfully in foreign markets requires managers to use functional, situational, systemic, and risk-based approaches to strategic management. In the strategy of foreign economic activity of the enterprise, the functional approach mainly allows to increase the efficiency of management functions such as: planning, motivation, implementation of organizational control. The choice of a particular strategy requires taking into account the psychological, social and other characteristics that are unique to each country and each nation.

In the strategy itself, doing business forms levels of value systems consisting of values, beliefs, customs, traditions, traditions.

The implementation of the planning function in the foreign economic activity strategy serves for the formation of the planned goals and results of the enterprise, the results of development and future long-term goals. Thus, the strategy of foreign economic activity of the enterprise is formed on the basis of short-term planning process, as opposed to individualistic cultures, collectivist systems governed by long-term goals and results. The algorithm based on the system sequence of this process affects the efficiency of the external economic activity of the enterprise (Figure 1).

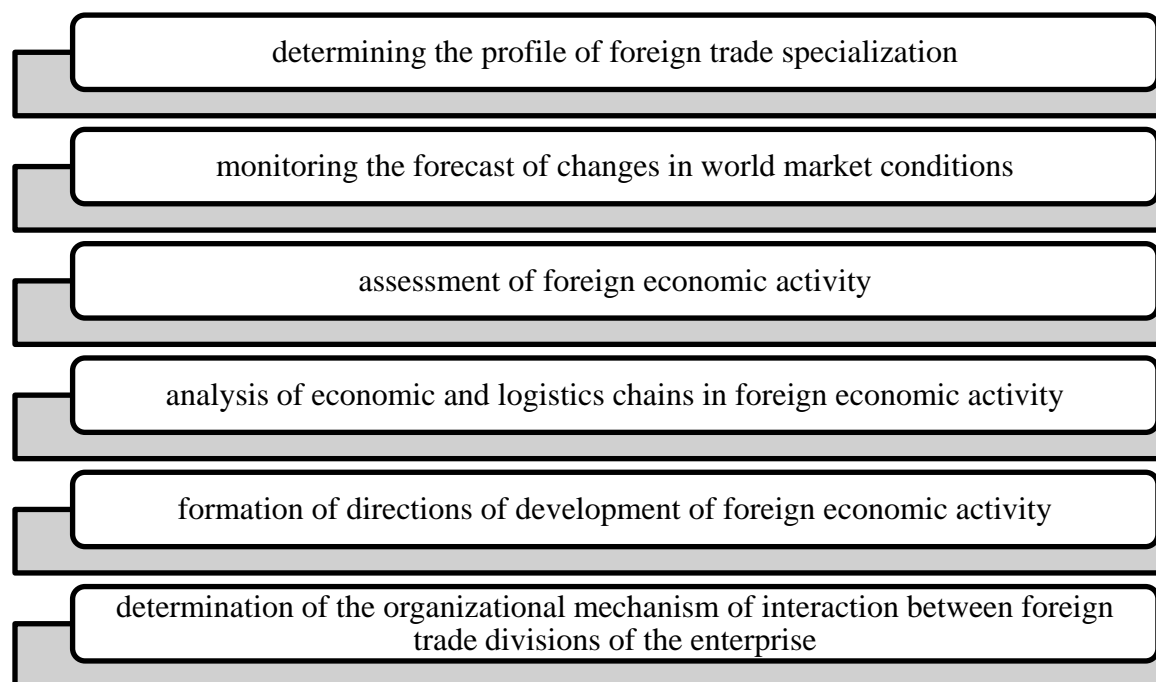


Figure 1. External market activity management strategy¹

The main directions of development of the foreign trade mechanism of the enterprise are:

- 1. Selection of the profile of specialization of foreign economic activity.** In the context of increasing competition in the world market, a successful foreign trade strategy can be formed only on the basis of forward-looking strategies.

2. **Formation of territorial-geographical priorities.** The search for these priorities should also be done at the economic level (competitiveness, profitability, solvency, economic complementarity, etc.).
3. **Improving the management mechanism of the organization's foreign economic potential.** To do this, you need:
 - coordination of priorities of the foreign trade department;
 - improving the structural structure of foreign trade, taking into account the functions of the enterprise focused on foreign markets;
 - introduction of a system of benefits and preferences for foreign trade units in accordance with the practical implementation of contracts and agreements;
 - systematic study of changes in foreign economic activity (political, economic, social, technological);
 - timely elimination of problems and shortcomings in the process of using management capacity through the analysis of the activities of business units;
 - formation of a unified system of information acquisition from foreign markets, etc.

The motivational function of the management system is important in the development and implementation of the strategy of foreign economic activity of the enterprise. The motivational system of the strategy of foreign economic activity of the enterprise can be explained as follows (Figure 2).

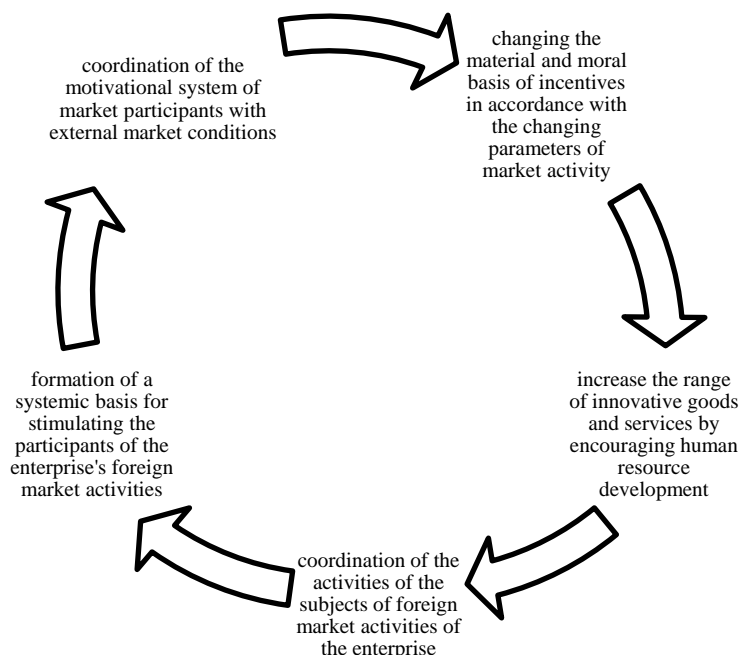


Figure 2. Motivational system for developing the strategy of foreign economic activity of the enterprise²

The success of the strategy developed by the enterprise must be based on properly selected incentives, the interests and career aspirations of each employee. In this regard, it is important to create an innovative system of individual-list managers that encourages the activity of individuals and groups that use new ideas and methods.

CONCLUSIONS AND SUGGESTIONS

The management strategy of the enterprise's external market activity is based on the creation of a favorable business environment, creating an appropriate environment in the process of working with foreign business partners of the enterprise. In turn, the specifics of business negotiations are largely determined by the mentality of the population of each country.

In the process of strategic management of the foreign economic activity of the enterprise, the situation in a particular target market requires the provision of management against constant changes. Therefore, the implementation of the strategy requires focusing on ensuring the flexibility of the enterprise to external markets and maintaining sustainable development, rather than on the planned results.

The general development of the enterprise is based on the principles of continuous planning, which is carried out in the activities of the enterprise. This means that in the management process, the ability to constantly monitor the external environment and apply the necessary decisions and actions in accordance with the variability of the external market expands in parallel.

The strategic position in the foreign market should be constantly evaluated and adapted to changing requirements. In this regard, in line with the situational approach that effectively influences the development and implementation of change strategies:

- participation of all employees in the achievement of common goals, the formation of their creativity, initiative, adaptability to innovations, the ability to respond quickly to unexpected changes;
- strengthening the responsibility of managers for decision-making by decentralizing the management system;
- forming the resource base needed to withstand potential or current threats from the external environment;
- effective use of the internal potential of the enterprise to understand the needs and values of the user to the maximum;
- establish and expand long-term partnerships with consumers;
- increase the efficiency of the mechanism of distribution of profits from trade activities between foreign trade entities, etc.

To assess the appropriateness of using a particular process in the implementation of strategic management of foreign economic activity of the enterprise, it is necessary to understand the pros and cons of each of them. The positive and negative processes mentioned in the various processes allow us to conclude that it is not expedient to consider only one process in the development of the strategy of foreign economic activity of the enterprise. Only a comprehensive consideration of them will help the enterprise to operate effectively.

In the context of innovative development of the economy, it is necessary to pay attention to the following in ensuring the compliance of the management strategy of the enterprise's foreign market activities with the strategic directions of activities in foreign markets:

- timely management decisions based on the functions of planning, stimulating, organizing and controlling the activities of foreign markets;
- to respond to the situation in foreign markets and to form a roadmap for adaptation to a complex, changing, unmanageable and turbulent international environment;
- Development of a system of scenarios that may occur in the implementation of international business in foreign markets;
- Formation of the concentration of complex structural composition based on the complexity of the development of the strategy of the external market (thinking process, formal process, analytical process, forecasting process, evolving process, negotiation process, transformation process), etc.

In our opinion, the consideration of the above practical suggestions and recommendations in the foreign economic activity of the enterprise will have an effective impact on the formation of a worthy competitive position of the enterprise in the long run.

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ABOUT THE RELATIONS BETWEEN UZBEK AND SANSKRIT LANGUAGES

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ABSTRACT

This article deals with the relations between Sanskrit and Uzbek. Additionally, the opinions of linguists and scholars on this topic, the information on the quantity and quality of Sanskrit assimilations cited in their scientific work are deeply analyzed. Our opinion can be supported by the following conclusion of the great Uzbek linguist E. Begmatov: "The relationship of the Uzbek language with foreign languages has different levels and qualitative aspects."

KEYWORDS: *Sanskrit, Uzbek, Sanskrit Assimilations, Uzbek And Sanskrit Relations, Written Sources, Quantitative And Qualitative Analysis.*

INTRODUCTION

The relations between Uzbek and Sanskrit languages have a long history. These languages are known from ancient times, including the close proximity of the peoples of Central Asia to the Indians, the location of these countries along the Great Silk Road, the long-standing political, cultural, social and economic ties of our ancestors are worth to mentioning. It is known from history that Sanskrit contributed to the development of world languages and cultures, played an important role in the history of the peoples of Northeast and Central Asia, and even in the lexical system of all European languages today there are many Sanskrit cultural and spiritual terms. came without leaving anyone indifferent. In addition, the fact that the historical and gradual study of the spiritual and cultural development of the world, especially languages, is almost impossible without Sanskrit [1] does not increase or decrease the interest of any of our compatriots interested in the fate of the motherland and language.

The main part: It is known that written sources on the Sanskrit language date back to the millennia before and after our era [2]. The written monuments of the Uzbek language (ancient Turkic language) have not reached us since the 6th century. Only written monuments after this century can be the object of research in the study of the features of the Uzbek language at that time. B.Bafoev notes that in the works of Alisher Navoi there are some words belonging to Hindi, Greek, Latin, Chinese, Mongolian languages [3; 107]. The great poet of our people ErkinVahidov said: "Our scholars have also found ancient Sanskrit words that have already been forgotten in our language treasury. That is why we have the right to say without hesitation that our language is rich"[4; 14] is also proud in a sense. However, it should be noted that the number of Sanskrit masterpieces in the Uzbek language is small, the quality of scientific work has been analyzed, and our encyclopedias [5] are not yet perfect in this regard. For example, in our huge

encyclopedia, where the vocabulary (perfect?!) Of our language is explained, exactly 8 words are recorded as Sanskrit [6]. The nearly 400-year rule of the Baburis in India, and the fact that Jalaliddin Manguberdi spent much of his time fighting the Mongols in India, especially the fact that trade with this people was ancient, must have influenced the Sanskrit and Uzbek languages. The Great Silk Road trade caravans passed through Central Asia, Sogdiana, Bactria and Ortospona (Kabul), and the second option was waterways, to which Indian goods were transported to us via the Amudarya and which could be brought in seven days, depending on the possibilities of the time (Strabo, 1st century BC, Pliny, 1st century AD, the great Roman-Greek encyclopedic scholars) [7]. Commercial goods were mainly fabrics (banoras, chit, satin), spices (tea, zarchava, sesame, rice, grain), precious stones (turquoise, lapis lazuli / lazurite), and these language units are products of the Sanskrit language.

The number of researchers who have studied the relationship between Sanskrit and Uzbek and its impact on the languages of these peoples is relatively small and there are no major fundamental works. Even Uzbek-Sanskrit languages are not mentioned in such fundamental works of our ancestor Beruni as India for many years, perfect knowledge of Sanskrit [8], Indian history, cultural and spiritual monuments, social life, ancient and medieval Indian science, such as "India", "Saydana". There is almost no mention of the relationship between these two languages. The reason for this is explained by our ancestor in his book "India": *I write the Hindi words in this book on its own, and I add similar Greek words to it to indicate that they are related to the Greeks. I will not quote the words of others along with the words of the Greeks...* [9] In his second work, "Saydana", he explains the names of medicinal substances in 29 chapters and 1116 articles, each chapter is devoted to one letter. He collects and interprets plant, animal, and medicinal names from more than 4,500 Arabic, Greek, Syrian, Persian, Khorezmian, Sogdian, Hindi, Turkish, and other languages. [8; 48] also provides a Sanskrit alternative to some words. However, the interpretations of the collected names are inconsistent, including no explanations in other languages (73 words with or without anonymity) [10] and the pronunciation and spelling of a word in several (five to ten) languages can be seen. We were interested in the Sanskrit language units that are still present in the Uzbek dictionary and found that only about ten rice out of 1116 medicinal plants according to the work of K.Toyjanov, K.S.Safarov, R.A.Eshchanov "Saydanadurdonalari", spelling, pronunciation and semantic similarities of the Uzbek language units of *rice, isfand (sipand), sugar, gora, shibit, fig* were noted [10].

In addition, many textbooks and manuals on the interlinguistic status of the Sanskrit language we have studied [2,13,14,8,15], notes [6] and notes [3] state that there are Sanskrit words in our language, some Sanskrit words (realities such as *brahmana, rupee, veda*) are given as examples. Such views are often expressed in reference to the ancient written monuments of our people - Mahmud Kashgari's "Devonulug'otitturk", Yusuf Khos Hajib's "Kutadgubilig" and a number of works by Alisher Navoi. Therefore, when we turned the pages of the great encyclopedia of Turkic linguistics "Devonulug'otitturk", we came across only Sanskrit lexemes such as *or, ariq, osh, pish*.

Of course, the author did not consider it interesting to take an interest in the etymology of these words. It is not surprising that the name of this great work is similar to the body, no linguistic units other than the Turkish dictionary are explained, phonetically and grammatically described, the words of other foreign languages (Mongolian, Chinese, Hindi) are almost not commented on, and their interpretations are understood as Turkish. Now, if we look at the number of Sanskrit

words used in Yusuf Khos Hajib's Qutadg'ubilig, another great written monument of the Uzbek people of that period, although these two works are about the same period, the number of Sanskrit units is more than Devonulug'otitturk. . As we browsed through Qutadg'uBilig, we came across simple and infamous words such as *osh*, *ipor*, *sugar*, *nom*, *bola*, *taft*, *balo*, *shirin*, *rang*, *shatranj*, *chavgon*, *gov*. The numerical difference between the Sanskrit words in these two works leads us to consider the Annotated Dictionary of the Language of AlisherNavoi's Works. The Sanskrit words in the dictionary are numerous, 77, and even more qualitatively diverse, with which we have witnessed the formation of new phrases, conjunctions, and cases of discovery of portable meanings. The following are examples of words found in this dictionary: *abr*, *ariq*, *bad*, *band*, *barahman*, *barodar*, *barhaman*, *bahramon*, *dara*, *daryo*, *kor*, *shakar*, *shir*, etc. The gradual increase of Sanskrit words can be assessed, first of all, as a result of the past 400 years or the richness of the personal vocabulary of the great language sultan AlisherNavoi. Of the 26,035 words used by our ancestor in his works, about 80 are in Sanskrit, which is like a drop in the ocean. By the way, the layer of Sanskrit words in the Uzbek dictionary is very thin, very little compared to Persian, Arabic, Russian or Western European languages. In this sense, it is not accidental that many of our researchers say that "*there is no significant trace*" in the relationship of lexical layers of Uzbek and Sanskrit. Our opinion can be supported by the following conclusion of the great Uzbek linguist E. Begmatov: "The relationship of the Uzbek language with foreign languages has different levels and qualitative aspects. Some of the languages with which Uzbek is communicated have not left a significant mark on the Uzbek lexicon. In particular, only a few words from Hindi and ancient Greek entered Uzbek. For example: from Hindi: *but*, *kotvol*, *lak* (*lok*) (color), *nil*, *nilufar* / *nilupol* (nilufar), *baraqman*(brahman), *barcha*, *bibi*, *paysa*, *chandan* / *chandol* (*sandal*), *peacock*, *lightning*, *chit* (*fabric*) and others "[3; 13]. E. Begmatov goes on to say that Sanskrit words are numerically insignificant, that Sanskrit elements are imperceptibly absorbed into the Uzbek lexicon, and that the word is Sanskrit can only be determined on the basis of scientific analysis, even if it is perceived by Turkic speakers as Turkish lexicon. [3] N.Rakhmonov, K.Sadikov's textbook "History of the Uzbek language" with the following quotation we get acquainted with one or two Sanskrit words that appear in our language: *buyan* (*Sanskrit-good work*), *bodi* (*Sanskrit-perfection*), *kshanti* (*Sanskrit-repentance*) "[15].

Uzbek linguist B.B.Abdushukurov also notes that in the abstract of his doctoral dissertation "Vocabulary of QisasiRabguziy" [11] he found 4 words related to the Sanskrit language, but in the "Sanskrit mastery" section of the abstract he analyzes only the word (*pilu*). In this regard, Professor Z. It should be noted that the etymology of the 3 words (*ar*, *arna*, *ap*) mentioned in Dusimov's monograph "Khorezmtoponyms" [12] is Sanskrit and the explanations given to them are clear and accurate.

CONCLUSION

In conclusion, we can say that in addition to the above-mentioned popular scientific works on the influence of Sanskrit on the Uzbek language and their interrelationships, no serious research works have not been found which were conducted on them.

Although the relationship between the Indian and Uzbek peoples has been going on for many years, there is not enough information about the lexical influence of their languages (Sanskrit-Uzbek) on each other. The first written sources on this date back to the 6th century AD. The interaction of languages, the possibility of encountering Sanskrit words in the Uzbek lexical

system dates back to the X century, and the written monuments left from that time (Devonulug'otitturk, Qutadg'ubilig). Later, based on the explanatory dictionary of the language of Alisher Navoi's works, it is possible to make certain comments on the lexical relations of these languages. Finally, although the lexical layer of Uzbek linguists and their scientific works, textbooks, manuals, dictionaries and encyclopedias do not provide perfect information about these two languages, it is possible to draw certain conclusions based on about a dozen examples. These examples are mainly real (such as *rupee*, *veda*, *yoga*, *roja*, *brahman*) names, which live forever in their own and mastered languages.

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YOGA FOR CHILDREN AND YOUNG PEOPLE'S MENTAL HEALTH AND WELL-BEING: REVIEW

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ABSTRACT

This article addresses yoga as a possible stress-reduction and self-regulation technique for youngsters. Yoga teaches you how to educate your mind and body to achieve emotional equilibrium. We believe that such tools are necessary for children and young people to listen inward to their bodies, emotions, and thoughts. Yoga may help children grow in a healthy manner, strengthen themselves, and contribute as social beings. First, we look at how today's children and young people are bombarded with expectations and are constantly stimulated by the Internet and other media and communication technology. Globalization exposes kids all around the globe to a variety of new expectations, norms, and choices, which is one reason why children suffer stress and mental health issues. There is also more pressure on students to succeed in school, partially as a result of greater competition, but also as a result of the wider variety of alternatives accessible to young people now than in the past. Our thesis is based in part on the reality that contemporary society is rife with diversions and unwanted temptations, particularly those associated with new communication technology. The prevalence of multimedia gadgets and the amount of time spent on them by youngsters are obvious indications of our current generation's changing lives and priorities. While these media technologies are important resources in the lives of children and young people for communication, learning, and entertainment, they also create continuous competition for the attention of children and young people. Yoga may assist children and young people deal with stress, and therefore contribute positively to life balance, well-being, and mental health, according to one of the major concepts in our essay. We provide evidence that suggests yoga is beneficial to children's physical and mental health. Yoga in schools also helps kids enhance their emotional and stress resilience, mood, and self-regulation abilities.

KEYWORDS: Children, Young People, Mental Health, Well-Being, Yoga.

1. INTRODUCTION

Children and young people all around the globe are exposed to a variety of new norms and choices as a result of globalization. Children now not only have access to new materials, but they are also expected to do well. Different institutions in the life of children and teenagers, such as family, school, and the media, offer continuous stimulation and expectations. This exposure to new expectations and demands has the potential to cause stress in the lives of young people, particularly when it comes to performance assessment.

According to recent study, the present generation of young people is the most stressed out. For example, the 2012 online poll "Stress in America" found that 2,020 people aged 18 to 33 years old in the United States had an average stress level of 5.4 out of ten. A stress level of three to six was deemed healthy by the experts. According to the study, millennials (18–33 years old) are more stressed than any other generation now alive. Millennials were also less likely than previous generations to award their healthcare an A. Almost half of them said that they didn't know[1], [2].

Stress has long been known to have negative health effects. A high stress level, if left untreated, may develop into a chronic illness, resulting in a variety of health issues such as anxiety, sleeplessness, muscular discomfort, high blood pressure, and a compromised immune system. Stress has been shown to contribute to the development of major diseases such as heart disease, depression, and obesity, as well as worsen existing health problems, according to research. When such young people are in charge of child care, they may tend to pass on their anxieties to their children, making the situation more frightening and concerning for their families. Stresses are internalized by children. Their self-imposed pressures to live up to the norms established by their caretakers, institutions, and society may be stressful. Furthermore, especially young individuals, internalization of self-expectation may become unchangeable.

We've seen that youngsters are very adept at concealing their discomfort and mental tension from their parents, since they don't want their parents to be concerned about them. They want to impress their parents by acting in a manner that is "acceptable" and "socially correct." Children despise disturbing their parents and contributing to their parents' already high levels of anxiety. Children take an active role in their own development while using a constructivist approach. Furthermore, children and adolescents engage with daily life events from perspectives that may vary from those of adults. According to this idea, children act as agents for their own well-being and develop the ability to be wellness partners with their families, friends, and society as they grow. Children, on the other hand, rely on the environment created by society to help them reach their full potential [3]–[5].

This article addresses yoga as a possible stress-reduction and self-regulation technique for teenagers. Yoga teaches you how to educate your mind and body to achieve emotional equilibrium. Yoga is said to bring about alignment and harmony. According to a new study, yoga may help you listen to your heart. We believe that children and teenagers need such assistance in order to listen internally to their bodies, emotions, and thoughts. As a result, yoga may aid in the development and maintenance of excellent mental health in children; health promotion for children should involve the enhancement of their attention, self-esteem, empowerment, and self-regulation. We think that children and adolescents must grow and develop in accordance with their own personalities, interpreting and achieving a balance between their own strengths and social expectations. Yoga may help children grow in a healthy manner, strengthen themselves, and contribute as social beings [6], [7].

1.1. Yoga's Effects on Mental Health:

There are other instances of young people nowadays who have more serious views than previous generations. For example, in Norway, as in several other European nations, young people take less drugs than earlier generations, do better academically, and are more involved in society and elections. Furthermore, kids are more devout and less criminal, and they study harder in school. Children and teenagers also share more values with their parents than previous generations, and although young people "hang out" online, many parents do as well. This resemblance may be one of the explanations for the drop in drug use and norm-breaking. However, this pleasant conduct comes at a cost; new study suggests that today's youth are more concerned than previous generations. In addition, a growing number of young people are being diagnosed with illnesses including attention deficit hyperactivity disorder (ADHD) (ADHD). They are also under more pressure to achieve in school today than in past years. It may be difficult to put such a strong focus on education and self-discipline. As a result, young people have greater psychological issues; many worry excessively, have sleep difficulties, and feel gloomy and stressed [8]–[10].

Mental health issues are prevalent among children and adolescents in the West, as well as in other areas of the globe. According to the 2012 European Union (EU) Youth Report, about 10%–20% of young people in Europe suffer from mental disorders, and one out of every five has emotional or behavioral issues. According to some statistics, although the majority of teenagers in the globe are healthy, 20% of them have mental health problems. Similarly, according to a recent study, 15–20 percent of Norwegian children aged 3–18 years have impaired functional skills as a result of mental illnesses such as anxiety, depression, and behavioral disorders. Due to psychological and biological changes, psychological difficulties tend to increase during puberty. Children endure demands from their families, schools, and other social settings to perform well and adapt to society's constantly changing rate of growth.

The present situation makes it difficult for instructors and parents, as well as children, to promote good mental health. The shift from infancy to adolescence and adulthood may be challenging in and of itself. Children must also establish their own identity, gain autonomy from their parents, and cope with shifting peer relationships while coping with bodily changes. Academic, commercial/marketing, and relationship problems, as well as excelling in school, being popular, having a fit or slender physique, wearing the correct brands of clothing, and possessing the newest technical devices, are all sources of pressure for young people. This set of expectations causes stress, which has a negative effect on children's mental health and well-being, as well as their academic achievement.

Bullying (at school and online), behavioral difficulties, attention and self-regulation problems [such as ADHD and attention deficit disorder (ADD)], sleep disorders, obesity, internet addiction, drug misuse, and a lack of school motivation may all contribute to dropouts in children. Despite many years of political importance and targeted actions in both the EU and the US, recent high school dropout rates are close to 30%. (US). Additionally, schools confront the problem of pupils (particularly males) being more interested in the Internet, social media, and gaming than the school curriculum.

1.2. Children and Young People's Media Use and Health Challenges

Current civilization also provides a plethora of unwanted diversions and temptations, many of which are connected to modern media and communication technology, on which we have grown

reliant. The enormous availability of media and the amount of time youngsters spend using media technology are obvious indications of our current generation's changing lives and priorities. In the United States, children spend over seven and a half hours per day using media devices, an alarmingly high average in 2013, but a reality. Children across the globe are spending an increasing amount of time in front of televisions, computers, and mobile phones, making media a major part of their life. Young people nowadays are expected to be online all of the time, and many of them are. To make media accessible to youngsters, advertising, communications, and education offer a fresh new social networking picture.

Although the media is a valuable source of information for children and adolescents' mental health, its widespread usage raises concerns about young people's ability and desire to balance physical and mental activity. A research conducted by the Kaiser Family Foundation looked at media usage among very young children (0–6 years) and found that they spend as much time with electronic devices as they do playing outdoors. This research, like many others, finds a connection between media use and a rise in health concerns including obesity and other physical and mental difficulties. Media addiction, recognizing media as a role in mental illness, dependence, obsessive–compulsive behaviors, concentration difficulties, and other attention disorders are words used by healthcare experts. In addition to these physical and mental dangers, safety concerns are being raised in media-rich societies, with issues such as cyberbullying, young children being exposed to violence, sexually explicit content, and extreme or inappropriate behaviors being emphasized. With media tools and technology, the world at large, including societal deviances, is closer and more readily accessible.

We define the media generation as young people who grow up in a hypermedia world. Unequal access to media is a significant issue in many nations, including India, particularly because information and communication technologies (ICT) are seen as key future knowledge resources. If children and young people's media usage is to be fully understood, it must be contextualized. To begin with, children's daily life offer background, which includes their family environment, school, and leisure activities. When analyzing the impact of new media and ICT on the lives of children, it's equally important to examine culture and norms. Young people's media usage is influenced by their social environment, which includes their family, community, and friends or peer groups. The media environment, which includes conventional media, serves as a backdrop for how new ICTs are adopted. The effect of media exposure on children will be mediated by their usage and receipt of it. Media usage may have far-reaching effects, affecting how youngsters spend their time, socialize, and even perceive the world. As a result, how young people perceive themselves and their life may be influenced by how they utilize media.

1.3. Yoga in Children's Lives

Yoga is an ancient activity that may assist children and teenagers deal with stress and therefore improve their mental health. “In a nutshell,” writes the author of a new book on yoga education in India, “yoga is a strong medium for developing the personality of children and making them capable of confronting today's difficulties and problems.”

What can we do as researchers and responsible citizens concerned about the healthy development of children and young people to create a pleasant environment and chances for them to reach their full potential? With such a deep issue before us, we'd like to provide the reasons for practicing yoga. Pharmaceutical therapies for children with mental health issues are

often used as short-term remedies, leaving them vulnerable to the medication's immediate and long-term side effects. As a result, we must explore alternative solutions that include empowerment in order to provide children and young people with the skills they need to develop self-awareness, self-defense, self-regulation, and holistic self-development.

The expectation that yoga may quiet the mind and improve general health and well-being has sparked a surge in worldwide interest in recent decades. Children's mental health and well-being include the ability to self-regulate emotionally, cognitively, and behaviorally, as well as the development of good relationships with peers and instructors. Yoga is an ancient Indian discipline that has gone across the globe and is now being revived in India. Asanas (postures), pranayamas (breathing methods), mudras (hand poses), and meditation are all part of yoga. There is a body of information about which postures are best for certain physiological processes. Yoga's beneficial effect on people's physical and mental health, as well as their overall well-being, has been documented in both ancient and modern yoga literature. Some of these assertions are supported by current scientific study on yoga, which shows that specific yoga practices are helpful to children's and young people's mental and physical health.

Yoga may be a beneficial scientific intervention for children and adolescents as a stress reliever, particularly in the school environment. Yoga is also anticipated to aid in the development of self-regulation in younger children and adolescents, facilitating their well-being, good social relationships, and academic achievement. Other scholarly research indicates that yoga offers substantial health benefits, particularly for stress management. "An increasing amount of data supports the idea that yoga improves physical and mental health through down-regulation of the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic nervous system," according to a meta-analysis of publications. Apart from being a supplement to enhance concentration and attention, yoga may help children grow, improve their well-being, decrease daily stress, promote weight management, and alleviate emotional and behavioral issues.

Yoga practice among children has been shown to enhance attention, stress relief, self-awareness, consciousness, self-regulation, behavioral and emotional maturity, and self-confidence in daily life. Yoga has also been shown to be an effective complement to medical therapy for mental disorder in certain cases. Although there are some promising signs, further study on yoga as a stand-alone treatment is needed.

2. DISCUSSION

Yoga, according to this article, may be a beneficial technique for youngsters. "If you practice yoga every day with persistence, you will be able to confront the turbulence of life with stability and maturity," we think this phrase equally applies to children and young people. Yoga's usefulness has been acknowledged by businesses all around the world. Yoga training centers, practice centers, commercial organizations, and individuals in both the business and non-profit sectors have established studios and conducted sessions in different forms and methods throughout metropolitan regions in recent years. A large number of individuals pay to utilize these facilities and practice yoga. Despite their primary duty of developing the full potential of children and young people, schools, pre-schools, and the public sector of education are not keeping up with the trend.

In the teaching–learning process, today's youngsters need a creative, dynamic curriculum and a participatory approach. This method may also be used to learn yoga. As a result, if we can

successfully connect with children and young people, they may use yoga as a strong tool to reduce stress and build resilience to cope with it. We think that further study is needed to better understand how children and young people may enjoy learning yoga, practice it regularly, and use it in their everyday lives. They may utilize yoga to deal with a variety of emotional and social stressors. From a social standpoint, we believe that yoga may help individuals become more socially aware, which may improve the probability of children and young people participating in civic activities and helping to shape a better society. Yoga, as previously mentioned, has the ability to enhance the mental health of children and adolescents. We've maintained that children and teenagers are agents with the growing ability to improve the self and society, and that yoga is a way for them to achieve holistic well-being. We may use this individual and societal conceptual value framework to restore social democratic structures for yoga and mental health in children and young people.

We have discussed some of the stresses to which children are subjected in their daily lives in contemporary cultures, such as increasing expectations and children's extensive media use, in this article. We've argued that yoga is essential for stress management, self-regulation, and healthy development in children and adolescents. As previously said, research on the impact of yoga on the mental health and well-being of children and adolescents is still in its early stages.

3. CONCLUSION

We believe that yoga may help children and young people stay focused or recover concentration, allowing them to deal with the stress and difficulties that they face in their daily life. Such instruments are required in the world and cultures in which today's youngsters are born. When feasible, yoga treatments should be evidence-based, supported by empirical research and user involvement. To advance this area of yoga research, research initiatives must be multidisciplinary and should include both quantitative and qualitative research methods.

As a result, the author makes the following suggestions:

- We suggest that yoga be made available to children and young people in pre-schools, schools, and community centers as part of the chances for them to study and practice it from an early age. Obviously, the long-term benefits of such an investment may be seen by future generations experiencing less stress.
- To determine the effect of yoga programs, we suggest both pre- and post-intervention investigations.
- In order to get a better theoretical knowledge of the possible benefits of yoga, it is also necessary to build a theoretical framework linking children and young people's mental health and well-being to appropriate self-regulation processes.
- Finally, we believe it is critical to create policies to introduce yoga into schools and to educate instructors to do so with children.

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OVERVIEW ON REVERSE OSMOSIS TECHNOLOGY FOR WATER TREATMENT

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ABSTRACT

Reverse osmosis (RO) is becoming more used both in water treatment & salinity applications throughout the globe. It is a pneumatically process in which dissolved components in the input water are rejected by a semi-permeable membrane. Size exclusion, charging exclusion, and physiological interactions between the solute, solvent, and membrane all contribute to this rejection. The efficiency of the process is determined by operating factors as well as membrane and appropriate water characteristics. Iterative and hollow fiber modules are the most widely accessible. This article examines current developments in reverse osmosis technique in relation to the main problems that have arisen in this fast expanding distillation technique. Fouling research and control approaches, membrane characterization methods, and applicability to various water types and components present in the feed solution are among these problems. A review of key advancements in RO efficiency and mechanism modelling is also provided, as well as an introduction to current transport models. The two major problems of RO brine discharge as well as energy prices and recovery techniques are also addressed. Finally, future studies trends and requirements in the field of robotics are discussed.

KEYWORDS: Brine, Characterization, Costs, Fouling, Models, Reverse Osmosis.

INTRODUCTION

The latter has a very high density and therefore produces a lot of permeate, but it is far more susceptible to fouling. [1] Asymmetric membranes with one protective film or composite membranes with two sheets are also possible. The valence and intensity of the labelled are controlled by the functional groups incorporated into the polymeric material, whereas membrane hydrophobicity, charge, and roughness influence the degree of sorption of dissolved species. High-area components have recently become accessible, resulting in a smaller footprint and fewer pressure vessels. This article examines current developments in RO technology in terms of membrane fouling research and management, membrane characterization techniques, applicability to various water types and components, and RO efficiency and mechanism modeling. It also addresses the crucial problems of brine and prices. Finally, future research requirements are identified.[2]

DISCUSSION

Fouling of the membrane In RO applications, fouling is a major limiting issue. Pore blockage or solute adsorption on the membrane inducing it. Pretreatment of feed water is required to extend membrane life and avoid fouling. Coagulant, fine filtration, ultrafiltration, or microfiltration, scaling control, such as softness, and acid for pH management are common pretreatment methods. Membrane fouling may occur as a result of: (1) microbial development, (2) scaling, (3) soluble organic compounds, or (4) particle and colloidal debris forming compact cakes. Membrane surface smooth and hydrophobicity have been shown in many studies to decrease fouling susceptibility. Biofilms are formed when bacteria adhere to the membrane surface and embed themselves in an external polymeric material matrix generated by the microbes. The use of chlorine may prevent microbial development. [3]

RO membranes, on the other hand, are sensitive to free chlorine but extremely resistant to chloramines, that are frequently employed to inhibit bio growth. A novel platform of extremely chlorine tolerant polymers built on polysulfone, on either hand, was recently presented. High amounts of calcium, silica, phosphate, carbonate, and other ions induce scaling. It lowers production and lowers the quality of the permeate. Whenever the sum of the concentrations of the soluble components surpasses the solubility limit, as measured by saturation indices higher than 1, scale layer development becomes crucial.[4] Antiscalants are injected, the pH is lowered, and the recovery rate is slowed to reduce scaling. The high expense of antiscalants, as well as the higher brine quantities as well as the fact that excessive doses may encourage scaling, are all disadvantages. Feed flow reversal may be used to avoid scale by employing magnetic valves to change the feed flow direction, extending the reaction rate before scale crystals form and enabling the scale that has accumulated just on membrane surface to dissolve. Due to high organic food content (10–20 ppm) in wastewater effluent compared to the surface waters (2–5 ppm), organic fouling is a significant problem in RO treating wastewater effluent. An filtration or microfiltration stage may successfully control colloidal fouling. Table 1 highlights the main results of current fouling and scaling research. [5]

1. Methods of characterization of membranes:

Membrane characteristics and morphology may be studied using a variety of techniques. New methods are being developed to get a better knowledge of the polymer membranes at the molecular, microcrystalline, and colloidal levels. Estimating the molecular weight cut-off (MWCO), bubble gas transport, water flux and solute rejection measurement, mercury porosimetry, liquid vapor equilibrium, gas liquid equilibrium or permoporometry, liquid solid equilibrium or thermo-porometry, and microscopic methods are all well-established methods.

The literature is replete with comprehensive evaluations of various methods. As a result, here's a quick rundown of the most important ones. The reject of a round solute of a given molecular weight is linked to MWCO, which is a pore size characteristic. Photogenerated electrons interactions between both the membrane and solutes, it is an overly approximate technique of determining actual membrane rejection properties. Methods are mainly based on bubbling pressure and gas movement assess a membrane's pore size distribution in wet circumstances, which is how they're really utilized, and therefore minimize structural change during sample preparation.[6]

Permoporometry is based on the capillary forces of liquids in micropores, which allows you to fill holes of a certain diameter with liquid by adjusting the relative pressure. Pores with a size matching to the vapour pressure exerted are emptied and become accessible for gas transmission when the pressure is decreased. By monitoring the gas flow across the membrane while lowering the relative pressure, the average diameter of active holes may be determined.[7]

The Hagan-Poiseuille equation and the micro porous diffusion model establish the concept of the water permeability technique. This technique determines the mean pore radius as a function of water viscosity, membrane thickness and surface porosity, hydraulic permeability, water flow, and trans-membrane pressure. It's a quick and easy way to estimate pore size indirectly, particularly when it comes to regulating the spinning parameters during the production of hollow-fiber membranes. The major drawback is that quantifying surface permeability and pore tortuosity, which is defined as pore length divided by membrane thickness, is challenging. The pore size distribution is estimated in thermoporometry, where pore structures are also assessed in wet settings, by measuring the freezing and/or melting thermodiagram, since the temperatures of liquid crystallization and/or solid melt is lower in smaller pores.[8]

The hydrophobicity of a membrane, which is usually measured by the contact angle, is one of its most significant characteristics. The captive bubbles contact area or the sessile drop method, in which the angle, contacting radius, and altitude of a motile drop are examined via an optical microscope from its edge, yields this angle. Electrokinetic phenomena like streaming potential are often employed to describe a membranes surface or zeta potential, which is vital to understanding colloidal and interfacial events. Streaming potential, on the other hand, is influenced by electrolyte content and may be deceiving owing to ion sorption and surface conductance-related events. Hurwitz used contact angle titration to create a quick method for determining charge functioning. Alienating active membranes layers on quartz crystal monitor and thin glass substrates and measuring water mass uptakes and biaxial stresses against humidity was also utilized as a characterisation technique. Another approach is indeed the EX-situ Scale Observation Detector (XSOD) device, which uses automated picture analysis software to identify scale crystals before flow declines. Lee also used the fractional rejection idea with nonionic and charged solutes to estimate pore size ranges in terms of molecular mass. Finally, nuclear magnetic resonance (NMR) and electron scattering methods are two newly used characterisation techniques.[9]

2. Applicability to certain water types and components:

Semiconductor materials, food manufacturing, electricity production, pharmaceutical drugs, water recycling, biotechnology, helped produce water from oil production, textile, pulp and paper, mine as well as dairy wastewater, procedure and boiler water, leather tanning, and beverage industry are just a few of the applications for reverse osmosis plants. The findings of current study on RO efficacy in treating various kinds of feed solution and components.

3. Modeling of performance and mechanisms:

System automation and dependability are important in RO plants, and automated systems are prone to valve or pump failure, membrane fouling, and sensor data loss. In the flow reversal operation, switching back to normal flow fast may create scale crystals on the membrane, and running the reversal for too long can produce scale on the output end of a membrane surface. Understanding these processes is therefore critical for ensuring consistent plant performance.

The mass transfer rate in the presence of low operating pressures and thermodynamic limits for highly permeable membranes are two potential processes that regulate the RO process. Although there is no precise technique for determining the shape of the barrier layer, osmosis transport models may be classified into three categories:

- (i) Irreversible thermodynamics models
- (ii) Porous membrane models
- (iii) Non - porous or homogeneous membrane models
- (iv) Nonporous or uniform membrane models
- (v) Non - porous or homogeneous membrane models

There are additional sophisticated transport models and linear dynamic models available, such as assuming a layer of polymer macromolecule clusters or incorporating the fractal character of pore distribution and shape in the barrier. Size restriction and charging or dielectric exclusion are two concepts that play a role in transport processes.[10] A sieving effect or steric hindrance rejects uncharged solutes, whereas solutes with a molecular weights cut-off (MWCO) are kept. Convection owing to a pressure differential and diffusion via a concentration difference across the membrane also contribute to the transfer of uncharged solutes. The mechanism for charged solutes is primarily regulated by charge exclusions or the Donnan effect. This is due to the interplay between the membrane matrix's fixed electric charges and the rejection of co-ions.

Irreversible thermodynamic models consider the membrane as a black box in which relatively slow processes approach equilibrium and solute and solvent fluxes are believed to be proportional to biochemical possible differences between both the sides of the membrane. In the classic hydrodynamic or pore model, the membrane is managed to cross by cylindrical pores of uniform diameter r_p and length A_x , solute compounds are designed to simulate as rigid spheres of radius r_s slowly moving inside the pores, Poiseuille flow occurs in the pore spaces of the solvent, steady-state flow occurs, and the solute concentration is so low that there is no interaction between solute molecules.

Modern pore models were created to improve on the traditional hydrodynamic model, which has two major flaws. First, the classical model employs the very same wall correction factor $f(q)$ for both diffuse and convection flow, which isn't always the case, particularly when the liquid within the pores isn't stationary. Second, since the equation of motion must be averaged across the membrane, using the identical concentrations on both sides is inaccurate.

A quantifiable structure activity relationship (QSAR) has indeed been suggested to predict the rejections of developing pollutants by polyamide membranes in addition to the aforementioned models. The QSAR model combined data on membrane interactions, filtration operating conditions, and solute properties to determine that salt rejection, equivalent molecular width, depth, and length, and the ratio of concentration levels of all organisms of a particle in octanol to the same species in the water phase were the most important variables. In other research, a flow reversal mechanism was suggested to avoid membrane scaling, and multi-criteria problems were combined to choose the best post-treatment technique. For an existing unit, the operational pressure differential from across membrane was found to be the sole important decision variable.[11]

4. *RO costs:*

The cost of reverse osmosis systems is still a significant issue, since it is determined by both energy usage and membrane replacement prices. Water production costs may be lowered by combining two or even more desalination techniques in a hybrid system. Energy recovery devices, like the Pelton wheel, turbocharger, pressure exchanger, and Grundfos Pelton wheel, have been designed to transfer the energy contained in the brine of RO systems back to the high-pressure pumps used in the water treatment process. Energy consumption may be decreased from 6–8 kWh/m³ to 4–5 kWh/m³ and even further to 2 kWh/m³. Electric power, membrane replacement, and the chemical treatments are all cost factors that may be improved in the future. Automation systems may help to improve plant reliability and safety, as well as decrease membrane fouling and improve problem detection. Increases in the amount of RO units in series and the size of single RO units have also been shown to be effective. RO systems powered by gas/steam turbines are less expensive (0.43\$/m³), and brine-staging units may improve water recovery while lowering specific energy usage.

5. *Brine disposal:*

The cost of disposing of reject brine is determined by brine properties, degree of treatment prior to disposal, disposal technique and environment, and salt volume. Direct sea release, well injection, and evaporation ponds are some of the current disposal options. The first two alternatives have a direct cost of 0.05–0.06 US\$/m³ of product water, but the latter option has a cost of 0.56 US\$/m³, however this is the only technique which allows for resource recovery. The indirect expense is unknown, since it is mainly determined by whether or not environmental harm occurs. As a result, dilution and salt recovery have been used to minimize the effect. By eliminating the scaling elements of input water, less brine is produced and excellent recovery rates are achieved. Furthermore, new RO membranes have been developed to handle the highly concentrated brine of a traditional RO system, recovering 60% of the brine as drinkable water with a TDS of b200 ppm and lowering total desalination costs by 15–20% and plant size by 30%. [12]

CONCLUSION

RO systems have been the subject of much research, and many improvements have been developed. These include using a photovoltaic solar system to power RO desalination and developing new membranes with novel materials, like the polyetherurea and polyamide–urea barriers, which have been shown to reduce microbial adhesion and therefore fouling potential. A pass matrix of polymers with engineered nanoparticles intended to pull in water ions yet reject virtually all pollutants, including dissolved salts, organics, and bacteria are examples of other membrane advances. Water is pumped through the membranes with less energy, and the new membrane foul more slowly than traditional membranes because they resist particles that normally cling to the surface.

Release of RO concentration or brine, management and decrease of membrane fouling, and use of membrane materials other than polymers are all areas that need further study. Chemically modified membranes' long-term fouling resistance has to be studied. Although the majority of research using membranes as a tertiary treatment procedure indicates complete removal, just a few studies on the efficacy of full-scale membranes treatment in eliminating endocrine disrupting chemicals (EDCs) and pharmaceuticals are known. Certain chemicals, such as unexplained

organic halides generated by disinfecting and their possible elimination by RO, as well as membrane cleansing and susceptibility to humic acids, need more investigation. Another study topic is automating and accurate performance modeling, since reliability is essential in automated facilities that are susceptible to component failure. When it comes to costs, creating less power systems is a top priority. Existing cost estimation methods and tools are insufficiently precise and do not take into consideration all relevant factors. Further study on the direct and indirect costs of brine discharge is also required.

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A REVIEW OF YOGA PROGRAMS FOR FOUR LEADING RISK FACTORS OF CHRONIC DISEASES

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ABSTRACT

Heart disease, stroke, and diabetes are the major causes of mortality in the United States. Obesity, high blood pressure (BP), excessive hyperglycemia, and high cholesterol are all common causes of chronic illnesses. These disorders are often linked to one another. There were favorable associations between body mass index (BMI) and hypertension occurrence in a prospective cohort research focused on males. Yoga is a kind of physical exercise that is quickly gaining popularity and offers many health advantages. However, healthcare professionals have been reluctant to acknowledge yoga's potential to enhance health, and few treatments that fully exploit its advantages have been created. The goal of this article is to examine existing yoga research and assess the impact of yoga treatments on key chronic disease risk variables (overweight, hypertension, high glucose level and high cholesterol). A thorough search turned up 32 articles that were published between 1980 and April 2007. Yoga treatments are usually successful in decreasing body weight, blood pressure, glucose levels, and high cholesterol, according to the research, but just a handful looked at long-term adherence. Furthermore, there were few studies that covered different groups at high risk for diabetes and its associated health issues.

KEYWORDS: *Yoga, Chronic Disease, Risk Factors, Overweight, Hypertension, Glucose, Cholesterol.*

1. INTRODUCTION

Diabetes and high cholesterol are more likely in men who have a higher BMI. Another research of men and women found a connection between obesity and type 2 diabetes. The Hypertension in Diabetes Study discovered that 40% of patients newly diagnosed with type 2 diabetes had hypertension, and that hypertension significantly increased mortality in individuals with type 2 diabetes. Another recent research found a 79 percent incidence of hypertension in type 2 diabetes patients who had received outpatient treatment for at least two years. Individuals with impaired

glucose tolerance are also more likely to have cardiovascular disease risk factors such as high triglyceride and low-density lipoprotein (LDL) levels, as well as low levels of high-density lipoprotein (HDL) (HDL)[1], [2].

Appropriate physical exercise is promising in this respect since it may lower body weight, blood pressure, glucose levels, and cholesterol. Yoga, a kind of physical exercise that consists of a variety of postures (Asana) as well as breathing and meditation methods (Pranayama), has been proven to offer therapeutic advantages for those suffering from a variety of ailments, including hypertension and diabetes. Because it is linked to cardiovascular reactivity, yoga seems to be helpful in decreasing stress and increasing exercise tolerance. Between 1997 and 2002, the number of individuals practicing yoga in the United States grew substantially. According to the National Health Interview Survey from 2002, 5% of American people had done yoga in the month before the survey. Yoga is also well-received as a therapeutic intervention; participants in a yoga intervention for insomnia, for example, considered it to be simple to learn and execute. Yoga has not been generally acknowledged in attempts to prevent and cure major chronic health problems, despite its popularity and beneficial physiologic benefits. The goal of this article is to look at published research that have used yoga to see how it affects common health issues including obesity, hypertension, high blood sugar, and high cholesterol[3]–[5].

According to the World Health Organization, 64 million individuals have acquired chronic obstructive pulmonary disease (COPD) (COPD). COPD claimed the lives of three million people in 2004, and it is expected to become the third largest cause of death globally by 2030. COPD is a lung disease marked by chronic airflow obstruction and symptoms such as dyspnea, abnormal sputum, and chronic cough. In a study of 29 older COPD patients, participation in a 12-week Iyengar yoga training program decreased dyspnea-related suffering (Baseline; 2.6 2.8, 12-week; 1.6 1.7, effect size (ES)=0.67, $p=0.08$) and increased functional performance (Baseline; 2.0 0.5, 12-week; 2.2 0.4, ES=0.79, $p=0.04$). In a separate study of 25 COPD patients, the Hospital Anxiety and Depression Scale anxiety score (pre-Iyengar yoga: 3.91 1.03, post-Iyengar yoga: 4.50 0.76) and the Chronic Respiratory Questionnaire fatigue score (pre-Iyengar yoga: 6.63 4.63, post-Iyengar yoga: 3.25 1.98) both improved significantly. Furthermore, after completing the 12-week Iyengar yoga program, these individuals' clinically significant ratings altered [6], [7].

Cancer is the most common cause of death in the world. According to the International Agency for Research on Cancer, the total number of cancer deaths in 2012 was 8.2 million, with lung cancer (1.59 million deaths), liver cancer (745 thousand deaths), stomach cancer (723 thousand deaths), colorectal cancer (694 thousand deaths), and breast cancer (521 thousand deaths causing the most deaths. The impact of a 6-week yoga program on 163 breast cancer patients' quality of life (QOL). At 1 and 3 months after radiation, the yoga group's physical component scale scores and physical functioning improved more than the control group's. Stress symptoms and QOL improved more in the MBCR group than in the control group in a trial of mindfulness-based cancer recovery (MBCR), which included mindfulness meditation and gentle yoga [8].

Cardiovascular disease (CVD) is the leading cause of mortality worldwide. According to the World Health Organization (WHO), the number of fatalities from cardiovascular disease (CVD) was about 17.3 million in 2008, accounting for 30% of all worldwide deaths, and is expected to rise to 23.3 million by 2030. Obesity and diabetes mellitus are the two most significant risk factors for CVD. In 51 overweight and obese men, a short-term yoga-based lifestyle intervention lasting two hours per day for ten days reduced interleukin (IL)-6 and raised adiponectin. CVD

risk was linked to high levels of IL-6 and low levels of adiponectin. As a result, a short-term yoga-based lifestyle intervention may be an essential strategy for reducing the risk of CVD in overweight and obese men, as shown by a reduction in IL-6 and an increase in adiponectin. After a 6-month Hatha yoga program, the activity of superoxide dismutase increased and fasting blood glucose, serum total cholesterol, very LDL, and malondialdehyde reduced in 231 individuals with type 2 diabetes mellitus. In 24 young and 18 older individuals, the impact of Bikram yoga on vascular stiffness and insulin resistance was studied. After the yoga program, total and low-density lipoprotein cholesterol levels, plasma insulin concentrations, and scores on the homeostatic model of insulin resistance assessment reduced in older people, whereas carotid artery compliance improved and the -stiffness index dropped in young adults.

The pathology of many chronic illnesses are known to be modulated by proinflammatory cytokines, and treatments for patients with chronic diseases are intended to decrease inflammation. TGF-, nuclear factor (NF)-B, tumor necrosis factor (TNF)-, and interleukin-6 (IL-6) activation has been observed in prior investigations of COPD, chronic renal disease, obesity, and metabolic syndrome. In 86 individuals with chronic inflammatory illnesses who engaged in a 10-day yoga-based lifestyle program, stress and inflammation makers were decreased. By day 10, the mean level of cortisol had reduced and the amount of -endorphins had risen from baseline in these individuals. By day 10, mean decreases in IL-6 and TNF- levels from baseline had also been detected. The plasma levels of soluble TNF receptor type II, a measure of TNF activity, were constant in the yoga group but rose in the control group in a 12-week Iyengar yoga program for breast cancer patients. Another research found that a 12-week Hatha yoga intervention enhanced the vitality of breast cancer survivors while lowering the tiredness score calculated by the Multidimensional Fatigue Symptom Inventory – Short Form and the levels of IL-6, TNF, and IL-1 three months after treatment. Increased yoga practice reduces the production of IL-6 and IL-1, but not TNF-. As a result, frequent yoga practice may lower proinflammatory cytokine levels and therefore be an effective therapy for chronic illnesses.

1.1. Yoga Session Frequency and Duration:

In assessing and comparing yoga research, the overall dosage of yoga training, which is dependent on both the length and frequency of yoga sessions, must be taken into account. In the research, the most common length and frequency of yoga sessions were 30–60 minutes each session, with sessions meeting daily for 4–10 weeks, although several studies utilized sessions meeting 2–3 times per week for 8–12 weeks. Some yoga programs meet more often but for a shorter period of time than others. In one research, those with essential hypertension got 1 hour of yoga training every day for three months, totaling 84 hours of training, compared to healthy young adults who received 1 hour of yoga training three times a week for ten months, totaling 120 hours of training.

Some of the results may be helpful in determining the most efficient yoga session lengths. In one research, for example, 1 hour of daily yoga practice was linked to substantial weight and cholesterol reductions after 4 weeks, with the benefits lasting for 14 weeks. Daily 30-minute yoga sessions reduced blood pressure on the fifth day in a study of 20 individuals with essential hypertension.

1.2. Completion of the Yoga Program:

Long-term adherence to yoga would be required for any long-term advantages, which was only looked at in a handful of the research analyzed. In other studies, after completing yoga instruction, participants were invited to continue their routines at home on a regular basis. One of them examined white and black American adults' commitment to yoga practice following a 10-week yoga intervention (mean age: 69 years for whites and 70 years for blacks). Although there was no significant difference in dropout rates (16 percent for whites, 22 percent for blacks), black participants did not practice yoga at home as much as whites. In a separate research, participants in a three-times-per-week yoga session had higher compliance with subsequent home practice than those in a weekly yoga class (86 percent vs 65 percent, $P = 0.05$). However, there was no difference in compliance with home practice between the yoga and aerobic exercise groups.

1.3. Loss of weight:

Regular yoga practice for four years or more was substantially linked with weight reduction in overweight individuals, according to a retrospective observational research of 15,550 people aged 53–57 years. Yoga practice was also shown to be helpful in decreasing body weight in many intervention trials. One research showed a substantial reduction in mean body weight from 72.26 to 70.48 kg among individuals with risk factors for coronary artery disease after a 4-day residential yoga practice followed by 14 weeks of 1 h daily home practice (CAD). Yoga has been linked to substantial weight reduction in both those with and without coronary artery disease, according to other research. After one year of yoga practice, adult males with CAD lost 7% of their body weight, while healthy individuals dropped an average of 5.7 kg after three months of yoga practice, according to Schmidt and colleagues. Within a year of starting yoga-based lifestyle changes, all overweight individuals were back to their normal weight. However, the impact magnitude of this modification was not shown in this article.

1.4. Reduced Blood Glucose Levels:

Yoga was shown to be helpful in lowering blood glucose levels in all six research that looked at it. Fasting glucose levels in a sample of individuals with type 2 diabetes decreased substantially (from 144 to 119 mg dl1, $P = 0.005$) following four months of yoga practice. After 40 days of yoga practice, a group of 24 individuals with type 2 diabetes had substantially lower fasting glucose (from 190.1 to 141.5 mg dl1, $P = 0.001$). After 8 days of 3–4 h of yoga practice, adults with normal blood glucose levels had substantially reduced glucose levels ($P = 0.001$).

1.5. BP Decreased:

Yoga was shown to be helpful in lowering blood pressure in this study. The benefits of a yoga class and an aerobic exercise class, both conducted three times a week for ten weeks, on systolic blood pressure were similar in a sample of low-income older individuals. However, regardless of the kind of yoga used, eight additional research showed that it was helpful in reducing blood pressure in healthy volunteers. People with hypertension, cardiovascular disease, or type 2 diabetes who practiced yoga had a substantial reduction in their blood pressure. For example, after the third week of a 4-week yoga program (1 hour per day, 6 days per week) in 13 patients with essential hypertension, BP decreased substantially, and it dropped even more following the

program. By the third week, systolic blood pressure had decreased from 141.7 to 127.9 mmHg, and by the fourth week, it had dropped to 120.7 mmHg.

1.6. Cholesterol Level Improved:

Yoga has been linked to substantial reductions in cholesterol in those with cardiovascular disease, hypertension, or type 2 diabetes. One research looked at a program that included four days of yoga at a residential course followed by a year of yoga practice at home. All lipid indicators except HDL declined starting the fourth week of yoga practice in both men with angina and asymptomatic individuals with CAD risk factors (for example, total cholesterol went from 206.6 to 193.6 mg dl), and total cholesterol continued to reduce to 176.06 mg dl after 14 weeks. Short-term intense yoga practice (3–4 h per day for 8 days) resulted in substantial improvements (P 0.01) in total cholesterol, triglycerides, LDL, HDL, and very-LDL (VLDL, defined as total cholesterol minus LDL minus HDL) in individuals at risk for cardiovascular disease and diabetes. The reduction in triglycerides (from 151.5 48.9 to 132.7 50.5 mg dl, P 0.001) and VLDL (from 36.7 13.8 to 30.2 14.6 mg dl, P 0.001) was significantly greater in subjects with higher baseline total cholesterol (triglycerides falling from 113.6 46.5 to 110.5 38.1 mg dl, P> 0.05; VLDL from 23.7 12.8 to 23.2 12.8) than in subjects with lower baseline total cholesterol (Finally, a study of healthy individuals over the age of 40 discovered that 5 years of yoga practice prevented age-related decline in cardiovascular function. The results revealed a long-term shift suggesting the efficacy of yoga on cardiovascular functioning, despite the fact that the paper reporting this observational research did not specify the kind of yoga done, nor the frequency or intensity of the yoga sessions.

Four studies utilized yoga as a control and aerobic exercise as an intervention. One of these studies, which looked at healthy active individuals aged 65 and above, showed that aerobic exercise had no meaningful effect on weight or blood pressure, but that 4 weeks of yoga practice did (for example, systolic BP decreased from 146 to 139 mmHg). In the yoga control group, there was no change in glucose and insulin responses. During yoga practice, however, the yoga control group was monitored to ensure that pulse rates did not surpass 90 beats per minute. As a consequence, this limitation should be taken into account while evaluating this outcome.

2. DISCUSSION

Yoga was shown to have positive benefits on body weight, blood pressure, blood glucose, and cholesterol levels in the studies. Nonetheless, in order for clinical programs to capitalize on these health advantages, numerous flaws in research on this subject must be corrected.

Only a handful of the papers discussing treatments included information about yoga programs or the names and sequences of yoga poses. Different kinds of health benefits are provided by asana and pranayama, and therapeutic yoga programs may include diverse mixes of these two components. Knowing the mix of Asana and Pranayama performed is necessary for an appropriate comparison of research findings. The sequence of yoga poses may be deduced from the list of position names, but future research that want to replicate or generalize the findings will need more simple information. How to standardize yoga activities for research purposes is a similar problem that has yet to be addressed.

The ideal length and intensity for maximizing the efficacy of yoga, as well as the requirement for a booster to give long-term benefits, must be established. Because yoga has a low MET,

increasing the frequency may boost the benefits. Many papers did not explicitly specify the dose of the yoga program examined, and they concentrated on the short-term health advantages of yoga, thus these variables cannot be evaluated from reviews research. Only a few research included data beyond the first six months. It's also unclear if more intense training, i.e., a higher dose, increases the chances of long-term adoption and maintenance of active behavior.

Additional issues arise as a result of the samples used in the research examined. It's no surprise that the majority of the research was done in India, the birthplace of yoga's theory and practice. However, the findings' generalizability is limited due to the study's emphasis on a certain geographical area where yoga is especially entrenched in the culture. Few studies have looked at factors relevant to minorities in the United States (Blacks, Hispanics, and Asians), who are thought to be more susceptible to type 2 diabetes and physical inactivity.

Yoga is helpful for a variety of health issues. A significant number of the research looked at the effects of yoga on healthy people. Yoga has been shown to be more helpful in reducing triglycerides in individuals with high cholesterol levels than in people with low cholesterol levels. Since a result, it is important to examine the health conditions of participants, as there may be variations in the benefits of yoga depending on their health severity.

Yoga has recently been shown to enhance a variety of immunological markers. Antimicrobial peptides called defensins kill bacteria by damaging the hydrophobic core of their lipid bilayers. The epithelial cells of the oral cavity and respiratory tract express human-defensin 2 (HBD-2). In a recent research, we found that 90 minutes of yoga stretching enhanced salivary HBD-2 concentrations and the rate of HBD-2 expression in 15 older people. Emotional stress has been shown to affect HBD-2 expression. As a result, we hypothesized that yogic stretching reduces stress, resulting in increased salivary HBD-2 expression.

3. CONCLUSION

We looked at the impact of yoga on chronic illnesses and immunological functioning in this article. These findings indicate that yoga may help chronic illness patients by reducing discomfort and increasing functional performance. Yoga has recently been shown to have beneficial benefits on many immunological markers, suggesting that it may be an effective way for older people to avoid infectious illnesses. Yoga has the potential to be useful as a supplementary and alternative treatment for chronic illnesses, and it may also aid in the health maintenance of older people. Yoga intervention analyses should be developed and performed to find programs that are most suited for a variety of groups, including those with high-risk factors for chronic health problems. Such research may help to create more realistic and effective treatments. Yoga is a low- to moderate-intensity activity that may be done gently and readily by beginners and older people. We examined the benefits of yoga on COPD, cancer, CVD, obesity, diabetes mellitus, and immunological functioning in this article; however, many research have shown that yoga has a variety of favorable impacts on other illnesses and mental stress. As a result, yoga may be beneficial for maintaining health in older people. A further in-depth look of the impact of yoga on immunological function is required.

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AN OVERVIEW ON FUEL ETHANOL PRODUCTION FROM LIGNOCELLULOSIC BIOMASS

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ABSTRACT

The current progressive depletion of world's energetic resources based on non-renewable fuel and energy use is increasing day by day. Moreover, it is generally known that fossil fuel consumption is the main driver of global warming. The method to address these issues relies on the potential adoption technologies for alternate sources of energy. The review deals with fuel ethanol generation using plant-based lignocellulosic biomass as raw materials. In this article, the technologies for generating fuel ethanol with the major research possibilities for enhancing them are described. The complexity in the biomass processing is detected by the study of different steps involved in the conversion of lignocellulosic biomass into fermentable sugars. Further, the fermentation processes with its essential characteristics are described based on biomass conversion. Comparative index for various kinds of biomass for fuel ethanol generation is given. Finally, some closing comments on current research addressing the pre-treatment together with biological conversion of biomass into ethanol are given.

KEYWORDS: Biofuel, Ethanol, Fermentation, Hydrolysis, Lignocellulosic biomass, Pre-treatment.

INTRODUCTION

There is one renewable option that solar energy may be utilized in the form of biomass. A significant area of global potential of bio-energy resources is represented in the form of energy crops and lignocellulosic complexes. Further, conversion of lignocellulosic biomass into biofuels is one of the key options for the development and utilization of alternative energy sources. In addition, plant-based biofuel manufacturing for gasoline replacement will improve the economic growth. Thus, the development of biofuels, particularly bio-ethanol, has acquired strategic significance.

Biofuels are described as transportation fuels generated from biological resources, or via biological processes. Biofuels may be liquid (e.g., ethanol, butanol, long chain alcohols, fatty acid esters, biodiesel, algal diesel, alkanes, methanol), gas (e.g., hydrogen, methane), solid (e.g., wood chips, sawdust, grass clippings, agricultural waste, manure), or electrical. These can be generated from various primary energy sources, such as plant biomass, algae, and solar energy as well as CO₂ plus secondary energies, such as hydrogen and electricity. These may be generated via biological methods mediated by bacteria or cascade enzymes, chemical catalysis (e.g., gasification, pyrolysis, and aqueous phase reforming), or a mix of these two [1]–[5].

Ethanol is an appealing alternative fuel because it may be mixed with gasoline and utilized as clean alcohol in engines with higher octane number and heat of vaporization. Bio-ethanol production has grown quickly since several nations aimed toward decreasing oil imports, increasing rural economy along with enhancing the quality of air.

Lignocellulosic Biomass and its Advantages in Bio-Ethanol Production:

Lignocellulosic complex is considered as the most common biopolymer in the world and as one of the possible raw materials for ethanol synthesis. About 50 percent of the global biomass is regarded as the lignocellulosic biomass and its total yearly output is estimated to be about 10–50 billion ton. Generally, lignocellulosic biomass for bio-ethanol (as fuel) production can be differentiated into the following six groups: crop residues (sugarcane bagasse, sweet sorghum bagasse, pulp, wheat straw, rice straw, rice hulls, and barley straw), softwood (pine and spruce), hardwood (aspen and poplar), cellulose wastes material such as newsprint and waste office paper, herbaceous biomass material (thimothy grass, alfalfa hay, switch grass, coastal Bermuda grass), and municipal solid wastes (MSW) (MSW). A significant number of research for establishing large-scale ethanol production from lignocellulosic biomass have been carried out globally. However, greater degree of complexity in processing the feedstock is the primary limiting factor for ethanol production, and this is directly linked to the composition of lignocellulosic material. Cellulose and hemicellulose are the two major polymers of the biomass that break down into fermentable sugars, which are subsequently turned into ethanol, however the breakdown of lignocellulosic biomass is a complex and energy-consuming process.

Biofuel production is more demanding in contrast to fossil fuels, thus the sources of energy will to a greater degree be local and offer security of supply. The global output of biofuels reached 105 billion liters in 2010, which is an increase of 17 percent from 2009, out of which biofuels contributed approximately 2.7 percent to the world's road traffic.

Conversion Process of Ethanol Production:

Production of ethanol from lignocellulosic waste offers a lot of benefits, but lack of production facilities is the major barrier. Currently, ethanol is generated from starch-based material in which a liquefaction phase is required to make starch soluble, thus making accessible for conversion to fermentable sugar, and the hydrolysis process for glucose synthesis from starch, which is ultimately fermented to ethanol. Figure 1 provides an overview of bio-ethanol manufacturing process. There are a lot of parallels between the lignocellulosic- and the starch-based processes for ethanol production, but lignocellulosic-based conversion is experiencing greater difficulties due of techno-economic constrains. Many feasible alternatives to lignocellulose-to-ethanol process are there, however the following worrying characteristics must be addressed in contrast to the existing ethanol production method based on sugar or starch material [6]–[9].



Figure 1: Illustrates the overview of bio-ethanol production process

Pre-Treatment of Lignocellulosic Biomass:

Pre-treatment of lignocellulosic biomass is the primary difficulty in ethanol production, and is considered as the most costly phase. The lignocellulosic biomass has a complicated structure and is made up of cellulose, hemicelluloses, and lignin. In the pre-treatment process, the complex structure of cellulose is broken down for the availability of free cellulose for enzyme reaction to obtain free sugars for fermentation. In cellulose hydrolysis, accessible surface area is one of the most worrying aspects. Theoretically, less than 20 percent cellulose hydrolysis is done in the absence of pre-treatment (directly with enzymes), whereas it is approximately 90 percent when pre-treatment is done. Therefore, the primary goals of the pre-treatment procedure are lignin and hemicelluloses removal, reduction to crystalline cellulose complex, and increasing the porosity of raw substrate.

Physical Methods:

In order to decrease cellulose crystallinity, waste materials may be used by a combination of processes such as screening, chipping, grinding, and milling. This reduction procedure provides an easier access of cellulases to the biomass surface followed by boosting the conversion of cellulose. The overall energy requirement for the mechanical pre-treatment of lignocellulosic biomass relies on the final particle size and properties of lignocellulosic biomass. The mechanical pre-treatment techniques enhance cellulose reactivity in enzymatic hydrolysis but are less appealing because of high energy consumption and capital expenditure. Pyrolysis has also been attempted as one of the physical methods for biomass pre-treatment since cellulose fastly degrades at high temperatures.

Physico-Chemical Method of Pre-Treatment:

Physico-chemical pre-treatment techniques for lignocellulosic biomass are regarded as one of the oldest and the most researched approaches in contrast to physical pre-treatment procedure. In this category, steam explosion is one of the most researched techniques for the pre-treatment of lignocellulosic biomass, during which hemicellulose and lignin are transformed into soluble oligomers by autohydrolysis reaction by saturated steam at high pressure. Temperature, chip size, and moisture availability are the major variables influencing the steam explosion pre-treatment. Temperature and time are believed to operate in a combined way during the steam explosion pre-treatment, and that is why this is termed severity index, and may be described as a correction term when the process is operating under acidic circumstances.

Chemical Methods:

The history of chemical pretreatment technique for lignocellulosic biomass conversion began a century ago. Chemical pre treatment techniques are the most researched ways among all pre-treatment procedures and include use of various chemical agents such as ozone, acids, alkalis, peroxide, and organic solvents. In general, inorganic acids such as H_2SO_4 and HCl have been mainly utilized for biomass pre-treatment. Use of diluted H_2SO_4 in hydrolysis reaction has been developed owing to fast reaction rates, and resulted in high value-added products such as furfurals, phenolic, aldehyde and aliphatic chemicals. Although this technique is a strong contender for cellulose conversion, significant expenses make this process less affordable.

In one of the experiments, Schell et al. clearly showed that prior treatment of maize stover with dilute acid at pilot plant size utilizing high solid loading at $190^\circ C$ produced a xylose yield of 77 percent. Dilute acid pre-treatment technique for lignocellulosic biomass has been established effectively and continues in two stages: de-polymerization stage of hemicellulose at $140^\circ C$ for 15 min so that the compound production, such as furan and carboxylic acids, may be prevented. In the second step, treatment with dilute acid at $190^\circ C$ for 10 min increases cellulose accessibility greater for enzymatic hydrolysis.

Biological Techniques:

Most technologies needed costly equipment and significant energy usage due to the necessary process requirements. Biological pre-treatment with various rot fungus is an environmentally acceptable approach. The major benefits of biological pre-treatments over high-cost, high-energy-consumption lignin degradation are low energy needs and moderate ambient conditions. This technique is restricted for industrial applications because to the sluggish procedures. Many white rot fungi have been found to breakdown lignin, and they've been utilized to make lacasses for the decomposition of lignocellulosic biomass. White rot and soft rot fungus target both cellulose and lignin, whereas brown rot fungi mostly attack cellulose. Brown rot fungus use the enzymes peroxidases and laccase to attack lignin.

Lignocellulosic Hydrolyzates Detoxification:

Along with fermentable sugars, a variety of chemicals that may impede fermentation are produced during the pre-treatment and hydrolysis of lignocellulosic biomass. Hydrolysis of organic molecules, estrification of sugar acids, and solubilization of phenolic compounds and their derivatives all produce inhibitory chemicals.

Lignocellulosic Biomass Fermentation:

Hydrolyzates The fermentation of biomass hydrolyzates entails many steps that are carried out in distinct units (hydrolysis and fermentation). Separate hydrolysis and fermentation is the name for this system (SHF). SSF, on the other hand, is a process that takes place in a single unit.

Hydrolysis and Fermentation Separated (SHF):

After the cellulose is pre-treated and hydrolyzed, a fraction is produced that includes the cellulose in an accessible state. Fermentation converts the resulting cellulose hydrolyzate into ethanol once the hydrolysis process is completed. One of the most appealing aspects of SHF is that each stage may be carried out under optimum circumstances, increasing the likelihood of product recovery. The availability of cellulose (for glucose conversion), reaction duration, temperature, pH, optimum enzyme unit, and substrate loading are the most essential factors to be considered for the saccharification phase. Distillation is the most common and well-known method of ethanol purification in industry. It makes use of the variations in the volatilities of the constituents in a combination. The fundamental concept is that heating a mixture concentrates low boiling point components in the vapor phase.

Simultaneous Saccharification and Fermentation (SSF):

Because of its higher ethanol production and lower energy usage, the SSF process is more appealing than the SHF. In this method, cellulases (for hydrolysis) and microbes (for fermentation) are combined in the same process unit, enabling glucose to be produced and immediately consumed by microbial cells, culminating in the generation of ethanol. As a result, carbohydrates' inhibitory impact on cellulases is neutralized. The use of more diluted medium, on the other hand, results in a low-concentration end product. Furthermore, this process operates at non-optimal hydrolysis settings, necessitating larger enzyme doses, which increases substrate conversion rate as well as process cost. As we mentioned in the outset of this study, enzymes play a critical part in improving the overall economics of ethanol production, so finding ways for reducing cellulase dosages and characteristics such as thermostability, which aids in hydrolysis at higher temperatures, is critical. Many scholars have suggested the use of surfactants to achieve this goal.

Fermentation of Pentose Sugar:

One of the major challenges in producing bio-ethanol from lignocellulosic biomass is that *S. cerevisiae* can only ferment mono and disaccharides, but not pentose sugar (mainly xylose). Recombinant DNA technology (genetic engineering) may be a way to get around this problem. Separate fermentation of pentose and hexose carbohydrates using pentose fermenting yeasts and bacteria-like microorganisms may be a possible solution to this issue.

Yeasts like *Pichia stipitis*, *Candida shehatae*, and *Pachysolen tannophilus* can use pentose sugar, but their ethanol production rate from glucose is much lower than that of *S. cerevisiae*.

DISCUSSION

Transportation fuels made from biological materials or via biological processes are known as biofuels. The most popular technique for generating fuel ethanol is fermentation. The starch and sugars in maize, sugar cane, and sugar beets are fermented by yeast in the most prevalent ethanol manufacturing methods today. In other areas of the globe, sugar cane and sugar beets are the

most frequent feedstocks used to produce gasoline ethanol. Almost majority of the ethanol produced today comes from starch and sugar-based feedstocks. These feedstocks include sugars that are simple to extract and ferment, making large-scale ethanol production feasible. Corn is the most important crop in the United States, and it is used as the feedstock for most domestic ethanol production.

CONCLUSION

Increased global production of gasoline ethanol necessitates the development of cost-effective and ecologically friendly ethanol manufacturing methods. The cost of producing ethanol, in particular, should be minimal. The major issue of the cost structure for current commercially available technologies is the expense of feeds (over 60%) combined with processing costs. It is necessary to identify several cost-effective pre-treatment techniques depending on the kinds of lignocellulosic biomass and productivity.

The use of a low-cost cellulase enzyme cocktail and improvements in characteristics like thermostability and alkaliophilic nature of enzymes would assist to reduce the total cost of ethanol production. Lignocellulosic biomass is a potential option for ethanol production because to its output, input energy ratio, and widespread availability in tropical and temperate climates. One of the advantages of using lignocellulosic biomass as a feedstock for ethanol production is that it is unrelated to food production. This suggests that large amounts of bio-ethanol may be produced without requiring huge swaths of fertile cultivable land to be devoted to bio-energy production. Furthermore, lignocellulosic biomass may be processed in a variety of ways to produce a variety of high-value products, including methanol, hydrogen, and energy. Furthermore, using genetic engineering for pentose fermentation, genomic sequencing, environmental genomics, and/or metagenomic technologies to improve pre-treatment methods and identify metabolic pathways may help to make bio-ethanol production more cost-effective, practical, and commercially viable.

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OPTICAL REMOTE SENSING IMAGERIES WERE USED TO RECONSTRUCT TIME-VARYING TIDAL FLAT TOPOGRAPHY

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ABSTRACT

Tidal flats (TFs) make up around 7% of the entire coastal shelf area on the planet. Due to the water-impermeable nature of current remote sensing methods (e.g., radar used for WorldDEMTM and Shuttle Radar Topography Mission DEM, and optical stereo-pairs used for ASTER Global Digital Elevation Map Version 2), TFs are not accessible in most global digital elevation models (DEMs). This issue, however, may be avoided by utilizing remote sensing imageries to monitor land exposure at various tide heights on each return. This study uses Landsat-4/-5/-7/-8 Thematic Mapper (TM)/Enhanced TM Plus/Operational Land Imager imageries to rebuild topography of a TF, the Hsiang-Shan Wetland in Taiwan, in order to reveal its creation and temporal changes since the 1980s. To generate an inundation probability map, we first identify water regions by applying a modified normalized difference water index to each Landsat picture and normalizing the odds of water exposure. To turn the probabilities into real heights, this map is scaled using tidal amplitudes derived from the DTU10 tide model. A water level-area curve is constructed after the DEM is built in the intertidal zone, and the accuracy of the DEM is verified by sea level (SL) at the time of each Landsat snapshot. A 22-year dataset of 227 Landsat sceneries (1992–2013) is examined and compared to tide gauge data. With a correlation value of 0.93, the root-mean-square differences in SL exceed 48 cm, indicating that the current method is effective for creating accurate coastal DEMs and those products may be used to estimate immediate SL. This research demonstrates how an archive of optical remote sensing imageries may be used to investigate the development of intertidal zones. The method proposed in this research has the potential to aid in the quantification of SL since the dawn of the optical remote sensing era.

KEYWORDS: *Tidal Flat Digital Elevation Model Landsat Radar Altimetry Tide Model*

1. INTRODUCTION

The US National Oceanic and Atmospheric Administration (NOAA) defines intertidal zones as coastal zones between the mean higher high water (MHHW) and mean lower low water (MLLW) lines. Soft sediment deposition forms tidal flats or mudflats, which are important substrates in intertidal zones. Globally, tidal flats account for around 7% of total coastal shelf area. Due to the water-impermeable nature of current remote sensing techniques, most global

digital elevation models (DEMs) do not cover these regions. For example, neither the German Aerospace Center's (DLR) World DEMTM produced by the TerraSAR-X and TanDEM-X missions (Krieger et al., 2007) nor the Shuttle Radar Topography Mission's (SRTM) C/X-band DEM built by Spaceborne Imaging Radar-C/Xband Synthetic Aperture Radar cover tidal flats (TFs). The ALOS World 3D-30m product from the Japan Aerospace Exploration Agency (JAXA) has data gaps in several regions. The Advanced Spaceborne Thermal Emission and Reflection Radiometer has the same issue. The International Society for Photogrammetric and Remote Sensing, Inc. is a non-profit organization dedicated to the advancement of photogrammetry and remote sensing (ISPRS). Elsevier B.V. is the publisher. All intellectual property rights are retained [1].

Homepage of the ISPRS Journal of Photogrammetric and Remote Sensing: www.elsevier.com/locate/isprsjprs (ASTER) aboard the National Aeronautics and Space Administration's (NASA) Earth Observing System Terra, which produces the Global Digital Elevation Model using a stereo pair of optical pictures. Another prominent global DEM, the Global Multi-resolution Terrain Elevation Data, has a similar problem; it is mainly made up of SRTM and other regional high-resolution data sources, such as ICESat laser altimeter observations. These DEM outputs have limits in coastal areas, and most sea-land interfaces show obvious discontinuity.

The significant morphological variations produced by ocean tides, currents, and river flows in estuaries make TF mapping difficult.

Airborne Light Detection and Ranging (LiDAR) instruments or ship-based single/multi-beam echo sounders are popular approaches for measuring coastal bathymetry. Using current techniques, DEM accuracy levels are several centimeters, with occasional variations of 20 cm. However, due to shallow water restrictions or high water turbidity, these techniques are ineffective in intertidal zones. It's expensive and time-consuming to conduct a comprehensive TF survey and maintain an updated DEM on a regular basis. Only a few regional DEMs including bathymetric/topographic data were published for storm surge research and tsunami mapping (NOAA National Geophysical Data Center, 2015) [2].

Another reason for the failure of traditional techniques to extract coastal DEM is a one-time gathering of satellite pictures. At low tides, a swath of remote sensing pictures has the ability to construct intertidal bottom topography. However, from a worldwide viewpoint, the confluence of tidal conditions and the design of such a mission is virtually unachievable. Remote sensing imageries may be used to observe bottom isobaths. Presented a series of improvements of coastal DEM utilizing synthetic aperture radar (SAR) pictures and the waterline technique. Feng et al. (2011) presented a process for determining the bottom topography of Poyang Lake, China, utilizing the Moderate-resolution Image Processing Technique [3].

250 m spectral bands on the Imaging Spectroradiometer (MODIS). Their research used MODIS water/land borders as well as in-situ gauge stations to recreate bathymetry contour lines. The remainder of the elevation model was subsequently filled using kriging interpolation.

Their model achieved 0.88 m accuracy when compared to a field survey performed fifty years earlier. At more stable regions with less inter-annual fluctuation, the mean standard deviation was 0.49 m.

However, tide gauges may not be readily accessible in many coastal areas. As a result, the primary goal of this research is to rebuild a coastline DEM and show its temporal variability without relying on ground observations. To give bottom information, we combined an archive of Landsat images with a tidal model. The topography of TFs, as well as its temporal variations, are ecogeomorphologically significant and may be used as proxies for predicting immediate sea level (SL), which is particularly beneficial to nearshore areas. Since the advent of altimetry satellites two decades ago, global SL variations have been intensively investigated. However, because of land pollution in radar echoes, monitoring coastal SL poses a difficult job in satellite altimetry, preventing waveform retracers from estimating water location and height. Because radar waveforms near shorelines must be carefully managed by complex retracking algorithms, nearshore water level is separated from wide ocean situations. Current pulse-limited radar altimeters have difficulty reaching coastal regions, save for realistic alternatives utilizing developing SAR altimetry (conceptually comparable to synthetic aperture radar that uses delay-Doppler). As a result, the second goal of this research is to see whether rebuilt coastal DEMs can offer adequate SL information when compared to existing altimetry techniques [4].

The goal of this research is to investigate a conceptually distinct approach to problem solving and to overcome the difficulties described above in mapping coastal topography and calculating coastal SL. To rebuild a DEM for TFs, a probability approach is presented that uses a series of Landsat optical remote sensing images and a tidal model (TF-DEM).

We take use of TF's well-known feature. Because of the flat landscape, water extends quickly as the water level rises. As a result, water level-area curves for such TF-DEMs are constructed, and Landsat-based SL is estimated using water area calculated from each co-registered satellite picture. We chose the Hsiang-Shan Wetland (HSW), a TF in Taiwan's northwest, as our research location to illustrate potential methods for coastal DEM reconstruction and SL estimate.

The research area is introduced in Section 2. The data and techniques used to reconstruct the TF-DEM are presented in Section 3. Section 4 compares the performance of the Landsat-based SL, tide model, and altimetry against those of the tide gauge. Section 5 looks at TF-DEM mistakes and how they may be used to estimate SL. Section 6 summarizes the method's contributions and limitations.

HSW is a saltwater marsh in northern Taiwan, near the city of Hsinchu. With a total size of about 16 km², this region completely encompasses the Keya and Yangang Estuaries. From east to west, the width is 2 kilometers, while the length of the coastline is 15 kilometers. The Ramsar Convention classified HSW in the Eastern Asia-Pacific Water Bird Protection Network in 1996. Fiddler crabs and a variety of uncommon and endangered migratory bird species call this region home. The red and yellow lines represent the ground tracks of the Jason-2 and Environmental Satellite (Envisat) altimetry missions, respectively. Panel (b) enlarges the green box that encompasses HSW and Envisat pass #225 and Jason-2 pass #51 near HSW are utilized to test the performance of the radar altimeter in this topographic configuration. Panel (b) has a natural-color backdrop made out of a low-tide picture captured by the Landsat-8 Operational Land Imager (OLI) (LC81180432014276LGN00), with RGB from bands 4, 3, and 2. The gray area in the center is the HSW mudflat, while depositing at Hsinchu Fishery Harbor to the north is mainly due to the stiff structure's groin effect. In situ data consists of an acoustic tide gauge near the port that is maintained by Taiwan's Central Weather Bureau. Due to a lack of gauge data, we can only verify SL for different independent observations and tide model forecasts from 1992 to 2013 [5].

The modeling method for coastal DEM used to estimate SLs is shown in Fig. 2. For water identification, we first collect less cloudy Landsat-family images and use the modified normalized difference water index (MNDWI) [10]. An inundation probability map (0–100 percent) is formed by accumulating sequences of water appearance through time, which is equal to the relative elevation difference between high and low tides. As a result, we use the DTU10 tidal model as our height reference to translate flooding probability into real elevation by using physical unit-length boundaries. Simulating a submerged region under stepping water K.-H. Tseng et al. / ISPRS Journal of Photogrammetric and Remote Sensing 131 (2017) 92–103 93 levels yields a water level-area curve. Finally, tidal gauge data is used to verify Landsat-based, altimetry observed, and DTU10 projected SLs.

2. DISCUSSION:

There is no independent reference for verifying TF-DEM in our research region, and this scenario is likely to occur in most TFs globally. As a result, we provide an alternate technique for evaluating products indirectly. DEM is utilized to determine SL, which is then compared to tide gauge data to check contour correctness at various levels. A water level-area curve is initially made by counting the area below the water level. The height spacing is 10 cm. A cumulative curve forms the blue curve. The total number of inundated pixels, as well as the inundation area in square kilometers (right ordinate). In this illustration, the area of water is measured. runs between 1.94 and 2.39 meters; this is the same range as the. The slope of this border is defined by H_l and H_e in Section 3.3. The steepness of the terrain at a given point is linked to the changing curve height. For instance, a significant rise in water area around 0.5 to 1. At this level, 0 m implies that the landscape is flat [6].

To calculate matching water levels, the water area estimated from each Landsat picture is crossed with this curve. For Landsat 4, 5, 7, and 8, indicate time and corresponding DTU10 tidal heights, accordingly. (b) Tidal heights are shown by a histogram of Landsat scenes. (For the purpose of interpreting) The reader is directed to the online version of this article for the references to color in this figure legend.) records of gauge. A linear interpolation was used to acquire in situ data. at concurrence of a 6-minute tide gauge time series. Indicators applied to Included in the comparison are the correlation coefficient and the root-mean-square after removing the means, of discrepancies (RMSD) between two time series to disregard the change in datum between data sets. The term RMSD is defined as. In the period 1992–2013, the RMSD of Landsat-based SL using long-term mean TF-DEM is 51 cm, and the correlation coefficient is 0.94 [7].

There are a total of 272 Landsat pictures in this collection. In addition, the two indications any problematic contour in the DEM is used to indicate DEM quality. Has an effect on the predicted SL at that level, as well as adjacent levels. As a result, at all levels, RMSD and linearity are utilized to evaluate DEM. (c), where the correlation value is 0.98 and the RMSD is calculated. These results are better than Landsat-based estimations by 28 cm during the same time period. In contrast to tides, we only see outlier's seldom. Data gauging Atmospheric forces, such as storm surge, may be to blame for these meter-level inaccuracies. These leaps, on the other hand, without data modification, they are still included in our study.

Ten meters (absolute) from the year 2000 until the present, data has been collected. STS-99 mission in 2000–present 11-day mission in 2000–present 100 percent coverage rate 100 percent

Shows the results. Utilizing temporal TF-DEMs to demonstrate modest improvement. The total RMSD is 48 cm, and the correlation coefficient remains constant. at a comparable level. Temporal TF-DEMs, which include just a few variables, are a kind of temporal TF-DEM. In estimating SL, pictures with a short time period have comparable accuracy and capacity. The TF-DEM file is verified and then manually modified to blend with the other files. a global DEM to show its potential to reduce emissions. Disparity in sea-land connections. shows the findings of SRTM. List DEMs that have been combined. We replace ocean grids with SRTM as a template. by reconstructing the TF-DEM inside the chosen intertidal bordering geoidal height; it is subtracted by 2 m randomly to approach. To enhance visibility, use the MLLW datum. In comparison to the natural color pictures, the shorelines are more realistic.

However, in the case of various parts of the modified and original interface exist as a result of the initial DEM's inaccuracy of the coastline edge. Or in supratidal zones, our product has been mismodeled. Modification of These deficiencies is beyond the scope of this study and should be investigated further relation to fusion technology. This probability technique has a vertical error connected with it. accu has a stronghold over the market.

3. CONCLUSION:

Using historical Landsat data, this research reconstructs coastal DEM at one typical TF along Taiwan's west coast, the HSW. pictures and predictions from the DTU10 tide model. The precision of the TF DEM reaches 48 cm as a missing component of widely used global DEMs, while comparing data from adjacent tide gauges in an indirect way. This reconstruction is a crucial stage in the process of modifying global DEMs. Pre-defined land-ocean masks, such as those found in the Global Self consistent, Hierarchical, High-resolution Geography Database, may be used. (GSHHG), resulting in truncated coastal margins and staircase-like coasts. We also show the merged version of DEM by adhering to the following guidelines. To provide a clean surface, the terrain was rebuilt using existing SRTM data. Near the interface, there is a smooth and realistic transition. Contributions of these kind. Changes to the global DEM include a better knowledge of coastal issues. Morphology, as well as coastal engineering and management support the techniques used in this research can be replicated. Landsat photos and tidal prediction are both accessible worldwide, thus many other TFs may benefit from them. When satellite images are used, this process is also enhanced in terms of resolution and sampling frequency. possible for shingle-beach or cliff-type coasts if the slope is not too steep. The slope of the water level-area curve is gentle. This research provides a proof-of-concept for such a process, which may also aid in addressing problems. Coastal SL observation from a different perspective.

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AN OVERVIEW ON BIOREMEDIATION, BIO-STIMULATION, AND BIO-AUGMENTATION

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ABSTRACT

To break down pollutants, such as petroleum hydrocarbons, bioremediation employs microbial metabolism in the presence of ideal environmental conditions and adequate nutrition. We looked at bioremediation technologies and found that biotechnological methods to remediation have gotten a lot of interest in recent year. Biostimulation (meaning the adding of limited nutrients to promote microbial growth) or Bioaugmentation (meaning the addition of live cells capable of destruction) research have dominated the literature, and technical evaluations of these technologies are rare if at all accessible. When nutrient delivery alone or with the addition of microorganisms is insufficient for cleanup, a simultaneous strategy is used. Recent research shows that combining the two methods is not only possible, but also advantageous. Evidently, site-specific requirements such as the availability of microorganisms capable of sufficient degradation, nutrient availability to support microorganism's growth and proliferation, as well as climatic variables including such temperature in combination with exposure time all influence technology selection. This study focuses on these technologies, with efforts aimed at eventually manipulating remedial processes in order to make bioremediation technically or economically feasible for the complete treatment of petroleum hydrocarbon-contaminated soils.

KEYWORDS: *Bioremediation, Biostimulation, Bioaugmentation, combined technologies.*

1. INTRODUCTION

There is increasing worry about the present pace of environmental deterioration across the globe, most of it is due to increased production and consumption of fossil fuels. Oil exploration and usage endangers the environment and living things, including people, on all continents. An oil spill occurs when a petroleum hydrocarbon is released into the environment. Releases of crude oil from tankers, offshore platforms, drilling rigs, but instead wells, and also spills of refined petroleum products (such as gasoline, diesel) but also their by-products, heavier fuels used among large ships including such bunker fuel, but rather spills of any oily refuse or waste oil, can all cause oil spills. Natural ecosystems have been harmed by crude oil and refined gasoline spills in Alaska, the Gulf of Mexico, the Galapagos Islands, France, Nigeria's Niger Delta area, and many other locations around the globe. The amount of oil leaked in incidents has varied

from a few hundred tons to several hundred thousand tons, although this is just a rough estimate of the damage or effect.

Smaller spills, such as those in the Niger Delta area of Nigeria, have already shown to have a significant effect on ecosystems due to the remoteness of the locations or bottlenecks impeding emergency environmental responses. Oil pollution has far-reaching consequences. Oil seeps into the structure of birds' plumage and animals' fur, decreasing their capacity to insulate and making them more susceptible to temperature changes and less buoyant in water. Due to the powerful smell of the oil, animals that depend on scent to locate their young or moms vanish. This results in infants being rejected or abandoned, causing them to starve and die. Oil may damage a bird's ability to fly, making it impossible for it to forage or flee predators. Birds may swallow the oil covering their feathers when they preen, irritating the digestive system, causing liver dysfunction, and kidney damage. This, along with their reduced foraging ability, may quickly lead to dehydration and metabolic imbalance. Some birds exposed to petroleum suffer alterations in their hormonal balance, including luteinizing protein modifications. Without human assistance, the majority of birds killed by oil spills perish. According to some research, just around 1% of oil-soaked birds survive even after washing [1].

An oil spill may result in an immediate fire danger for people. The Kuwaiti oil fires polluted the air, causing respiratory problems. Eleven oil rig employees were killed in the Deepwater Horizon disaster. The fire that erupted as a consequence of the derailment at Lac-Mégantic killed 47 people and destroyed half of the town. A spill at Ikarama, Bayelsa State, Nigeria, resulted in a fire on the work platform, resulting in the deaths of at least fifty people. Drinking water sources may potentially be contaminated by spilled oil. In 2013, for example, two separate oil accidents polluted water sources for 300,000 people in Miri, Malaysia, and 80,000 people in Coca, Ecuador. An oil leak in Clark County, Kentucky, damaged springs in 2000.

1.1. Bioremediation

George Robinson is credited for helping to popularize the use of microorganisms in contemporary bioremediation. In the late 1960s, a researcher employed microorganisms to eat an oil spill off the coast of Santa Barbara, California. Bioremediation of oil spills and other hazardous pollutants has gotten increasing attention since the 1980s. Microorganisms and their products are used in bioremediation to eliminate pollutants from the soil. Native soil microorganisms, in particular, are important biogeochemical agents in soil bioremediation, converting complex organic chemicals into simple inorganic molecules or their component elements [2], [3]. Mineralization is the name for this process. The bacteria are adsorbed to soil particles via the ionic exchange process. Soil particles have a negative charge in general, and soil and bacteria may be held together by a polyvalent cation ionic connection. Microorganisms are used in bioremediation to decrease, remove, contain, or convert harmful pollutants in soils, sediments, water, and air. The employment of microorganisms to eliminate or immobilize waste compounds is referred to as bioremediation. By mineralization, transformation, or modification, this detoxification process targets the toxic compounds. Natural bioremediation has been utilized in wastewater treatment for millennia, but it is only recently that it has been used to reduce hazardous pollutants. Bioremediation entails the generation of energy in microbial cells through a redox reaction. Respiration and other biological processes required for cell maintenance including reproduction are included in these reactions. An energy source (electron donor), an electron acceptor, and nutrients are all needed by most delivery systems. Different kinds of

microbial electron acceptor classes, such as oxygen-, nitrate-, manganese-, iron (III)-, sulfate-, or carbon dioxide-reducing, and their associated redox potentials, may be engaged in bioremediation. The relative dominance of the electron acceptor classes is shown by redox potentials [4], [5].

Concentrations of contaminants have a direct impact on microbial activity. Contaminants may have harmful effects on the microorganisms present when concentrations are too high. Low contaminant concentrations, on the other hand, may inhibit the stimulation of bacterial degradation enzymes. Contaminant bioavailability is determined by the degree to which pollutants sorb to solids or are sequestered by molecules in contaminated medium, are dispersed in soil or sediment macropores, and other variables such as whether contaminants are present in NAPL form. For pollutants that are more firmly sorbed to solids, contained in matrix of molecules in contaminated media, more extensively dispersed in macropores of soil and sediments, or present in NAPL form, bioavailability for microbial responses is reduced.

Oxidizing or reducing circumstances are indicated by the redox potential and oxygen concentration. The presence of electron acceptors such as nitrate, manganese oxides, iron oxides, and sulfate affects redox potential. Nutrients are required for microbial cell division and growth. Trace nutrients in sufficient quantities for microbial growth are typically present, however nutrients may be supplied in a usable form or through an organic substrate amendment that also acts as an electron donor to boost bioremediation. Moisture content: Microbial development need a high level of water in the surrounding environment. Microorganisms need 12 percent to 25% moisture for optimal development and multiplication. Temperature has a direct impact on microbial metabolism and, as a result, microbial activity in the environment. The rate of biodegradation increases with rising temperature and decreases with lowering temperature.

1.2. Bioremediation kinds :

The placement of pollutants determines the feasibility of bioremediation. Whether the affected soil to be treated remains intact in the ecosystem or excavated for treatment in an offsite facility, the methods for implementing bioremediation vary. If the cleanup takes place on site, the phrase Insitu is appropriate; if it takes place offsite, the term Ex situ is appropriate. This term has been used by certain writers to define the kind of bioremediation. However, it is essential to identify what is done in situ and ex situ, as well as to use the same terminology to describe the various kinds of bioremediation [6].

1.2.1. Bio-stimulants:

Many variables, including nutrients, pH, temperature, moisture, oxygen, soil characteristics, and the presence of contaminants, may restrict hydrocarbon biodegradation in soil. Biostimulation entails altering the environment to encourage the growth of microorganisms capable of bioremediation. This may be accomplished by adding limiting nutrients and electron acceptors such as phosphorus, nitrogen, oxygen, or carbon (e.g., in the form of molasses) that are otherwise unavailable in sufficient amounts to restrict microbial activity.

The main benefit of bio stimulation is that bioremediation will be carried out by previously existing native microorganisms that are well-suited to the subterranean environment and are widely dispersed. The main difficulty is that the distribution of chemicals in such a way that they are easily accessible to subsurface microbes is dependent on the underlying geology. It's difficult

to distribute additives across the affected region due to tight, impermeable subsurface lithology. Fractures in the subsurface provide preferred routes for additives to follow, preventing additives from being distributed evenly. The addition of nutrients may encourage the development of heterotrophic bacteria that are not inherent degraders of Total Petroleum Hydrocarbons, resulting in competition amongst the resident microflora [7].

1.2.2. Bioaugmentation:

Bioaugmentation, or supplementing indigenous populations with oil-degrading microbes, has been suggested as an alternative method for bioremediation of oil-contaminated settings since the 1970s. The reason for this technique is that native microbial populations may not be capable of decomposing the broad variety of possible substrates found in complex mixes like petroleum, or they may be stressed as a consequence of recent spill exposure. When the original hydrocarbon-degrading community is low, the speed of decontamination is the most essential factor, and seeding may reduce the time it takes to begin the bioremediation process. Bioaugmentation may be considered when the indigenous hydrocarbon-degrading population is low. In order for this approach to be successful in the field, the seed microbes must be able to degrade most petroleum components, preserve genetic stability as well as viability during storage, survive in foreign and hostile environments, compete effectively with indigenous microorganisms, as well as move through the pores of the sediment to the contaminants [8].

The assumption or confirmation that indigenous microbes within the impacted site could indeed biodegrade hydrocarbons leads to the introduction of isolated bacteria from the contaminated site, from a historical site, and otherwise carefully selected as well as genetically modified microorganisms to support the remediation of hydrocarbons contaminated sites.

1.3.Types of Bioremediation:

Several research have focused on bioremediation of petroleum-contaminated areas via the addition of nutrients or the introduction of microorganisms. Nutrient additions may be natural or synthetic, organic or inorganic, and enzymes, which can be naturally occurring or manufactured, can be added to accelerate the repair processes in certain instances. Bioaugmentation can take the form of isolating native organisms and 'mass cultivating' them for reintroduction to contaminated sites, procuring preserved microbial cells and inoculating impacted sites, or, better yet, using genetically modified cells that are specific for the contaminants in question for bioaugmentation processes. In these investigations, a variety of technologies and experimental setup/methodology are used [9].

1.3.1. Organic Nutrients for Biostimulation:

Some reports on the use of organic fertilizers for petroleum hydrocarbon stimulation. Organic nutrients may be helpful as stimulating nutrients for bioremediation, according to these research. Atagana used sewage sludge and wood chips compost to treat contaminated soil with more than 38,000mg/kg TPH (2008). Temperature regimes in compost systems, nutrient composition, and moisture content were all important factors in this study.

Inorganic Nutrients for Biostimulation Biostimulation agents have also been used with inorganic fertilizer sources all over the globe. the effectiveness of an inorganic fertilizer (NPK) in promoting microbial decomposition of petroleum hydrocarbons in soil In less than 10 weeks, gas chromatography findings revealed that normal paraffin and isoperoid dropped by 40-60% in all

treatment groups. The addition of inorganic fertilizer increased the test setup's CNP ratio, which aided microbial decomposition.

1.3.2. Recent Bioremediation Techniques:

The use of genetically modified microbes to affect their capacity to utilise particular pollutants like hydrocarbons and pesticides is gaining popularity. In the late 1980s and early 1990s, this method was first mentioned. The capacity to 'engineer' microbes to enhance degradative characteristics is based on the ability to investigate microorganism genetic variety and metabolic flexibility. In the chromosomal and extrachromosomal DNA of these microorganisms, the blueprint for gene encoding for biodegradative enzymes is present. By identifying the presence of degradative genes and converting them into appropriate hosts via a suitable vector in a controlled environment, recombinant DNA methods investigate an organism's capacity to metabolize a xenobiotic. Polymerase Chain Reaction (PCR), anti-sense RNA method, site guided mutagenesis, electroporation, and particle bombardment techniques are all explored in this technology [10].

2. DISCUSSION

A simultaneous approach is employed when nutrition supply alone or with the inclusion of microbes is inadequate for cleaning. Combining the two techniques is not only feasible, but also beneficial, according to new study. Clearly, site-specific requirements such as that of the availability of microorganisms competent of sufficient degradation, nutrient levels to support microbe growth or proliferation, or climatic variables such as temperature in combination with exposure time all have an impact on technology selection. This research focuses on these methods, with the goal of ultimately modifying remedial processes to make bioremediation technically or economically viable for treating petroleum hydrocarbon-contaminated soils completely. Microbial metabolism may aid in the biodegradation of petroleum hydrocarbons in soils.

The instances above demonstrate that depending only on autochthonous microorganisms is not as effective as other methods, since the percentages of remediation after supplementation (microbes or nutrients) are typically greater than control. It was clear that nutrients (both organic and inorganic) may aid microbial growth and hydrocarbon breakdown. When it was discovered that nutrients such as nitrogen, phosphate, and potassium were lacking, there appeared to be widespread consensus that indigenous microbes needed to be "encouraged" and fed. It was an interesting diversion, since using locally available support material and microbes recovered from previous pollution seems to be a cost-effective and scientifically useful method. Furthermore, effective implementation of a restoration regime required consideration of indigenous biota, nutrient levels, and other environmental variables critical to achieving optimum results. Finally, recovering contaminated soils to fit-for-purpose states would require a combination of technologies that are carefully monitored and given sufficient time.

3. CONCLUSION

Some authors proposed that the presence of hydrocarbons within tolerable ranges for microbial survival was sufficient nutrient for microbial growth, and that a ready-to-use boost of more

microbial population tested and trusted (most likely isolated from previously contaminated sites) could be used instead of nutrient addition. It's worth noting that nutrient addition, if not done properly, may be harmful in the sense that it can help heterotrophic populations while unintentionally triggering an antagonistic scenario, slowing down the degradation process. A combined strategy was also explored by several writers in order to maximize the possibilities of a more robust technology. This strategy seemed to combine the benefits of each of the previously mentioned technologies while attempting to overcome the obstacles of nutrient scarcity and petroleum-degrading microbe inadequacy. It proved to be an intriguing detour, as the use of locally accessible support material and microorganisms recovered from past contamination promises to be a cost-effective and scientifically beneficial procedure. In addition, a successful implementation of a remediation regime necessitated taking into account the indigenous biota, nutrient availability, and other environmental factors essential to achieve optimal outcomes. Finally, restoring polluted soils to fit-for-purpose states will need a mix of technologies that are controlled under strict circumstances and given adequate time.

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A REVIEW ON FERMENTED MILKS AND MILK PRODUCTS AS FUNCTIONAL FOODS

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ABSTRACT

Fermented foods and drinks provide a wide range of nutritional and medicinal benefits. Lactic acid bacteria (LAB) play a critical part in the health benefits of fermented milks and similar products. The use of Lactobacillus acidophilus and Bifidobacteria spp. in probiotic dairy meals is well-known. At the moment of consumption, cultured goods with any claim of health benefits should satisfy the recommended minimum amount of more than 106 cfu/g. Yogurt has been reintroduced as a probiotic carrier food. Several food powders, such as yoghurt powder and curd (dahi) powder, are produced with the amount of organisms that survive after drying in mind. Consumers like such meals, drinks, and powders because of their taste and fragrance, as well as their high nutritional content. Because antitumor activity is linked to the cell wall of the starting bacterium, it persists even after drying. Preventing gastrointestinal infections, lowering serum cholesterol levels, and having antimutagenic action are some of the other health advantages of fermented milks. Lactose intolerant people and those with atherosclerosis should consume the fermented goods. The development of fermented dietetic preparations and specialty goods is a growing field of study. The health advantages of fermented milks, as well as the technology used to make them and the kinetics of lactic acid fermentation in dairy products, are discussed.

KEYWORDS: *Fermented Milks, L. Acidophilus, Bifidobacteria, Probiotics, Lactic Acid Bacteria*

1. INTRODUCTION

One of the most commonly stated reasons for dietary choices in EU nations is health. Individuals are thought to be in charge of their own health. Diseases are increasingly being seen as the outcome of consumer behavior rather than the effect of the environment. Obesity, cardiovascular disease, cancer, and other lifestyle-related illnesses may all be influenced by a person's diet. Traditionally, nutritional variables such as fat, fiber, salt, and vitamin content of food have been

linked to health. Food may include single components that have a beneficial effect on our well-being in addition to conventional healthiness[1]. Functional foods are products that claim to have certain physiological benefits that are helpful to the body. By enhancing or adding a possible health-promoting element to a food, it may be made more functional. Alternatively, unfavorable component concentrations might be decreased, or there could be a partial exchange of harmful and helpful substances.

Without a prescription, functional food may be used as a therapeutic assistance. Stephen De Felice, the founder of the Foundation for Innovation in Medicine, invented the word nutraceutical in 1989. A nutraceutical, according to him, is a food, dietary supplement, or medicinal food that provides a medical or health benefit, such as illness prevention or therapy [2]. Today, the terms nutraceutical and functional food are often used interchangeably. In the United States and Europe, there is no formal meaning for the phrase functional foods. According to EU concerted action, “a food can be considered functional if it has been satisfactorily demonstrated to affect beneficially one or more target functions in the body beyond adequate nutritional effects in a way that is relevant to either an improved state of health and well-being and/or a reduction of disease risk in a way that is relevant to either an improved state of health and well-being and/or a reduction of disease risk in a way that is relevant to either an improved state of health and well-being and

Functional meals are manufactured in a variety of ways, depending on the technique used to make them or the purpose for which they are intended. Functional meals may be modified or fortified with various chemicals, and the functionality of a product can be tailored to a specific illness or just to enhance general health. Because the health impact cannot be seen from the product itself, knowledge on health effects and methods of disseminating such information are critical. The nutraceutical or functional food business has grown from a market of \$20.2 billion in 1989 to a market worth \$20.2 billion in 2002.

Functional drinks had sales of \$10.35 billion in 2002, increasing 10.7% from the previous year, and are expected to reach \$15.9 billion by 2010. A broad range of functional dairy meals are gaining popularity throughout the globe. Probiotic, prebiotic, and symbiotic goods, low cholesterol fresh milk omega-3-milk, low lactose, and lactose-free products, and milk products that can regulate or manage hypertension and immunological functions are only a few examples[3]. The market for functional foods, nutraceuticals, wellness foods, and beverages is rapidly expanding, and the functional food sector is expected to almost double in size by 2007. As the population ages, a growing segment of the population is turning to functional foods. Weight reduction and management, heart health, eye health, cancer, increased energy and stamina, eye health, and better memory are all priorities for today's customers. To address these difficulties, a variety of functional meals and drinks have been created.

The purpose of this paper is to provide an overview of the kinetics of lactic acid fermentation in dairy products, as well as the technology and nutritional significance of fermented milks popular in various countries, as well as the therapeutic properties of probiotic organisms used in their production.

1.1. Lactic Acid Fermentation:

1.1.1. Fermentation Kinetics:

The biokinetics of functional starting cultures may be mathematically analyzed to learn more about the connection between the food environment and bacterial functionality, which can help with strain selection and process design. This may lead to improved process control, improved food safety and quality, and a decrease in financial losses. To understand the fermentation process and create continuous fermentation systems, kinetic data is required. Lactic acid bacteria (LAB) have long been employed as starting cultures for the production of fermented meat and dairy products in the food industry [4]. Lactic acid, a commercially important product with uses in the food and pharmaceutical sectors, is the main metabolite generated during such fermentation processes. Lactic acid may be produced using chemical or biotechnological techniques, however lactic acid produced via fermentative procedures has gained market share due to customer desire for natural goods.

The dairy fermentation business, which includes the manufacture of cheeses, fromagefrais, sour cream, and other dairy products, is well-known and ranks second only to alcoholic drinks in terms of economic importance. The methods for using wood may be focused toward the generation of lactic acid. Several researchers have looked at the kinetics of milk fermentation by starting cultures. On the fermentation process of yoghurt, Response Surface Methodology has been effectively utilized in modeling of acidification rate and starter bacteria development as a function of factors such as fermentation temperature, fat and solid content, inoculum size, and cocci/rods ratio.

A pH measuring technique that is frequently used to determine acidification kinetics during gel formation. Several researchers have created models to predict acidification kinetics and attempted to improve the acidification process for the production of fermented goods. The effect of fermentation operating temperatures on cell growth rate, cell concentration, substrate utilization rate, and lactic acid generation rate has been predicted using mathematical models. A variety of models, both fully empirical and partly empirical, have been presented in the literature. Lactic fermentations are well-known for their product inhibition [3].

1.1.2. Common Organisms and Pathways:

LAB is an important component of fermentation processes, with a long and safe history of use and consumption in the manufacture of fermented foods and drinks. The acidity of the milk increases during lactose to lactic acid fermentation, and the growth conditions for bacteria other than LAB become more hostile. In South East Asia, the LAB is found in fermented foods. They spoke about how LAB is distributed and used in different goods including fermented milk, meat, fish, vegetables, and plant items. Many of these bacteria's major technical characteristics have seen significant progress in understanding their genetic, biochemical, and physiological bases. LAB are made up of a diverse collection of Gram-positive bacteria that have a fermentative metabolism [5].

The capacity of all LAB to ferment lactose and a variety of other carbohydrates into the main end product, lactic acid, is one of their most significant functional characteristics. LAB are useful for both household and industrial operations due to their capacity to convert food into new products and perform antagonistic activity against dangerous bacteria. Servin is a fictional character (2004). There are many phenotypic and genotypic types of LAB involved in the manufacture of fermented milks. Different dietary needs, physiological, cultivational, and technical characteristics distinguish these groupings. LAB found in fermented milks has been

linked to *Lactobacillus*, *Streptococcus*, *Pediococcus*, *Leuconostoc*, and *Lactococcus* genera, according to many studies. In African fermented milks, the function of yeasts and LAB interaction.

1.1.3. Fermentation Process and Health:

Fermented milks are an essential component of our diet. Humans first saw fermentation in ancient times, but they didn't understand why it happened. Originally, milk fermented spontaneously, and the reuse of fermentation containers and equipment helped to ensure that the fermentation process was repeatable and stable. As a result, certain microbes were used to produce more or less refined goods. Different nations, or even different regions within a same country, created their unique fermented milks. The most well-known product is yoghurt, a thermophilic fermented milk that has grown in popularity during the past three decades [6].

The importance of live microorganisms in fermented dairy products has piqued the attention of both consumers and producers. Through the action of lactic LAB, nature has given a degree of positive connection for humans. These bacteria may be found in a variety of foods as well as agricultural fermentations. These are renowned for their length of human life, in addition to their preservation, nutritional, and therapeutic significance. LAB are natural residents of the gastrointestinal system. These bacteria have a variety of characteristics that make them especially appealing as "probiotics."

The acidity of milk increases during lactose to lactic acid fermentation, and the growth conditions for bacteria other than LAB become more hostile. Fermentation bacteria generate bacteriostatic chemicals in addition to the primary metabolite lactic acid. Ingestion of LAB has been proposed to counteract the impact of *Escherichia coli* outgrowth via a variety of mechanisms, including anti-*E. coli* metabolites, detoxification of enterotoxins, inhibition of toxic amine production, and gut adhesion, thereby avoiding harmful bacteria colonization. To generate energy and equilibrate the redox equilibrium, homofermentative LAB convert the available energy source (Lactose) nearly entirely to lactic acid through pyruvate [7]. Specific LAB strains' fermentation activity may result in the elimination of toxic or antinutritive components like lactose and galactose from fermented milks, preventing lactose intolerance and galactose buildup [8].

1.2. Technology of Fermented Milk and Milk Products:

Aside from the conventional goods that are popular in different nations, probiotic products, dairy drinks, dietetic preparations, and dry cultured products are being developed in response to the growing demand for such value added products and convenience based components. Process technology is provided for several types of such goods. Cultured milks containing mesophilic organisms and thermophilic milks are two of the most common types [6].

1.2.1. Cultured Milk:

Cultured milk is a term that refers to a variety of mesophilic fermented milks that share a number of features. Mesophilic organisms have a growth temperature range of 20 to 30 degrees Celsius. Aroma producers and homofermentative mesophilic LAB are employed as fermentation starters. Mesophilic lactic cultures include group N streptococci and/or leuconostocs and grow in a temperature range of 10–40°C. The final flavor of cultured milk is the consequence of a complex combination of chemicals in a certain proportion [9]. The taste diacetyl is linked with butter and

buttermilk, for example. Cultured milk should be somewhat acidic and prickly. To fulfill these criteria, the amount of lactic acid and carbohydrate in the product must be carefully monitored throughout production. Acidification may be controlled by chilling the milk at the appropriate moment, while excess carbon dioxide in the product at the conclusion of fermentation can be eliminated by stirring or vacuum de-aeration [9].

Heat treatment of milk used to make cultured milk is required to inactivate native chemicals that are inhibitory to the LAB and to enhance the end product's structure by denaturing whey proteins. 805 or more whey proteins should be denatured to produce a coagulam that can be readily mixed to a smooth and viscous product. This may be achieved by a heat treatment of 90°C for 3 minutes or 85°C for 30 minutes.

Milk hardness is reduced and acidity is delayed when the pasteurization temperature is lowered. In cultured milks, ultra high temperature (UHT) sterilized milk and other high temperature treated milks result in reduced viscosity, thickening with age, and a cooked taste. To achieve a proper distribution of fat, homogenization of milk at 55°C and 20 MPa is adequate. There is a flavor change when the amount of milk solids (not fat) is reduced. The product may become "flat" and "watery," and a "astringent" fault may develop. Increased MSNF in milk results in a more "full" flavor, greater viscosity, and stable cultured milk that does not whine during cold storage[10].

1.2.2. Dry Cultured Milk Products:

Various dry cultured products, such as yoghurt, acidophilus milk, kumiss, and kefir, have undergone extensive study, and are typically coupled with ingredients that improve the nutritional quality of the final product. *Streptococcus thermophilus*, *Lactobacillus bulgaricus*, *Lactobacillus acidophilus* (LA), "Kefir grains," and *Bifidobacterium adolescentis* are among the starter bacteria for dry cultured drinks[4]. In this area, there has been very little scientific work published, and the established methods are protected by patents. In general, the processing of these goods varies from that of traditional cultured products in several ways. Prior to culture, milk is heated to 90–95°C for 20 minutes. A total solids content of 30% has been shown to be the most beneficial. Vacuum evaporation or ultrafiltration are used to concentrate the liquid. The benefit of utilizing concentrated milk for culture is that it saves space and provides bacteria with some stimulation [7].

2. DISCUSSION

The growing popularity of fruit-flavored drinkable yoghurt across the globe presents a great potential for whey to be used in the creation of cultured fruit-flavored products. In the production of fermentable cultured dairy drinks, the quantity of stabilizer used, as well as heat processing and homogenization of the components, are critical. The standardized method for making drinks from sweet or acid whey involves adding sugar to filtered whey, pasteurization at 80°C for 5 minutes, homogenization at 70°C, incubation at 43°C with 2 percent *Lactobacillus helveticus* starter for 15–17 hours to pH 3.8–3.95, repasteurization at 85°C with 5 minute holding, addition of 4–7% fruit juice concentrate, rehomogenization, cooling to 50°C, and paddling. The drink had a total solids content of 11.65–13.1 percent, total sugar content of 11.27–11.65 percent, protein content of 0.66–0.78 percent, fat content of 0.2–0.3 percent, and mineral content of 0.42–0.46 percent.

Bifidobacteria culture, whey, and mango juice are all included in the Mango-molke mix, a popular whey beverage sold in Europe. To make fermented whey drinks, LAB's probiotic properties may be used. People with gastro-intestinal problems may benefit from these beverages, which also offer nutritious and therapeutic soft drinks. Cheese whey and milk may be combined to create a high-quality whey-based fermented milk beverage. The fermented milk beverage produced by combining 70% cheese-whey and 0.3 percent CMC with milk yields an appropriate whey-based fermented milk beverage.

Food fortification may be a useful strategy in the fight against micronutrient deficiency. The compatibility of the vehicle, fortificant, and procedure is critical for effective food fortification technology use. Functional foods can include modified foods, such as those fortified with nutrients (ADA reports). Functional foods, such as whole foods, fortified enriched or enhanced foods, offer a potential health benefit when eaten as part of a diverse diet on a regular basis at effective levels, according to the American Dietetic Association (ADA). Iron fortification programs have traditionally utilized fermented dairy products like yoghurt and soft cheeses. Ferrous sulfate, at a concentration of 10 ppm, was shown to be stable over a 12-month period in powdered nonfat dry milk fortification. At a level of 20 ppm iron in the reconstituted product, ferric ammonium citrate and ferric chloride yielded satisfactory results. Enrichment and fortification are sometimes used interchangeably, but it is defined as the replacement of vitamins and minerals lost during processing elsewhere.

3. CONCLUSION

The integration of probiotic organisms into the production process for well-accepted conventional dairy products will be extensively investigated in order to create additional probiotic goods. The development of convenience-based dry cultured goods containing live bacteria using different methods such as microencapsulation, as well as the fortification of such powders or concentrated products with minerals and vitamins, is becoming more important. Preparing appropriate mixes including healthy components like dietary fiber, natural vitamins, and folic acid also opens up new opportunities in this rapidly growing field of study. The beverage sector would undoubtedly benefit from the development of different health beverages and dietetic preparations as value added goods based on traditional fermented products. Apart from the overall nutritional improvement obtained, further study is needed to differentiate the therapeutic effects of viable and nonviable organisms in various fermented products.

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FORMS, METHODS AND METHODS OF INTRODUCING CHILDREN WITH THE FINE ARTS

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ABSTRACT

This article gives an idea of the work that a teacher should do on the methods and forms of familiarizing children with works of fine art in the process of teaching visual activities in preschool educational organizations. First of all, the teacher instills in children an interest in works of fine art, arouses attention to them. Gradually, he forms the ability of aesthetic perception. Examining pictures or sculptures, children are interested in what is depicted, they recognize familiar objects and phenomena, get acquainted with those that they did not know before. Developing aesthetic perception in children, one should direct their attention not only to the content of what is depicted, but also to the form of expression of the image, to the means of image that make the image expressive.

KEYWORDS: *System, Activity, Work, Visual Art, Preschool Child.*

INTRODUCTION

Currently, much attention is paid to the preschool education system, which is the main link in the education system of Uzbekistan. In particular, the decree UP-3261 "On measures to radically improve the preschool education system" requirements and systematic improvement of their professional competence. [1]

In this regard, the organization of art classes in preschool educational organizations at a high level requires a great responsibility from the educator. Along with the practical process in the art classes, children are introduced to the works of fine art. So, what should the caregiver pay attention to for this? [2]

Below we will consider this issue.

First of all, the teacher instills in children an interest in works of fine art, arouses attention to them. Gradually, he forms the ability of aesthetic perception. Examining pictures or sculptures, children are interested in what is depicted, they recognize familiar objects and phenomena, get acquainted with those that they did not know before. Developing aesthetic perception in children, one should direct their attention not only to the content of what is depicted, but also to the form of expression of the image, to the means of image that make the image expressive. [3]

Through works of art, children do not just get acquainted with the phenomena of life: they receive ideas about the beautiful, harmonious, purposeful, expressive, that is, they learn to master life aesthetically.

Aesthetic assessments usually include moral judgments - what is good and what is bad.

Aesthetic perception is characterized by an interested, agitated attitude towards the depicted phenomena. This attitude is expressed in words, in the assessment of what is happening in the picture, conveyed in the sculpture. [4]

The focus on expressiveness in the depiction of events, images of people, animals, on the richness of characteristic details, the color side in works of art makes it possible to lead children to the ability to evaluate them in an elementary way. The evaluative attitude of children is expressed primarily in the preference of some works over others: often children are asked to show several more times what they liked and remembered; favorite works appear, a conscious feeling of joy, pleasure from viewing develops. [5]

When studying with children 3-4 years old, it is important first of all to draw their attention to the picture. One of the techniques by which you can interest the kid in the content of the pictures is to invite him to put himself in the place of the child who is the protagonist in the picture. The child becomes the hero of an interesting event for him and begins to talk about himself with enthusiasm. [6]

When examining a picture with small children, you can introduce a kind of play technique that develops observation and speech: the teacher, through questions, involves the child in the competition - "Who will see more in the picture?", Encouraging him to be observant and expressive. [7]

In very rare cases, kids watch pictures in silence. The teacher should support the conversations of children, teach them to correctly name objects and some of their characteristic features, helping to better understand the content of the picture.

Older preschoolers acquire the ability to perceive works of various content, and not only those in which there is an entertaining plot, some kind of action is depicted. At the same time, they are now able to perceive the plot picture differently than at a younger age - they can guess a lot, imagine a lot; the knowledge gained by children and new ideas about the phenomena of life help.

Children of this age have a rather developed love of nature, and they are interested in the landscape, determine which season is depicted, what is typical for autumn and spring, what colors the artist chose to convey them, how winter cold, blizzard, autumn wind are depicted. [8]

It is very important to practice re-examining pictures: a familiar work evokes lively expressions; it notes those aspects and details that were not noticed the first time. Conversations with children are aimed at a deeper understanding of the events depicted in the picture: children not only talk about what is depicted, but also how it is depicted. The educator teaches the children this using a sample story. [9]

The teacher's story about the picture should be, as possible, figurative, expressive in order to raise the interest of children, to create a certain mood. Whenever possible, the teacher uses fiction (reads the lines of a poem, an excerpt from a fairy tale, story). [10]

The teacher leads children to the ability to compare one picture with another. Older preschoolers are capable of some comparative analysis. For example, having shown the children the paintings of U. Tansykbaev "March in Uzbekistan" (Fig. 1) and I. Levitan "March" (Fig. 2), the teacher asks where, in their opinion, the early spring is depicted and where is the late spring.

The teacher's question "Which picture shows a sunny day?" - directs the attention of children to the coloring of the picture - a combination of colors typical for a spring day.



(fig. 1)



(fig. 2)

The conversation can begin with the teacher's own story about the picture. Then, by asking questions, he also attracts children to actively express their impressions. In other cases, when children have developed the ability to look at pictures and have developed an interest in them, the conversation begins directly with questions to the children. After talking about the picture, the teacher concludes by expressing his judgment about it in a form that is understandable and interesting for children, summarizing their statements. [11]

Book illustration allows you to lead children to an in-depth perception of the content of the text. In this case, the teacher's questions play an important role, establishing a connection between the content of the picture and the text heard.

So, for example, when analyzing the image of the hero Zumrad ("Zumrad and Kimmat" Uzbek folk tale), the teacher, showing illustrations, draws the attention of children to the transfer of the character's characteristic appearance, and also asks questions that reveal certain properties of Zumrad's character, her actions. The teacher helps children to draw simple conclusions, generalizations, draws their attention to the main thing. [12]

As a result of such activities, children develop an interest in looking at pictures. They begin to notice the pictures outside the kindergarten, tell the teacher about their content. This interest is supported by the fact that in kindergarten children are given the opportunity to independently consider art postcards and pictures. You could, for example, organize a game in a "shop" that sells postcards, and the children will choose them themselves.

In the spring, after the older group has systematically examined the paintings, it is good to arrange an exhibition in the group room or in the hall. All reproductions of paintings that children have seen during the year are inserted under glass or in cardboard mat and are beautifully placed on the walls. Several new paintings are added to them. [13]

When the exhibition is ready, the teacher offers to see it. Children move freely from one picture to another and examine them.

The teacher listens to the statements of the children, checks whether they remember the pictures they saw before, whether they notice what is new for them.

Then he brings the children together and goes around the entire exhibition with them. Children say which pictures they like more, which they remember better, examine new pictures more carefully, and speak out about their content.

When familiarizing with arts and crafts, other techniques may be applied. First of all, children must understand the expediency of things, the combination of beauty with the purpose and use of things. In all cases, when it is appropriate, children should be given the opportunity to act with things, to use them. [14]

When examining patterns on things, decorative patterns, elements of the game can be introduced: the teacher suggests finding identical or homogeneous elements in the pattern, indicating how they are repeated, marking the same colors or differences in the color of the same elements.

The teacher leads children to a judgment about the repetition of elements, about their correct alternation, about the variety of their use.

Patterns, ornaments on objects help in decorative drawing: children learn to make patterns more rhythmic and multicolored.

Artistically made toys and sculptures serve as models for modeling and drawing, acquaint children with plastic images, with the transfer of form, movement.

Unusual entertaining images, cheerfulness, bright painting of Uzbek toys (donkey, camels, horses, lamb, ducks, roosters, etc.) make it possible to use them in games, in games-dramatizations based on fairy-tale plots ("Golden Watermelon", "Zumrad and Kimmah", "Hit the club! "And others).

It is advisable to organize an excursion for the children of the preparatory group to a museum or to an exhibition of decorative arts. Having got acquainted in the classroom and in games with similar works, children will look with interest at the exhibits of the museum or exhibition and listen to the explanations of the museum employee.

So, in the kindergarten, the following forms, methods and techniques of acquainting children with art are used: Consideration of individual works or specially selected series of paintings, sculptures, illustrations, works of decorative and applied art. For the lesson, works of one kind of art are usually selected - either reproductions of paintings, or sculpture, or works of decorative and applied art.

The examination is accompanied by questions to children, a conversation, independent statements by children, a teacher's story, reading poetry and excerpts from prose.

In kindergarten, in a group room or hall, exhibitions of works of art on a particular topic or from works of any kind of art are arranged: prints, illustrations, sculpture, etc. With older children, excursions to museums or exhibitions are organized to view pre-selected material, available for children's perception both in volume and in content.

Children are encouraged to independently explore works of art in and out of kindergarten. The teacher attentively listens to the stories of children about what they saw.

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CHARACTERISTICS OF FORMATION OF IMMUNITY AGAINST "PUBLIC CULTURE" IN ADOLESCENT STUDENTS ON THE BASIS OF GENDER APPROACH

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ABSTRACT

This article analyzes the specifics of the formation of immunity against "mass culture" in adolescent students on the basis of a gender approach, thinking that adolescence is a complex, controversial period, the development of self-awareness and self-esteem during this period. "Popular culture" products easily attract the attention of young people. Because mastering them does not require intellectual effort. Adolescence is a favorable time for the emergence of the first bases of the tendency to "popular culture". Therefore, in the educational process, the formation of immunity in adolescents against the negative aspects of popular culture is required. Thus, the formation of immunity against "popular culture" plays an important role in the education of the individual, in the formation of features and qualities inherent in the requirements of society.

KEYWORDS: *Gender Approach, Popular Culture, National Culture, Adolescent Students, Girls, Boys, Social Roles, Pedagogical Factors, Gender Conflicts, Behavioral Norms, Values, Gender Consciousness, Popular Culture Views, Psychological Characteristics, Development Lines.*

INTRODUCTION

"Popular culture" products easily attract the attention of young people. Because mastering them does not require intellectual effort. Adolescence is a favorable time for the emergence of the first bases of the tendency to "popular culture". Therefore, in the educational process, the formation of immunity in adolescents against the negative aspects of popular culture is required. Thus, the formation of immunity against "popular culture" plays an important role in the education of the individual, in the formation of features and qualities inherent in the requirements of society [1; 36-p].

Adolescence has a special role in the formation of personality. The boundaries of adolescence are not clearly defined by psychologists. It is manifested in relation to the level of development and ontogeny of the adolescent.

Early adolescence begins at age 10 and lasts until age 14. The age of adulthood is 14-16 years. Most psychologists have noted in their research that adolescence is a complex, controversial period. One of the hallmarks of adolescence is that it feels like an adult. During this period, self-

awareness and self-esteem develop. The teenager is interested in himself as a person and appreciates his abilities and potential.

Each age group of a person has its own characteristics and is based on certain laws of development. These basic achievements, the conditions that allow formation and re-formation, the manifestation of qualities specific to certain stages of mental development, are reflected in the expression of specific aspects of the ability to self-awareness.

Adolescents begin to take an interest in their own little world from the age of 10-12. Gradually the process of self-knowledge becomes more complicated. The teenager discovers his inner world for himself. In connection with new relationships, new experiences, personal qualities, behaviors develop and self-analysis skills stabilize. The teenager begins to imagine what he will be like, showing his characteristic features.

A teenager's self-awareness is helped by classmates and close friends. He compares his actions to theirs. He starts looking for like-minded people among the adults and follows them. Adolescent self-knowledge is the basis for the formation of the concept of self-awareness in the cognitive character. The emergence of psychosocial harmony signifies the adolescent's self-awareness. It is distinguished by 3 main tasks:

- To have a project from childhood to the past and to imagine their future and to achieve the formation of self-awareness;
- The composition of the desire to understand their differences from their parents;
- Implementing a value system that ensures the adolescent's self-awareness.

Gender self-awareness is an integral characteristic of the individual, which includes personal identity, the concept of "I", gender stereotypes, gender attitudes, gender behavior, gender self-awareness and gender roles [2].

The critical phase of the newly formed adolescence is manifested in a clear expression of self-awareness and self-awareness as adults. In the process, adolescents build their relationships with those around them and choose their own path of development. Adolescents begin to imitate adults and accept their behavior. In most cases, they imitate adults with specific habits, such as smoking, alcohol consumption, and uncontrolled behavior [3; 67-b.].

Adolescents tend to change themselves and behave like adults. That is why they strongly strive for self-formation, independent learning and self-awareness. This is reflected in the fact that they look like adults on the outside, they like the way they dress and make-up.

Teenage girls tend to wear pop-like, high-heeled shoes, use unconventional hairstyles, dress fashionably, and act like different singers, movie stars.

Boys, on the other hand, want to be physically strong and developed. The essence of the sense of self-awareness in them is to show their physical strength and have a strong appearance. They tend to monitor their physical strength more regularly, play more sports, and show their strength more clearly among their peers. They find it difficult to properly evaluate their bodies and facial expressions. Adolescent boys want all the components of their bodies to develop at the same time, and they strive for that.

This form of evaluation is done by evaluating others. The developmental process is reflected in the concept of appropriate self-awareness of adolescent boys. Thoughts about a teenager's body structure are not always realistic. They can sometimes even deny each other. For adolescents, self-assessment in terms of masculinity and femininity is the benchmark. It is no secret that for teenagers, the growth of the body is of paramount importance.

Boys like to play different sports. It is important for them to increase their physical strength in the process of training, to try to acquire a masculine image. Rhythmic gymnastics and dancing are fun for teenage girls, who aim to have a slender figure and graceful movements that are typical of a woman's appearance.

The development of self-awareness and self-esteem is an indication of the aspiration of adolescent girls to maturity. They show signs of physical maturity and attract the attention of those around them. As the inner births of adolescents change, so do their social roles. In this situation, "Who am I?" The question is transverse.

According to E. Goziev [4], adolescent boys and girls have a special attitude and interest in each other. For teens, the attitude of those around them is important, and they begin to pay special attention to their appearance. In this way, they develop gender perceptions of their gender.

As they compare themselves to their peers around them, their self-esteem decreases. This is directly related to the process of variability and development that is specific to their age.

Most girls worry that their height will be too long and boys will be too short. Boys avoid obesity, begin to limit themselves in the matter of nutrition, try to keep a diet. Girls pay special attention to their appearance, the opinion of others is important to them. Such girls are adamant about the various attitudes expressed about their height. They are intolerant of laughing or criticizing themselves. They get very upset when they expose the girls' shortcomings.

Boys and girls react differently to assessing their mental qualities. Boys see themselves as strong, fearless, and brave. Girls, on the other hand, are more critical of themselves. The rhythm of maturity is different in each of the boys and girls.

14-year-old teenage girls want to have more status among themselves and boys. Boys who are physically weak do not consider themselves fully formed. They have a negative attitude towards themselves, a strong sense of dependence. In girls who are lagging behind in development, however, mental experiences manifest themselves differently. They have a strong sense of concern for their well-developed peers. Such anxiety arises in connection with their physical development. Boys with such development do not face such difficulties.

The problem of gender identity arises in the family. It is the family that is the main social influence factor on adolescent boys and girls. A favorable environment must be created in the family for the successful spiritual development of adolescent boys and girls. The absence of such an environment has a negative impact on the mental and sexual compatibility of both boys and girls. The personal qualities of the parents also play an important role in the formation of adolescents. For adolescents, the completeness of the family is important. The role of parents in a teenager's life is unique, and teenagers who grow up in a full family are mentally healthy.

Adolescent girls also find it easier to form very subtle and complex aspects of self-awareness because they better express their experiences and have more vocabulary. Adolescent boys, on the other hand, have stronger emotional aspects and don't talk about it much. They conditionally express their feelings, sometimes with the help of music. But they don't want to tell. Accordingly, the pedagogical process requires special consideration of the gender characteristics of boys and girls in the formation of immunity against mass culture, especially in adolescents.

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DEVELOPING STUDENTS 'ABILITY TO SING IN NATIONAL MUSIC

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ABSTRACT

Musical literacy, the activities of composers, musical performance, singing, choir, ensemble, composers and composers of the orchestra, knowledge of Uzbek folk instruments, creative activities of famous Uzbek folk musicians and singers, musical terms and phrases, musical genres, modernity in music and the assimilation of our national musical culture based on themes such as contemporary music, national pop music and its performers.

KEYWORDS: *Musical Literacy, Musical Performance, Singing, Choir, Ensemble, Orchestra Composer, Composer, National Stage, World Musical Art, Love Of Music, Personal Feeling, Musical Perception, Means Of Expression, Musical Taste, Solo And Violence, National And Classical ... Music, Musician Or Singer.*

INTRODUCTION

Primary music literacy, musical activity, music performance, singing, choir, ensemble, orchestral composers and composers, knowledge of Uzbek folk instruments, creative activity of famous Uzbek folk musicians and singers, musical terms and phrases, music genres, modernity in music and it involves the assimilation of our national music culture on the basis of themes such as modern music, national pop music and its performers. [1]

Music perception (listening). It is difficult to assess the importance of listening to music in children's musical knowledge systems. It is impossible to teach culture without listening to music, to get acquainted with the masterpieces of world music, to teach the means of expression of music, to awaken love for works of high musical art. The process of listening to music plays a very important role in shaping these qualities. While listening to music, children listen to samples from the works of various composers and composers. D. In Shostakovich's words, "To love music, you must first listen to it ..." Listening to works about homeland, friendship, work and other physical and mental activities has a positive effect on children. If the child does not ask any questions about the music or work of art he is listening to, if he does not have any feelings, if there is only a message in the form of a message that is not related to personal feelings and attitudes, then the task is considered unfulfilled. In his work "Musical Psychology" VI Petrushin dwells on the psychological properties of music, as well as on the perception of music. In his opinion, when a listener listens to a piece of music, he can immediately identify its author and the name of the melody if he has heard it before. Each piece of music evokes the impressions and experiences that a person has gained throughout his life. But when the listener listens to a piece of music, he must understand the mood, the feelings of the composer, not himself, through the means of expression of music. According to V. Petrushin, the formation of musical perception

depends on the formation of this musical hearing ability. [2] But he also points out that a person's upbringing, education, and age also have a significant effect on his musical perception. Everyone believes that the taste of music is closely linked with his place of residence, living environment and the social environment that surrounds him, V. Petrushin. The scientist also says that "... musical perception is the initial stage of thinking ...". So, analyzing the opinion of the scientist, we can conclude that:

1. Musical perception is related to auditory perception.
2. When perceiving music, the previous impressions are embodied.
3. People's musical taste is directly related to the social environment in which they live.
4. Musical perception is one of the first stages of the thinking process.

In her Theory of Music Perception, N.A. Vetlugina describes the extreme impact of music and the early stages of the formation of the skills of perceiving it through the human mind. First of all, N. Vetlugina is a scientist who has been dealing with the problem of children's perception of musical works. When he talks about the importance of listening to music, he emphasizes that listening to music has a greater impact on people's psyche than playing. N. Vetlugina also speaks about the fact that the process of listening to music has its own methodology. When we listen to songs of different content to students at school, it is permissible to organize the listening process and develop effective ways to do it. [3] According to N. Vetlugina, music has a multifaceted effect on a person: melody and its musical expression affect a person's emotions, evoke different feelings in him, create different moods. The text of the song, the ideological content, affects not only the emotions but also the minds of the listeners, making them excited and forced to think. B.V. Asafev (1884-1949) explained listening to music or perceiving music in two different ways:

1. The listener becomes accustomed to his performance and enjoys it, and listening to music becomes his daily work.
2. The listener immerses himself, his whole body in the ocean of music, feels it with his heart and listens as a true music connoisseur.

As we can see, BV Asafev also distinguishes music listeners. He teaches that the original scholar listens to music differently and simply the amateur listens differently. Naturally, as a musicologist perceives music, he can easily express his opinion about the creator, form, character, genre of music. However, when an amateur listens to music, he can only give a partial idea of the nature of the music, the artistic image. In the second stage of knowing the work, the child must express his opinion about the work, evaluate its ideological and artistic content, analyze the characteristics of the work. It combines the knowledge that humanity has accumulated about the author and his works in criticism, art criticism, and so on. Listening to music, the ability to distinguish between solo and violin, the ability to distinguish words and timbre of words, the development of musical taste and understanding, listening to samples of works by Uzbek, fraternal and world composers. The acquisition of this knowledge increases the musical and aesthetic level of children. It is important to develop children's perception of music, to understand its language, to create a circle of each child's favorite musical works, to instill in them a sense of gratitude to the authors of musical works, to arouse interest in national and classical music. One of the unique features of music culture lessons is that it covers many

activities of music education. Among these activities, choral singing and listening to music play a leading role in shaping children's musical tastes. [4]



Children's musical tastes are also formed in the process of singing - singing, accompaniment on musical instruments, rhythmic movements under the music. To inspire children to love music, it is important to love the music they are listening to. This quality is realized only through a work of high artistic and aesthetic level. When a person listens to a good song from a skilled performer, he evokes impressions and thoughts about the piece of music. How listeners perceive a song, how much they are affected by it, the effect of a piece of music on the feelings and consciousness of the listener depends on how the music sounds, how well the musician or singer performs the piece. But

that alone is not enough to listen to music. When listeners have an idea about the creators and authors of music, the period, shape, type, size, rhythm, etc. of the work, they fully understand the content of the work, as well as the work has a positive effect on inner feelings and experiences. forms. [5]

In the implementation of musical education, children should be taught not only to perform a piece of music, but also to understand music emotionally and spiritually. Basically, children hear music while singing. as a rule, the teacher plays the song to the children before teaching it. This makes it very rare for students to hear and understand music. To do this, the teacher must first teach the students to listen to more complex melodies and songs than the songs they sing. That is why the teacher himself is required to be able to play music and sing at a high level. Unfortunately, not all teachers currently have this opportunity. [6]

But a methodologically skilled teacher can organize children to listen to music in a highly emotional state using a variety of technical means, audio tapes, music centers and computers, i.e. a modern music culture teacher uses every opportunity to help students understand the true meaning of music. and be able to use visual aids effectively. [7]

However, it should be borne in mind that a piece of music performed by a teacher is more impressive to students than a work heard on a tape recorder. If the teacher plays the piece of music first and then puts it on the tape recorder, the result will be high, of course. The main tasks of listening to music in primary school include two main areas: Get acquainted with the works of different content and different authors, collect music reserves. Mastering musical terms and concepts, basic knowledge about the means of expression of basic music, the elements of a musical work. In the methodologically correct organization of lessons in the system of music education, the work listened to in the lessons should be based on the theme of the quarter in terms of musical structure, artistic and ideological content. The process of listening to music can be divided into the following stages: [8]

1. Introductory speech of the teacher about the work to be listened to (in this case, the teacher tells the students about the authors of the musical work, the history of the work).
2. Listening to the work performed by a teacher or a tape recorder.
3. A simple musical and artistic analysis of the listened work through conversation.
4. Listening to the whole piece of music and making a final conclusion about the general impressions of children about the work.

Following the above steps, if we listen to musical works of different character, which are relevant to the lives of children in terms of subject matter, and have a brief information about the life and work of the composers who created these works - we will achieve the intended goal. Thus, children will acquire the following skills and abilities in the listening part of the lessons:- Listen carefully to the piece of music in silence. - Understand the content and nature of the work when listening to a piece of music; - have a simple understanding of the means of expression of music, genres (song, dance, march), timbre; - be able to hear and distinguish the voices of men, women, children and mixed choirs, soloists; - Distinguish between national musical instruments, orchestral types, musical genres, etc. [9]



Singing activities. Music plays a leading role in the education of students. This type of activity is closer and more understandable to children than other types of activities. Students love to sing. Singing is the leading type of activity in the performance of students, which plays an important role in the musical and aesthetic education of students. A good song delights a child, nurtures and nurtures him in every way. Unlike instrumental melodies, singing has a strong emotional impact. Because the song reflects the artistic unity of text and music. Singing has a profound effect on a child's personal upbringing. The song serves to grow a person's mental maturity, expand his worldview, enrich his perception of the world around him. [10]

In the process of singing, they have a deeper understanding of music, more actively expressing their experiences and feelings. The lyrics of the song help students understand the content of the music and master the melody more easily. Children understand the melody played in the voice better than the melody played on any instrument. In the process of singing, children develop musical abilities: Musical hearing, musical memory, sense of rhythm, as well as singing develops from musical abilities: sense of meter and rhythm, musical hearing, sense of fret. Singing as a group is necessary to develop students' musical reading skills and performance skills. In the process of singing as a group in the classroom, the student tries to control his own voice performance, to hear and observe the performance of his teachers, and to interact with them, fosters a sense of team unity, cohesiveness, mutual friendship. Singing has a great impact on a child's psyche, as well as his physical growth and development. In group singing lessons, students' attention, awareness, and activity increase, musical memory develops well, and a sense of enjoyment emerges as they perform learned songs. They have a deep understanding of the meaning of the song and the tone of the music, and learn about life through the content of the

work. Singing also helps to develop students' speech. [11] Because the lyrics of the song are played over a long period of time, children learn new words without mistakes. The teacher checks the correct execution of the words. The process of singing unites children with a common mood, they learn to work together. They hear their comrades hurrying or falling behind and call them to sing at the same pace. Singing is the main tool of music education. It is very close to children compared to other activities. By singing, they perceive music more actively. The lyrics help to understand the content of the song. In singing activities, children develop a sense of memory and rhythm of how to listen to musical skills. Singing develops children's speech. The music teacher supervises the students as they sing the word to the tune during the singing process. The distinctive features of the child's voice are delicate, soft soft. The baby's throat will be big and small with a joint in it. The sound is therefore soft and amplified through a sound resonator. [12]

The resonator is divided into two: 1. upper head resonator. 2. lower chest resonator. The chest resonator amplifies the sound. The main resonator makes the sound resonant. [13]



Singing is a complex process that produces sound, i.e. hearing and singing must be interrelated during singing. Children imitate the speech and tone of adults, expressing in their voices the sounds of birds, pets. In order to effectively form singing skills in students, we must first know the structure of the human vocal

apparatus. The mouth, nasal cavity, larynx, trachea, bronchi, and lungs are the sound-producing organs. The main sound system is located in the larynx. Work on the development of children's singing skills will be carried out gradually. With this in mind, the school curriculum includes works appropriate to each class range.

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AN OVERVIEW ON ANTIBODY AND ITS APPLICATION

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ABSTRACT

Antibodies are immune system proteins that circulate in the bloodstream and detect and destroy foreign entities such as bacteria and viruses. Antibodies circulate in the bloodstream after exposure to a foreign material termed an antigen, giving protection against subsequent antigen exposures. The accurate detection or quantification of a wide range of analyses is now critical in a wide range of applications as well as situations. Biosensors have revolutionized diagnostics, allowing for the recognition of the food or environmental pollutants, biologicals warfare substances, illegal substances, and human/animal disease indicators during point of care testing's (POC). Because of their remarkable specificity for their corresponding antigens, antibodies continue to play significant roles in several sensing systems. Current biosensor systems that use antibodies for molecules are briefly discussed in this study. The utilization of molecular biological methods for antibody development as well as improvement is scrutinized. These recombinant antibodies are more suitable for biosensor growth in relation of design, stability, affinity, but also specificity.

KEYWORDS:*Bio Sensor, Bloodstream, Human, Recombinant Antibodies, Transducer.*

1. INTRODUCTION

A biosensor is a kind of sensor that has a biological materials as its main purpose. The bio enables assessment, the transducer, as well as the signal presentation or printout are the three main components. The transduction mechanism converts the analyte's contact with the biological reference electrodes into a quantifiable signal. After that, this signal is transformed into a printout and display. Biosensors are valuable instruments for evaluating biomolecular interactions in clinical, pharmacological, or climate change studies. In the medical environment, biosensors have the ability to provide speedy, real-time, especially high accuracy in emergency rooms and local hospitals. Some in vitro assessment of capillary hyperglycemia (around patient) in people with diabetes is an outstanding illustration of this. The subject of antibiotic bio detection will be examined for the goals of this study, with a focus on advancements in antibody synthesis and their implications for biosensor design (1).

1.1.Antibodies:

The immune system is a mechanism that protects the body against immune systems serves as a watchdog against transferrable organism or their harmful byproducts. Non-adaptive (innate) as well as adaptive (acquired) immunity are the two types of immunity. Non adaptive protection is wide, nonspecific reply to distant substances that comprises phagocytosis cells lysis (usual killer cell), as well as other physicochemical processes. The basic variance among non-adaptive or adaptives immunology is adaptive immunity's capability to recover following acquaintance to the specific molecule. Lymphocytes (particularly, white blood cells) secrete immunoglobulins, which are responsible for adaptive immune system (antibodies). To give birth to the memory cells, B-cells are ultimately differentiated. B-cell, which recognize the antigen immediately after initial exposure, and plasma cells, which secrete particular antibodies in reaction to the antigen

Enzymes, lections, microbial cells or receptors, are some of the other bio recognition components. Signal transduction: transforms the analytic molecule's interaction with the analytic into a measurable signal. Display or readout. Show in Figure 1.

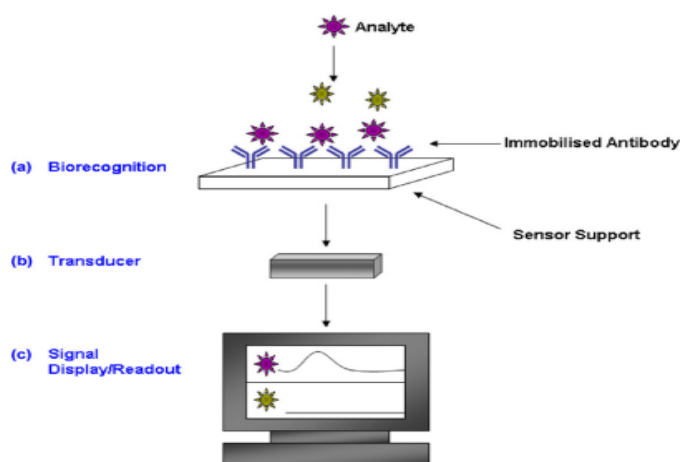


Figure 1: The Components of biosensors (a) Interactions of analytes with biorecognitions elements: this is aided by the rendered immobile antibody's affinity for its cognate antigen (purple). Enzymes, lectins, microbial cells or receptors, are some of the other biorecognition components. (b) Signal transduction: transforms the analyte molecule's interaction with the analytes into measurable signals. (c) Display and readout(2).

1.2 Antibody Structures:

The basic construction of the immunoglobulin. Disulphide bonds link two heavy chain with molecules masses of the 51 kDa but also two lights chain with molecular masses of 25 kDa in the drug molecule. The chain have both constants or variables components (3). Each variable region (VH) of the H chain has three constant parts that are required for antigen binding (CH1, CH3 or CH2). The light chain is made up of one point mutation, which is a significant factors of antigen binding's sites, or one constant regions. Antibodies, also known as IgA, IgM, or IgD, are immune response proteins that flow in the circulation" or "recognize and eliminate invading organisms like bacteria and viruses. Antibodies circulate in the bloodstream after exposure to a

foreign material termed an antigen, giving protection against subsequent antigen exposures. And IgE are the five immunoglobulin classes characterized by their heavy chains.

The immunoglobulin isotype is determined by heavy chain class switching during gene rearrangement. Light chains come in two types, which join with iron chains to produce an antibodies molecule. Antibodies of the types IgG and IgM are the most prevalent types of antibodies produced during the mature immune reaction that are used to construct immunological libraries. CH1, CH2, or CH3 are 3 main areas in Fc regions that are important for antibody downstream actions including complement activity. The adjustable light and heavy subdomains enable antigen contact by either bringing together all of the antibody's excitable parts, referred as complementarity determining sections, or separating them (CDRs). Antibodies' constants portions are usually retained, with just slight sequence differences amongst antibody classes. The CDRs, but at the other hand, contain a lot of variation in their sequence (4).

1.3 Antibody Diversity Is Important:

The immune system achieves antibody diversity by gene recombination and somatic hyper mutagenesis of the encoding genes. The heavy chains in vertebrate genomes are encoded by a combination of constants, 123–129 variables (VH), 27 diversers (DH), or joining genes segment. Throughout B-cells developments, the immunoglobulin loci experience rearrangement. The VH-DH-JH rearrange within the heavy chain locus throughout transcription, so this exon is coupled to variety of CH segment. The mRNA is subsequently transcribed into a lymphocyte specific immunoglobulin isotope. Excluding D segments, the very same sequence of events happens. Somatic hyper mutagenesis contributes to the defense service's diversity by introducing new mutations (SHM). SHM creates errors in the genes that code for the variable sections of individual B-cells. The region suffers an unusually high rate of alteration during short period when B-cells are proliferating, with base substitutions happening at a rate 1 million times quicker than the normal rates of the mutations across the genomes. Antibodies that drop their attraction again for antigens or perish as a consequence of random mutations, or helpful antibodies with enhanced affinity and concomitant proliferation of connected antibody producing cell clone (5).

1.4 Biosensors Are Number Two:

Introduction Clark or Lyons presented the first biosensors, the "Enzyme Electrode," in 1962. It connected glucose oxidase to an amperometry electrode that measures blood oxygen levels. Antibodies might be used in situ in a fiber optic-based immune sensor to detect a chemical carcinogen. Antibodies have subsequently proved to be effective diagnostic tools. The biosensor's selectivity or specificity is mostly determined by the bio recognitions elements, which can "sense" the occurrence of an analytes. Immuno sensors with antibody-based recognition components have been created for variety of analytes on a variety of transduction platforms. The transducer element converts the analyte's selective identification into a measurable signal, and therefore has a significant impact on sensitivity. Electrochemical, piezoelectric, and optical systems are examples of transduction systems (6).

Platforms for data transmission this section gives a quick overview of some of main transductions platform used in biosensor with antibody based bio recognition. Monoclonal or polyclonal antibody has been effectively utilized in biosensors and are the most common antibody types used. However, as we'll see later, recombinant antibodies are becoming more important for biosensor applications. Several examples of transduction elements for the detection

of different analytes, using both polyclonal and monoclonal antibodies. Jiang and coworkers offer more extensive information on the concepts underlying each of the transduction techniques, and both Lippa and coworkers and D'Orazio provide full reviews of insecticides and clinical applications, respectively.

1.5 Methods Involving Electrochemistry:

Electrochemical transducers are the most frequent and oldest kind of transducer. They have a high specificity, low detection limits, a cheap cost, and are relatively free of matrix interference. However, there are still certain issues to address, such as high performance and cost-effectiveness.

1.6 The Three Types Of Electrochemical Transmission Are Potentiometric:

Amperometric, or impedance. Potentiometric transduction measures a system's potential change using the Nernst equations. Specific ion activity is linked to changes in potential. This happens whenever an antigen, an antibodies electrode, but just a counter electrode come together to form a bonding action. Ion-selective sensors use ion-selective membrane to achieve charge transfer between the samples or the sensor surface. The sensor is made up of a perm-selective outermost surface or a bioactive molecules, such as an enzymes. This perm-selective outermost part increases sensor sensitivity by removing interference from whatever electroactive element in the solution. The protease reaction makes as well as utilizes a species, which is detected or converted into a logarithmic significant dose - dependent signal by the ion-selective electrodes. Potentiometric sensor design has been greatly influenced by the introduction of semiconductors including such field effect transistors. Charges on such an electrode's surfaces that have collected on the metal fence here between drain and source are monitored by a FET. (7).

1.7 Amperometric:

The flow of current produced by an electrolytic method is monitored using amperometric sensors. Because most analytes are unable to behave as redox partners inside an electrochemical process, direct amperometric detectors have limited value. Electroactive labels are used to create current in amperometric sensors. When an electroactive species is oxidized or reduced just at surface of electrode whereby the analyte preferentially binds, instead of the reference electrodes such that no greater attachment would ensue, this current is produced. The discharge is proportional to the amount of electroactive species. Operating electrodes are often made of metallic nanoparticles, graphite, especially modified allotropes of carbon, and the conducting polymers to which the antibody is bonded, while comparison electrodes are usually made of Ag/AgCl. Another of the main advantages of this type of sensors is its ability to operate in challenging (i.e. turbid) matrix. However, in amperometric biosensing, the need to label or discriminate free from connected labeled antibody is generally a stumbling block that could have been addressed by using porous membranes (8).

1.8 Methods Involving Piezoelectricity:

When an irregular electrical fields is practical to piezoelectric sensors, the materials resonate. The frequency of the oscillations in fields is related to crystal mass, therefore quartz crystals are often employed. Changes in the frequency of the oscillation are caused by mass differences at the crystal surface. A mass change and, as a consequence, a change in oscillation frequency occur as a result of the interaction between being an analyte and also an antibody bound on quartz

crystals. The usage of piezoelectric material devices is beneficial since it allows for precise observation even without labels. The two kinds of piezoelectric sensors are bulk or surface acoustic wave instruments. Bulk wave instrumentation are used in gravimetric systems such as crystal microbalances, which are related to the crystals weight sensitive, and thicknesses shear mechanism flux capacitors, which characterize the crystals' vibrational motion. Changes in mass create a reduction in resonant frequencies in BW devices since the precipitating Ab–Ag interaction happens on the surfaces of a crystal, from inside an oscillation circuitry. The influence of viscoelastic and pattern created interference produced by the sampling fluid, and also absorbing layers, must be put into account while using piezoelectric transducers. The usage of QCMs as well as micro-cantilevers enables advanced piezoelectric transducers (9).

1.9 Antibody Databases:

These libraries are patterned like human libraries, permitting them to manufacture antibodies against antigens found in ordinary life. This is the foundation of our immune response, which enables us to fight infections, poisons, including life-threatening diseases. In antibody engineering, having access to combinatorial libraries is critical. These libraries might come from vaccinated hosts (both animal or humans), as well as institutions in academic or business world (naïve or non-immunized libraries). Since there are no covalent linkages between college libraries or their antigens, antibodies are segregated from these library. Scientists may now use elevated screening to evaluate enormous library of antibodies, increasing their odds of obtaining highly specific immunoglobulin. This capacity has also paved the way for the synthesis of antibodies with higher affinity as well as stability, ushering in a new age of "tailor-made" antibodies for a variety of uses.

1.10 Display Technology's Benefits:

The advents of the display technologies has permitted the synthesis of incredibly huge antibody public library, making recombinant antibody development more viable and effective. The size of a library had a substantial impacts on attributes of selected antibodies, with a bigger library increasing the chances of selecting antibodies having higher affinity. The antibody fragment is coupled to the phage coat protein, which is related to the particular genes of the phage display. The selection of binders in the antibody library is enabled by the physical link between the genetic studies. The mRNA, ribosome, and nascent antibody produce a stable, stalled antibody–ribosome–mRNA (ARM) combination in ribosome display, allowing for RT-PCR-mediated restoration of particular binders. This technique combines the strengths of phage (plasmid library) and ribosome display (mRNA/PCR fragment). Yeast, bacterial, or mRNA display are examples of other display strategies (10).

1.11 Recombinant Antibody Design And Development:

Mutagenesis is the process of altering genetic material to produce changed proteins, products, or activities. Mutagenesis has had a lot of success as a tool for directed evolutionary changes. The use of evolutions in the vitro as powerful approach for proteins production or refinements resulted in increases in ligand binding, folding effectiveness, or thermal stability. One of two approaches is often used for gene mutagenesis. Site-directed mutagenesis produces faults that are unique to a specific place (CDR and antibodies conserved region). Random mutagenesis generates dispersed mutations inside a gene using error-prone PCR or DNA scrambling. By

modifying the V genes, mutagenesis techniques for improving affinity of certain antibodies have been developed.

1.12 Display of Ribosomes:

Introduction Ribosome projection is indeed a fibroblast approach for identifying but also evolving molecules that is just not constrained by cell-based translational processes. It's an in vitro method for sorting bioactive peptides from vast library that has been used to make antibodies for both prokaryotic and eukaryotic systems. Ribosome show overcomes present limitations in protein selection approaches since diversity is limited by the physical amount of ribosomes obtainable and the multiple atoms of elements accessible in vitro, instead of transformation efficiency. By creating permanent proteins ribosome-mRNA (PRM) complexes and, upon selecting, amplification of matched DNA for contemporaneous shortlisting as well as evolution, ribosome display connects particular developmental proteins (phenotypes) together their corresponding mRNA (genotype).

1.13 Antibody-Based Biosensors Have A Wide Range Of Applications:

While there are many valuable diagnostics kits for the variety of the disease state, including like as cardiac diseases (James or coworkers analyze commonly produced monoclonal antibodies based kits) or biological threat detections (such as Raptors TM), there are few commercially available recombinant antibody-based biosensor devices. Clinical diagnosis but instead monitoring, environmental including food safety, military biothreat assessments, even counter-terrorism all benefit from biosensors. Furthermore, POC testing may avoid the requirement for significant delays by providing very short testing durations. Existing biological formats must be decreased in size, samples or reagent volume demands must be lowered, as well as reliability, ease of use multi-analytes, or higher throughput abilities must be considerably enhanced for POC and other biosensors based detections strategies to the become popular.

There are just a few studies in the literature connected to recombinant antibodies and biosensors, but we anticipate this to variation dramatically in nearby future. Many early research on sensor transduction components depended on commercially available antibodies to illustrate the process and construct viable diagnostic devices (usually monoclonal or polyclonal). Combining antibodies synthesis with transmission, surface interaction engineering sciences, nanotechnology, and microfluidics will speed up the development of recombinant antibiotic sensors. For optimal antibody action, the goal is to improve specificity, sensitivity, durability, or orientation/immobilization is critical. The antibodies used have a high sensitivity or specificity.

2. DISCUSSION

Antibodies are often used as bioreceptors in biosensors. Antibodies are immunoglobins (Ig) with two heavy chain or two light chain that form a Y shape. Antibody might be polyclonal, polyclonal, and recombinants, dependent on their inequitable features or how they are created. A biosensor is a kind of transducer whose primary function is biological recognition. The three main components are the biological recognition element, a transducer, or the signal presentation as well as readout. The analyte's interaction with the bio recognition element is converted into a measurable signal by the transduction process. The signal is then converted into a readout or display. In a broad variety of applications or conditions, multiple effective or assessment of a

broad range of analytes is becoming increasingly relevant. Biosensors have transformed diagnostics, enabling for the detection of food or atmospheric contaminants, biowarfare chemicals, illicit drugs, or human/animal illness markers at the point of treatment (POC). Autoantibodies continue to play an important role in several sensing systems due to their great sensitivity for their associated antigens.

3. CONCLUSION

A biosensors is type of transducer that is designed to detect biological signals. The three essential characteristics are the bio recognizing components, the transducer, and the signal showcase and readout. Since transcription necessitates reducing circumstances or translation necessitates oxidizing settings, transcription stabilizers have been shown to have an impact on antibody folding efficiency. As a result, in the presence of reducing chemicals, the activity of the enzyme of transcribing (T7 RNA polymerases) must continually be checked, however when reduction reagent are employed for transcription, oxidizing conditions are necessary for subsequent translations. In vitro translational yield and efficiency are affected by time, temperature, and the addition of different chemicals.

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AN OVERVIEW ON BENEFITS AND RISKS OF COFFEE CONSUMPTION

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ABSTRACT

Coffee is the world's greatest popular caffeine-containing beverage, behinds just water as well as tea. Because coffee covers a multipart blend of chemicals components related to health benefits, maximum customers starts their day with at least a cup of coffee after a meal as well as close their work day with coffee. However, it has an unsettling influence on the human's brain; it is seen as a vital part of modern living. In contrast, different groups report suffering varying health hazards as a result of which they are reluctant to consume coffee, implying individual differences in coffee intolerance. The goal of this study was to describe the health advantages and hazards of coffee drinking in a concise manner. It is utilized to growth physical presentation, burn fats, reduction the danger of strokes, prostate, liver, as well as colorectal cancer by 20percent, and lower the risk of Type second diabetes by 25 percent, safeguard our brains, brighten our mood, help us combat depression, and cut the chance of suicide by 50 percent. Coffee use has a numbers of negative health's influences, including suppressing appetite, affecting pregnant women and those with high cholesterol, causing insomnia and restlessness, causing breast tissue cysts in women's, digestive issues, incontinence, as well as cumulative the incidence of migraines. Finally, recent research has shown that coffee intake is good to our health when consumed in the optimal range of four cups per day. Additional study will be necessary to demonstrate together the healths advantages and risks of coffee intake.

KEYWORDS: Benefits, Caffeine, Coffee Consumption, Disease, Risks.

1. INTRODUCTION

Coffee is by far the most popular caffeine-containing beverage, as well as the 2nd largest traded product after edible oils. It's made up of a complicated combination of ingredients that include significant quantities of chlorogenic acids as well as caffeine. Arabica coffee is the most significant agricultural product in world commerce (*Coffea L.*)(1). Despite the fact that coffee of Arabica is of Ethiopian origins, it is the greatest important in the global coffee markets, accounting for about 66.00 to 70.00 percent of commercial output. In reality, although coffee contains fewer nutrients, it does include hundreds of naturally occurring substances such as

carbs, vitamins, minerals, alkaloids, lipids, nitrogenous compounds, as well as phenolic compounds, some of which are possibly beneficial.

It was the most consumed beverage on the planet, second just to water as well as tea, which is used to cure everything from higher blood pressures and cholesterol to pancreatic cancer, fibrocystic breasts, as well as bone losses. However, recent research has connected coffee uses to health problems(2). In recent years, however, the majority of studies has indicated that coffee offers health advantages. The caffeine, found in coffee, is a bioactive molecule that has a stimulatory effect on the central nervous system and improves long-term memory(3). Despite the fact that coffee intake has been linked to negative health consequences in the past, recent study suggests that it may be helpful. It was the world's most popular beverage, second only to tea and water, and was used to treat it all from high blood pressures and cholesterol to pancreatic cancer, fibrocystic and bone losses. However, new study has linked coffee use to health issues, and other phenolics, have been verified, and these characteristics may have additive or synergistic effects. Figure 1 illustrates the coffee seeds.



Figure 1: The above diagram shows the Coffee seeds(4)

1.1 Major Chemical Compounds of Coffee:

Coffee is high in a variety of chemicals that have been linked to positive health effects in recent years. Significant quantities of chlorogenic acid and caffeine are present in this complicated combination of compounds. Cafestol and kahweol, two diterpenes linked to coffee's cholesterol-raising effects, are abundant in filtered coffee. In many communities, it is the primary source of caffeine(5). Thousands of other substances, including as lipids, nitrogenous mixes, carbohydrates, vitamins, alkaloids, minerals, as well as phenol compounds, are also present. Antioxidants discovered in coffee include chlorogenic acid (the most prevalent), cafestol, kahweol, caffeic acid, and melanoidin. N-methyl pyridinium is an anti-oxidant found in coffee that has been discovered. Caffeine, chlorogenic acid, and other micronutrients are some of the most significant chemical components in coffee. Coffee is a mixture of thousands of compounds that may include bioactive substances including caffeine, chlorogenic acid, as well as 2

diterpenes called cafestols as well as kahweol. The following are some of the components that were examined.

1.1.1 Caffeine:

Caffeine (one,three,seven-trimethylxanthine) is a nonselective adenosine receptor antagonist found in tea leaves, cocoa beans coffee beans, as well as cola nuts, among other plants. It's an alkaloid component current in coffee beans, as well as more than sixty other plants counting cocoa beans, tea leaves, as well as cola nuts. Caffeine is the world's most extensively utilized psychoactive stimulant, as well as it seems to have the mainstream of its bio logical belongings through blocking adenosine receptors, notably A one and A two A. It has a wide range of concentrations, ranging from 30.00 mg to 350.00 mg per cup of coffee or 150.00 milli liters of home-brewed coffee(6).

1.1.2 Chlorogenic Acids (Polyphenol):

Chlorogenic acid is a physiologically active chemical found in coffee that slows glucose absorption. It is a chemical molecule found in coffee that belongs to the Easter family and is produced when Tran's cinnamic as well as quinic acids, both of which are important nutritious phenols, come together. It's also known as five-O-caffeoylquinic acid, and it includes 70.00 to 350.00 mg of it in a 200 ml (Seven-oz) cups of coffee, with 35-175 mg of caffeic acids.

1.1.3 Coffee Lipids (Cafestol And Kahweol):

Cafestol and kahweol, a structural homolog of cafestol, are found in the typical bean of Coffea arabica, with individual's quantities range from 0.1 to 7.00 mg/ml in the coffee. When we consume boiling coffee, it increases serum cholesterol points in humans as well as contains two coffee-specific diterpenes with anticarcinogenic and anti-aflatoxin B1 (AFB1) action in human cells.

1.2 Profits Of Coffee Consumptions:

Coffee is a high-quality stimulant that should be eaten at least three to four times each day. It is abundant in antioxidants and other beneficial compounds that may aid in our overall health. Regularly drinking coffee has been related to a reduced risk of death as well as chronic illnesses likes' cancer. The good influence of coffee is reinforced by numerous possible mechanisms owing to the presence of a variety of biologicals components like caffeine, caffeic acids, diterpenes, polyphenols, volatile aroma, and heterocyclic compounds.

The inclusion of a number of biological components including such caffeine, diterpenes, caffeic acids, polyphenols, volatile fragrance, and heterocyclic compounds may contribute to coffee's positive influence. When coffee intake is fewer than five cups per day, there is a definite link between it and a lower risk of colorectal cancer. Caffeine aids premature neonates with apnea by reducing fatigue, improving performance, eventually curing apnea. It commonly resulted in a longer sleeps latency, a decrease in total sleep length and efficiency, and a decrease in perceived sleep quality. It was also discovered that eating it was linked to a lower risk of death. It is capable of exhibiting the defensive impact of higher smoking and alcohol use.

Furthermore, coffee use has a host of health benefits that have been shown via real human observation. Increasing energy levels, boosting several features of brain functions such as memory, mood, attentiveness, levels of energy, reactions times, as well as common cognitive

presentation are just a few of them. Caffeine, a bioactive component in coffee, exerts stimulatory belongings on the central nervous systems as well as a positive impact on long terms memory. Despite the fact that coffee consumption has been linked to detrimental health impacts in the past, a current research reveals it may be beneficial. Coffee consumption has been related to a numbers of health profits, counting a reduced risk of heart disease. Heart attacks and strokes are caused by hypertension, which is a key risk factor.

1.3 Risks of Coffee Consumption:

Contrary to popular belief, coffee may not always provide protective advantages, according to a new research. It was shown that consuming twenty eight cups of coffee as well as additional per week raised a person's risk of dying hastily by 21.00 percent. In individuals under the age of 55, his risk was more than 50 percent greater. In addition, excessive coffee intake has been related to an increased risks of mortality. Caffeine consumption that is too high elevates health risks by raising a person's hearts rate as well as blood pressure, as well as somewhat increasing peripherals arterial difficulty as well as distal vascular tones(7).

Coffee intake has been related to an augmented long-term risks of coronary heart disease in males, while regular moderate coffee consumption has been related to a reduced danger of coronary heart infection in women. Coffee has long been blamed for a variety of ailments, ranging from slowing our development to causing heart disease. Recent research has shown no link among coffee consumption as well as an improved risk of heart disease or the cancer.

Also, those who consume a lot of coffee has a reduced risky of emerging arterial fibrillation (AF). In humans, glucose tolerance is decreased soon after consuming caffeine or caffeinated coffee, suggesting that coffee use may raise the risk of diabetes. When we consume 2-4 cups of coffee a day in moderation, it is good to our health; however, when we drink more than that, it is detrimental to our health. No smokers who quickly metabolizes caffeine may be at an improved risks of delivering babies with smaller birth sizes if they consume more than 300 mg per day.

2. LITERATURE REVIEW

R. Ostrauskas et al. discussed about Coffee feeding as well as type two diabetes mellitus(8). The researchers wanted to investigate whether there was a relationship amongst coffee consumptions as well as the risk of developing type two diabetes. Methods: A case controls study in 2001 including 234.00 patients with extent consistent type two diabetes mellitus and 468.00 healthy controls. Cases as well as controls were matched basis of gender and aged (five years). Age, education level, work position, family status, history of diabetes, lifestyles, and stress were all gathered via a questionnaire. If a variable affected the value of the OR by more than ten percentage points in any exposure category, it was kept in the model as a confounder. The odds ratio, 95 percent confidence interval, and P for trend were calculated using conditional logistic regression. After accounting for various confounders such as family history of diabetes, eating frequency, morning exercise, cigarette smoking, years of schooling, and stress, a statistically significant link between type 2 diabetes mellitus and coffee drinking was discovered. Those who consumed four or more cups of coffee per day had a decreased chance of developing type two diabetes than those who drank one or less. Conclusion: Daily coffee intake of four cups or more may be associated with a reduced risk of type two diabetes.

K. Güngördük et al. discussed about Effects of coffee consumption(9). Background Following an intraperitoneal procedure, paralytic ileus is a frequent and severe side effect of elective surgery that is considered unavoidable. The goal of this research was to see whether drinking coffee aids in the recovery of bowel function following gynecologic cancer full staging surgery. The Structure of the Research 114.00 patients were randomly assigned to either three times daily postoperative coffee intake or standard postoperative treatment without coffee consumption (n=56) in this randomized controlled experiment. As part of full staging surgery for endometrial, ovarian, cervical, or tubal cancer, all patients underwent a total abdominal hysterectomy and salpingo with systematic pelvic and par aortic lymphadenectomy. The time it took for the first passage of flatus following surgery was the primary outcome measure. Time to first defecation, time to first bowel movement, and total time to tolerance of a solid meal were secondary outcomes. Results Mean time to flatus, mean duration until feces (43.19.4 vs 58.517.0 hours; P.001), and mean time to ability to eat (3.41.2 vs 4.71.6 days; P.001) were all considerably shorter in coffee-drinking patients than in control people. In the control group, 17 patients (30.4 percent) had mild ileus symptoms, compared to 6 patients (10.30 percent) in the coffee group. The patients tolerated and accepted coffee drinking well, and no intervention-related adverse effects were identified. Coffee consumption improves intestinal motility and food tolerance after a full abdominal hysterectomy and extensive paraaortic lymphadenectomy. This simple, affordable, and well-tolerated medication should be included in the postoperative care of gynecologic oncology patients.

L. Kirsty Pourshahidi et al. discussed a review on risk and benefit of coffee consumption(10). The evidence on the health benefits as well as dangers of coffee use is mixed. On the other hand, most experts agree that moderate, regular coffee use by healthy people is either fully harmless or mildly helpful. A variety of variables, including age, gender, health condition, coffee preparation style, serving quantity, and coffee supplier, muddy the results and generalizations. Coffee may have both positive and negative health effects, but the current study, which is primarily observational data, cannot prove causation for either. The goal of this study was to provide a thorough examination of the hazards and benefits of coffee drinking in terms of health outcomes. Using the electronic databases "OVID," "CINAHL," and "Web of Knowledge," a complete search of the literature yielded 12405 results. The remaining qualifying research was utilized to compile a comprehensive list of possible health advantages and dangers associated with coffee use, which was structured and addressed by major diseases/conditions, at-risk/vulnerable populations, and particular coffee components. For the great majority of health outcomes investigated, the advantages of moderate coffee use much exceed the dangers among adult consumers, according to this qualitative study. The findings of this study may assist in more qualitative and quantitative deterministic risk–benefit analyses of coffee use.

3. DISCUSSION

Coffee is the most widely consumed caffeine-containing psychoactive beverage on the planet. Because coffee contains a multipart blend of chemical components associated to health benefits, most customers start their day with at least a cup of coffee after a meal and close their workday with coffee. A regular cup of coffee may not only make you feel more energized, help you burn fat, and improve your physical performance, but it may also lower your risk of illnesses including cancer, Alzheimer's, type two diabetes, as well as Parkinson's. Coffee, in fact, may help you live longer. Overdosing on caffeine may result in anxiety, heart palpitations,jitteriness,

as well as even aggravate panic attacks. You may want to avoid coffee altogether if you're caffeine-sensitive and quickly aroused. Another negative effect is the possibility of sleep disruptions. Coffee should be consumed in little amounts throughout the day so that you are not adversely impacted.

4. CONCLUSION

Coffee is the world's most popular caffeine-containing psychoactive beverage. Caffeine consumption has a numbers of health benefits, such as improving physical performance, fat burning, decreasing the risk of stroke, liver, rectum, or rather colorectal cancer by 20%, lowering the risk risk of Parkinson's disease by 25%, lowering the risk risk of Type two diabetes, lowering the risk of dementia and protecting our minds, brightness our feeling, assisting in the fight against depression, and lowering the risk of suicide by 50%. Furthermore, owing to their highly integrated DNA, coffee consumers have a decreased risk of heart disease. They have a lesser risk of dying from a heart attack as well. Coffee use has also been connected to a rise in sleep latency, a decrease in overall sleep length and efficiency, as well as a deterioration of the claimed sleep feature.

Coffee use, according to certain research, is damaging to our health. In both women as well as men, caffeine in coffee increased depression, nervousness, as well as the need for anti-anxiety medication. In both women and men, caffeine in coffee increased nervousness, depression, and the need for anxiety medication. Other side effects include adrenal exhaustion, abnormal heartbeat, hallucinations, faster bone loss, and tremors. Finally, new studies suggest that coffee intake, particularly decaffeinated coffee, may be beneficial for our health. More research is required to evaluate the short as well as long-term impact of coffee consumption and its constituents on health benefits and risks.

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THE PROSPECT OF GROUP ADMINISTRATION FOR KNOWLEDGE SHARING

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ABSTRACT

In the article, the researchers suggested the idea of Knowledge Sharing (KS) as an essential component for effective management. KS is a method to define, acquire, apply, develop, preserve, and assess an organization's knowledge. This book is a treatise on the study and analysis of the future of entrepreneurs. A literature study has been performed on key present management problems and based on these assumptions have been established regarding develop in the future and its effect. In the future, management will change to accommodate a new kind of global organization that is extremely flexible to a quickly changing external environment. Running a virtual company is different from running a conventional organization and running it will largely rely communication technology in the future a new business is required. The findings indicate that the organizational culture and attitudes of senior management based on individual views and management styles are adversely related to the advantages of perceived knowledge. An examination of managerial initiatives reveals that not all of them have been effective. For future study, we suggest you gather data from workers, managers or stockbrokers and compare the findings for more reliable information. Future research may also utilize numerous case studies to compare their effect on different businesses and sectors.

KEYWORDS:Employees, Knowledge Sharing, Information, Management, Value Systems.

1. INTRODUCTION

Knowledge is one of those concepts that has no universal meaning and is difficult to describe. Different writers approach issues from diverse points and views and convey different meanings. It may be described as the process of data processing with the goal of better understanding what is occurring in the environment. Changes in the external environment that occur every day on an international level determine the future of management. The degree of connection between various areas of the globe, an economy's reliance on many other economies, and the growth of technology are anticipated to increase substantially in the future. The area of management evolved out of conventional management theory and may be considerably more casual. Novel management theories and models will be created to fit the administration of various kinds of companies in the future. Knowledge sharing may be viewed as a means of addressing problems,

especially ones that may be addressed in a number of ways. A good manager knows that employees and their expertise make them different (1).

1.1 Current Discussions in Management:

When the management and workers of a company share the same ideas and points of view and internalize these principles, the connection between management and employees is reinforced. The development and utilization of employees' creativity are essential to an organization's culture in which the operational elements of knowledge may achieve their full potential. Change management topic is that a business adjusts to the continuous changes of the external environment of the company owing to political, economic, social, technical, ecological and legal requirements. Whereas the emphasis is on how to integrate human elements into the production and dissemination of information to make the process easier, management is more concerned with the psychological dimension than with simply disseminating knowledge. Information, technology, know-how, and skills are all examples of knowledge. Value and long-term viability are created by combining these resources more effectively than competitors (2).

A tiny moment is a little everyday occurrence, as when a client comes into a service facility and sees something insignificant. Maximum outcomes are influenced by these micro seconds. For example, if an air conditioner is damaged and the service centre is clogged with air, less customers will visit the business and sales will drop, otherwise the company will go bankrupt and production would cease, with thousands of employees lost. Attention to detail, focused at refining all aspects, helps to create an organizational culture that adjusts to external changes in order to stay competitive. As a consequence, organizational transformation goals are willingly accomplished. The goal of this article is to develop themes from literature studies and surveys, to understand the challenges underlying knowledge sharing, and to increase awareness of the obstacles to sharing. Sharing expertise in the area of industry (3).

Traditional knowledge refers to specialist knowledge about organisational settings that occurs under particular business circumstances in a certain place. Employee and management attitudes, as well as management efforts to thrive in a competitive environment, are all covered by the development of a KS system within the company. On the other hand, it was found that value systems may play a major role in the development of environmental-adaptive organisational cultures. Values are that continuously adjusts to the external environment to accomplish its objectives. As a consequence, the objectives of organisational change will continue to be fulfilled in a natural manner (see Figure 1) (4).



Figure 1: The Company Is Aligning Its Employees with Management's Viewpoints and Charting A Course for Information Sharing [Google].

2. LITERATURE SURVEY

A. Goksoyet *al.* presented in the article that increasing competition and globalisation push most companies to become more innovative and adapt to change. Business Process Reengineering (BPR) is typical change management methods that may help companies achieve exceptional outcomes. BPR has become a method for companies to enhance their bottom line, boost efficiency, and gain competitive advantage in a continuously changing and ever-changing market. Despite the fact that successes and failures have been documented in the literature, RPR, when done properly and with care, is an essential tool to accomplish real change and a competitive company. In this regard, consider business process reengineering as the most relevant current management trend for organizational change, review restructuring projects implemented by multinational electronic and electrical equipment companies and suggest areas for improvement and finally, will present the results of the staff survey opinions on their company's projects (5).

W. D. Valdivia stated in the article that to appreciate how much science and technology have helped society, we only need to compare our living conditions to those of a few generations ago, when vaccines and air flights were not widely accessible. When people realize how much of that development was made possible by government money, we gain an intuitive support for public research spending. Despite the fact that the history of federal research has been defined by steady development, a few waves of enthusiasm have resulted in enormous surges of financing for particular projects. A crucial issue is whether these huge public spending have resulted in

disproportionately significant social gains. Budget punctuations may be assessed on three levels: societal consequences, knowledge production, and research bureaucracy impact. For each of these categories, author proposed some evaluation criteria and give some early policy suggestions (6).

D. Marginson mentioned in the article that the aim of this research is to investigate into the role of value systems as organisational transformation instruments. Study all the intended and unintentional objectives, practices and consequences of utilizing a value system as a management control instrument to accomplish organizational change. The results are based on a thorough longitudinal study of the British titans operating in the "global telecoms industry". The data was gathered from a number of sources, including interviews and surveys with different corporate leadership organizations. In perspective, may use the value system tool to create changes in the company by allowing a new set of normative values to guide the choices, decisions and actions of managers, particularly in business circumstances compromise. Mission statements, newsletters, e-mails, "strategic days", "road races" and similar social activities are all examples of processes and procedures based on formal and informal information that may be used to convey and execute value systems. Change agents may be accountable for desire, according to the value system may only partly succeed in accomplishing the intended goal of mobilizing attitudes behind a set of norms, normative norms. The increasing duplication of projects, the weakening of project controls, the reallocation of social esteem within the business, the polarization of views on budget management and the overall deterioration in the execution of line management have negative effects. Overall, it has been claimed that adopting organizational transformation may be detrimental yet helpful for the company. The findings of this research may assist businesses create stronger value systems to "maintain or alter patterns of organizational behaviour". The present research examines the various processes that may be engaged in accomplishing organizational transformation through value systems by giving data demonstrating that may be used to communicate a highly specific that knowledge more thoroughly (7).

R. J. Ockeret *et al.* articulated in many details in the article that notwithstanding an amount of empirical study on the significance of leadership and the efficacy of leadership in conventional and computer-assisted groups, little research has been done on the motivation of leadership in partly dispersed groups (PDTs). When virtual groups are created with one or more centralized and separated subgroups of people, they are partly dispersed. This article provides the foundation for a better knowledge of PDT leadership applied to various settings. Use the location, culture as well as time to study composition of leadership. It also offers that utilizes twelve groups of students to investigate the effect of content upon PDT. Significant variances in leadership dynamics were found, and these differences had an effect on team performance. We develop leadership and PDT ideas based on these insights (8).

P. Stokes *et al.* presented articulately in the article that the aim of this article is to look at the catalytic and crucial function of micro-moments in organisations, as well as their significance in deciding whether change and transformation can be maintained or not. Within an interpretivist methodological framework, the study utilizes participant observation. This provides you important event vignettes to work with as you're attempting to figure out what's going on. The idea that macro events is founded on micro emphasis on behaviours and choices linked to unsustainable or irresponsible occurrences. Many of these options are repeated and a mystery

captured by the Janus metaphor. Building on Aristotle's ethical concept of ethics and Kant's dental science, this research necessary to guarantee permanent transformation. In contrast, behavioural propensity for generating confusing, unsustainable, and irresponsible circumstances. In businesses undergoing change. Harmful micro-moments, if allowed uncontrolled, adversely impact, but pleasant times tend to create a more responsible as well as sustainable culture. This essay integrates current research concerning sustainability, organizational change management, corporate culture, organizational behaviour, and business ethics to concentrate on under-studied micro phenomenon (9).

3. DISCUSSION

From an employee's point of view, the most essential elements for a successful restructuring are the dedication and support of senior management, communication with workers, collaboration and team composition. An adequate IT technologies innovative structure that favours work efficiency, expert and experienced staff, planning and resources, process analysis and new and innovative ideas, using the right methods and tools, customer orientation, control and continuous improvement of processes other success factors cited by employee such as, cost factor, speed and time improvement. Factors for a successful restructuring, senior management commitment and support, and customer focus were one of the four elements of restructuring success highlighted in the study.

Meetings or conferences were deemed moderately or very important by 51 per cent of aerospace industry respondents, while patents were rated moderately or very essential by only 14 per cent. Business organisations may develop into fully virtual business organisations as a consequence of de-structured and disaggregated organisational structures. Virtual organizations take full that flexible. A manager's job in a virtual organisation varies from that of a conventional organisation in terms of the nature of leadership and the dynamics of leadership. Virtual company management should concentrate more on developing and supporting workers' knowledge and problem-solving abilities, than monitoring their job. Employees in virtual companies will have greater autonomy and power, and managers in virtual organisations will have to accept this. As a consequence, individualistic organisational cultures had a negative effect on knowledge sharing.

Employees in virtual companies will have greater autonomy and power, and managers in virtual organisations will have to accept this. Employees in a virtual company, for example, will not be required to work from 9 a.m. to 5 p.m.; instead, they would be expected to accomplish tasks do they spend doing so. Employees continue to play a significant part in information exchange, and management efforts fail as a consequence of this aspect, in conjunction with technological and organisational issues. It was clear that the knowledge sharing system's functionalities needed to be improved with dynamic techniques for understanding content creation. As a consequence, in the future, management will need to concentrate on creating organisational cultures that value contribution from people who make up the virtual corporate organisation rather than individuality.

The researchers think that the management of the businesses questioned did not offer sufficient money, incentives or rewards for their performance to encourage their workers to become more efficient and effective. KS. One of the main disadvantages is that information sharing platforms cannot assist organizations in various ways. As a consequence, business culture and managerial attitudes have impacted information sharing. According to the findings of these writers,

organizational culture will continue to play an essential role in improving the capacity of virtual businesses, as previously demonstrated. According to the study, businesses try to promote information sharing, management efforts to support employee connections and actual application experiences, other dynamics, as well as knowledge sharing and learning in the workplace. As a change in the surroundings, we need to redirect our attention. Provides time, space and tools.

3.1 The Future of Management:

With the development of information and communication technology, constant collaboration between multinational offices across the globe will be feasible, generating more lucrative companies and delivering better service to the market. In addition, in each time zone, information and communication technology has raised the working hours limit, adding eight hours plus eight hours from home or mobile devices like that. As a consequence, information sharing requires an organisational culture that encourages employees and management to freely share their views, ideas, and strategies for achieving objectives (10).

To obtain a competitive advantage in an information-intensive world, businesses must enhance their grasp of knowledge sharing and network usage. Administration need to encourage employees to offer reaction in order to improve KS labours. This would encourage individuals to engage certainly by enhancing their creativity, motivating them to come up with fresh ideas, and improve their performance. As a consequence, management provides the business and its workers with a wide growth framework of sharing. One of management's "moon shots" de-structuring corporate organisations quickly developing possibilities all over the globe as a vital strategy for companies to fully utilize the new global order.

As a consequence, inflexible organisational structures hindered the rapid realignment of skills and assets in order to leverage on global potential. Business organizations need to reorganize into smaller, more flexible, project-based structures to be more adaptive. People and technology are linked to allow knowledge sharing and seamless flow. According to data from a study of various industries, different channels are of varied importance depending on the industry. In the pharmaceutical industry, for example, 64 percent of respondents rated meetings or conferences as moderately to very important. Patents were rated as moderately to very important by 50 percent of respondents in the same industry.

3.2 The Impact of the Future of Management on Social Change:

'Embedded', 'encoded', 'embodied', and 'engrained' knowledge are the many kinds of knowledge. These four kinds of knowledge are unique to the individual and group. The measurability and accessibility of knowledge transfer throughout the organisational hierarchy varies. The settings and types of managerial roles may have an effect on the efficiency of information sharing. Smaller and more flexible project-based virtual structures and organizations regrettably contribute to widespread short-term unemployment. Recent developments, such as from the 2008, indicate without commensurate job growth.

Future companies may need fewer people to function (see Figure 2). According to a British Broad Casting worldwide news story dated November 3, 2014, UK Lloyds Bank has stated that it would shut 200 branches in the UK and fire 9,000 workers. Bank executives claimed it was feasible since most clients are now utilizing internet banking and their large branch network is no longer required. Furthermore, the efficacy of information transmission may be affected by the

participant's expectations, personal learning style, and attitude. One theory was that information sharing becomes more effective as levels of involvement increase, suggesting that engaged employees, for example, promote more knowledge interchange.

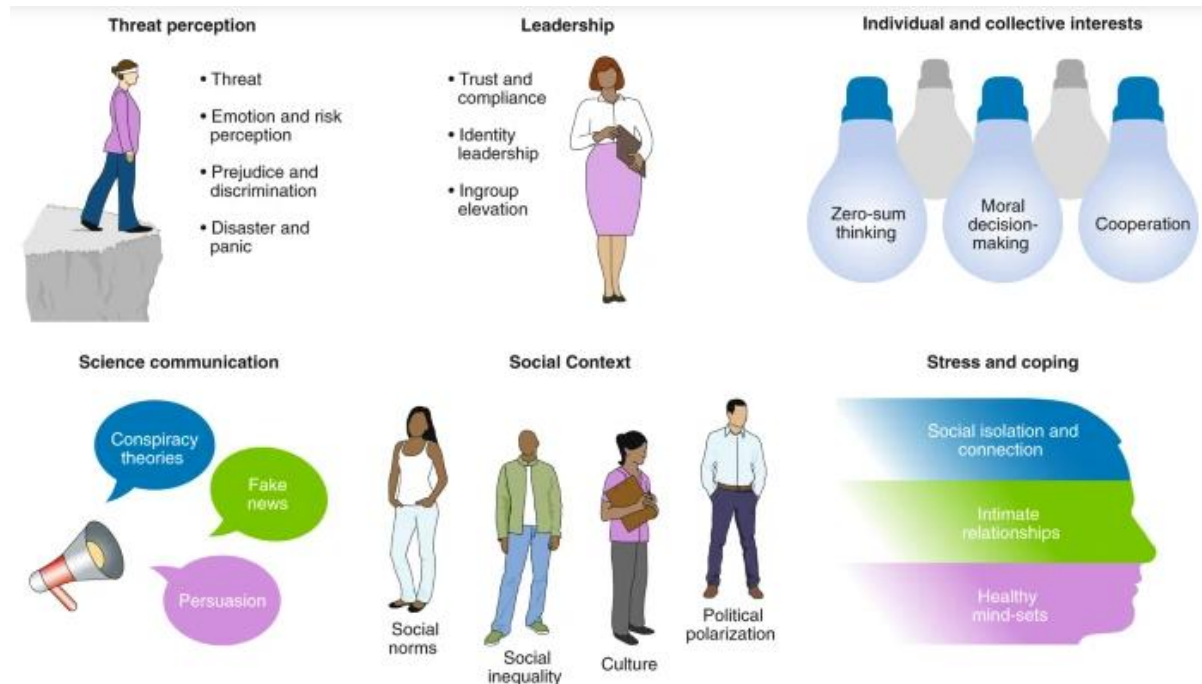


Figure 2: The Future of Management's Impact on Social Change However, In the Future, Organisations May Need Fewer Personnel to Function [Google].

Management motivation should be handled in this respect, and it could be a rich field for new ideas. Making the information accessible to participants is an interesting option. Such openness is in accordance with current knowledge. As a consequence, a new kind of employment market may develop. People selling their talents too many businesses at the same time will make up such a labour market, which will be highly technically educated. The ability to perform multiple vocations at the same time will be helped by technology advances. The long-term implications of a new form of organization may lead to good societal developments in which human civilization is considerably more educated, talented and competitive with art. When information and knowledge are deemed important to a company, they need to be handled correctly for them to develop and prosper. Researchers think there are some gaps between current ways of exchanging information and what sample management businesses anticipate from knowledge sharing, and there are no two industry leaders. They respond to each other in the same manner.

4. CONCLUSION

The study arrived to the idea that once a particular kind of information is produced, administrative exertions to maintain besides spread it. Employees' efforts to create the knowledge sharing required for their companies' advantage will be impacted and ideally added value by the firm's culture and management perspectives. This study is essential companies UAE economy, especially that technique of performing occupational as well as achieving organisational objectives. It was tried to discover obstacles to knowledge exchange and

transference within companies, this research examines organisational knowledge as well as learning techniques. The future looks bright. Looking back in 2050, the world we know today may be a highly outdated and inefficient method of conducting business. Many nations will recover from poverty and enjoy economic success due to globalization spurred by increasing international commerce. We can offer services from anywhere on the globe, therefore it makes no difference whether a person is born or lives. The notion of global north and south vanishes, resulting to a multipolar international economic environment. This is the future scenario. These obstacles, such as management attitudes, corporate culture, vision and purpose, internal environment, and employee perspectives, create problems that go beyond the scope of our research. However, there was a significant connection between information sharing and the sample's workers' experience. As a consequence, researchers believe that organisational structure and operational procedures should be improved or changed. For future study, we suggest that you gather information from workers, managers, or change agents as well as compare the findings to obtain more accurate data. Future research may need additional case studies to evaluate efficacy in different businesses and industries.

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THE MOST USEFUL TECHNIQUES USED BY ADVANCED TEACHERS IN TEACHING DRAWING

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ABSTRACT

Every teacher, including a drawing teacher, has three issues: what to teach, why to teach and how to teach. Providing methodological assistance to young teachers who can get acquainted with the basic methods, techniques and tools of teaching drawing at school. Drawing methodology is a branch of pedagogical science that defines the content and methods of teaching the basics of graphic literacy in schools in accordance with the general goals and objectives of education and upbringing.

KEYWORDS: *Revival of thinking activities, sketches and axonometry, education, graphics, archeological excavations, architecture, thick and high walls, castles, masterpieces of world architecture, bells, screws ,pona, axonometric projection.*

INTRODUCTION

Every teacher, including a drawing teacher, has three issues: what to teach, why to teach and how to teach. However, due to the shortness and insufficient substantiation of the answers to the questions in the program, it does not fully satisfy young teachers. [1]

Providing methodological assistance to young teachers who can get acquainted with the basic methods, techniques and tools of teaching drawing at school. The above tasks require the course to reflect and justify the following:

- a) the most convenient methods and techniques used by advanced teachers in teaching drawing;
- b) methods and tools that enable students to stimulate their thinking activities and visualize their existence;
- (c) Methods and means to ensure the development of solid skills in the performance of clear drawings in accordance with the rules of manual, visual sketches and axonometry;
- g) tools that provide practical knowledge and skills in reading and executing drawings.

Since the development of practical knowledge and skills in drawing depends on the conditions, this course will consider the organization of the drawing room and its equipping with appropriate teaching equipment and tools.

Thus, we draw some brief conclusions that define the content of the methodology as a scientific science. [2]

Drawing methodology is a branch of pedagogical science that defines the content and methods of teaching the basics of graphic literacy in schools in accordance with the general goals and objectives of education and upbringing.

At the same time, the method of drawing develops the most convenient ways to perform graphic work, and on this basis, the perfect means of organizing the educational process in the subject. [3]

The need for a graphic image began to emerge in the time of primitive society. This is evidenced by the ornaments used on the tools and objects of labor of primitive people, as well as many images carved on the rock.

Archaeological excavations in Central Asia, including Uzbekistan, show that the fine arts of the primitive peoples living here were much higher. They reflected their activities in rock carvings. For example, a rock carving scene near Jizzakh (Figure 1) and a rock image found in Soymalitash (Fergana Valley) (Figure 2) show the sun and the farmer plowing. These images were carved in stone 2-3 thousand years ago. [4]

The first architectural constructions began to appear during the period of the primitive community system. Examples of primitive architecture consisted of basements, huts, huts; In the vicinity of the water it is made of rocks, mud, bones, wood, branches. About 30 ruins of such primitive architecture were found in the territory of Central Kazakhstan. Figure 3 shows an image of one of the primitive buildings (reconstructed) found on Mount Bugili in Central Kazakhstan. [5]

In the territory of the Republic in the IV century BC each nation built thick and high walls, fortresses and fortresses to protect itself from external enemies (Jonbos fortress, Dalvarzintepa, Toprakkala, Varakhsha near Bukhara, Bolalik hill near Termez, Kuva fortress in the Fergana valley, etc.). Before building the fortifications, of course, their history (plan) was drawn. Thus, the implementation of architectural and construction drawings on the territory of Uzbekistan has gradually improved, and the construction of buildings on the basis of these drawings has reached such a high level that for more than a century in the cities of Bukhara, Khiva, Samarkand Historical monuments have become masterpieces of world architecture. That is why it is not in vain that these cities are called "open-air museum cities". [6]

Our ancestors used their own standards for the production of various types of bricks used in construction, that is, brick formwork (wooden device). This indicates that some types of standards were used in Uzbekistan thousands of years ago. Later, in their scientific work, scientists widely used graphic images, as well as writing. The use of graphic images in the works of Central Asian thinkers dates back more than a thousand years. They skillfully used their own drawings in their works. As evidence of this, let us take some of the graphic images in Ibn Sina's Encyclopaedia (Ibn Sina, Encyclopedia, Tehran, 1952). It is noteworthy that the clear image of the bell, screw, pona, etc. is made in axonometric projections. Figure 4 shows the axonometric projections. [7]

In this work, Ibn Sina, in addition to a clear description of the mechanisms, also describes their drawing in the scheme. For example, while depicting the connection of screws with the wheel, as well as the wheel, screws and blocks, at the same time shows them in graphic images. These are prefabricated drawings, reminiscent of kinematic schemes. For example, consider a graphic

representation of the connection of a screw with a pulley (Figure 6). It is clear from the figure that AB and CD have two vertical columns, to which are attached: ER, FJ, MN with axles, the first of which has H-gear, the second P-L gears, the third has X and O gears. The gears are positioned vertically and the O wheel is screwed vertically. The axles of the wheels, shafts and columns are depicted in straight lines. The function of the H and P and L and X wheels is to transmit gears. The attachment of the screw to the wheel is based on a worm gear. This graphic image used by the scientist takes the form of Figure 7, b, based on the symbols of the kinematic scheme. It works in the following order: the screw (1), which is the source of movement, is attached to the gear wheel (2); Wheels 2 and 3 transmit motion from shaft I to shaft II; Wheel 5 engages with the S-wheel mounted on shaft III and transmits the motion to it. According to the scientist, the load is applied to the third shaft, and when the device is activated, the load rises. Such drawings can be found in the works of such scholars as Abu RayhanBeruni, Al-Khwarizmi, Ali Kushchi.

The development of human production activity began to set them the task of accurately depicting objects in the plane and determining the dimensions of the object on the basis of the image. [8]

At the end of the 18th century, the French scientist Gaspar Monge studied the scientific works of his predecessors and wrote the book "Descriptive Geometry", which is the theoretical basis of the science of drawing. This book was published in 1798 and soon spread throughout Europe and began to be widely used in technology. G. Monj is the founder of orthogonal projection on two planes perpendicular to each other, this method is still called "Monj method". All projections, machine-building and architectural-construction and other drawings used in practice and connected with measurements are made by Monj method. [9]

In our country, in the manufacture, production and construction of large aircraft, from simple household items, drawings prepared according to the standard on the basis of the Monge method are used. Multi-storey multi-storey buildings of complex construction are being built in the country on the basis of architectural and construction drawings. [10]

In our country, the study of descriptions under the names "Drawing" and "Drawing Geometry" began in 1931 in schools and universities. About fifty doctors and candidates of science have been trained in this field. Uzbek pedagogical scientists R.Khorunov, Y.Kirgizbaev, E.Sobitov, I.Rakhmonov, S.Murodov, A.Akbarov, J.Yodgorov, L.Khakirnov, A .Ismatullayev, P.Odilov and methodologists A.Umronkhoyjayev, E.Rovziev made significant contributions.

From the above, it is clear how perfectly the graphic images (drawings) carved into the rock in the territory of our country are made by specialists.

As mentioned above, the need for imagery dates back to the time of the primitive community system. During this period, people initially exchanged ideas with each other only through oral communication. Later, with the formation of large clans and tribal communities, there was a need to extend the oral tradition. Such a need was fulfilled by images. People exchanged views through images. For the first time, a person was able to create simple graphic images on stone, creating an opportunity to write a letter. There were no words or letters in the ancient letters. Thoughts about an object are conveyed through the image of the object. Such a "picture" letter tells stories about battles, military campaigns and hunting.

Primitive people painted graphic images on bark, stone, bone, leather and other objects.

The graphic images above were found in Central Asia and the Altai Krai of Russia.

Later, papyrus paper was invented in Egypt for graphic design and writing, and later in China.

Later, on the basis of this human need, writing appeared, that is, the image served as writing. Sounds, syllables and words pronounced by human beings are marked with different symbols (letters) in different nations. Letters are also images. For example, the letter “O” is an image of the sound “O-O-O”, the letter “A” is an image of the sound “A-A-A”, and so on.

Today, in addition to writing, the importance of a modern image and its use in our daily lives is growing for every ordinary person. Because today no family can be imagined without computers, telephones, household appliances, furniture or toys. For these devices, a drawing or diagram is attached to his passport. It is important for everyone to be able to read and understand the images (drawings, pictures, diagrams, etc.) in the application.

For example, you have bought new furniture for your home, and if you want to assemble it yourself, you must use the drawing and technical drawing attached to the furniture passport. Or if you want to repair the furniture yourself (it is a bit complicated), you will have to use the images provided in the Appendix. Let's say that when decorating the interior of the house, you use a drawing plan of the house to choose the layout that best suits your taste when placing household appliances (furniture, TV, etc.), you sketch it in several options and equip your home based on the project.

To make simple clothes or some small things at home on your own, you will need to know how to make a spread pattern.

In the development of children's technical creativity in the family, it is important for parents to be able to read and draw simple drawings, sketches, drawings or diagrams. You bought your child a toy (mechanical, electronic, etc.), If you want to help the child to collect and use the toy, of course, use the images attached to the toy passport. You help the child to read the image (drawing or diagram) in the application, thereby increasing the child's interest in technical creativity.

Know the signs (pictograms) of traffic rules in our daily lives and teach them to children and teach them to follow them; plays an important role in the prevention of various life-threatening accidents.

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IMPROVING THE READING SKILLS OF YOUNGER STUDENTS IN EXTRACURRICULAR ACTIVITIES

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ABSTRACT

Extracurricular reading is an independent, teacher-organized reading of fiction and popular science literature by students. Reading activity is the activity of younger schoolchildren in reading, which manifests itself in a persistent need to turn to books, in a conscious choice of material for reading, in the ability to effectively apply acquired knowledge, skills and abilities in the reading process. To become a literate reader, a junior schoolchild must learn to adequately perceive a work of art, react not only to the eventful side of the text, but also to the artistic form, have a developed, active imagination, and get aesthetic pleasure from communicating with art. He must understand and extract useful information from the text, generalize what he read, convey information fully, briefly, selectively.

KEYWORDS: *Reading Activity, Junior Schoolchildren, Reading, Sustainability, Work Of Art, Extracurricular Activities.*

INTRODUCTION

A modern person is increasingly involved in search, creative activity, and this is possible in the presence of various skills, the formation of which begins in elementary school. During this period, the child's intellectual sphere develops as actively as possible, a change in the leading type of activity occurs, and the need for self-expression increases.

In the context of the introduction of the state educational standard of the second generation, the goal of teaching reading in primary school is the formation of the necessary level of reading competence of a younger student, the awareness of oneself as a literate reader, capable of using reading skills as a means of self-education, self-realization, including him in active research activities, creating an opportunity for successful independent assimilation of subjective new knowledge. The achievement of this goal determines the success of a student's education both at the primary and at subsequent levels of education. [1]

The problem of forming the reading skills of younger schoolchildren was considered in the works of R. Safarov, S. Akramov, and others. In modern psychological, pedagogical and methodological literature, issues of teaching reading are discussed in the works of such scientists as Tsukerman, G. Akramov, F. Khodzhaev and others.

Despite the fact that the theoretical aspects of the problem of forming the reading skills of primary schoolchildren are sufficiently disclosed in the scientific literature, in practice, teachers

face significant difficulties in teaching children to read and understand what they read, as evidenced by the results of international studies of student reading literacy (PISA, PIRLS) ...

An integral part of the educational process at school is the organization of classes in the areas of extracurricular activities. Extracurricular activities allow you to fully implement the requirements of the state educational standard, since it has some advantages over educational activities within the framework of the lessons: it is organized on a voluntary basis and has great opportunities for organizing various types of activities, allowing you to use traditional and innovative forms in an optimal combination. and methods of work. [2]

Extracurricular work on literature is the most important part of the work on introducing children to literature as the art of speech, awakening children's interest in verbal creativity and reading works of art, the formation of reading techniques and methods of understanding text, thereby helping students to better assimilate the program material, increase their overall linguistic culture. It is the extracurricular activities of children with a book that can form them as literate, qualified readers who are able to independently choose and read books, master the content of what they read, since when organizing it, one can take into account the individual interests and preferences of children, maintain and improve their reading motivation.

Extracurricular reading is an independent, teacher-organized reading of fiction and popular science literature by students.

It is difficult to overestimate the importance of extracurricular reading for the development and education of younger students. This is the acquaintance of students with children's literature, which is not covered by the school curriculum for literary reading, and the expansion of students' horizons, and the formation of reading skills, and the development of oral coherent speech. In the course of extracurricular reading lessons, students get acquainted with the library, learn to search for information on the Internet (not being able to find the text of a work in the library or at home, students resort to the help of the worldwide network). Extracurricular reading lessons can be combined with lessons in other subjects using integrated learning technology

Conducting extracurricular reading lessons has its own characteristics. First, how often and when should this lesson be taught? I am inclined to believe that extracurricular reading should not be taken out in extracurricular activities. This is not an activity, but a lesson, attendance and preparation for which are mandatory, not voluntary. Therefore, the extracurricular reading lesson should be in the grid of the lesson schedule. The frequency of their conduct depends on the class and on the work proposed for study. So in the first grade, extracurricular reading is 20-25 minutes from a literary reading lesson once a week. In grades 3-4, extracurricular reading is already a separate lesson once every two weeks, since the volume of works for reading is already quite large. Pupils read large works on vacation.

Second, how can you test and evaluate your extracurricular reading lesson preparation? 2-3 days before the lesson, as homework or immediately at the beginning of the extracurricular reading lesson, students receive a 5-15-minute test (sometimes in the form of a test) on the knowledge and understanding of the text of the work. Students love this type of work very much: it is an opportunity to get a good grade, and interesting questions, tasks, pictures for coloring, which help them remember the work, comprehend its main points, and express themselves creatively.

Reading activity is an independent and important type of intellectual and emotional activity. Reading activity is a complex structure, which includes three key stages: "pre-reading", the process of reading and "post-reading".

An important task is facing literature lessons - to prepare a qualified, competent reader who knows how to navigate in a large amount of native and foreign literature, who can understand and aesthetically appreciate a literary work of different times and peoples. To successfully solve the problem, you need to understand the concept of "reading culture", consider its main components, and then consciously and purposefully carry out work on the formation of a literate reader through the formation of reading activity from class to class.

In the methodological literature, reading culture is considered as a combination of interest in a book, a wide acquaintance with various literature, as well as special knowledge about the book and how to work with it, skills, abilities and habits that help to read the book with maximum benefit.

The allocation of reading activity as the basic content of elementary literary education emphasizes the specificity of a literary reading lesson in comparison with other subjects in elementary school (native language, mathematics, the world around them, etc.), in which children are taught not a system of knowledge, but precisely activities, i.e. ... skills, universal learning activities, modes of activity, etc. In other words, the elementary school forms in the child a qualified reader who, in relation to literary texts, adequately perceives a work of art, loves to reread and reflect on what he has read (before reading, during reading, after reading), reacts both to the event side of the text and to an artistic form, has a developed, active imagination, receives aesthetic pleasure from communication with art; and in relation to information texts, he understands and extracts the necessary information from the text, unites what he read, conveys information fully, briefly, selectively, uses the information received for his own purposes.

Based on the foregoing, reading activity is a purposeful process of comprehending and mastering books, which consists of three steps: "before reading", the process of reading, "after reading". Reading activity manifests itself in a persistent need to turn to books, in a conscious choice of material for reading, in the ability to effectively apply acquired knowledge, skills and abilities in the process of reading.

The structure of reading activity includes: perception of what is being read; comprehension of what is read; recreating the readable; reproduction of what is read.

As a result of reading different types of text, the reading activity proceeds in different ways. When reading both fiction and cognitive texts, students find and extract information from the text, integrate and interpret information, comprehend and evaluate the content of the text. When reading a literary text, students, in addition to the above, should fully perceive the figurative and expressive means of the language, recreate in their imagination the pictures of life depicted by the writer, and see the author's position in all elements of the artistic work. All these actions performed in the course of reading activity are usually called reading skills.

According to the International Program for the Assessment of Student Academic Achievement (PIZA), reading skills are cognitive strategies and ways of working with text that the reader uses to make their own way through the text and between the text [1].

On the basis of this program, let us single out the reading skills that younger students need to master for full-fledged reading activity when working with any kind of text [1]:

Ability to find and extract information from text;

Ability to integrate and interpret information;

Ability to comprehend and evaluate the content of the text;

Ability to navigate in various sources of information;

We define methods and techniques for the formation of reading skills. Teaching methods and techniques are applied in a living process, where conditions are constantly changing, and the same way of working is either a method or a technique.

We determine the nature of the teaching activity of the teacher and the educational activity of students: explanatory-illustrative, or information-receptive; problem statement method; heuristic, or partial search; reproductive; research.

When applying the method of creative reading, artistic perception is activated at the beginning of the study of the work and after its analysis. The techniques provide techniques that ensure the implementation of the creative reading method: posing an educational problem in the lesson, commented reading, expressive reading, conversation with students, various creative tasks. Types of educational activities of schoolchildren: reading, memorizing, listening, making plans, telling, creating reviews, viewing illustrations.

The method of creative reading is the first step on the path of cognitive activity. The creative reading method allows you to develop such reading skills as the ability to integrate and interpret information in the process of drawing up plans, viewing illustrations, the ability to connect the message of the text with your own beliefs and experience in the process of creating a review of the work.

The second step in the process of cognitive activity is the heuristic method. The technique of this method is a heuristic conversation. In the process, a logically clear system of questions is being built, when answering which, the student independently acquires knowledge, formulates tasks in the text, identifies the problem and looks for ways to solve it. The heuristic method involves the following activities: selection of material from a work of art, retelling with elements of text analysis, episode analysis, and character image analysis, drawing up a plan for a performance, for an essay, and posing a problem. A deeper analysis of the text is associated with the study of elements of the science of literature. Based on the types of activities, we can say that the heuristic method involves the development of the following reading skills: the ability to extract one or more fragments of information from the text, the ability to link separate information into a single whole, the ability to comprehend and evaluate the content of the text, the ability to distinguish between the main and secondary thoughts.

Next, we will consider the research method, which implies the development of the ability to independently analyze the text of a literary work. In this method, such a technique is used as the formulation of problematic questions and tasks with elements of research. With the research method, the student independently analyzes a work of art, evaluates a play or film. In the course of the analysis, such a reading skill develops as the ability to comprehend and evaluate the content of the text. Exploratory and heuristic methods are similar.

With the reproductive method, students receive knowledge, as it were, in a finished form, but not dogmatically. The development of students' thoughts is facilitated by the problematic presentation of the material. It is important not in itself to reproduce the finished material, but also to generalize, summarize knowledge. Activities: writing a plan or a summary of a teacher's lecture, working on a textbook, preparing a report based on ready-made materials. With this method, the following reading skills are developed: the ability to find and extract information from the text and the ability to interpret information.

The classification of teaching methods is based on the joint activities of a teacher and a student in choosing a method for comprehending literature. He distinguishes three methods. The first method is the method of artistic interpretation, which consists in the fact that the teacher is the director and the student is the reader-interpreter. This method is creative.

The next method is the critical-journalistic method, which offers a certain character of mastering literature. When using this method, a certain type of reader is formed - a reader-critic who has motivated assessments. The teacher plays the role of the editor-critic. The third method, the literary search method, presupposes the development of school literary studies and certain research opportunities.

Classification of methods for the formation of reading skills according to the source of knowledge acquisition are divided into verbal, visual, practical.

One of the verbal methods of developing reading skills is conversation. In the course of the conversation, children develop an interest in a literary work, in various genres of the work, in the work of different authors, as well as in the reading process itself.

The use of the conversation method for the formation of reading skills gives the kids the opportunity to share impressions, emotions, discoveries. A child of primary school age, when communicating with a book, becomes a co-author, an accomplice in events. He perceives in a special way what is happening in the text based on his own experience and understanding, and he wants to share his opinion, he wants others to know about him. The method-conversation is faced with the task of preparing the student for the perception of the text, to make his perception deeper, as well as to promote understanding of the text. This method develops an interest in reading, teaches you to argue and emotionally express your point of view. As a result of the application of this method, the ability to comprehend and evaluate the content of the text develops.

The analysis of literary text also applies to verbal methods. It is a complex type of work that is necessary for younger students, as it teaches them to ponder and peer into the text, see the depth of the content, comprehend the author's thought and follow it.

There is an opinion that text analysis is not needed when teaching reading to primary schoolchildren, since it destroys the primary perception of the text and the emotions that arise in the reader during the initial acquaintance with it. But in defense, we can say that the analysis of a literary text is a very important type of work with a work, since it contributes to a deep understanding of the meaning of the work, the artistic features of the text and the creative individuality of the author.

By visual methods of forming reading skills, we can include such methods as demonstration of posters, charts, tables, diagrams, models, watching movies. As a result of the application of

practical methods, the ability to extract information from the text in an explicit and implicit form, the ability to connect separate information into a single whole, and to establish cause-and-effect relationships are developing.

Verbal, visual and practical methods of forming the reading skills of primary schoolchildren are closely related to each other and complement each other.

The formation of the reading skills of primary schoolchildren in literary reading lessons can be carried out in various forms of lesson and extracurricular activities. There are different forms of lesson: traditional conversation lesson; game lesson; excursion lesson, travel lesson; research lesson; a lesson in literary creativity (composing your own stories, fairy tales; preparation for oral creativity, etc.).

The activities of younger students in a literature lesson can take place in the form of group and individual work. Work can be done in pairs, in small and large groups.

Let's consider in detail several forms of lessons.

The lesson-game implies the use of theatrical, role-playing and didactic and other games in literature lessons. In the lesson-game, such methods of work as expressive reading, dramatization and dramatization of a work, oral illustration are used. In such creative methods of work, there must certainly be creativity.

When working with younger students, cognitive and didactic games are most often used, since students actively and with pleasure participate in them. During the game, students show their intellectual qualities and acquire new knowledge. The game takes place without violence and takes into account the interests of children. During the game, students develop auditory, visual and tactile sensations, and also get acquainted with various information. Of the didactic games, the most popular are story games: travel or route games through stations. You can travel around the country of fairy tales, according to a literary work, in your native country.

Since the element of rivalry is inherent in younger schoolchildren, it will be most expedient to hold didactic team games.

Elementary school students enjoy participating in these kinds of games. The game contains the following elements of activity: game task, game motives, educational problem solving. The educational task is not set directly, but arises in the process as a game task for the student himself, and the methods for solving this problem are educational. The pedagogical goals is veiled in the play task and play motives and is a powerful impetus in the development of cognitive interests. Playful motives in the process of this activity, which play the role of the first impulse, acquire true meaning, being replaced by cognitive motives.

In a role-playing game, the student must choose a specific role for himself and perform certain actions in an imaginary situation, recreating the actions of a specific hero. In the process of role-playing, students learn to distinguish between the content and the plot of the work. The plot of the game can be varied and change at any time. It is the condition in which the student should be during the game. The content of the game implies a deep penetration of the child into the activities of adults; it can reflect either the external aspect of human activity, or the attitude of a person to his activity and other people. The content expresses the social meaning of human labor.

Role-playing is best done in generalization lessons. When composing a role-playing game, the teacher composes a plot and subordinates it to the goals and content of the game. In a generalization lesson, the goal of the game may be to consolidate the knowledge gained in previous lessons and develop reading and speech skills, in which case the content of the game may be to help the hero of the work in trouble. In this case, the plot of the game is built according to the following principle: students receive a letter from a literary hero with a specific request for help. The character students re-create the situation described in the letter and act out it using their homework. The content and character of the background, which each participant receives, is determined by the plot. The participants in the game receive their roles and tasks in advance, which become the basis for improvisation in the game.

Role-playing puts students in situations in which a deep understanding of the characters' characters and the relationship between the heroes of the work is required.

The theatrical play introduces students to professional activities, as a result of which students' understanding of the culture and the world in general is broadened. In the process of theatrical play in the classroom, students reveal their literary talents and abilities, students also comprehend the author's attitude to the characters and events described in the work, and the communicative skills of younger students are formed. To achieve the set goals, it is necessary to implement specific tasks: to motivate play activities, to activate the emotional perception of a literary work; introduce students to different activities and different types of art; create communicative situations.

In a research lesson, the teacher helps younger students master the elements of literary analysis, thereby imitating research activities. The educational task in such lessons is posed as a proposal to engage in scientific activities, for example, to identify features of similarity and differences between one work and another. The role of a researcher for a junior schoolchild seems rather boring, since one has to engage in analytical activities. Lesson research will allow the student to happily do things that he would not normally do - fill out tables, choose examples, etc.

When organizing work in small groups, the teacher must determine the principles of group formation: by the similarity or variety of types of thinking. Depending on the principles by which the groups are formed, you should select material for group work. So, if the group includes children-thinkers, then it is advisable to offer them tasks of an analytical nature; artists, in turn, have creative tasks. You can do the opposite: analysts do creative work, and artists do analytical work. In this case, children need to make a lot of efforts, but in this way we stimulate the harmonious development of schoolchildren. If the group is mixed, then it should be offered synthetic tasks that require the manifestation of both analytical and creative abilities.

The tasks for all groups can be either the same or different. In addition, it should be borne in mind that for each member of the group there must be a task that he will be able to complete.

Naturally, a lesson-game in some cases can be combined with a lesson-work in groups (for example, a team game across stations). Group work can also take place in a conversation lesson, but especially often in a research lesson.

Thus, we can conclude that for the formation of the reading skills of primary schoolchildren, there are different methods and forms of work that contribute to the formation of a literate reader.

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**DISTANCE LEARNING TECHNOLOGIES AS A MEANS OF
INCREASING THE EFFICIENCY OF INDEPENDENT WORK IN THE
STUDY OF MATHEMATICS AND METHODS OF TEACHING
MATHEMATICS BY FUTURE PRIMARY SCHOOL TEACHERS**

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ABSTRACT

In this article, the author outlines the essence of distance technologies and gives examples of the use of elements of distance technologies in teaching mathematics and methods of teaching mathematics to full-time and part-time students of the primary school faculty. The importance of independent activity in the professional training of a teacher is especially noted: what is learned independently, consciously, motivated, provides a higher level of development.

KEYWORDS: *Mathematics, Teaching, Distance Technologies, Methodology, Junior Schoolchildren.*

INTRODUCTION

It is a well-known statement that what cannot be taught can be learned. Indeed, what is cognized independently, consciously, motivated, provides a higher level of development. Particularly important is independent activity in the professional training of teachers, in particular, in preparing the future primary school teacher for teaching mathematics to junior schoolchildren. After all, not a single professional competence can be developed outside of independent cognitive activity and personal activity. [1]

However, the traditional study of mathematics and methods of teaching mathematics, organizationally represented by lectures, seminars and laboratory-practical classes, provides the student with very few opportunities for such activities and activities. From school he got used to the fact that when studying mathematics, he was first given information, organized mastering of given patterns, and for independent fulfillment they were offered training tasks, sometimes non-standard and creative. Moreover, his participation in the choice of the content and organization of his own teaching is either absent or minimal. [2]

University education, according to modern approaches, including those laid down in the SES, should be focused on a different type of teaching, in which the student is the initiator of his educational and cognitive activity, responsible for its results. One of the teaching models that provides maximum independence and at the same time a sufficiently high level of controllability of the educational process is distance learning technologies (distance learning technologies). [3]

The main goal of introducing distance learning technologies is to improve the quality and accessibility of education. Distance education technologies many times increase the effectiveness of independent educational and cognitive activities of students and allow them to get quality

education, regardless of the physical ability to spend a lot of time in an educational institution. According to the method of information delivery, case technologies, network technologies and TV technologies of distance education are distinguished. The introduction of distance technologies into the learning process usually begins with the use of case technology. The use of any technology requires the creation of appropriate information support and the development of methods and means of interaction between the teacher and the student. [4]

The creation of information support for the implementation of distant teaching of future primary school teachers in mathematics and methods of teaching mathematics is a very important and responsible task, which is presented in the work.

The complexity of creating such information support lies in the fundamental openness of the system of pedagogical, including methodological and mathematical, knowledge, their constant variability, the presence of many different approaches and different implementations of the same approach.

As part of our research, we focused on the development of materials for a system of tasks, the core of which is made up of tasks of a semantic nature. With the introduction of distance technologies, the student has the opportunity to interactively interact with the teacher in on-line and off-line modes (forums, chats, e-mail, electronic seminars, video conferences), which contributes to the timely receipt of advice by students on emerging issues and quick access to information in electronic form or posted on the Internet. [5]

To organize training, which is completely built on the basis of distance technologies, from a technical point of view, a single local intra-university network is needed, uniting the departments, the dean's office, the library, computer classes with Internet access, and the presence of a computer with Internet access for students.

In connection with the transition to a qualitatively new level of education, the view on the nature of the learning process is changing, in particular on the content of the teacher's and student's activities - pedagogical activities and learning activities. The task of the teacher of mathematics and methods of teaching mathematics is to show the place of mathematical and methodological-mathematical training in the professional competence of an elementary school teacher, to set an attitude towards a personality-oriented approach to educational and cognitive activities, to ensure the focus of information and organizational materials on the implementation of appropriate methodological positions. [6]

The student's task is to completely independently build their education. The teacher in such teaching is not the one who teaches, but the one who helps to learn. The tasks of the teacher are to provide consulting services, current and final assessment of knowledge, preparation of educational and methodological complexes, which should be electronic, but can also duplicate some of the information on paper for the convenience of students.

Electronic educational and methodological complexes for disciplines are developed by university teachers. They should be built on the basis of a modular principle using hypertext presentation of information and easy navigation to provide quick access to the information of interest to the student at the moment.

Each student must be presented with a set of teaching materials in printed and (or) electronic form, including the curriculum of the academic discipline, methodological recommendations, a

textbook on the discipline (in the absence - a textbook, a full course of lectures), a practical or practical manual, teaching aids and problem books, test materials for self-control and final control. [6]

As additional literature, you can use reference books, dictionaries, readers, periodicals, industry and public policy publications in electronic form, as well as links to databases, sites, reference systems, electronic dictionaries and network resources. In case of full-time study of mathematics and methods of teaching mathematics, independent work of students can also be organized on the principles of distance learning.

In the system of distance learning mathematics and methods of teaching mathematics based on information and communication technologies, the sources of information are significantly expanding, since future primary school teachers have the opportunity to familiarize themselves with teaching programs for primary schools, with testing systems and with information databases. The use of distance technologies leads to an increase in the proportion of independent work in the organization of the educational process. In fact, we are talking about the independent work of students with theoretical (lecture) material, about current and intermediate self-control, about the implementation of student research work, about preparation for seminars or practical work, about working with computer simulators and simulation models, etc. [6]

With full methodological support of the academic discipline, the share of independent work can be more than two-thirds of a student's semester academic load. In the conditions of full-time or part-time education in the first classes in mathematics and methods of teaching mathematics, students are recommended lists of e-mail addresses of sites and portals in these disciplines so that they get acquainted with their content, structure, functions and services for searching information on the Internet.

When performing special tasks in a computer class, future primary school teachers get acquainted with effective ways of organizing queries, including searching for information not only by keywords, but also by attributes (for example, subject area, type of material, level of education, nature of the audience, etc.).

It should be noted that students who study remotely and communicate in writing only through e-mail have certain difficulties, because the teacher does not always have the opportunity to see and point out the mistakes that students make when completing assignments, to understand the sources of these mistakes. The problems of "distance students" are aggravated by the low level of computer literacy of most of them. In this regard, at the first stages of the introduction of distance technologies, courses are needed to increase this level.

We see an important role in solving the above problem in the creation of guidelines for the individual work of students in the study of a specific discipline, including questions and provisions that need to be paid special attention to, and in the analysis of typical mistakes made by other students. As additional tools, you can use the capabilities of forums and chat rooms to discuss problems and exchange views between students and teachers, including group and collective forms of work. As practice shows, when organizing independent work in the distance learning system or using the capabilities of such technologies in the study of mathematical and methodological disciplines by future primary school teachers, an important place is occupied by the structural organization of the educational material and the teaching methods used. [3]

At the first consultations, the teacher often has to carry out work to familiarize students with various effective techniques for working with texts and sources of information. For this, students or a group of students are given special assignments, during which they learn not only to acquire knowledge on their own, but also to communicate with the teacher and other participants in the learning process, using the capabilities of the Internet.

To control the success of mastering the discipline, various forms are used, including systems of tests, laboratory, practical and creative work, the results of which can be presented on special "personal" pages of students in the distance learning system or sent by e-mail.

The testing system allows the student to carry out self-control and correction of his own level of knowledge when studying the discipline (when performing tests for self-control, students are usually given from three to six attempts, it is possible to view the result of the test, indicating the correct and incorrect choice of answer options). The teacher can assess the progress of students in independent study and the implementation of practical tasks in mathematics and methods of teaching mathematics during computer testing. [4]

Modern testing tools allow him to develop his own test materials for current, intermediate and final control without much effort and time consuming. Based on the results of the study of each module, a survey of students should be conducted in order to identify wishes and comments on the quality of the distance course and the organization of the learning process.

To coordinate the work of students in the system of distance learning mathematics and methods of teaching mathematics, it is also necessary to provide for the following forms of organizing the independent study of the discipline: - the use of printed and electronic educational-methodical complexes with access in the distance learning system or distributed on CD-ROMs; - file exchange via e-mail or using standard tools of the distance learning system; - the use of various multimedia teaching tools and network resources that are publicly available on the Internet; - building the educational process in such a way that the teacher has the opportunity to systematically track, correct, monitor and evaluate students' activities throughout the course. [5]

Our experience of using even elements of distance technologies in teaching mathematics and methods of teaching mathematics to full-time and part-time students of the faculty of primary grades showed a significant increase in the effectiveness of independent work of students in accordance with the goals of the discipline being studied, made it possible to take into account the individual characteristics of students more differentially.

With the improvement of the experience of using distance technologies, conditions are gradually created for students to build an individual educational trajectory for studying the discipline within the curriculum of the specialty and on the basis of an individual curriculum. [6]

It becomes obvious that mastering the components of the professional competence of a future primary school teacher largely depends on the readiness to master and use new methods, forms and means of teaching in their educational and professional activities, including those based on information and communication technologies.

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ASSESSMENT OF INDUSTRIAL WASTEWATER TREATMENT PROCESSES

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ABSTRACT

The article explores some analyses concerning industrial wastewater treatment methods, with aerobic, anaerobic, or a mixture of both ways being used in these investigations. The article tries to carefully examine the academics' as well as researchers' motivations, instruments, and results. The management of chemical industrial effluent from a structure as well as the building chemical plant alongside a rubber shoe factory is looked at. The effluent from the various facilities is dumped into the city sewage system. The wastewater discharged from the structure as well as the construction chemical plant is determined to be highly contaminated with organic chemicals, according to the results. Biochemical oxygen demand (BOD) and Chemical oxygen demand (COD) averaged 149.8 mgO₂/l and 2911.8, respectively. Phenol concentrations as high as 0.28 mg/litter were observed. With ferric chloride and lime chemically treated was successful, and the effluent had a characteristic that was within Egyptian allowed limits. Domestic wastewater is mixed with industrial wastewater at the other plant to reduce the burden i.e., organic. After mixing, the BOD and COD readings were 2614.8 and 5238.8 mgO₂/litter, respectively. 0.48 mg/litter is the average phenol content. As a consequence, the chemical industrial wastewater's properties determine which treatment plan to employ. Engineering development of each treatment system based on laboratory results.

KEYWORDS: Aerobic Reactor, Aerobic, Anaerobic, Chemical Industrial Wastewater, Wastewater Treatment Plant.

1. INTRODUCTION

For environmental impact, the chemical industry was significant. This industry's wastewaters are usually powerful as well as include dangerous substances. Inorganic alongside organic materials are frequently present in varying concentration in chemical industry wastes. It includes a low suspended solid content, a brilliant colour and matter with a high biological oxygen demand, toxic compounds, bases and acids. Numerous chemical components are toxic, mutagenic, carcinogenic, or only partly biodegradable. Many treatment unit operations suffer from the usage of petroleum hydrocarbons, emulsifiers, and surfactants, which are used in the chemical sector. The best method for cleansing highly contaminated and dangerous industrial effluent was to treat it at the cause. In terms of environmental impacts, the chemical industry is significant (1).

This industry's wastewaters are usually rich in organic and inorganic contaminants, and they may also include radioactive pollutants. Organic and inorganic particles in varying quantities are typical in chemical industry wastewaters. Many chemical industrial chemicals are toxic, mutagenic, carcinogenic, or virtually non-biodegradable. Pre-treatment is required to produce an equal effluent because these wastes differ in general characteristics from residential sewage. The practise of wastewater treatment in the chemical industry is marked by significant unpredictability, stringent effluent permits, plus severe working circumstances (2). The art of wastewater treatment in the chemical industry is defined by significant unpredictability, stringent effluent permits, and severe operating circumstances.

1. Aerobic and Anaerobic Wastewater Treatment:

The word "aerobic" refers to the presence of oxygen (air), but "anaerobic" refers to the absence of air (oxygen). As a consequence, aerobic treatment procedures take place in the presence of air and use microorganisms (also known as aerobes) that absorb organic pollutants by converting them to carbon dioxide, water, and biomass utilizing molecular/free oxygen. Anaerobic treatment methods, on the other hand, are carried out by microorganisms (also known as anaerobes) that do not need air (molecular/free oxygen) to absorb organic pollutants in the absence of air (and therefore molecular/free oxygen). Methane and carbon dioxide gas, as well as biomass, are the end products of organic digestion in anaerobic treatment.

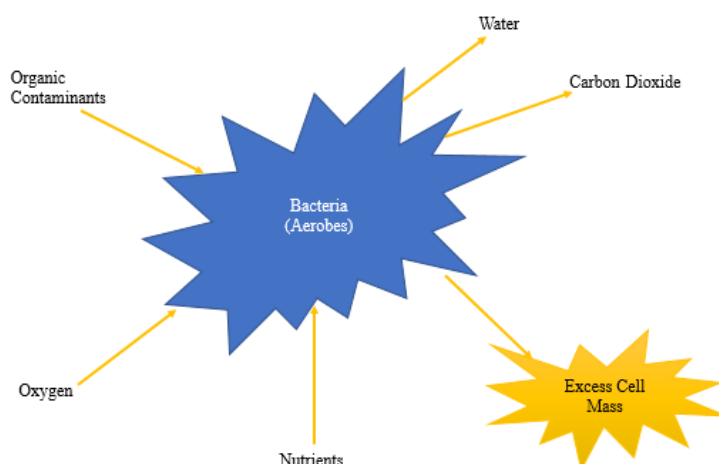


Fig. 1: In Bacteria (Aerobic Process)

The triggered sludge technique was utilized in batch laboratory studies. Plexiglas laboratory columns with a capacity of two litres were utilized. Enabled sludge from a residential sewage treatment plant was added to the wastewater. Aeration was turned off every day to allow till a substantial amount of adapted sludge was produced. Several experiments were carried out to evaluate the impact of the aeration cycle upon the activated sludge. A pre-treated wastewater was administered to a separate column with a predetermined volume of sludge (2.8–3.8 g/l) transferred to it. The researchers looked at prison terms ranging from one hour to full one day. After 1 hour of settling, the treated wastewater was characterised (3).

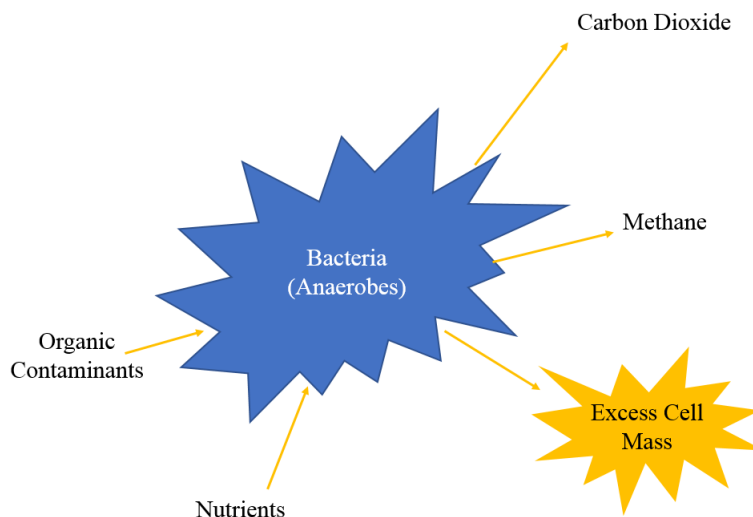


Fig. 2: In Bacteria (Anaerobic Process)

Aerobic treatment methods, such as the conventional activated sludge (CAS) process, are frequently used to treat low-strength wastewater (less than 999.8 mg COD/L), such as municipal wastewater. Fig. 1 depicts the aerobic unit, which comprised of a bio-film reactor accompanied by a sedimentation tank. Due to the high aeration needs, the CAS process is energy expensive, and it also produces a considerable quantity of sludge (about 0.38 gram dry weight/gm COD detached) that must be treated then disposed of. As a result, the cost of operating plus maintaining a CAS system is extremely significant. Anaerobic procedures (Fig. 2) for residential wastewater treatment was a potentially more cost-effective alternative, particularly in sub-tropical and tropical regions. In the past several decades, anaerobic wastewater treatment has grown increasingly common. These techniques are essential because they have beneficial effects, such as eliminating more organic loading, generating less sludge and removing more pathogens, producing methane gas, and consuming less energy (4).

2. LITERATURE REVIEW

Mahdi *et al.* performed a hybrid anaerobic-aerobic system for textile wastewater treatment in 2007. Textile manufacturing requires a large quantity of water throughout the production process. The water is mainly utilized in the textile industry's dyeing and finishing processes. The textile industry wastewater is the most polluting of all industrial sectors, both in terms of volume generated and effluent composition. In their study, a continuous operation of a mixed anaerobic-aerobic reactor was utilized to remediate effluent from textiles. Cosmo ball is used as a microorganism growth medium in an anaerobic reactor. In the nitrification and denitrification processes, the effects of pH, dissolved oxygen, and organic changes were studied. The findings indicated a removal efficiency of about 84.618 percent ammonia nitrogen and approximately 98.88 percent Volatile Suspended Solid (VSS) (5).

Gapariková *et al.* investigated how to create an optimal system based on a combination of anaerobic and aerobic technologies. Following operational practices, it may be managed advantageously for the organic waste removal alongside suspended particles, as well as nutrient removal under optimum circumstances. When compared to a small WWTP that functioned on

aerobic standards, energy consumption fell by approximately 24.8 percent to 39.8 percent. The AS-ANA comb's operation revealed a 39.8 percent decrease in actual sludge production. The WWTP's frequent start-up is not creating any major problems owing to good servicing. The AS-ANA comb's process revealed numerous problems, leading in a decrease in care quality. In some instances, this is related to the buildup of materials that shouldn't go into WWTPs (grease, gasoline, solvents, washing chemicals) (6).

Florante *et al.* did a preliminary research which was performed concerning the effectiveness of removal of organic besides nitrogen. The researchers utilized a synthetic wastewater with high nitrogen content. The objective of the study is to assess the performance of the anaerobic as well as the aerobic reactors in removing COD alongside nitrogen from wastewater high in nutrient. Moreover, it shows the results of start-up tests performed upon artificial wastewater with separate reactor configurations: aerobic and anaerobic was tracked by calculating the concentration of biomass characterized by mixture of liquor volatile solid, which was fed continuously to the two reactors (MLVS) (7).

Bashaar *et al.* described laboratory size were used to categorize and treat wastewater from Jordanian mills, respectively. The lowest frequently mentioned in the literature for P: N: C ratios of 0.8:4.8: 99.8 for aerobic therapy and 249.8:4.8:0.8 for anaerobic treatment in the literature. This is owing to the wastewaters' weak biomass yield coefficient as well as relatively low removal efficiency. It is found that anaerobic treatment conducted upon olive mill effluent with a P: N: COD ratio of approximately 1.69:4.9: 899.9 was capable of removing more than 79.9 percent of COD. The biomass yield was 0.059 kilogram VSS per kilogram of COD decomposed, according to the data (8).

Bury *et al.* used dynamic simulation to maintain as well as the control of treatment plant in the chemical industry by the virtue of the change in rate of flow besides strength. The main aim of this study was to evaluate the use of alternative wastewater treatment technologies in the chemical sector. Preliminary results showed that after a dozen days, an aerobic reactor with a hydraulic retention time (HRT) of five hours produced a 97 percent decrease in COD, whereas an anaerobic reactor with the same hydraulic retention period obtained a 34 percent reduction in COD after two weeks. A COD: N: P ratio of approximately 169.8:4.8:1.48 was competent to achieve more than 74.8 percent COD removal for extended aeration aerobic treatment of pulp and paper mill effluent. The biomass approximately 0.308-kilogram of COD decomposed. Nutrients were not added to any of these wastewaters (9).

Hu *et al.* suggested a technique for identifying the optimum disposal strategy for chemical industrial wastewater based upon biodegradability as well as the pollutants' molecular size. Waste reduction is the first and most important stage in the chemical industry's manufacturing process to avoid waste creation. The chemical oxygen demand (COD) was monitored to monitor the elimination of organic contaminants until a steady state condition was reached. COD and nitrogen tests, were also carried out using different feed concentrations on nitrogen elimination. Founded upon actual biomass yield coefficient as well as the removal efficiency, a simple formula is used to estimate nutritional needs (10).

Research Question:

1. What is the role of Industrial Wastewater Treatment Processes?

3. METHODOLOGY

3.1 Design:

The efficiency of the system was investigated using a laboratory scale combined anaerobic-aerobic reactor.

3.1.1 Anaerobic Reactor:

The transparent PVC anaerobic reactor has a 29.8 cm diameter, 29.8 cm height, and a total working volume of 17.8 litre with supporting particles to keep micro-organism in the system immobilised, as well as an over-all 1.8-liters sludge which is active from a palm oil mill are gathered as well as nourished in reactors from Hulu Langat, Malaysia. The support material had a total surface area of 192.558 m². Chemical treatment with lime and ferric chloride was effective, and the effluent had a characteristic that was within Egyptian allowed limits.

3.1.2 Aerobic Reactor:

The clear PVC aerobic reactor has a diameter of 19.8 cm, a height of 47.8 cm, and a total working capacity of 8.9 litres. The aerobic reactor received a total of 1 litre of sewage sludge from the Indah Water Konsortium (IWK). Because the aerobic reactor's primary purpose was polishing solely, acclimatisation of the aerobic sludge was not as essential as it was for the anaerobic reactor. A tiny bubble diffuser provided the air, and a flow gauge maintained the flow at 5.8 mg/l/min. They arrived to the conclusion that the combined anaerobic-aerobic system could manage high-strength textile effluent. Ammonia nitrogen, BOD, COD, and VSS removal rates were 84.618 percent, 63.638 percent, 59.8 percent, and 98.88 percent, respectively. COD, BOD, as well as the Ammonia nitrogen concentrations in the final effluent were found to be 108.748 mg/litter, 13.168 mg/litter, and 1.108 mg/litter, respectively.

pH as well as the DO is shown to contain very minimal impacts upon the nitrification process, with just 2.8 percent of pH alterations happening for each 9.8 percent decrease in nitrogen. The denitrification rate was 0.058 mg NO₃/VSS when the COD/NO₃ ratio was 27.8 percent, and this rate would decrease as the dissolved oxygen content increases. The factory of building and construction chemicals, as well as the factory of plastic shoes, were examined. The effluent from the two facilities is dumped into the municipal sewage system. The wastewater released from construction chemicals plant as well as the structure were determined to be highly contaminated with organic compounds. COD and BOD averaged 2911.8 and 149.8 mgO₂/l, respectively. Phenol concentrations as high as 0.28 mg/l were observed.

3.2 Sample:

Aerobic biological therapy was carried out utilizing a rotating biological contactor as well as an activated sludge. The geometry of the instrumentation is shown below (Fig. 3):

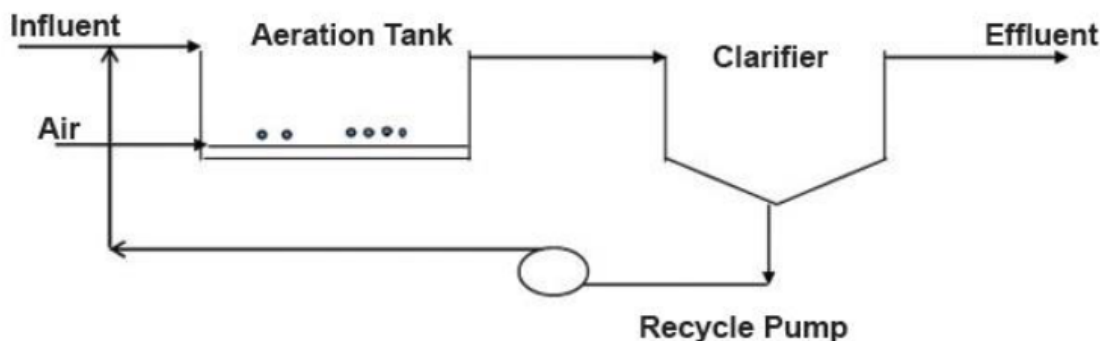


Fig. 3: System for Activated Sludge Processing in the Past

According to their results, chemical industrial wastewater properties, define the suitable treatment method. The use of household sewage in the factory to dilute chemical industrial pollutants effectively lowers the concentration and toxicity of the contaminants, improving the efficacy of biological treatment. The researchers utilized a simulated sewage with high nitrogen levels. Preliminary findings revealed that after 10.8 days, an aerobic reactor with a HRT (hydraulic retention period) of five hours achieved a 97.8 percent reduction in COD, while an anaerobic reactor with the equivalent hydraulic retention period (HRT) achieved a 33.8 percent reduction in COD after 2 weeks.

It also displays the outcomes of start-up experiments conducted upon simulated wastewater using two distinct reactor configurations: the anaerobic as well as the aerobic. Starting experiment was conducted utilizing a 3.8-liter flask anaerobic reactor as well as a 4.8-liter acrylic aerobic reactor with activated sludge as an inoculum source controlled the concentration of biomass signified by mixture of liquor volatile solid, which was fed constantly to the two reactors (MLVS) was measured to track the reduction of organic pollutants until a steady state condition was attained.

3.3 Instrument:

Aerobic and anaerobic reactors were employed in the studies. An air pump was utilized in the aerobic zone of 4.8 liters. A continuous anaerobic reactor, on the other hand, a 3.8-liter Erlenmeyer flask with stir bar as well as a magnetic stirrer to allow for continual stirring within the reactor. For aeration, air pumps were employed in each reactor. The biomass output was 0.058 kg VSS per kilogram of COD decomposed, according to the results. The biomass 0.308-kilogram VSS of COD decomposed.

The following conclusions were made from the experimental results: Aerobic methods take longer to aerate and produce a lot of sludge, but they are efficient at eliminating ammonium nitrogen. Anaerobic treatment methods usually offer benefit like the generation of usable biogas as well as the higher organic loading rates; however, they also have drawbacks such as a relatively larger effluent concentration and the inability to extract ammonium nitrogen. At the same HRT, the aerobic reactor decreased COD by 97.8 percent, whereas the anaerobic reactor only reduced COD by 33.8 percent. Nutrients were not added to any of these wastewaters. Founded upon experimental biomass yield coefficient as well as the removal efficiency, is applied to estimate nutrient requirements.

3.4 Data Collection:

The active volume of the study was 1.8 L. The combination of OMW was produced as well as the maintained at $29.8 \pm 1.8^{\circ}\text{C}$ using a magnetic stirrer/hotplate for anaerobic treatment. Mixing and heating were turned off once the mixing time was completed, and the reactor is kept idle for the two hours length so that anaerobic sludge is settled. Following this, the calculated volume of supernatant is removed from the reactor besides put to a series of tests in line with. Under anaerobic circumstances, the COD of the reactor is kept close around at 15,999.8 mg/liter by diluting after the start-up phase. Sludge wastage was carried out in order to keep the Volatile Suspended Solids (VSS) content in the reactor potentially, close to 11,999.8 mg/liter.

Three days are selected as the hydraulic retention time. The pH of the reactor is 6.8 using sodium bicarbonate when required. Dissolved oxygen concentrations in paper and pulp mill effluent are retained from 1.8 to 3.8 mg/l for aerobic treatment, prolonged aeration was selected as the treatment method. The average period for hydraulic retention was 1 day. The reactor was fed three times a day with 669.8 ml each time. The MLVSS content (mixed liquid volatile suspended solids) was maintained at approximately 2499.8 mg/liter. He also discovered that the nitrogen and phosphorus contents in Jordanian olive mill effluent as well as the paper and pulp mill wastewater are sufficient, and that no extra nutrients are needed.

The COD: N: P ratio used for aerobic and anaerobic treatment of industrial wastewater should be derived using a formula that takes into consideration the removal efficiency and observed yield for the wastewater in question (40.8/EYobs:4.8:0.8). Finally, for testing, three WWTPs were constructed with the assistance of Slovak Technical University. They work on the idea of anaerobic pre-treatment and aerobic post-treatment. Plants for wastewater treatment are intended for 4.8-598.8 PE. The findings match the directive water discharge from small wastewater treatment facilities in the Slovak Republic when operating under the appropriate circumstances.

3.5 Data Analysis:

The work described here is divided into two parts: laboratory research in reactors AN-I and AN-II, and research with evaluation of a real-world WWTP, AS-ANA comb. The experiment utilized two pilot-scale reactors with aerobic post-treatment. Reactor AN-I (shown in Fig. 1, which consists of a primary settling tank, an anaerobic baffled system, an aerobic component, and a secondary settling tank), seeded with anaerobic sludge (~200 l, SS content 17.8-21.8 g/l). Reactor AN-II was built in the same manner as AN-I, but it was powered up without being vaccinated. Both experimental plants were erected (39,998 PE) municipal wastewater treatment facility in Bratislava. From September 1999 to August 2001, pilot size tests with both reactors were performed. The underlying wastewater parameters of the influent and effluent (COD, BOD₅, pH, SS, NH₄-N, NO₃-N, NO₂-N) were monitored using Standard Methods.

In the second part, seven authentic WWTPs, one for 9 PE, three for 19 PE, two for 199 PE, and one for 249 PE, were chosen for evaluation. The samples were collected from WWTPs in Slovakia's north western area. The samples were collected five times from the effluent of the WWTP between August and October 2003, and they were all grab samples. The samples were tested for COD, BOD₅, pH, SS, NH₄-N, NO₃-N, and PO₄-P using Standard Methods. According to the results of their study, an integrated system was developed by integrating the aerobic as well as the anaerobic technologies. Subsequent operating experience, it can be resolved that properly regulated bi-stage technique was effective for the elimination of suspended particles

besides organic pollutants, as well as nutrient removal under optimum circumstances. When compared to a tiny WWTP that functioned on aerobic principles, energy consumption fell by approximately 24.8 percent to 39.8 percent.

The AS-ANA comb's operation revealed a 39.8 percent decrease in special sludge generation. The WWTP's frequent start-up is not creating any significant problems owing to good functioning. The AS-ANA comb's operation showed some problems, leading in a decrease in therapeutic efficacy. In many instances, this is due to the build-up of things that shouldn't go into WWTPs (grease, gasoline, solvents, cleaning chemicals). Fluctuations in the wastewater flow may also be a troublesome issue. The performance of chosen AS-ANA comb WWTPs may be favourably evaluated. The majority of the WWTPs evaluated were efficient at eliminating organic pollutants without the need for expert operation, which is one of the most important requirements for small wastewater treatment plants even in a temperate environment.

4. RESULTS AND DISCUSSION

The workshop produces 10.8–14.8 m³/d of wastewater. The usual values of BOD (149.8 mgO₂/l) and COD (2911.8 mgO₂/l), (Table 1). In the average, the BOD/COD ratio was 5.8 percent. The presence of phenol was detected in the sample, with a value of 0.28 mg/litter. The grease and oil concentrations between 148.8 and 599.8 mg/litre, with a mean of 370.8 mg/litre. The gross suspended solids content averaged 199.8 mg/l. The effluent at the end of the conduit was treated chemically using activated sludge. The phosphorus as well as the nitrogen contents in the effluent were found to be inadequate.

**TABLE 1: END-OF-PIPE WASTEWATER HAS MANY CHARACTERISTICS
(CONSTRUCTION CHEMICALS FACTORY AND BUILDING)**

Variables	Max.	Minimum	Mean	Units	Egyptian decree
Grease & Oil	599.8	148.8	370	mg/l	99
Phenols	0.2	0.05	0.09	mg/l	0.04
Organic Nitrogen	24	8	18	mgN ₂ /l	99
Phosphorous	29	0.7	8	mgP/l	24
Total suspended solids	518	156	199.8	mg/l	799
Biological Oxygen Demand	569	209	149.8	mgO ₂ /l	599
Chemical Oxygen Demand	3923	1869	2911.8	mgO ₂ /l	1099
pH	9.4	6.0	7.4	mg/l	6-9.4

The concentration of nitrogen and phosphorous salts was adjusted to meet the requirements. The properties of treated effluent do not reach the permissible level. The biodegradability at a very low level, as defined by the ratio of BOD to COD is 5.8 percent only, which is to blame for this

outcome. On a bench scale, aluminium sulphate is carried out first to establish the optimum coagulant, ideal dose, and pH, and then a continuous approach was employed.

5. CONCLUSION

For many areas of the globe, anaerobic systems have proved to be a successful treatment technique. WSP's conventional system will certainly compete more and more with UASB methods in the future. Aerobic structures, such as ponds, trickling filters, or activated sludge plants, are also needed for post-treatment. However, it hasn't been extensively utilized in the past. Anaerobic reactors, on the other hand, were believed during variations, requiring a lengthier start-up time. This assumption originated from a lack of knowledge anaerobic treatment has now been significantly decreased due to technological advances. The usage of anaerobic procedures gradually expanded in the preceding thirty years, owing to the work of Young and McCarty in 1969. Due to significant advantages over aerobic therapy. The bench scale was essential before going on to the continuous system. The use of household sewage in the factory to dilute chemical industrial wastewaters effectively lowers the build-up and toxicity of toxins while also saving money because are utilized to provide nutrient in biological treatment systems. Spinning biological contactors are a simple to use and maintain technology that provides excellent performance.

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A STATE OF THE ART REVIEW ON JAUNDICE DISEASE

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ABSTRACT

Jaundice is a difficult disease to treat. Jaundice is began by an increase in bilirubin levels in the core body temperature. Jaundice is characterized by yellow of the skins, mucous membranes, including skin. The different varieties of jaundice include pre-hepatic jaundice (produced by red blood cell hemolysis), hepatic jaundice, as well as post-hepatic jaundice. Various kinds of jaundice have either developed or congenital causes. A higher plasma bilirubin levels may induce psychosis, lethargy, convulsions, coma, or even death, as might GI bleeding, diarrhea, anemia, edema, and weight loss. A high bilirubin level may aid in the analysis of jaundice. The amount of bilirubin, ultrasonography, as well as other radiologicals methods may be used to differentiate between the various types of jaundice. The best approaches to treat jaundice are to drink plenty of water and eat a low-fat diet. Phototherapy is the most effectives treatment for pre hepatic as well as newborn physiologically jaundice. Immunoglobulin infusions are also used to treat pre-hepatic jaundice. Hepatic jaundice is treated with diet, steroids, and immunosuppressants. Decompression and surgery are used to treat post-hepatic jaundice.

KEYWORDS:*Hemolysis, Hepatobiliary, Hyperbilirubinemia, Jaundice, Obstructions.*

1. INTRODUCTION

Jaundice is a yellow of the skin, mucous, including sclera produced by the depositions of bilirubin, a yellow-orange bile pigments. Bilirubin is an endogenous cannabinoids generated pigment that may be harmful to children, particularly newborns. Uninflected bilirubin exhibits a characteristic spectrographic profile. The name "jaundice" comes from the French word "jaune," which means "yellow." The appearance of jaundice indicates hyper bilirubinemia, with excess bilirubin that might be conjugated or un conjugated. When bilirubin levels are high, clinical manifestations of jaundice emerge. Heme group is used as a substrate for the synthesis of bilirubin. An enzyme called heme oxygenase catabolizes the heme at the alpha carbon bridge, carbon monoxide, releasing iron, as well as biliverdin. Biliverdin is then improved to bilirubin by the enzymes biliverdin reductases. The heme groups of hemoglobin is responsible for 80percentage points of bilirubin production(1).

The breakdown of reddish blood cells in the reticuloendothelial of the spleen, liver, as well as bone marrow, produces this hemoglobin. The residual 20percent of the bilirubin originates from a variety of sources, including cytochromes, myoglobin, as well as other proteins. Normal individuals generate 3.8 mg/kg of bilirubin every day, or around 250-300 mg. Neonatal bilirubin generation is significantly greater than adult bilirubin production. The bilirubin generated is

subsequently coupled with plasma albumin and delivered to the liver. The first albumin binding site's dissolution characteristic. UDP-glucosyltransferase conjugates bilirubin in the liver, and this conjugation is required for water solubility as well as removal(2). Gender, Age, thyroid hormones, including microsomal enzymes persuading drugs like phenobarbital and rifampicin all affect the activity of UDP-glucosyltransferase. ten to fourteen Bilirubin conjugates are eliminated in the bile. The bile is subsequently transferred via the biliary systems to duodenum. Nearly bilirubin is converted by the intestinal flora into urobilinogen as well as subsequently reabsorbed within the gut. These urobilinogens are subsequently eliminated via the urine system after being removed by the kidney. Figure 1 depicts the generation and metabolism of bilirubin.

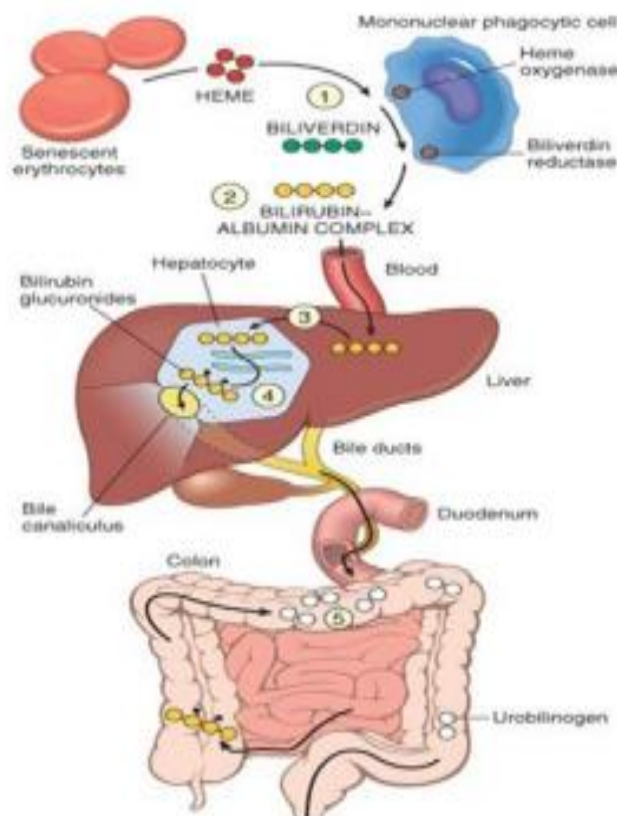


Figure 1: illustrate the diagram shows the productions as well as metabolism of bilirubin (3).

Jaundice Kinds

Jaundice is divided into three categories based on the causes: Pre-hepatic jaundice and hepatic jaundice are two different types of jaundice.

- Jaundice after a liver transplant
- Jaundice in the pre-hepatic stage

Pre hepatic jaundice, also known as hemolytic jaundice, is a kind of jaundice that occurs as a result of hemolysis. A deficiency in the plasma membrane of red blood cells is the most common

cause of increased hemolysis. Because the fragile cell membranes can't withstand the shear stresses, it ruptures, subsequent in hemolysis and a rise in serum bilirubin levels.

Etiology

Hemolysis is the major cause of pre-hepatic jaundice. There are two types of reasons for pre-hepatic/hemolytic jaundice:

Acquired Causes

The following are acquired causes of pre-hepatic jaundice:

- Transfusion reactions
- Paroxysmal nocturnal hemoglobinuria
- Trauma
- Hypophosphatemia
- Thrombotic thrombocytopenic purpura
- Vitamin B twelve deficiency
- Folic acid deficiency
- Micro angiopathy
- Long distance runners
- Hemolytic uremic syndrome
- Contagions
- Resorption of extensive hematomas
- Auto immune hemolysis
- Toxins
- Chemicals

Congenital Causes

Congenital reasons of hepatic jaundice include following:

- Echinocytes
- Thalassemia
- Spherocytosis
- Sick cell anemia
- GSH synthase lack
- Pyruvate kinase shortage
- Elliptocytosis

- Congenital LCAT deficiency
- Stomatocytosis
- Acanthocytosis

Clinical Performances

Anemia, yellowish skin, dark yellow-brown urine, yellowing of the sclera, as well as elevated bilirubin levels are all indications of hemolytic jaundice.

Jaundice (Hepatic)

This types of jaundice is a kinds of jaundice in which the underlying causes is a malfunction in the liver's hepato cytes. The liver gathers bilirubin from proteins of plasma, primarily albumin, as well as defecates it in the bile through the biliary systems following conjugation. Hepatic jaundice may be produced by any liver ailment that causes a deficiency in capture, conjugation, or excretion. UDP-Glucosyltransferase is the main enzymes involved in conjugation. This is often underdeveloped at birth, and its lack of activity may result in Neonatal Physiological Jaundice. Furthermore, a genetic mutation in the UGT1A gene on chromosome one might cause this enzyme to malfunction(4). UDP This gene produces glucronyl transferase, a conjugating enzymes that produces hepatic jaundice. A failures in the bilirubin excretory systems in the liver may produce hepatic jaundice. The excretory systems include hepatocytes bile acid independents secretion, hepatocyte bile acid-dependent secretions, as well as bile ductular secretion. Any one of the excretory systems mentioned above could fails, causing bilirubin to build up in the bloods and hepatic jaundice(5).

Clinical Performances

Hepatic jaundice can cause fever, vomiting, abdominal discomfort, as well as nausea, as well as complications such as satiety, diarrhea, gastrointestinal bleeding, anemia, weight loss, edema, as well as associated weakness, which can lead to mental turbulences such as kernicterus, even death if left untreated.

After The Hepatic Jaundice

Post hepatics jaundice is a type of jaundice caused by an issue with the biliary systems of the hepato biliary systems. The much more prevalent cause of After-hepatic hepatichepatic jaundice is extrahepatic biliary obstruction. As a consequence, it's often referred to as obstructives jaundice(6).

Clinical Exhibition

Dark urine, pale stools, and widespread pruritus are all symptoms of obstructive jaundice. Obstructive jaundice is characterized by a history of the fevers, weight loss, biliary colic, abdominal discomfort, as well as abdominal mass. Cholangitis, gastroenteritis, renal as well as hepatic failure are all possible consequences of obstructive jaundice (Table 1)(7).

TABLE 1: EXPLAINS HOW OBSTRUCTIONS ARE CLASSIFIED BASED ON THEIR ANATOMICAL LOCATION.

Classification of obstruction on the basis of anatomical location		
Upper third obstruction	Middle third obstruction	Lower third obstruction
Polycystic Liver Disease	Mirizzi Syndrome	Pancreatic Tumors
Oriental Choangiohepatit	Cystic Fibrosis	Ampullary Tumors
Sclerosing Cholangitis	Intrabiliary Parasites	Duodenal Diverticula
Iatrogenic injury to the Bile Duct	Choledochal Cysts	Penetrating Duodenal Ulcer

Difference Diagnosis

Only higher blood levels of unconjugated bilirubin as well as urobilinogen, which are heightened in pre-hepatic jaundice, differentiate pre-hepatic jaundice from hepatic as well as post-hepatic jaundice. Alkaline phosphatase, Conjugated bilirubin, Alanine transferase, as well as Aspartate transferase levels are all normal in pre-hepatic jaundice. Pre-hepatic jaundice also lacks conjugated bilirubin excretions in the urine. 50 Hepatic jaundice may be separated from post hepatic and pre hepatic jaundice by the presence of 5 times greater bilirubin levels. In hepatic jaundice persuaded by hepatitis, bilirubin levels may be 10 times higher than their maximum values. Hepatic jaundice may be identified from post-hepatic jaundice using abdominal ultrasonography as well as others radiographic methods. However, diagnostic markers such as alpha-1 antitrypsin, Immunoglobulins, Ceruloplasmin, as well as others may help differentiate hepatic jaundice from pre-hepatic jaundice (8). The combination of an elevated blood bilirubin level and conjugation is a major diagnostic feature in post-hepatic jaundice. Gammaglutamyltranspeptidase, alkaline phosphatase, as well as transaminases levels in the blood may be abnormally high (9). computed tomography, plain abdominal x-ray, Ultrasonography, contrast-enhanced multi-sliced, percutaneous trans-hepatic cholangiography, computed tomography endoscopic ultrasound, as well as magnetic resonance cholangio pancreatography can all be used to confirm the diagnosis of obstructive jaundice (10).

2. DISCUSSION

This research contains a number of limitations that are worth mentioning, as is typical with scoping studies. To begin, no quality evaluation of the included papers was performed to establish publication bias or the validity of the diagnostic criteria for the etiological components described. Second, despite the wide inclusion criteria, it's possible that further relevant research that wasn't located in the specified databases was overlooked. Third, despite the fact that linked factors may change based on severity, no distinction was made between the severity of SNH,

which encompasses acute and chronic bilirubin encephalopathy. Regardless, the study's major findings emphasize the enormity of the SNH burden in a low-resource African environment, as well as the pressing need for comprehensive treatment. While newborns cannot escape jaundice, it may be prevented from advancing to bilirubin-induced brain dysfunction and the hazards that come with it. They also highlight areas where more focused education for mothers and caregivers is required to overcome erroneous beliefs and traditions regarding SNH, as well as capacity building for future research and advocacy to improve care for newborns with or at risk of SNH in this and other LMICs.

3. CONCLUSION

Jaundice is a frequent ailment. Jaundice is characterized by the yellowing of the sclera, skin, as well as mucous membranes as a result of a problem with bilirubin synthesis, metabolism, or excretion. Jaundice has two causes: congenital and acquired. Differential diagnosis is made using serum bilirubin levels and ultrasonography. The best ways to treat jaundice are to drink plenty of water and eat a low-fat diet. Jaundice therapy differs depending on the kind of jaundice. In the frequent scenario when the infant's bilirubin levels have been monitored in a variety of health-care settings, the capacity to interpret changes over time that is not affected by changes in the technique employed is required. There is a compelling need for harmonization of tests performed at sites where the same baby may have several samples sent to them. This may become increasingly probable as regional laboratory networks grow; nevertheless, either the conventional bilirubin technique used for adult samples is appropriate for newborn analysis, or a distinct neonatal bilirubin method must be established. Many fewer direct or conjugated bilirubin tests are required, and it may be sufficient to have them accessible from a single laboratory in a local network if suitable handling and transportation connections are in place.

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ABORTION PREVALENCE AND RISK FACTORS IN WOMEN OVER TIME: EVIDENCE FROM A COHORT REVIEW

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ABSTRACT

Fertility is lost in 15-25 percent of pregnancies due to spontaneous abortions. The number of nonspontaneous abortions in Iran has increased in recent years, according to nondocumentary figures, particularly in Kurdish territories. The focus of this research is to find out how common spontaneous abortions are among women aged 35 to 65, as well as what factors influence spontaneous abortion. The data was acquired during the Ravansar Non-Communicable Disease (RaNCD) cohort study's recruitment phase. All 4831 married women aged 35 to 65 who'd already previously gotten pregnant were included in this study. The abortion ratio was obtained by dividing the number of abortions by the number of live births, and a multivariate logistic analysis was used to identify factors that influence abortion. A history of spontaneous abortion was reported by 25.7 percent of the women. The abortion rate among women was 0.10 percent. Women with a secondary education, first pregnancy and marriage at the age of 26, economic status, hyperthyroidism, and diabetes had a greater risk of abortion than women who exercised more, had a BMI of 18:9, or lived in rural areas. After taking into account all of the relevant factors, researchers discovered that women with high blood pressure had a 63 percent lower likelihood of nonspontaneous abortion, which is statistically significant (p value 0:05). Given the impact of disparities in education, age at first marriage, and age at first conceiving on the probability of spontaneous abortion, more consideration should be given to these individuals.

KEYWORDS: Abortion, Analysis, Legal, Pregnancies, Spontaneous.

1. INTRODUCTION

One of the most common pregnancy complications is spontaneous abortion. Abortion is defined as the removal of an embryo or fetus from the womb before it has reached a stable stage of life. According to studies, between 10% and 20% of women have spontaneous abortions. It's also worth noting that the majority of spontaneous abortions happen early in a pregnancy, making them easily confused with menstrual flow. In general, determining the prevalence of spontaneous and unwanted abortions is particularly difficult due to the possibility of false reporting in countries where legal abortion is prohibited. Furthermore, because most abortions are not reported to or recorded in the public health system, studying spontaneous abortion in low- and middle-income countries is difficult (1). In more than half of the instances, genetic diseases and chromosomal abnormalities were indicated as reasons for abortion. Uterine irregularities,

infectious diseases, and undiagnosed illnesses in the mother, the mother's age during pregnancy, previous background of abortion, age at first menstruation, menstrual disorders, the use of contraceptive drugs, BMI > 25 kg/m², environmental conditions, and the mother's lifestyle, including such smoking and caffeine use, being exposed to cigarette smoke, stress, and mobile phone radiation, and the mother's age at first menstruation, are all factors that inflict infertility(2).

Abortion is a traumatic experience for the woman. It affects her mental condition, which may lead to psychiatric problems including depression. Despite the fact that Iran's maternal abortion and miscarriage rates are steady, the number of new instances is growing. In reality, Iran is experiencing a demographic decline, owing in part to a rise in divorce and a decline in marriage among young men and women. While the nation tries to control population growth, a transparent feature on the cost of abortion might help people comprehend the situation. Contrary to popular belief, abortion is intricately tied to culture and religion variables, and Iran is a multiracial nation. Kurdish people lived largely in western Iran, where their culture and way of life were mixed. The purpose of this research is to find out how common abortion is among women aged 35 to 65 who participated in the Ravansar NonCommunicable Disease (RaNCD) cohort study, which was the first of its type among Kurdish people(3).

2. LITERATURE REVIEW

In her work, A Garca-Engudanos discusses miscarriage, which is among the most prevalent issues in human pregnancy. The World Health Organization (WHO) adopted the most widely accepted definition in 1977. Clinical pregnancies account around 12-15 percent of all pregnancies, but then when pregnancy miscarriages are included in, the percentage climbs to 17-22 percent. All scientists agree that uterine anomalies and paternal balanced chromosomal translocations are the only two causative causes. There have been a slew of new risk factors suggested. We address them in this revision (4).

In his study article, G. M. Stirrat specifies the data that should be gathered up to 28 weeks' gestation, while evaluation up to 20-22 weeks' or 500 g fetal weight must also be feasible. General practitioners and gynecologists should do what those who think is best for couples who do not meet these criteria, but no determination of recurrent miscarriage should be made. Women who satisfy the criteria are separated into two groups: those who have failed all of their prior pregnancies and those who have had one healthy baby following a string of miscarriages(5).

Craig P. Griebel addresses the conventional therapy of surgical uterine evacuation, which is the treatment option in individuals who are in a state of instability. Recent research suggests that expectant or pharmacological treatment is acceptable for certain persons. Patients who have experienced a total spontaneous abortion are usually prescribed medication or undergo surgery. Expectant care for up to two weeks is often successful for women who have had an incomplete spontaneous abortion, and medical therapy has little further benefit. When patients are given the choice of selecting between treatment alternatives, expectant management is the most popular option. The success rate of expectant therapy for a missed spontaneously abortion varies, however intravaginal misoprostol medicine has an 80 percent success rate. Patients and their partners may have psychological problems as a consequence of a fetal death, which doctors should be aware of. For up to a year after a spontaneous abortion, women are more likely to

experience acute despair and worry. Counseling should be provided to handle guilt feelings, the mourning process, as well as how to cope with friends and family(6).

3. DISCUSSION

The Participants in the Research. The population for this cross-sectional study was drawn from centers participating in Prospective Epidemiological Research Studies in Iran, as part of the RaNCD cohort project (PERSIAN). The hiring process began in November of 2014 and completed in February of 2017. 10065 individuals volunteered to take part in the research and completed a written informed consent document. More information may be found elsewhere.

3.1 Inclusion and Exclusion Criteria:

Those with a track record of delivering were chosen from among all the competitors. The RaNCD prospective study required women to be willing to enroll and finish the study, sign a written permission declaration, and interact with the research team. We excluded those who had never been married or had never been pregnant for the context of this research.

3.2 Definition and Measurements:

Principal component analysis (PCA) was used to generate the key variable representing the family's economic state, socioeconomic status (SES), which included the participants' money and social features. As a consequence, the population was split into five quintiles: lowest, poorest, middle class, middle class, affluent, and wealthiest. For the weight evaluation, BIA equipment (In Body 770 BIOSPACE, Korea) was employed. The heights were measured using a stadiometer with a 0.1 accuracy.

To collect information about the subjects' physical activity, a 19-item inventory connected to light, moderate, and severe physical operations was used. After that, the Metabolic Equivalent of Task (MET) rate of the each exercise was calculated, and the Compendium of Physical Activities was used to evaluate daily MET rates of each participant. Low (MET 24-36.5 hours per week), moderate (MET 36.6-44.9 hours per week), and high (MET 36.6-44.9 hours per week) levels of physical activity were assessed (MET 45 hours per week). Based on 2015 criteria to measure the quality of healthy meals, the Healthy Eating Index (HEI) was divided into four categories. In this study, an abortion is defined as a self-reported pregnancy that was ended voluntarily before week 20. By subtracting the total of abortions even by number of live births, the miscarriage ratio was derived(7).

3.3 Statistical Methods- Qualitative variables were scored on a scale of one to ten, while continuous data were reported as mean and standard deviation (percent). To begin, the risk factors for abortion were investigated using a univariate logistic regression analysis. Variables with $p < 0.3$ were then added to the multiple model. Variables with a $p < 0.05$ were preserved, while others were eliminated in a gradual (backward) manner. All of the studies were purged of missing data (less than 1 percent). For all of the studies, the STATA V.14 (STATA Corp LLC) program was employed. Statistical significance was defined as a P value of less than 0.05[8]. 2083 (58 percent) of the 4831 women who participated in the research resided in cities, whereas the remainder lived in rural regions. Between the ages of 13 and 16, 3472 (72.2%) of them had their first period. 2202 (45.9%) of those who took part had between one and five years of education, and 3608 (74.8%) of the women had never married consanguineously. Over the course of their lives, 1241 women (25.7%) experienced at least one spontaneous abortion.

After adjusting for other factors, the risk of spontaneous abortion increased as the pregnancy rate increased; for example, the odds of abortion were 8.3 (6.6- 10.5) times greater in women who have had more than 6 pregnancies than in women who had 1-3 pregnancies. Women who married after the age of 26 had a 1.6 (1.02-2.4) times higher likelihood of having an abortion than women who married before the age of 26. Furthermore, the risk of abortion was 1.9 (1.3-2.8) times greater in women who had their first pregnancy after the age of 26 than in the rest. Education level was a major driver of spontaneous fatal abortion; that is, the chance of abortion rose as education level increased (Table 1). Women with a secondary education had the highest rate of abortion (Figure 1) [9].

Contraceptive pills were used by 24.8 percent of women who'd already previously undergone an abortion. It was observed that taking tablets defends against spontaneous abortion after modifying the factors. As a result, women who used contraceptive tablets had a 22 percent lower risk of abortion than women who used alternative contraceptive methods, which was statistically significant. The odds ratio of abortion = 1.1 was not substantially increased by secondhand smoking (95 percent C.I: 1.0-1.3). (96 percent confidence interval: 1.0-1.3). People with the greatest socioeconomic status were more likely to have an abortion (Table 1). Higher SES, previous history of hyperthyroidism, and diabetes, as well as females with a secondary education, marriage, and first pregnancy age of further than 26 years, had a higher abortion ratio than those without. Women with high blood pressure, a high level of physical activity, and a BMI of less than 18.9, as well as those who lived in rural regions, had a lower mean termination ratio(Figure 1)(8).

TABLE 1: THE FINDINGS OF THE LINEAR REGRESSION MODEL EVALUATING RISK VARIABLES OF SPONTANEOUS ABORTION AND DESCRIPTIVE STATISTICS OF THE SELECTED POPULATION (9).

Variables	Total N (%)	Abortion N (prevalence)	Abortion ratio Mean (SD)	Adjusted OR (95% CI)
Total (%)	4831 (100)	1241 (25.7)	0.10 (0.2)	
Menstruation start age				
<12 years	1031 (21.4)	276 (26.8)	0.11 (0.2)	1
13-16 years	3472 (72.2)	891 (25.7)	0.11 (0.2)	0.9 (0.8-1.1)
>17 years	306 (6.4)	64 (20.9)	0.07 (0.1)	0.7 (0.5-1.0)
Pregnancy number				
1-3	1799 (37.3)	255 (14.2)	0.09 (0.2)	1
4-5	1376 (28.5)	420 (30.5)	0.14 (0.3)	4.5 (3.7-5.5)
≥6	1648 (34.2)	558 (33.8)	0.10 (0.2)	8.3 (6.6-10.5)
First pregnancy age (year)				
15	611 (12.7)	169 (27.6)	0.08 (0.2)	1
15-20	2469 (51.2)	620 (25.1)	0.09 (0.2)	0.9 (0.8-1.2)
21-25	1159 (24.1)	286 (24.7)	0.11 (0.2)	1.3 (0.9-1.6)
≥26	581 (12.1)	155 (26.7)	0.20 (0.4)	1.9 (1.3-2.8)
First marriage age (year)				
≥15	1406 (29.1)	375 (26.7)	0.08 (0.2)	1
16-20	2338 (48.4)	593 (25.4)	0.10 (0.2)	1.2 (0.9-1.4)
21-25	728 (15.1)	174 (23.9)	0.12 (0.2)	1.2 (0.9-1.6)
≥26	358 (7.4)	98 (27.4)	0.19 (0.4)	1.6 (1.0-2.4)
Level of education				
Illiterate	1791 (37.3)	433 (24.1)	0.06 (0.1)	1
1-5 years	2202 (45.9)	582 (26.4)	0.12 (0.3)	1.8 (1.5-2.1)
6-9 years	461 (9.6)	123 (26.8)	0.14 (0.3)	2.4 (1.8-3.2)
10-12 years	243 (5.1)	62 (25.5)	0.18 (0.4)	2.4 (1.6-3.5)
≥13 years	111 (2.1)	41 (36.9)	0.23 (0.3)	3.5 (2.1-5.8)
Place				
Urban	2083 (58.0)	772 (34.7)	0.12 (0.3)	1
Rural	1507 (42.0)	469 (31.1)	0.09 (0.2)	0.9 (0.8-1.1)
Consanguineous marriage				
No	3608 (74.8)	934 (25.9)	0.10 (0.2)	1
First degree	678 (14.1)	172 (25.4)	0.11 (0.3)	0.9 (0.8-1.2)
Second degree	541 (11.1)	135 (2.9)	0.09 (0.2)	0.9 (0.8-1.2)
Smoking status				
No	4548 (94.4)	1166 (25.6)	0.11 (0.2)	1
Current	105 (2.2)	22 (20.1)	0.05 (0.1)	0.7 (0.4-1.2)
Former	165 (3.4)	48 (29.1)	0.07 (0.1)	1.2 (0.8-1.7)
Secondhand smoking				
No	2446 (50.6)	599 (24.5)	0.10 (0.2)	1
Yes	2385 (49.4)	642 (26.9)	0.11 (0.3)	1.1 (1.0-1.3)
BMI				
<18.9	52 (1.1)	7 (14)	0.09 (0.2)	1
19-24.9	965 (20.1)	229 (23.7)	0.11 (0.2)	1.9 (0.8-4.6)
25-29.9	1952 (40.6)	504 (25.8)	0.12 (0.2)	2.2 (0.96-4.9)
30-34.9	1381 (28.8)	380 (27.5)	0.09 (0.2)	2.4 (1.1-5.5)
>35	452 (9.4)	115 (25.4)	0.9 (0.2)	2.3 (0.9-5.3)

Variables	Total N (%)	Abortion N (prevalence)	Abortion ratio Mean (SD)	Adjusted OR (95% CI)
Physical activity daily METs				
24-36.5	1036 (21.4)	261 (25.2)	0.11 (0.3)	1
36.6-44.9	3302 (68.4)	862 (26.1)	0.11 (0.2)	1.1 (0.9-1.3)
≥45	492 (10.2)	118 (23.9)	0.08 (0.2)	1.0 (0.8-1.4)
Use contraceptive drug				
No	812 (16.8)	240 (29.5)	0.13 (0.3)	1
Yes	4013 (83.2)	996 (24.8)	0.10 (0.2)	0.8 (0.6-0.9)
Socioeconomic status				
1st quantile (the poorest)	968 (20.1)	236 (24.4)	0.08 (0.2)	1
2nd quantile	966 (20.0)	222 (22.9)	0.09 (0.2)	0.9 (0.7-1.1)
3rd quantile	962 (19.9)	242 (25.1)	0.09 (0.2)	1.0 (0.8-1.3)
4th quantile	968 (20.1)	248 (25.6)	0.11 (0.3)	1.0 (0.8-1.3)
5th quantile (the richest)	962 (19.9)	291 (30.2)	0.15 (0.3)	1.4 (1.1-1.8)
Thyroid				
No	4546 (94.1)	1159 (25.5)	0.10 (0.3)	1
Hypo	261 (5.4)	73 (27.9)	0.1 (0.2)	1.1 (0.8-1.5)
Hyper	24 (0.5)	9 (37.5)	0.14 (0.2)	1.8 (0.7-4.5)
Blood pressure				
No	4465 (92.7)	1158 (25.9)	0.11 (0.2)	1
Yes	353 (7.33)	76 (21.5)	0.12 (0.3)	0.6 (0.5-0.8)
Goodness of fit model				
Sensitivity	19.15%			
Specificity	95.25%			
Accuracy	75.97%			
Positive predictive value	57.79%			
Negative predictive value	77.63%			

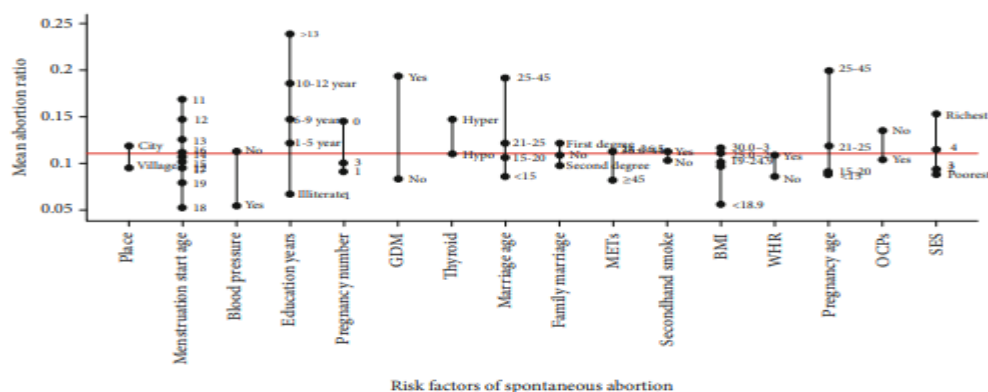


Figure 1: Mean abortion ratio based on the studied variables in the participants of RaNCD (8).

Despite the fact that the overall incidence of maternal abortion and miscarriages in Iran has become less than 0.02 percent, the psychological consequences of abortion (such as grief) and its medical complications may lead to a range of psychiatric illnesses in families and women. In one study, the highest incidence of spontaneous abortion was determined to be about 26%, whereas other studies found it to be between 10% and 31%. Although the rate of abortion in just this study was similar to that seen in other studies, this finding cannot be applied to the whole community. While the woman is uninformed of her pregnancy, she may have an abortion in the first few weeks of her pregnancy. Furthermore, in jurisdictions where contraception is outlawed, such as Iran, determining the actual burden of various forms of abortion is difficult. In this scenario, ladies are concealing the genuine cause for their abortion in effort to get medical treatment(10).

Age at first marriage and age at first pregnancy, according to the results of this research, are both substantial risk factors for spontaneous abortion. As a consequence, women in their first marriage and pregnant after turning 26 had a 57 percent and 87 percent greater chance of abortion, respectively, than women in other age groups. This result was also consistent with earlier studies. Scientists think that having a child and marrying later in life increases the chance of abortion, fatal and chromosomal abnormalities, and pregnancy-related disorders. As a consequence, it is important to undertake frequent examinations and tests on the controlled growth of foetuses in pregnant women of senior age, as previously noted.

According to the results of this study, secondhand smoking raised the incidence of spontaneous abortion, albeit not considerably. However, similar studies found a strong link between secondhand smoking and an increased incidence of abortion. Smoking is not safe at any stage of pregnancy; consequently, pregnant women should avoid being exposed to tobacco pollution. As a prophylactic measure, contraceptive pills lowered abortion rates by 78 percent, which was consistent with earlier data. It might be because contraceptive tablets have medical qualities in addition to contraception and are occasionally used to avoid ovarian cysts or strengthen follicles. Taking progesterone hormones as advised by a gynecologist is another therapy option for minimizing the risk of abortion. As a consequence, hormonal contraceptives containing progesterone may have a part in safeguarding spontaneous abortion (4).

According to a prior research, when the number of births grew, the risk of abortion increased. The incidence of spontaneous abortion rose as education levels climbed, placing women with a secondary schooling at the highest risk. Many research have indicated that unfavorable pregnancy consequences are more noticeable in women with greater education; nevertheless, a study in northwest Ethiopia came to a different result. When women with a secondary education marry later in life, variables such as their age at first marriage and first pregnancy, both of which are possible causes for spontaneous abortion, might increase the likelihood of an abortion. When shown in this study, as one's SES rises, the likelihood of having an abortion rises as well. Taking all of the factors into consideration, it was discovered that expectant mothers with such a higher socioeconomic status are 1.36 times more probable to have an abortion. A substantial link between spontaneous abortion and SES has been shown in numerous previous investigations (6).

Women with high blood pressure had a higher incidence of spontaneous abortion than women lacking high blood pressure, and only 6.2 percent of sudden abortion patients had high blood pressure. After adjusting for other conditions, it was shown that women with hypertension had a reduced risk of spontaneous abortion. Blood pressure and spontaneous abortion were shown to have no significant association in a Finnish research. This finding might be attributable to the fact that hypertensive moms get better health treatment, allowing them to avoid abortion. One of the study's shortcomings was that participants were required to complete self-report questionnaires, which might make distinguishing between spontaneous and nonspontaneous abortions difficult. Families and women in Iranian culture, as well as in places where norms still exist, such as Kurdish communities, are ashamed of any sort of abortion. Furthermore, an induced abortion is illegal if there is no medical reason that has been authorized by forensic medicine and an expert. We don't have a comprehensive picture of the true frequency and types of abortion as a consequence of these limitations. The investigator watched the PERSIAN cohort procedure in the RaNCD cohort trial and used a local and female interviewer for the women to

guarantee that the questions were answered appropriately. The participants were advised that their replies would be kept confidential by the interviewer(9).

4. CONCLUSION

Identifying risk variables in a population-based research is crucial in countries like Iran, where the psychosocial repercussions of abortion may be frequent. The likelihood of spontaneous abortion rises with the number of babies, age at first marriage, age at first pregnancy, and degree of education, according to our data. While all of these elements have risen in recent years in unison with women's socioeconomic growth in Iran, it is vital to avoid abortion among these women. In reality, actions on abortion and its risk factors should be conducted via the media, counseling, supplementary education, and training both for the individuals and medical care professionals. While most Iranian cities provide basic health care and maternity care provided by midwives and gynecologists, high-risk women need additional high-quality treatment.

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THE USE OF CREAM IN THE SCIENCE OF SCIENTIFIC TOPICS IN GRADES 1-4 OF SECONDARY SCHOOLS

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ABSTRACT

When we observe a being, we are amazed to see that the world around us is made up of different colors. Making various clay and plasticine figurines in visual arts activities is an important factor in the development of students' hand muscles, sensing the volume properties of objects by hand, and regulating finger movements. Making various clay and plasticine figurines in visual arts activities is an important factor in the development of students' hand muscles, the ability to feel the volumetric properties of objects, and the regulation of finger movements.

KEYWORDS: *Sculpture, Clay Or Plasticine, Making Various Things In The Stack Yard, Clay Soil, Pottery, Large-Eyed Sieve, Mysterious Bucket, Mixture In The Bucket, Increasing The Hardness Of Clay, Making Clay Figurines, Lacquer Or Alif, Plastic Knife, Blower Whistles, Plywood Flooring, Etc.*

INTRODUCTION

Making various clay and plasticine figurines in visual arts activities is an important factor in the development of students' hand muscles, the ability to feel the volumetric properties of objects, and the regulation of finger movements.

Students will learn to make a variety of items from clay or plasticine by hand, using a stack. This type of activity should include: enough clay or plasticine for each student, a 25x25 cm plywood base, a rag, a water bottle, a stack of various shapes, and so on. [1]

One of the factors for students to master the content of the program is to get acquainted with the specifics of the materials used in sculpture.

The main disadvantage of plasticine is that it cannot be stored in hot places (even in the open). Because in such places they can melt. Plasticine does not work well when washed. Clay, on the other hand, is free of such defects and can be re-baked in a muffle furnace and treated with gouache. [2]

Natural clay is used in the preparation of clay. Clay is usually used to make pottery, and it is also used to decorate the walls of houses. This soil can be cleaned of various impurities and used as a clay for visual activities with a little tillage. To do this, the soil is finely ground and passed through a large sieve. The sifted soil is placed in a plastic or glazed bucket and covered with water to cover the soil. This process is continued until the container is full. The mixture in the bucket is left in this state for 1 day. The excess water is then drained and the mud is mixed well

by hand. It is recommended to mix finely chopped newspaper pieces and a little oil to increase the hardness of the clay. The resulting mud will continue to be soaked until it becomes inaccessible. The finished clay is placed in a plastic bag to prevent it from solidifying. The softness of the clay allows students to easily create the shapes they want. A small amount of water is added each time to prevent the mud from solidifying over time. [3]

Clay figurines should always be made on a non-slip base. This, in turn, keeps the workplace clean and makes it easier to cover and set aside when work is not finished. 25x25 plywood is selected for the base, and the surface is well sanded and smoothed. Then wipe clean with a cloth. The surface of the furniture is painted with varnish or alif oil. In sculpture, small and delicate details are worked on wooden or plastic knives (stacks). They come in many shapes and sizes. They often make mud whistles and various toys. [4]

Plasticine is also widely used in sculpture. But there are some rules to follow when dealing with it. Plasticine hardens when it is cold. And before you start, you need to soften it a bit. To do this, the plasticine box is placed closer to the heat source before training or held in the palm of a slightly damp hand. As a result, the plasticine softens and is ready for use. Plasticine should not be held in the hand for long periods of time. This is because the plasticine becomes too soft and sticky.

The above-mentioned equipment is also needed to make plasticine figurines. Making clay or plasticine figurines requires students to become familiar with different ways of working. [5]

Rounding is one of the simplest ways to process a plastic mass that does not have a specific shape. The palms of the hands are held parallel to each other and a piece of clay or plasticine is placed between them. When the palms of the hands are rotated in a straight line without changing their parallelism, a spherical shape is formed. Round balls can be used to make bread, mushroom caps, plates, apples, teapots and bowls. To create the shape of an oval object, a pre-made round coplocra is placed between the palms of the hands and moved back and forth at an angle to one side. As a result, one side of the ball elongates to form an ovoid shape. This type of processing is usually used to create an image of an object from a single piece. The small details of the objects are given the desired appearance by squeezing them, cutting off the excess parts, and squeezing them. In this case, the flat side of a finger or knives soaked on the uneven surfaces of the object or objects. The joints of the objects should be well smoothed. Clay items are easy to sand with a damp cloth. [6]

Sculpture uses techniques to make things from whole and individual pieces of clay. Bread, plates, cucumbers, carrots, etc. are made from whole pieces. But it is better to work with more complex objects from separate parts. In this case, all the work is done in a "design" way, that is, each part is assembled in its place after finishing separately. The joints are smoothed and smoothed. [7]

Cognition is a form of visual arts that consists of two independent parts - the perception of being and art.

Perception of being can be done independently, as well as in combination with one or another type of fine arts. One of the tasks of the Cognition Act is to show the connection between the visual arts and life. The perception of being includes nature as well as animals and birds and the

study of buildings, architectural monuments, household items, as well as examples of folk applied art.

Perception of being is mainly related to students' drawing based on memory and imagination. short trips to the park, cities, architectural monuments. They reflect their impressions of the trip in their drawings. They also study the nature of other republics through illustrations in books, filmstrips, slides, and pictures. [8]

As a result, students develop a desire for beauty and enjoy it. At the heart of students' emotions is the ability to observe things and objects. Being able to observe nature allows children to understand the shape of things and see different color combinations. Observation makes it easier to understand nature. This is important for understanding the visual arts. And to love a work of art that depicts a landscape is to love nature. [9]

Understanding art is basically talking about works of fine art. Students will learn about the creative work of various artists. They will gain an understanding of the richness of colors used in the creation of works of fine art. Understanding art helps children develop artistic taste, love and understand beauty.

There are no special classes for first graders to talk about fine arts. Conversation classes are combined with seasonal themed drawing lessons. The time allotted for conversation in these classes should not exceed 15-20 minutes. Because long conversations make students tired. [10]

In elementary school, conversations about a work of art are conducted in the form of questions and answers and stories. In most cases, conversation is an active form of such lessons, which is used in every lesson. In the process of understanding art, students become familiar with the phrases used in art classes and learn to use them in conversation. The teacher asks the students questions to draw their attention to the main idea of the play. During the interview, it is recommended to give a brief overview of the compositional connections that are used to reveal the content of the work, as well as the materials used. [11]

Students will also be introduced to the art of color in the process of understanding existence and art. The purpose is to acquaint them with the theoretical and practical foundations of color science. Because students are introduced to the primary colors (red, yellow, and blue) and the secondary colors (orange, green, and purple) directly during the lesson. They practically create new colors by mixing these colors in watercolor or gouache with water or mixing them with each other. In the process of perception, they look for these colors in nature.

The instructor should provide specific instructions on specific techniques for using brushes and paints during the practical work. These include wetting paints with water at the beginning of the lesson, not rubbing the brush hard on the paint, not hitting the dirty brush with clean paints (e.g. yellow, orange, etc.), brushing the brush. little surface running from left to right, from top to bottom (where the brush should always be full of paint), and so on. [12]

The second part of the Art Building program, Art Work, integrates and helps students develop the knowledge, skills, and abilities they have acquired through fine arts activities. It involves the students' practical activities and the creation of a specific lesson based on a well-thought-out plan. It is important that in the process of making different things, children's construction activities should be practical and creative. This, in turn, develops the ability to think logically, which is an important factor in shaping children's learning activities.

Art construction in the primary grades is a new type of activity that develops students' creative abilities, imagination, and gives children knowledge and skills in the field of art and technology. The peculiarity of this type of training is that the topics are subordinated to one content and have the character of a game.

The name of the construction activity is actually derived from the Latin word "construction", which means "construction". When it comes to artistic construction, primary school students make different toys from different materials (colored and cardboard, wood, discarded materials, natural materials, special construction kits, etc.). studies are understood.

The result of children's artistic construction is that they are naturally inclined to satisfy their desire to build. Because in the process of artistic construction, children usually make a variety of objects and toys, partly through the artistic processing of almost semi-finished forms, without making any significant changes. However, the support of adults in their artistic construction activities allows them to create notable examples.

In elementary school, students learn from the following natural materials: sand, soil, gravel, water, snow, leaves of trees and plants, twigs, roots, seeds of vegetables and fruits, egg shells, straw, and so on. Real forms of natural materials can be used where needed. At the same time, children learn to emphasize the similarities of any image expressed in natural material, to bring it closer to reality through additional processing, and to use tools in this process. Working with natural materials not only develops students' imagination and creativity, but also develops their ability to create unique fun toys and the like by combining certain natural shapes. In the process of building from natural materials, students learn how to connect different pieces together, whether they are movable or immovable, and how to work with sandpaper, egov, knives, and so on. they also master fluffy bones. In some cases, natural materials are used, as well as discarded materials to enhance the expressiveness and effectiveness of toys. The teacher should pay attention to this aspect of the problem when giving students the necessary insights.

The natural materials needed for the training will be collected according to the season and divided into the required types. It's a good idea to do this while traveling with students on a nature trip. During the trip, the teacher gives the children the necessary insights into each natural material and the necessary instructions on how to collect and store them. The timely completion of these works is of great importance for the effectiveness of the construction of natural materials. This is a process that requires a great deal of responsibility from both the teacher and the students. The more natural materials you need for the lesson, the more varied the content of the assignments will be.

Discarded materials include matchboxes, perfume bottles, glue, paper boxes, foams, used matchsticks, ink-filled felt-tip pens, ink-filled ballpoint pens, colored wire pieces, foam plastic, various plastic containers, tea boxes, and so on. etc. In everyday life, many used dishes are discarded. Students can collect such junk and then make a variety of toys out of it. It also requires the development of students' imagination, creative abilities, and the ability to "see" a sample of the required toys in advance.

Stacks made of wood or plastic are used to make clay and plasticine figurines. Stacks are usually used to work on the finest, smallest details in sculptures. For example, stacking is done by drawing on a piece of clay, carving, scraping or cutting off excess parts. Plasticine is easy to store because it comes in a paper box. They come in 6, 8, 12 different colors. Some plasticine

kits also come with plastic stacks. The teacher can make stacks from tree branches in sufficient quantities for all students. The teacher will also show you the plywood floor used in the sculpture class and how to use it.

Plywood flooring protects students' workplaces from contamination. Colored paper is widely used in decorative applications. The teacher shows the students a set of colored papers of different sizes and explains that the larger ones are needed as a background and for cutting large shapes. It is also useful to show some visual aids.

Each student should have a rectangular tablet for drawing. The tablet measures 30x42 cm and is made of smooth plywood. The teacher should be able to put the paper on the tablet and practice how to work on it. If you have to use the tablet at an angle, the papers are fastened with buttons or rubber bands.

From the very beginning of each fine arts class, the teacher should teach students to behave during the lesson, to use the teaching aids correctly, as well as to behave properly during the lesson. . It is important to keep children from drawing on sheets of paper, small notebooks and various notebooks. Explain to the children that the picture is drawn on one side of a notebook sheet. Students should also not be allowed to carry a notebook for sketches. This is because the notebook wears out quickly and does not absorb the paint well.

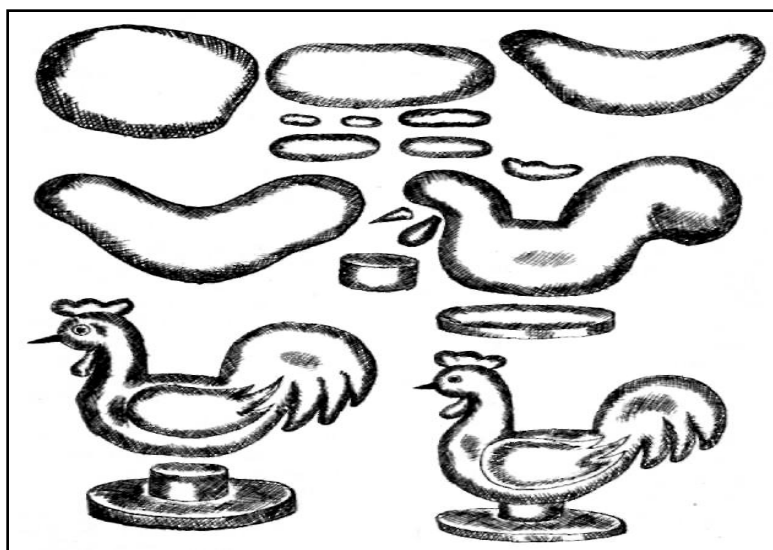
Often students hold the notebook correctly when they draw a horizontal line, and change the position of the notebook according to that line when they draw a vertical and a curved line. This is redundant and prevents students from knowing whether the lines they are drawing are straight or curved.

SCHOOL COURSE EXAMPLE

The subject of the lesson: Make a toy rooster statue.

The purpose of the lesson. To develop students' skills in sculpting from a single piece of clay. Continue to learn how to process a piece of clay by rolling, rolling, squeezing, stretching, pressing, and grinding. Develop the ability to create a complete toy sculpture by assembling individual pieces.

The course: In the previous lesson, as students became familiar with the external structure and characteristics of a chicken in the process of drawing a picture from natural materials, the teacher focused on teaching her how to draw her body parts in clay. He first shows the students a sample of a rooster and a short question and answer session to remind them of the concepts and ideas they learned in the previous lesson. Students will look at Figure 1 to see what parts a rooster toy is made of.



In the next activity, the teacher demonstrates the practicality of separating the parts of the rooster's body, base, crown, and hooves into a ball by rounding them. After the students have completed the task, the teacher shows them how to turn it into a ball by rolling it. He then squeezes and stretches one end of the rooster for the general body to give it the shape typical of a rooster's neck and tail.

In the next stage, the whole body is processed and the beak, tail and body of the rooster are completed. The rooster's crown, hooves, and bottom are then installed and polished.

At the end of the work the shapes of the rooster's eyes, wings, tail feathers are drawn with the tip of the stack (after the clay dries, it is painted with white gouache, the colors of the rooster are given and covered with varnish) .

At the end of the lesson, all the toys will be analyzed together.

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USE OF COMPUTER TECHNOLOGIES IN THE STUDY OF ARCHITECTURAL DECORATION IN FINE ARTS CLASSES

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ABSTRACT

If we look at the centuries-old history of the Uzbek people, we can see in our daily lives that this nation has left a great and invaluable legacy for present and future generations in all areas of science, literature and art, architecture and handicrafts. we willIn particular, the art of painting is a flower and a unique kind of heritage left to us by our ancestors. The current changes in the educational process and the work being done to reform the content of education and bring it into line with international educational standards are aimed at radically improving the quality of education in higher education.that is, the use of new information and computer technologies in the educational process requires the formation of creative abilities of students studying in our schools and the development of their creative thinking.

KEYWORDS: *Science, Literature And Art, Architecture, Painting, Secrets Of The Profession, New Form, Information And Computer Technology, Art History, Fine Arts, Architecture, Design, Design, Biology ,Chemistry, Physics, Astronomy, Mathematics, Computer Science, Information And Communication Technologies, Coreldraw And Autocad, Geometric Constructions, Girix, Graphic Applications.*

INTRODUCTION

If we look at the centuries-old history of the Uzbek people, we can see in our daily lives that this nation has left a great and invaluable legacy for today's and future generations in all areas of science, literature and art, architecture and crafts. lamiz. In particular, the art of painting is a flower and a unique kind of heritage left to us by our ancestors. [1]

As you know, the art of painting has long been popular in Central Asian architecture. Especially in the second half of the XIX century and in the XX century in Khorezm and in the regions of the Republic culture and art flourished. During this period, in Bukhara, Samarkand, Khorezm, Quqon, Margilan, Tashkent, there were folk masters who raised the level of applied arts, such as pottery, pottery, carving and painting. Our current goal is to pass on the legacy of these masters and the secrets of the profession to young people and pass it on to future generations. The use of information and computer technologies in the educational process is important in solving these problems. [2]

The Law on Education and the National Training Program set the task of applying new forms, content and methods of teaching to higher education workers. This requires students to become

professionals. The fact that the main subject and object of the national model of training is the individual is in line with the motto "Personnel decides everything." [3]

The current changes in the educational process and the work being done to reform the content of education and bring it into line with international educational standards are aimed at radically improving the educational work in higher education institutions. The use of new information and computer technologies in the educational process, thereby teaching in our schools and fostering the creative abilities of young learners and the development of their creative thinking. Indeed, today the education system is undergoing a great development. Opportunities for the widespread use of computer technology in the education system are developing. To date, computer technology has covered all areas of education, science and development.

Computer graphics is widely used in various fields of education: engineering graphics, art history, fine arts, architecture, design, engineering, biology, chemistry, physics, astronomy, mathematics, computer science and other disciplines. Electronic textbooks and visual aids have been developed in these disciplines so that students can easily master these areas. However, computer technology is not being used effectively in many disciplines, especially in the decorative arts. Computer graphics can be used successfully in applied decorative arts, especially painting. It is imperative that we, the teachers of fine arts, make effective use of information and communication technology programs to give an idea of our architectural monuments and to draw the patterns of ornaments that are preserved in them. It is necessary for us, the teachers, to fulfill these tasks in order not to lose the unique architectural patterns that are still preserved in our architectural monuments. [4]

Computer graphics are very useful in drawing Islamic and girih patterns used in Uzbek folk applied arts such as painting, wood carving, ganch carving, gold embroidery and others.

We can use computer graphics applications CorelDRAW and AutoCAD graphics applications in the field of applied decorative arts.

We can use CorelDRAW to create Islamic pattern compositions and AutoCAD to draw girih pattern compositions.

Many higher education institutions and vocational colleges now offer drawing classes using AutoCAD. The introduction of computer technology in the arts and crafts will naturally lead to high results in this area. In particular, the role and place of AutoCAD graphics program in the study and copying of entrance compositions on the art of painting in all our regions is invaluable. Our professional teachers, who have been teaching and educating the fine arts in schools, now have access to computers. In the classroom and in extracurricular activities, students will be taught to draw patterns that are common in our national architecture, free access to computer programs, and students will be taught to draw patterns in the style of girih. [5]

Girih is an Arabic word meaning "knot", "tangle". Each entry is a unique node, both literally and figuratively. Girih is made in knot-forming nets. To find the solution to the girih, you need to "untie the knot and find the end of the rope". It's all about finding the main figure and determining its exact position in the species.

Girih patterns are based on the geometry of the circle, which is solved using a compass and a ruler. It consists of dividing a circle into equal parts to form a net and arrows. The artist, who was

engaged in geometric design, had to solve very interesting problems. For example, the arrangement of eight-pointed stars, the formation of five-pointed stars, and so on.

Making Girix required a precise knowledge of the properties of geometric figures and a positive use in composing them. Stellar pentagonal, star-shaped ridges are common in traditional Central Asian ridges.

Star-shaped figures are made at opposite ends of a square or rectangle. The compositions consist of four and eight three-pointed stars. This is an inheritance inherited from the past, which is made in a strict sequence to form a correct geometric shape.

Using AutoCAD graphics software, these tasks can be completed in a very short time. With this program, you can draw girix pattern compositions with great precision, and you can draw and copy the resulting pattern compositions to the desired size. Pattern compositions can be painted in different colors using the color palette. [6]

AutoCAD has a number of commands that you can use to draw input and pattern compositions. Using the capabilities of this program, it is possible to draw girix pattern compositions with high accuracy. Girix construction begins with a line diagram of geometric patterns. The other side of the coin is that the pattern is intertwined and the art is intertwined. As a result of the artistic work of Girikh, a complex composition is created, creating a complex geometric pattern. To draw this composition, first create a grid from the command button "Pryamougolnik" (rectangular drawing), the button of the command "Pryamaya" (straight line) and the command "Cut" (cross-section). used in the execution of the distribution. Then, using the commands in the "Edit" panel, the excess lines of the finished distribution are removed. Then, using the Copy button and the Mirror button, the pattern is reproduced and duplicated. [7]

The commands in the Drawing panel, the Edit panel, and the Privyazka abyekta panel are used to draw Girix pattern compositions.

The commands in the Drawing panel are as follows:

"Otrekoz" - button for cutting command;

"Pryamaya" - a button to draw a straight line;

"Multiline" - button for drawing double lines;

Polyline is a multi-line command button

Mnogougolnik - button to draw a polygon;

Rectangle - button to draw a rectangle;

"Arc" - a button to draw a bow;

"Circle" - the command button to draw a circle;

"Ellipse" - button to draw an ellipse;

The "Edit" - "Edit" panel commands are:

"Steret" - a button to delete the selected object;

"Copy" - button to copy from the object;

Mirror - button to create a symmetrical image of the object;

"Move" - button to push the selected object;

"Array" - a command button to enlarge the image of the object;

"Move" - the button to move the selected object;

Povernut - button to cut off the excess part of the object;

"Chassis" - a button to remove the angle chamfer of the lines intersecting at an angle;

Delete command button;

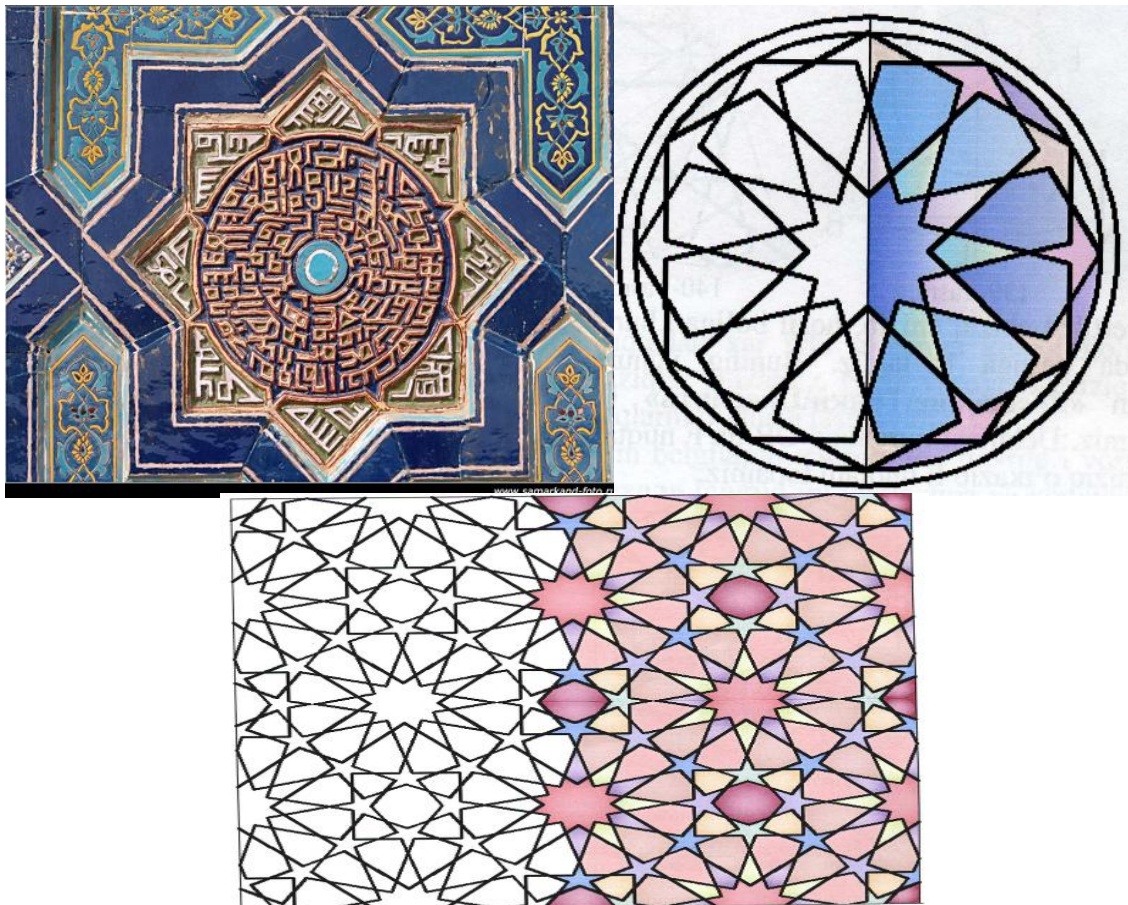


Figure. 1

Thousands of historical monuments have been erected in our country, which still attract people from all over the world. They embody the rich spiritual values of our people formed over the centuries, as well as their creative and creative potential. is inherited. These buildings are part of the history of our country, its long history, the people of our country, the achievements of our ancestors in architecture, which many centuries ago were able to show the subtleties of art in their buildings. the image of a hard-working people who have been sweating for years is clearly embodied. [8]

For a building to become an architecture, it must be created in the form of a high-level work of art or a work of art. Architecture differs from other types of human activities, including

construction, in that, in addition to usefulness, it also performs ideological and artistic aesthetic functions that meet the needs of a particular historical and socio-spiritual environment and period.

The drawings, developed by Central Asian architects, are based on a grid and scale system of cells, in which the history and style of each building to be built are clearly expressed. Academician M.S. Bulatov in his "IX-XIV centuries, geometric harmony in the architecture of Central Asia" in his monograph he described the geometric analysis of many architectural monuments, proving for the first time that medieval architects had not only practical but also theoretical knowledge, that construction was based on drawings. [9]

Just as there are no meaningless words, there are no meaningless patterns. Even primitive rock paintings have a certain meaning. Many of them describe the process of hunting and trapping wild animals. Before the introduction of Islam in Central Asia, monumental fine arts flourished. This is evidenced by the fact that the monuments of Afrosiyob, Varakhsha, Bolaliktepa are decorated with thematic panels. Various topics, such as the arrival of ambassadors with gifts, the warmth of hospitality, and the hunting process, were clearly reflected in them. After the introduction of Islam, fine arts were replaced by mainly ornamental, ie floral, geometric patterns. Such patterns have been used since ancient times, along with monumental art, and have a symbolic meaning. The colorful floral and geometric patterns are intertwined to form an ideologically rich, meaningful whole panel.

Creating pattern elements in Corel DRAW has become a modern requirement. Corel DRAW is a program that creates and edits illustrations based on the principle of vector graphics. The capabilities of the Corel DRAW program help to create a variety of graphic compositions. In particular, dynamic interactive tools, various effects and the ability to prepare graphic data in HTML and PDF formats. You can also choose different colors in the color palettes in the Corel DRAW graphics editor. There are also a variety of tools to help you work with different formats, many filters needed for import and export, image printing tools create the highest creative environment for the artist. [10]

Launch the Corel DRAW graphics editor. After launching Corel DRAW, its window will appear as shown in Figure 2. To work on the graphics, use the Welcom to Corel DRAW (Welcome to Corel DRAW) dialog box and one of the options must be selected. If we select the New Graphic option, a standard window with a print sheet in the center of the screen will appear, as shown. In this dialog box, in the What is New section, you will find the latest changes to the Corel DRAW program.



Figure 2 Below we provide information about the main elements of the Corel DRAW window.

All surfaces except the beginning of the line and the print sheet. Workspace Figure 2.referred to as In the left corner of the window is a graphics panel, and on the right is a color palette. From the top edge of the window, there is a row header, a menu bar, a standard toolbar, and an attribute panel. At the bottom of the window there is a horizontal scroll bar, and below it there is a status bar. In the center of the window is a leaflet. The shadow frame is the sheet border. The white area around the sheet is called the workspace of the document window.

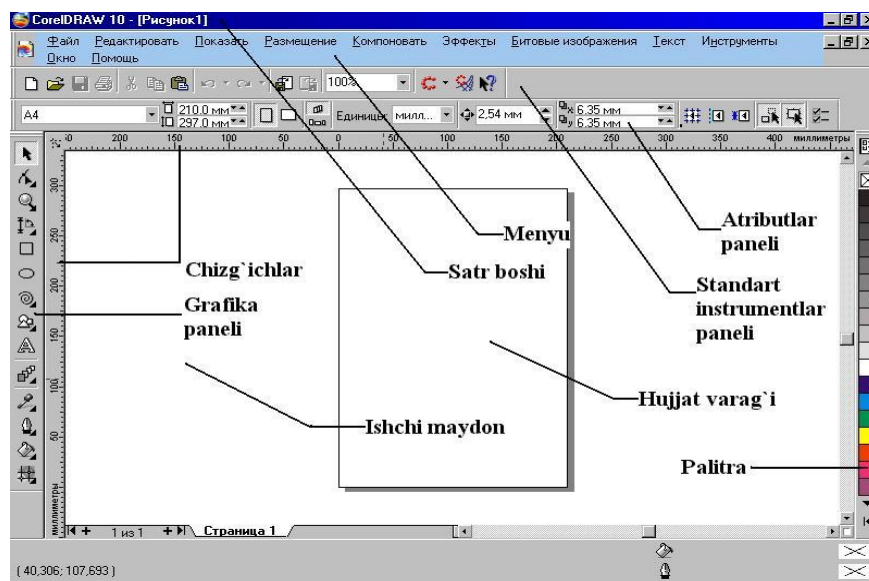


Figure 3.

Graphics panels. Interactive tools. Graphics panels. The graphics panel contains the tools needed to create a graphic work. There are also additional tools on the graphics panel that change the color and shape of objects. Some instrument buttons have small black triangles at the bottom right. If you press such a button with the "mouse" for a while, it will open the buttons for additional tools.



Figure 4.

The following table contains information about all the tools in the graphics panel and the main functions of the tools attached to them:

N/r	Instrument	Additional tools	Functions to be performed
1	Pick (ko'rsatgich)		Selection and rearrangement of objects
	Shape (shakl)	Knife (Pichoq) Eraser (o'chirg'ich) FreeTransform (Erkin holatda o'z-gartirish)	Changing the shape of objects by pushing the contour links. Cut out parts of graphic objects and join lines. Delete parts of an object. Modification and reconstruction of objects.
3	Zoom (Macштаб)	Pan (varaqni surish)	View objects in enlarged or enlarged state. Place the sheet on the edge of the document window.
4	Freehand (egri)	Bezier (Egri Beze) Artistic (Badiiy vositalar) Dimension (o'lcham chiziqlari) Connector Line (Birlashtiruvchi chiziq)	Draw curved lines as you would in a pencil Draw a curve by "merging points" and controlling the shape of the curve. Drawing in brush mode using various fog art effects. Draw dimension lines to place objects or dimensions between them. Draw connecting lines between objects.
5	Rectangle (To'g'rito'rt-burchaklik)		Draw a rectangle of different sizes and proportions

6	Ellipse (Ellips)		Draw ellipses of different sizes and proportions
7	Polygon (Ko`p burchaklik)	Spiral (Spiral) Graph Paper (Diagramma to`ri)	Draw polygons and stars with different sides. Spiral drawing. Draw a grid of different line diagrams.
8	Text (Tekst)		Figure or plain text input
9	Interactive Fill (Interaktiv quyish)		Interactive coloring of objects
10	Interactive Transpanency (Shaffoflikni interaktiv tuzish).		Interactive creation of object transparency
11	Interactive Effects (Effektlarni interaktiv tuzish)	Interactive Blend (qadam-baqadam o`tishni interaktiv tuzish) Interactive Contour (Oreolni interaktiv tuzish) Interactive Distortion (Interaktiv deformatsiyalash) Interactive Envelope (Egiluvchi shakllarni interaktiv tuzish) Interactive Extrude (hajmni interaktiv tuzish) Interactive Drop Shadow (Soyani interaktiv tuzish)	Interactive creation of step-by-step transitions of objects. Interactive creation of objects that replicate the shape of other objects. Interactive deformation of objects. Interactive bending of object shapes. Imitation of a three-dimensional effect for objects. Interactive creation of a half-tone shadow falling from objects.
12	Eyedropper (Tomizgich)	Paintbucket (To`ldiruvchi)	Add a color by selecting the color of the object. Color the object from the standard color scheme.

Main menu. The main menu bar is located at the top of the Corel DRAW screen, below the row header row. This is the only item in the program that has a specific location that cannot be placed anywhere on the screen. The main menu consists of 11 items. The user can also add additional special commands to this menu.

If you click on any item in the main menu, a list of commands will open. You can select a command from the menu by clicking on the "mouse" or the corresponding key. For example, if you want to open the Color Management dialog box, you can click the "Tools" menu with the "mouse" and then the "C" key. In addition to the "mouse", the use of keys also helps to speed up the work.

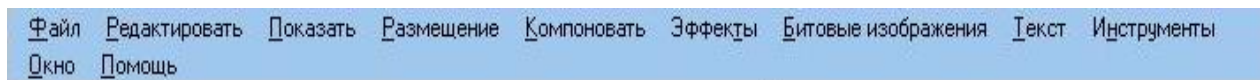


Figure 5

Windows system menu. The system menu icon in the document window is located in the left corner of the menu bar, to the left of the File command. In the background of the document is the Corel DRAW (balloon) logo.

The system menu consists of standard commands that control the Windows system window, including Restore, Move, Size, Minimize, Maximize, Close, Next.) are available.

The system menu of the Corel DRAW main window is invoked by clicking on the balloon icon to the left of the word Corel DRAW or by pressing the ALT-PROBEL keys together. Right-click to invoke the menu. [11]

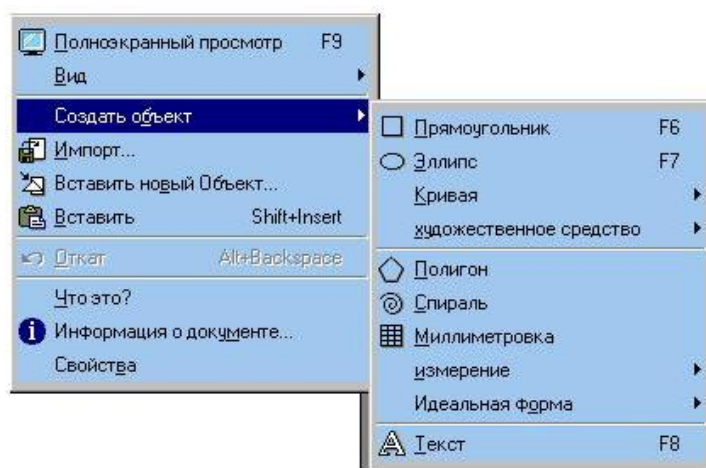


Figure 6.

In Windows, you perform certain actions by right-clicking anywhere on the screen. This feature is also widely used in the Corel DRAW graphics editor. Clicking the button on the right will invoke the context menu.

This image shows the Document context menu. We open the command menu to select the tools in the graphics panel by clicking on the command Create Object.

The next picture shows the Object menu. We call this menu by going to the group of selected objects and clicking the button on the right. Commands in such menus are called context menus because they depend on the status of the minutes being called.

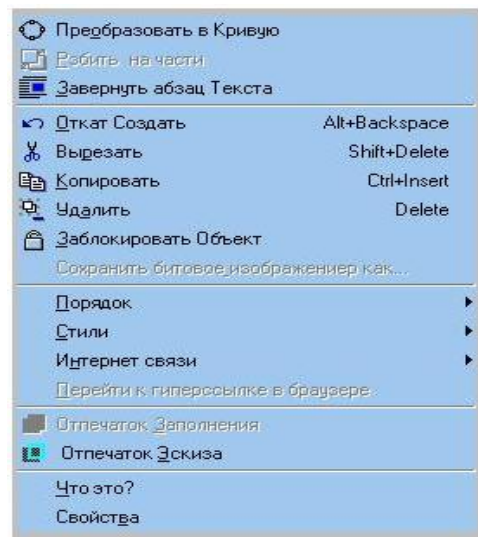


Figure 7.

Toolbar (Toolbar) context menu. The context menu of the Toolbar shown in Figure 7 is one of the most interesting and desirable menus. This menu is invoked by right-clicking on a standard toolbar, attributes panel, or graphics panel. You can select the toolbar through this menu.

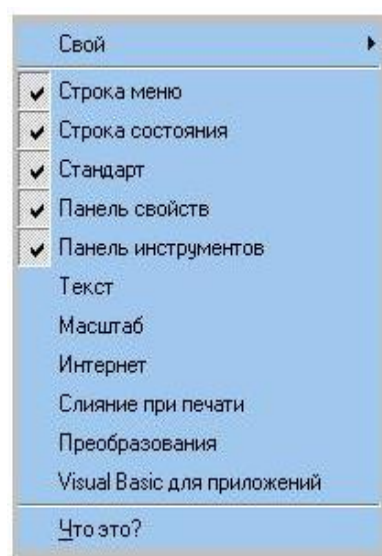


Figure 8

Standard instrument panel. The standard toolbar is located below the main menu bar. This panel has buttons that allow you to quickly and easily find the various functions of the Corel DRAW. In addition to these buttons, the panel has a drop-down list called Zoom levels.

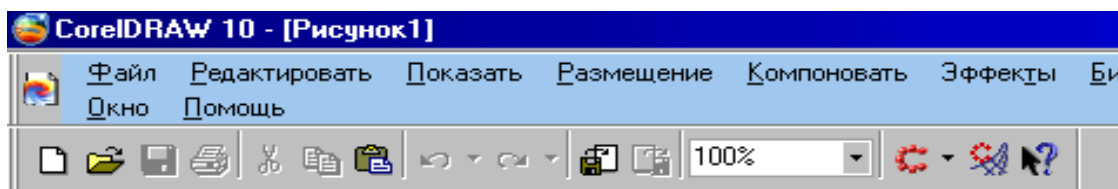


Figure 9

You can select 12 different scales from the Zoom levels drop-down list:

- To Selected
- To Fit (all objects)
- To Page
- To Width
- To Height
- 10%, 25%, 50%, 75%, 100%, 200%, 400%.

You can also specify non-standard Scale coefficients in the Zoom parameter field. To do this, press the ENTER key, giving the required scale in percent.

Everyone can create a standard toolbar to suit their style of work.

If you place the mouse pointer on any button on the toolbar and wait for a while, the information with the name of the button will appear. Additional information about the function of this button will appear in the status bar at the bottom of the screen.

The table provides information about the buttons on the standard toolbar.

In conclusion, in the circle of fine arts, in the process of performing these tasks, students learn the basics of the laws of creation of very elegant patterns, entries, using simple geometric drawings.

The table provides information about the buttons on the standard toolbar.

In conclusion, in the circle of fine arts, in the process of performing these tasks, students learn the basics of the laws of creation of very elegant patterns, entries, using simple geometric drawings.

The work in these graphics programs is automated and the drawings are performed with high accuracy. The use of graphic software in applied decorative arts not only increases its effectiveness, but also increases students' interest in applied decorative arts, as well as computer literacy and skills.

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THE ROLE OF HISTORICAL MONUMENTS IN THE FORMATION OF THE NATIONAL PRIDE OF THE YOUNG GENERATION

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ABSTRACT

The aim of this work is to study the impact of historical and monumental monuments on the formation of national pride in the education of young people. Currently, local lore materials, history and art opportunities are not used enough, but due to them in the article: increase interest in the study of the history of the motherland, the acquisition of new knowledge by students, expanding the professional card of adolescents, It lies in exploring the development of skills such as cultivating a sense of pride.

KEYWORDS: *Patriotism, Abilities, Skills, System, Activity, Interests, Monuments, National Pride.*

INTRODUCTION

There are several directions in the study of historical monuments of the country. However, with their help you can solve a number of problems: increase motivation to study the history of their homeland, the formation of new knowledge by students, the awakening of a sense of patriotism, and etc.

Apart from the status of the program for the implementation of the general requirements of youth education, it is clear that the restoration of the urban system, including excursion clubs, has a greater role to play.

The problem of cultivating patriotism and forming a respectful attitude to traditions is an integral part of national culture. I.I. Alpatsky noted that the historical memory of the people, loyalty to traditions and customs, patriotic upbringing in Uzbekistan has a high spiritual and moral potential, is an element of the human worldview, and is a source of inspiration for the motherland. [1]

Considering the issues of modern patriotic education, it is necessary to define the scope of the terms "patriotism" and "patriotic education". The word "patriot" first sounded during the Great French Revolution (1789-1799) and was addressed to the fighters, the defenders of the republic.

In those days, the word "citizen" was often used interchangeably with "patriot." One of the highest moral qualities embodied in these concepts is the love of science, diligence, and selfless service to the cause of the Motherland.

It is also necessary to pay attention to the activities of foreign researchers and their attitude to the problem of patriotism, the development of patriotic feelings in young people. Even the ancient Greek philosopher Democritus insisted that a person who is moderate in all his dealings with public duty should be moral. [2]

His contemporary Socrates pointed out that there are universal and unchanging moral concepts that man should strive to understand: among them, in his opinion, is the love of the Fatherland. [3]

Analyzing the work of modern authors, it should be noted that in the twentieth century paid less attention to the problem of educating young people in the spirit of patriotism, which was the result of changes in society, changes in political and economic directions of the country's development and, consequently, amendments to the conceptual framework. Based on the above, the most optimal direction of the integration of civic and patriotic education is the formation of the basic qualities of personality.

It instills in children not only love for the Motherland, but also love for the homeland, respect for national traditions and customs, and pride in their people. Of course, not only history teachers, but also other school teachers have a special place here in up-bringing the youngsters.

Important factors of education are the formation of personality and students' attitudes to the studied disciplines, historical themes, historical events, famous military men, statesmen, active forms, methods and methods of stimulating cognitive, creative activity, deepening knowledge. There are requirements and personal interests of schoolchildren, which can be achieved through the active involvement of monuments in the educational process.

The work on preservation and promotion of cultural heritage is important. Monuments of culture and history influence the formation of moral beliefs, worldview principles, aesthetic tastes. [4]

We do not have the right to be indifferent to the misuse and destruction of monuments by certain individuals. Nurturing patriotism means educating the monuments in the spirit of respect for the glorious past of the Motherland, educating people who are ready to defend their homeland in difficult times.

We believe that the main purpose of education should be: to bring up a patriotic person with the most important spiritual and moral values;

socio-economic qualities capable of expressing them in the interests of society and the homeland.

The implementation of patriotic education is based on a number of principles.

reflects the laws of the whole pedagogical process and the peculiarities of patriotic education of secondary school students. [5]

Parents can and should involve their children in the preservation of ancient monuments, instilling in them a sense of respect for memorable places. Historical and monumental buildings can become illustrations in the depiction of important events in the history of a country and a region.

Involving local history materials, such as historical and monumental buildings, in patriotic upbringing can play an invaluable role, so that teenagers can relate to history, gain new knowledge and skills, and be proud of their country.

The main social functions of cultural monuments include:

1. The historical continuity of the broadcast function or social experience.

It is also often referred to as an information function. Monuments are rightly a collection of human social memory about different periods, events and people. In this case, it is represented in sign systems, such as art monuments and so on. Thanks to monuments, social experience is passed from generation to generation, from one country to another. In this case, the monuments serve as a mechanism for broadcasting the richest experience accumulated by humanity.

However, it is not just a “repository” of social experience reserves, but a means of rigorous selection and active transmission of its best examples. Hence, any violation of this function has serious, sometimes catastrophic consequences for society. The rupture of cultural continuity leads to the loss of social memory, the loss of the whole layer of information, the connection between the past, present and future.

This phenomenon of manicurism is described in ChingizAitmatov's novel "The day lasts more than a year". It shows how the abducted boy's plastic surgery removes memory from his mind. He forgets his roots, his past, and becomes a manatee, an obedient slave to his masters. Cultural monuments do not allow you to forget your roots and past. We can say that monuments are the historical memory of humanity as part of culture. It is a vast treasure trove of knowledge and values created and accumulated by humanity. The principle must apply to them: to preserve everything and pass it on to future generations. But it's definitely about saving, not losing, and not destroying. And each generation chooses from this treasure what they need, in accordance with the requirements of modern times.

2. Ideological function. Historical and cultural heritage has always been one of the most important means of shaping people's social consciousness and enhancing their spiritual life, as it has undergone social interpretation and evaluation in the process of existence and has repeatedly. The first interpretation occurs in the creation of a monument and is aimed at contemporaries and sometimes generations. Given the specific socio-cultural situation, the following interpretation is made as necessary. For example, after the revolutionary events of 1917, the state's attitude to historical and cultural monuments changed radically. The leaders of revolutionary radicalism combined spiritual values with a social system that, in their view, should be abolished. This situation led to the rapid promotion in the Soviet country for decades of the importance of monuments that reflected only the revolutionary ideology, and monuments that did not conform to new views of the country's past were forgotten or completely destroyed. Numerous monuments began to be used by the authorities as an ideological weapon in the fight against "class enemies", telling the story of the plight of workers during the previous regime.

The presence of objects of historical and cultural heritage in the historical and cultural environment influences people's worldview. This will be more effective with the targeted use of monuments.

The role of monuments and their ability to influence social life has been accepted as a reality in the process of their use. At a time when the first measures for the preservation and study of monuments in our country are being implemented, it is used as a useful material for the development of scientific knowledge, as a means of shaping people's worldview.

Many human creations have survived their time and the culture that created them, continuing to live in their “second life,” filling new conditions with new content, embodying new ideas,

events, and thus connecting generations. They will continue to realize in time. views of contemporaries on the past. [6]

These symbols can mean region, period, idea, moral category. The Egyptian pyramids are considered not only the tombs of the pharaohs, but also as a symbol of eternity and great human labor. The Acropolis of Athens is for us a symbol of antiquity and its lofty art. The Great Wall of China has lost its defensive significance and is accepted by contemporaries as a symbol of isolation policy. The Eiffel Tower is a symbol of France. Moscow Kremlin - Russia.

In a society of different nationalities and religions, historical knowledge acquires an ideological and political character. Therefore, the issue of expediency of preservation and use of monuments is a key issue that determines the attitude of the state and society to all measures for the protection of monuments, as they are related to the available opportunities. pursuing their own interests by different political forces.

3. Educational function. The educational function is understood by society as the use of historical and cultural monuments to influence the formation of human views, worldviews, which ultimately determines its social behavior.

Monuments themselves are a source of information and, as a result, have an epistemological (cognitive) function and are able to play an educational and pedagogical role in society. As a result, in the process of emotional perception of the monument and its connection with historical events, the impact on people's social consciousness, the connection with the historical past is realized.

The educational function is the most important social function of historical and cultural monuments, and as a result of its implementation, the society receives from the monuments the main result - the worldview of the society.

4. Cognitive (gnoseological) function. It involves the use of historical and cultural monuments in order to obtain new information about historical and cultural events and happenings in the past. The study of monuments is not a goal in itself, but helps to delve deeper into the essence of historical and cultural events.

Thus, the social functions of monuments are quite diverse, primarily due to their ability to influence the worldview of members of society, people's perception of the present in the context of the past. From a social point of view, monuments contribute to the upbringing, education and ideology of a society, can be used as attributes of the political sphere and can be used by it.

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A REVIEW ON PRODUCTION OF RICE IN WATER DEFICIENT REGIONS

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ABSTRACT

Rice output in Asia must grow in order to feed an ever-increasing population. Despite the fact that the water deficit for rice in Asia is still being evaluated, data indicates that a decrease in water quality and availability is placing the irrigated rice system in jeopardy. Drought is one of the major reasons for the high yields of rain-fed rice. In order to ensure food security and satisfy the world's hunger need, different methods of growing rice with little water are required. The article examines a systematic strategy to increasing rice yields and decreasing water requirements for rice cultivation that includes genetics, breeding, and integrally managed capital. Various water-saving irrigation techniques, such as saturated-soil cultivation and alternate wetting-drying, may reduce wasteful water discharges while constantly increasing water productivity. Additional contemporary techniques for increasing water efficiency without sacrificing returns are being investigated. Incorporate the C4 photosynthetic pathway in rice to improve yield per unit of water, utilize molecular biotechnologies to promote drought tolerance, and cultivate "aerobic rice" in non-flooded soil to produce a healthy and safe yield.

KEYWORDS: Drought, Irrigation, Irrigated Rice, Rain-Fed, Water Management.

1. INTRODUCTION

Water scarcity has been more prevalent globally in recent years. Asian nations are under enormous pressure to reduce water use, since 90 percent of the world's fresh water is diverted. Rice is an easy water management goal since it covers more than 30% of irrigated land and uses 50% of irrigation water. If the conserved water is exported to high-competitive regions, it will help society and the environment by reducing the usage of water in rice cultivation. The 10% reduction in water volume required to irrigate rice would save 25% of the anticipated fresh water used for non-agricultural purposes globally, or approximately 150,000 million m³. Rice, on the other hand, is very sensitive to water pressure. The various methods for reducing water usage in rice production will result in poorer performance and put Asia's food safety at risk. Reduced rice water intake would result in a shift from submergence to aeration in soil aeration. Our goal is to develop new rice-based systems that are socially acceptable, commercially viable, and ecologically friendly, allowing rice production to be maintained or expanded in the face of

diminishing water supply. This article looks at the present status of rice supply in rice-growing areas, as well as the benefits and drawbacks of producing rice with less water (1,2).

As a consequence of the use of different irrigation methods aimed at conserving water, rice fields will transition from anaerobic to fully or partially aerobic. These will make significant advancements in water conservation, organic soil turnover, fertilizer dynamics, carbon sequestration, soils, weed biodiversity, and greenhouse gas pollution. Some of these improvements are seen as positives, such as water reuse and decreased methane emissions, while others, such as surface nitrous oxide release or agricultural soil reduction, may be viewed as negatives. The aim would be to develop effective integrated natural resource management measures that enable rice to be cultivated economically with improved soil aeration while maintaining rice-based productivity, environmental services, and long-term sustainability (3–5).

1.1. Rice-Producing Areas and Available Water Resources:

Rain-fed rice accounts for around 45 percent of worldwide rice production. Drought was one of the main constraints in the rainfed lowlands and all the rain-forest mountains that are prone to drought, with an average of 2.3 t ha⁻¹. Droughts, both severe and mild, are frequent in rice-growing areas such as Laos, northeastern Thailand, Central Myanmar, and northeast and east India.

Rice is grown over 79 million hectares of irrigated lowlands, which account for around 75% of total rice production. Rice production in Northern and Central China, Northwest India, and Pakistan is mostly dependent on wet-season plant precipitation with supplemental irrigation. Throughout the dry season, irrigated rice may be found in Southeast and East India, Southeast Asia, and South China. In the irrigated rice area, a thorough assessment of water availability for irrigation is lacking. By 2025, Pakistan, north China, and north and central India's dry-season irrigated rice areas are expected to run out of physical water. In addition, during the dry season in central India, nearly two million hectares of irrigated rice will be physically scarce. The 'economic water deficit' area includes the bulk of South and Southeast Asia's roughly 22 million hectares of dry season irrigated rice crops. However, since water shortage predictions are based on yearly groundwater recharge, dry season water resources may be overestimated. Water is always limited during the dry season, since the lack of rain makes irrigation difficult. Physical water limitations in the commercial water scarcity zone may impact rice crops during the dry season.

Water problems currently dominate rice-growing regions, according to data. Over-exploitation of groundwater in China and South Asia has caused major difficulties in recent decades. Higher pumping costs, salt penetration, fluoride contamination, land decrease, and fractures and sinkholes have all resulted as a result. These large groundwater-depletion regions impact rice-wheat-growing areas in northern India, as well as rice-growing areas in Tamil Nadu, Pakistan, and China. Groundwater overdrawn in Bangladesh causes rice fields to dry up during the summer months, but water is replenished during the monsoon season. The emergence of toxic arsenic, which is related to the region's decreasing groundwater level, is a specific issue (6).

Strong upstream water use along several of Asia's major rivers is exacerbating water shortages downstream. Because of the high demand for water, the final 600 kilometers remained dry for more than four months in 1997. In the Beijing area, the Chinese government has declared it illegal to cultivate flooded rice. The fact that fierce rivalry between governments and different

industries for rice-growing regions has resulted in water shortages in Thailand's Chao Phraya delta and southern India's Cauvery is less dramatic, but more important.

In addition, irrigated rice farming faces competition from other sectors. China's irrigated rice fields shrank by 4 million hectares during the 1970s and 1990s. Although the reduction in irrigated rice area cannot be attributed entirely to water scarcity, indications suggest that the reduced area of water carried into irrigated rice is linked to water scarcity. Zhanghe's 160,000-hectare irrigation system was dominating until the 1980s, when the water was transferred to irrigation. When compared to the 1980s, the area irrigated rice fell by approximately 20% in the 1990s. As a consequence, rice production was also hampered. In Asia, there are similar examples of heightened competition. Water from the Angat River in the Philippines is progressively being diverted to Manila, reducing water supplies downstream for agriculture. Other areas are endangered by degraded water quality, which is exacerbated by human contamination. The water of the Agno River in Pangasinan Province has been contaminated by sediments and pollutants from upstream mining operations (7).

2. LITERATURE REVIEW

Yasuhiro Tsujimoto et al. describe how the usage of fertiliser input for rice cultivation in Sub-Saharan Africa may increase agricultural productivity returns, such as grain per kg of N relevant (AEN). The findings of the experiments indicate that irrigated and rainfed soil geographic variations may enhance the value of AEN in the soil. Major variations in small-scale topography also affect AEN in rainfed agricultural systems, causing complicated hydrological shifts and changes in the contents of soil organic carbon and clay. Low-cost UAV-systems for micro-topography collecting, a high-resolution soil nutrient data base, better SSA fertilizer mixing, and immersive decision support instruments utilizing mobile phones are among these capabilities. Small-dose fertilization of nursery in challenging terrain conditions in Sub-Saharan Africa is another method to improve AEN (8).

Shaobing Peng et al discussed chinese farmers have difficulties in rice production. China's rice output has more than quadrupled in the last five decades, owing to higher grain yields and expanded planting areas. This increase has been attributed to the development of high-yielding crops as well as improved agricultural management techniques such as nitrogen fertilizer and irrigation. However, rice production in China has been stagnant for the last 10 years. If per capita rice consumption continues at its current level, China would need to produce 20% more rice by 2030 to meet domestic requirements due to its growing population. It's a problem since China's capacity to produce rice sustainably is limited by a variety of innovations and difficulties in the rice production system. Arable land degradation, increasing water scarcity, global climate change, and labor shortages are all significant issues. A lack of genetic history, excessive use of pesticides and fertilizers, failing irrigation infrastructure, excessively simple plant care, and inadequate expansion plans are all factors in Chinese rice growth. Despite these obstacles, China's rice output may be improved with efficient research methods. Development of novel rice varieties with high potential returns, increased resistance to major diseases and insects, and abiotic stress such as drought and heat, as well as integrated crop management, are all part of the process. We believe China will achieve long-term rice production growth as a result of new technologies and rice science (9).

T.P. Tuong et al. looked at new methods for combining genetic engineering, integrated resource management, and breeding to boost rice output while lowering irrigation water needs. Irrigation, such as wet soil irrigation and alternating watering and drying, would significantly reduce wasteful water output and increase water production. However, the majority of lowland rice cultivars now in use generate lower yields. More innovative techniques for increasing water production without sacrificing yields are being investigated. The C4 photosynthetic mechanism is integrated into the rice in this manner to improve unit water efficiency, boost drought resistance using molecular biotechnology, and cultivate "aerobic rice" to provide excellent and steady harvests in non-flooded soil. As a consequence of the use of water-conserving irrigation techniques, Rice fields may go from being completely anaerobic to being partially or completely aerobic. Water management and investment would be influenced by changes in soil organic matter turnover, nitrogen dynamics, carbon sequestration, soil productivity, crop biodiversity, and greenhouse gas pollution. While some of these changes are beneficial, such as increased water efficiency and reduced methane emissions, others, such as the release of nitrous soil oxides and the removal of organic soil, are harmful. Rice output in Asia must expand to feed a growing population. While a thorough assessment of the water scarcity rate in Asian rice production is still lacking, indications suggest that decreasing water quality and a decreased water supply pose a danger to the irrigated rice scheme's continuation. Drought is a significant constraint on rain-fed rice yields (7).

3. RICE PLANTATION

In Asia, lowland rice is often transplanted into flooded lowland paddy fields. Paddy land planning includes procedures such as soaking, plowing, and puddling. Puddling is mostly used to control weeds, although it may also be used to improve soil permeability, water absorption, transplanting, and field leveling. Soaking is a one-time procedure that produces water penetration and the formation of a battered water surface on top soil. In large irrigation systems, there are often "idle intervals" between working and transplanting, which may extend the field preparation process by up to 12 months. The crop is growing from the time of transplanting until the time of harvest. During this time, fields are typically covered with 5-10 cm of water, with the last runoff occurring 10 days before harvest.

In flooded settings, water is required to deal with outflows (percolation (P) and seepage (S) to the environment, as well as depletions (transpiration (T) and evaporation (E) to the atmosphere. The water head on the ground and the water resistance movement across the soil define the flow rates S and P. Sometimes the letters S and P are combined to form a single word. SP, since they are difficult to distinguish in the domain. Because soil fracture cannot fully seal after ground soaking, SP in land preparation may reach 25 mm per day. Only E happens during land planning, while both E and T occur during crop growth. Evapotranspiration is also known as ET since the difference between E and T is difficult to detect during crop formation. Rice ET prices in Asia are typically between 4 and 7 mm per day.

3.1. The Productivity of Water:

The quantity of cereal results obtained per unit of water is referred to as water productivity. Water productivity is measured in terms of total grain yield per unit water input (WPIP) or grain yield per unit water evapotranspired (WPET), depending on the type of water flow. In the field, WPET levels range from 0.4 to 1.6 g kg⁻¹ under typical lowland circumstances, whereas (WPIP)

values range from 0.20 to 1.1 g kg⁻¹. WPET's large range exemplifies the significant fluctuation in rice yield and ET produced by changing growth circumstances. WPET levels in rice are only slightly lower than in other C3-type food crops like wheat. Rice, on the other hand, has a (WPIP) value that is about half that of wheat. Rice has a poorer (WPIP) score because to the strong infertile discharges mentioned previously as SP and E. Apart from the quantity and yield of field water outflows, the boundaries and scale of the area in which water productivity is evaluated have a major effect on its significance. This is due to the fact that S, P, and wastewater outflow losses in one part of the sample area may be duplicated in another. Water efficiency data may be analyzed at various sizes to see whether upstream water discharges are effectively reused downstream. For irrigation systems, there has been a scarcity of solid data on the quality of water at various levels (Table 1). The results show that water productivity varies substantially from that in the field and is below the range of productivities on the bottom level. Data on water efficiency at sizes larger than a field are scarce because:

- a. Data on produce, flows of water, or both at certain scales; and
- b. Collaboration among agricultural and water-management professionals.

TABLE 1: THE PRODUCTIVITY OF WATER WITH RESPECT TO IRRIGATION, EVAPOTRANSPIRATION AND OVERALL WATER INPUT AT VARIOUS SCALES.

Area (ha)	WP_{ET}	(WP_{IP})	WPI	Location
30–50	0.5–0.6	0.25–0.27	1–1.5	Muda irrigation system, Kendal, Malaysia
287–606	1–1.7	-	0.4–1	Zhanghe irrigation system Hunan, China
Over 10 ⁵	-	0.5–1.3	1–2.5	-

3.2. Techniques for Enhancing Productivity of Water:

Increasing water efficiency can be achieved by considering following points:

- (i) ET accumulated increases in yield per unit;
- (ii) Reduced water outflows and depletions that are not productive (SP, E); or
- (iii) Ensuring the rainfall is best used. The final solution is economically as well as environmentally important because rainfall will complement or replace the water which needs to be supplied by irrigation.

3.2.1 Agronomic Practices and Germplasm Development:

The development of germplasm has helped increased water efficiency in rice cultivation. In compared to traditional kinds, new varieties show almost a threefold increase in water productivity by increasing yield while simultaneously lowering crop duration. Cultivars introduced before 1980, on the other hand, accounted for the bulk of WPET increase. This is due to the fact that between 1966 and the beginning of the 1980s, the rise in yield was accompanied by a reduction in growth. As tropical japonicas and hybrid rice grow more established, water productivity will increase.

In low-fertility, drought-prone rain-fed environments, breeders have had the greatest success utilizing drought alleviation. Drought exposure may be minimized by shortening crop rotations or minimizing the number of susceptible crop phases that coincide with water shortages. Drought resistance breeding has advanced more slowly, and the issues encountered are often ascribed to the trait's genetic diversity and environmental interaction. Drought-resistant cultivars were developed and released in both highland and low-lying rain-fed regions.

Improved agronomic methods, such as efficient weed management, site-specific fertilizer control, and appropriate field leveling, will significantly increase rice production without compromising ET, possibly boosting water productivity.

3.2.2 Minimizing Inactive Periods throughout the Preparation of Land:

Transplant rice seedlings are usually fed in the seedbed for 2-4 weeks. Most fields surrounding seedbeds are tilled and watered with tertiary and field-to-field irrigation systems during this period. With access to the services, farmers may reduce the land planning phase by encouraging them to:

- i. Provide water directly to the nursery without having to submerge the main fields; and
- ii. Carry out their agricultural operations regardless of the weather.

Farmers in Malaysia's Muda irrigation systems were able to shorten field preparation periods by increasing drainage power from 10 to 30 m ha in 25 days, saving 375 mm of water per year over two rice-growing seasons. This is due to an increase in the time it takes to prepare the water.

During the ground design, direct planting seems to be another option for minimizing idle time in irrigation systems without tertiary canals. In the main sector, however, transplanted rice has a shorter crop development period than straight seeded rice. For the water saved by direct seeding, a balance between reduced water use via reduced land planning and expanded water usage through a longer growth phase in the primary industry is estimated.

Changing the soil's physical characteristics will make it more resistant to water movement. Puddling results in a compacted, well-compacted soil that stops water from flowing upward. In North-East Thailand, heavy compaction machines have been shown to reduce soil permeability by at least 5% clay in sandy and loamy soils. Researchers have also attempted physical barriers such as bitumen deposits and plastic coverings beneath paddy soils. For most farmers, however, soil compaction and physical barriers are expensive and beyond of their control.

3.2.3 Utilization of Rainfall More Efficiently:

The development of dry-seeded rice has the potential to conserve a lot of water by making better use of rainfall. Farmers in both transplanted and wet-sown rice systems usually wait until the field is emptied before ordering canal water. The processing of dry-sown rice begins with early monsoonal rains and takes place in dry or humid soil. Crops are planted and begin to grow early in the monsoon, and the crop is only watered later when the canal's water supply is sufficient. However, all three crop-establishment operations were found to have similar total water input and water productivity in terms of total water output. Due to the early establishment of the crop, dry seeding also allows farmers to produce an additional crop after harvest utilizing leftover soil moisture or conserved irrigation water. In stringent rainfed systems, rice plants may avoid a

later-season drought and increase production and dependability in early establishment and harvesting of dry-seeded rice.

4. DISCUSSION

Saturated soil cultivation (SSC) requires careful field water management and frequent, labor-intensive shallow irrigation rotations. The experiment is being conducted in Australia with raised beds to encourage SSC activities. Water in the furrows kept the beds (120 cm wide) wet. Water reductions were 34 percent and yield losses were 16-34 percent as compared to flooded rice. The SSC was shown to reduce both irrigation-water intakes and yields by slightly over 10% in southern New South Wales, Australia, thus preserving water productivity. Due to cold damage, the new cultivars cultivated with SSC are expected to reduce yields in this region. The test's findings indicate that further study is needed to fill in the water balance components, which are responsible for disparities in overall water usage. Under the Muda irrigation system in Malaysia, dry rice enhances irrigation water production significantly in wet seeds and transplanted rice (Table 2).

TABLE 2: THE MEAN \pm SE OF WATERS PRODUCTIVITY AND GRAIN YIELD. THE NEW VARIETIES GROWN WITH SSC ARE LIKELY TO DECREASE YIELDS DUE TO COLD DAMAGE IN THIS AREA.

Parameter	WS ISU	DS ISU	TP ISU
Yield	4.50 \pm 0.23 ^{a,b}	4.14 \pm 0.17 ^b	4.79 \pm 0.23 ^a
WP(I)	0.62 \pm 0.30 ^b	1.48 \pm 0.26 ^a	1.00 \pm 0.30 ^b
WP(I+R)	0.26 \pm 0.02 ^a	0.27 \pm 0.02 ^a	0.25 \pm 0.02 ^a
WP(ET+E)	0.42 \pm 0.02 ^a	0.38 \pm 0.02 ^a	0.39 \pm 0.02 ^a
WP(ET)	0.53 \pm 0.04 ^b	0.48 \pm 0.03 ^b	0.61 \pm 0.04 ^a

After rice, a crop such as wheat may benefit from the SSC and the growing rice. Spring irrigation and winter plant output after rice are continuously decreased in physical structure and logging due to bad soil. For a post-rice crop, a bed system may assist with drainage.

Soil submergence is a unique characteristic of irrigated lowland rice ecosystems. Continuous fertilizer supply, soil carbon levels, and rice production patterns indicate that lowlands producing two or three harvests of rice per year on submerged soils are highly functional. The anaerobic decomposition of organic matter, on the other hand, is aided by soil submergence, resulting in the production of methane, a major greenhouse gas. Temporary soil aeration, like as that employed in AWD, may decrease methane emissions. Long-term soil aeration, such as that seen in aerobic rice, will further decrease methane emissions. Soil aeration, on the other hand, will enhance nitrous oxide emissions, which are a greenhouse gas. Methane and nitrous oxide emissions are strongly related to soil redox potential, which is an indication of soil oxidation state. It is suggested that all methane and nitrous oxide emissions may be minimized by maintaining the soil redox potential between -100 and +200 mV.

Better aeration of AWD soil and aerobic rice will improve the condition of soil organic matter and nutritional potential. It may also make seed residue retention more difficult. More active weed flora linked with water-saving technology may need a greater dependence on pesticides,

putting the ecosystem at danger. The quantity of water and soil required for rice ecosystem resources and productivity may be significant issues for water-saving methods.

5. CONCLUSION

Rice growth has been predicted in perpetually flooded regions for decades, but the coming water crisis will change rice growing techniques. Researchers are re-examining irrigation methods that were explored in the late 1970s for water conservation, such as Alternate Wetting and Drying (AWD). The basic components for putting these ideas into action seem to be in place. With the exception of China, however, the adoption of these technologies has been sluggish. The goal is to discover environmental and socioeconomic variables that enable farmers to take advantage of them. In this area, our investigation is far from complete. However, we can identify key variables influencing farmers' willingness to adopt water-saving technologies. In contrast to fertilizers and pesticides, water is seldom offered on Asian markets, and government-mandated irrigation waters are either inadequate or non-existent. If water becomes a measurable economic benefit, farmers are more inclined to use water-saving technologies. Farmers in Asia that face high water expenses are already employing this technology, according to statistics. Farmers in north-central India who use pumps to water their crops utilize some kind of AWD to save money on pumping. Water trade, which allows farmers to sell their water rights to others, has also been viewed as a way for farmers in Australia to adopt water conservation measures.

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HUNGER PROBLEM OF THE WORLD AND PLANNING OF THE VARIOUS GOVERNMENT OFFICIALS TO CURB HUNGER PROBLEM

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ABSTRACT

Hunger is not a word but it's a sensation and have ability to affect many emotions. The fundamental requirement of the human body is satisfied via the food. The food is a fundamental need since the birth of a person, in reality, food is a need before the birth when the infant was inside of his mother. However, food insecurity and hunger became a significant issue with the development of human. The infrastructural development has eloping the land for agriculture and many man created technologies proven to be deadly for the environment, and blamed for the climate change and global warming. These fluctuations in the atmosphere are not helpful for the harvesting the crops. Apart from this, population is also playing a significant influence in food security. This issue needs to be addressed with global attention, where all countries of the globe need to cooperate for a common cause and strive towards the food security. The future of the globe is in the safe hand as different government has made collective action to minimize this issue.

KEYWORDS: Food Security, Harvesting, Hunger, Hidden Hunger, Population.

1. INTRODUCTION

The food security for everyone is receiving more and more attention from the different government and the agencies of the globe. The altering environment of the globe also creates a barrier in safeguarding the food crop at huge interest of people. Despite obvious sight of the impending issue, this had been observed that many government bodies are not treating the matter with a serious note. The truth is that hunger issue is not just a single problem but this may connect with a number of problem that may be develop in human body simply because of the incorrect eating habit as well as lack of nutritious based food. The food issue is also generating a national nascence and this may impact the many other companies (Figure 1) (1).



Figure 1: Main Factors Associated with the Food Security in order to increase the Availability of Food Grain

To guarantee the food for everyone and also take the required measures in the direction of the food security, several governments had intended to enact the food security act in their respective parliament. This food security act is useful to start various planning and actions to protect the food. The planning for securing food for the current generation as well as increases the production of the food grain for next generation are depends upon many factor such as increase the production capacity of the land, use the bacteria based fertilizer as the chemical based fertilizer is not suitable for long run as per new study going on by the agricultural scientist of the various nation, make the ware house equipped with the modern technology (Figure 2) (2).



Figure 2: Food Security and its Effect on the Future of the Youth and Children

There are even more step which has to done by the government in order safeguard the food. The issue of ensuring food and right to eat are becoming major political concern and a widely online discussion topic among the intellectuals. This is also quite surprising that the income of the capita population had increased by 2 or 3 times in last two decades but the problem of the food is not change little bit but take more worse shape because of the inflation as the scorching prices of the commodity that have been increasing day by day and creating a problem with a person who is not earning well (Figure 3). The high costs of the item affected a lot on the purchasing power of a person (3). The nations like India, having a large population who is not earning well and also

a minor portion of the population is relies upon the government assistance for food and other necessary. The low-income group people are directly connected with low quality of food intake as the they are not able to consume the highly priced good items and because of the low production of the food items, the essential and more nutrient food item are becoming more expensive and because of this, this item is not be purchased by the low-income group people. Apart from these high costs, the competitive climate of the market has established the marketing and advertising strategies for the well-known goods (4).



Figure 3: Illustrating the Pyramid Associated With Severity of the Food Insecurity.

The food security is determined by the many variables that must be considered when determining the status for the food availability to the population. Actually, research have revealed that the important variables are availability, access, stability and usage. The availability of food grains are the main variables that must be examined for determining the food security measures. The second element is the accessibility of the food grain to the people (5). At this point individuals may also be split into various group depending upon their respective income since the earning power of a person determines their buying power and, in turn, their purchasing power decides what kind of food they can get readily (Figure 4). The competitive business world had separated the nutritious and excellent food into various quality segment and marked their costs appropriately, however, occasionally, their prices are so heavy that a regular person or an individual with little income cannot buy that item (6).

The essential yet vital element for research the food security is the use of available food grain so that maximal nutritional-based diet can be absorb by a human body. To find the quantity that can be accessible and get utilized by which part of the papulation, a national based survey has been carried out and this survey has revealed that 45 percentage of the children up to age of 3 are facing the problem of underweight, at least 34 percentage of females and at least 29 percentage of males are known to be suffering from body mass index below normal, as many as children up to 78 percentage of new born are find with anemia, the primary victim of the food scarcity and malnutrition's are pregnant and lactating women (7).

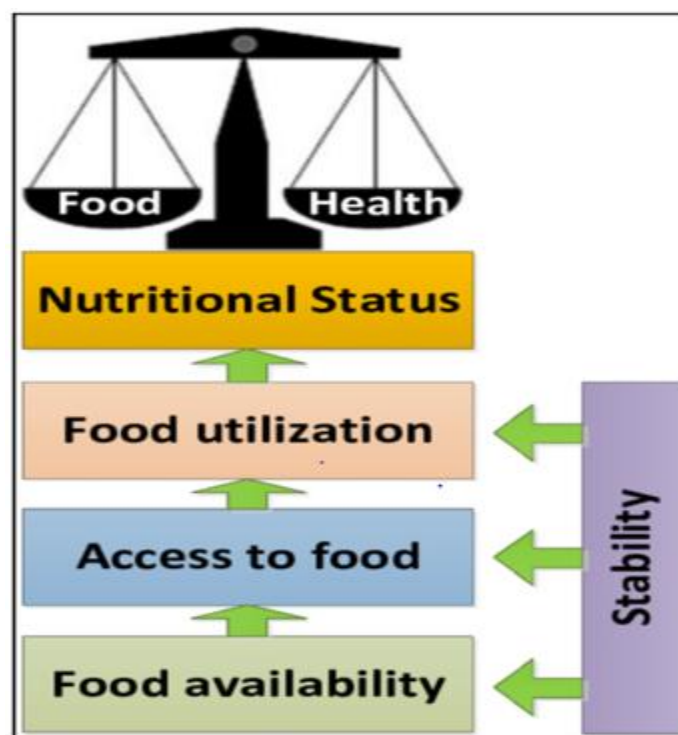


Figure 4: Illustrating the Relation of the Food and Health with Other Critical Factors (8).

2. IMPACT OF FOOD INSECURITY AND HUNGER IN INDIAN STATES

The Indian state are also a major victim of the food security and hunger amongst the population. The research have shown that there is marginal disparity between the food security measure at national level and state level, even, it has been observed that this difference was not uniform at various state level. The buying power of individuals in one state have at a greater level however, their production for the food grain is extremely low. In similar perspective, another state has a large capability for production of food grain but their buying power is not excellent. This study allows the analyst to provide explanation for non-uniformity of the data gathered for food security and hunger in various states. The people having good purchasing great financial power can be able to brought the food grain from the poor state and that will make their people again vulnerable for food grain but this exercise will left them with some money to purchase other essential food grain but still lack of money make them more vulnerable in comparison to the other rich state (9). The all-India averages do not reflect the considerable variance between states and even within states. For example, the India State Hunger Index 2008 (given out by the International Food Policy Research Institute) reveals extremely significant variations among 17 main states, ranging from 13.6 for Punipur to 30.9 for Madhya Pradesh. If these states may be compared to nations in the Global Hunger Index rankings, several states in India have index ratings near the bottom: Bihar and Jharkhand score lower than Zimbabwe and Haiti, while Madhya Pradesh sits between Ethiopia and Chad (10).

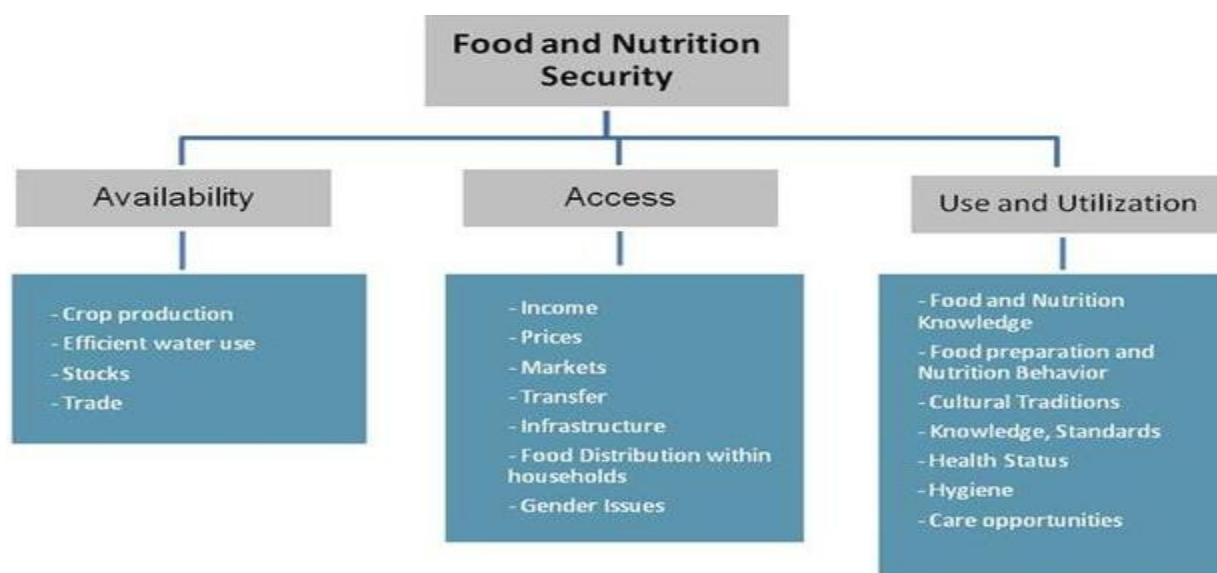


Figure 5: Illustrating the Critical Factor Associated With Food and Nutrition Security

The Various actions are performed under food security measure on the national level and these measures are tallied from the time when a baby's birth takes place. The first stage begins from the time of birth of a baby and first six months are extremely essential for the mother as well as her kid, during this time both require a particular care, only not physically but also psychologically and most importantly in case of the food intake (Figure 5). This is period when a great attention has been taken towards the food intake and food quality. The nutritional content of the meal must be high so that mother and baby receive adequate nutritional. There is one more word that is known as the hidden hunger and this term is utilized, where one may obtain complete diet but food does not include appropriate nutrition and this may frequently mislead the people as they believe as they are getting right diet but nutritional level of their body is degrading slowly. This thing will make their bodies weak and illness prone in long term.

Hunger is a major issue in many developing nations as certain African countries are in worse situation and people are denied from nutritious food, there is a lot of shortage of food as well. Therefore, united nation has started numerous campaigns activities to make people conscious about the food waste and should be able to store the food grain for long time. This cause is not appropriate for the agriculture, thus there is a shortage of food grain and people are mainly relies upon the seafood and non-vegetarian. Apart from the shortage of the food grain, the other major issue is the poverty and people are not able to earn enough to buy the high quality food grain. Sometimes, there is famine type condition and circumstance is so terrible that not only humans but even animals are killed due of the hunger.

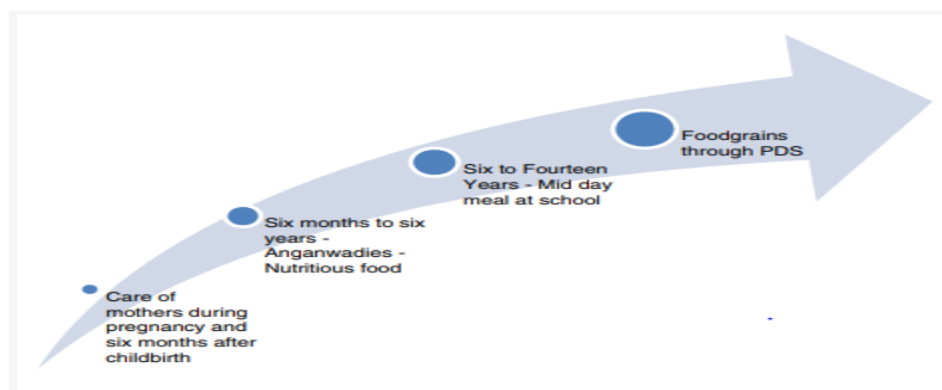


Figure 6: Illustrating the Steps Taken Under the Food Security Measures

India's performance to curb the hunger and address the food problem is not at higher level from its neighbor nations and many other Asian countries but performance of Bangladesh is marginalized well over the same issue. The situation and measure implemented by the Indian agencies have not demonstrated progressive improvement in same issue yet, performance of the India is so bad that it has to share the rank with Zimbabwe, a nation suffering the severe hyperinflation due of the collapse of the indigenous market. Some Indian state which have demonstrated excellent performance over the financial issue and contribute generously in India's GDP. Maharashtra, Gujrat and Karnataka have showed highest performance as per GDP contributor but exhibited low hunger index. Hunger index of these stare significantly worse than Kerala and Assam (Figure 6).

The new increase in food values in India is likely to have made things abundant worse, and effects of global crisis on service and livelihoods inside nation are probable to cause a further deteriorate in people's admittance to food. Clearly, then, food safety is now one of most important policy issues, and pressures emphasizing a rights-based approach to public food plan have grown ruttet. To address the issue of the food shortage, the move should be towards the raise the production and also regulate the price of food commodity since the high-priced commodity is not accessible by everyone. The unevenness of the income of various group makes them more susceptible if their income is not up to a particular level.

3. ECONOMY FACTOR

The worldwide issue of the food shortage is also linked with the economic situation of the various nations in some way. In the backdrop of the India, the country has been performing well on the economic platform and its GDP and foreign direct investment have been growing day by day, despite this, production of food grain is also increasing after adopting different innovative technique. The rate of population is aggravating the present problems as food commodity costs is likely to rise. Although, it has been observed that cash inflow of the nation has increasing multifold but this quantity of cash is not equally distributed rather hoarded in hand of few individuals.

The individuals must have large quantity of money in their pocket as this would make them able to buy the food grain. The main element for this is the purchasing power parity since it determines the people's buying power. Moreover, the money is the crucial element which determine the poverty and wealth of the people. There is no absolute mark to assess the wealthy

ness of the people but one may measure the poverty since government has designated poverty as below poverty line. The individuals living below poverty line are severely deprived from the basic amenities since they have no purchasing power. Thus, economics of a country in addition to an individual are equally significant.

4. DISCUSSION

In 21st century, technology is developing at rapid speed and there are many countries have been making attempt to regulate their population as well. China is the ideal illustration of this, since Government over there forced every couple to have just one kid for set length of time. This was a tough choice by the administration but this decision was proven as a game changer for whole country. The time when this choice was taken, China was battling with mayhem type scenario in the field economics, agriculture, food security, hunger, commerce, employment and many more. However, this choice was proven as a historic decision in the interest of the country and its citizen, and China ran victorious over the road of development and emerge out as the global leader at many fronts. The hunger issue must be addressed as soon as feasible since it is cruel practice to watch a people dying of simply because of the hunger.

5. CONCLUSION

Similar method has to be put out by the other country whose situation is not under managed and confronting the issue of food insecurity separate from another economic condition. To guarantee the food for the current and future generation, population regulated is important problem for the developing nations. Apart from this, there is a requirement to push the innovative methods for harvesting and obtaining the food grains for lengthy time. There is a need for new modern techniques for increasing the production and also need to make participation of more and more agencies to make people more aware about saving the food grain so that a sustainability can be introduced in the field of food grain and this is the way to secure the food sustainability and eradicate the hunger as well as hidden hunger problem. The study has been concluded that increasing the production of food grain and population control is the only method to reduce the issue of hunger.

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AN ESSENTIAL WAY TO NATIONAL GROWTH AND DEVELOPMENT OF WOMEN

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ABSTRACT

Women empowerment is method to prepare the path for the progress and development of the country. It is a well-known fact that women are also counted as roughly half of population of every country. If half population is not receiving sufficient exposure then what will assurance of healthy growth and development of the country, thus, it is essential to establish an environment in which women and girls may explore themselves to a new height. The contemporary woman is not far behind from a male counterpart, she is ready to face any challenge and she is guaranteed to perform well in any area. The government also came with numerous changes to assist the women and committed to build an atmosphere to develop its female population. This article has been prepared to emphasize the difficulties and obstacle to obtain the excellent positive atmosphere to womenfolk's and also recommended the new methods to adopt for the further improvement in the condition of the women.

KEYWORDS: Culture, Development, Education, Society, Women Empowerment.

1. INTRODUCTION

The woman is also equally essential in society as a men, but there are many prejudiced in the mentality of the male dominant society towards the feminine counterpart. There was a time in India, when women has equal position and respect in society but as a consequences of the advent of foreign invader , the cultural value had deteriorated like anything . It could be feasible because of the convergence of the culture of India with another country or might be possible due of cruel nature and their crimes (Fig. 1). The Indian tradition usually taught everyone to offer lot of respectful to ladies however this situation may worsened following the foreign invaders. Although, it is truth that if a country establish its own identity, then it is only feasible through the growth of the women.



Fig. 1: Representation Picture To Show the Empowered Women Personality

In fact, women empowerment is not a very old topic to discuss in male dominating world as before some time ago, women even does not have the right to discuss their problem. The word women empowerment may be addressed in two board sense, first one is particular sense and second one is the general senses (1). The particular meaning is connected to elevation of status of the women in society structure and in general sense it is related to the empowering women through their appropriate education and get them able to enjoy the same freedom and position as that of the males. The women development is important for the development of Nation in addition to the growth and development of an individual family.

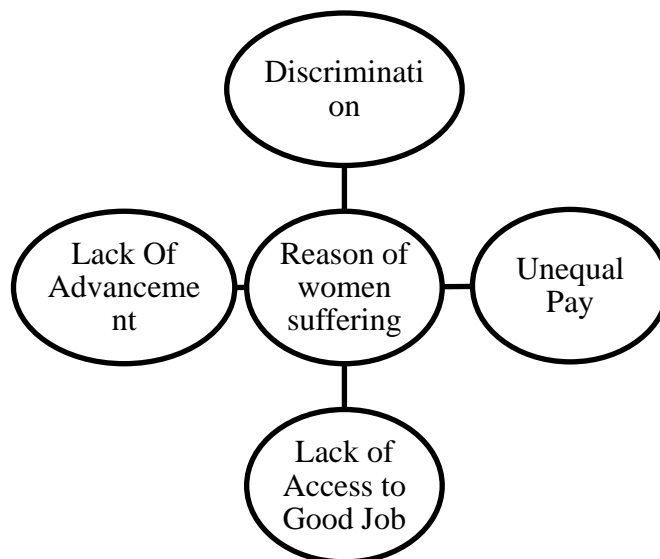


Fig. 2: Some of the Reason to Show the Discrimination of Women at Work Place

The meaning of the women empowerment is wide as much as one may interpretations the sense of these two word i.e. Women and empowerment. Although, Nation and its people are already too late to start the job on the road map to make the female of the nation empowered enough for paving the path to success not only for themselves but also for others connected individuals (Fig. 2). As a Female is considered first teacher of their own infant. The mother taught many things to

baby before baby begins to attend to school, that is what a woman must be educated so that she can provide the correct education at right moment to their children (2).

There are numerous factors which are accountable for women discrimination in society and these reason frequently lead prejudice between the male and female in society. There numerous thing which are already prevalent in society and these things skewed the thinking of people towards female in society. The primary reason is that many people believes that males are always superior to girls and can accomplish everything with greater perfection t5han girls. However, in current era, this notion is proven as incorrect as women are performing well in nearly every area and receiving acknowledgment by various organizations and famous people. They are ready to do everything simply to shatter their previous image and build a new image that will definitely produce a role model for the public.

There are too many prejudice between a female and guy. There was a tradition have been followed by many king and people in the past , in which , they are murdered to their female baby soon after the birth as girl kid was not taken as grace of the god but girl child was understood as monster to degrade the image and respect of her parents. The females was intended as an item only to home hold chores and taking care of children. There was also a tradition to have more than one wife and this made their situation much sadder. In previous period, caste inequality make worse the condition even more miserable for women as the woman belongs to tiny caste was having no respect at all and they are not regarded more than an object by others.

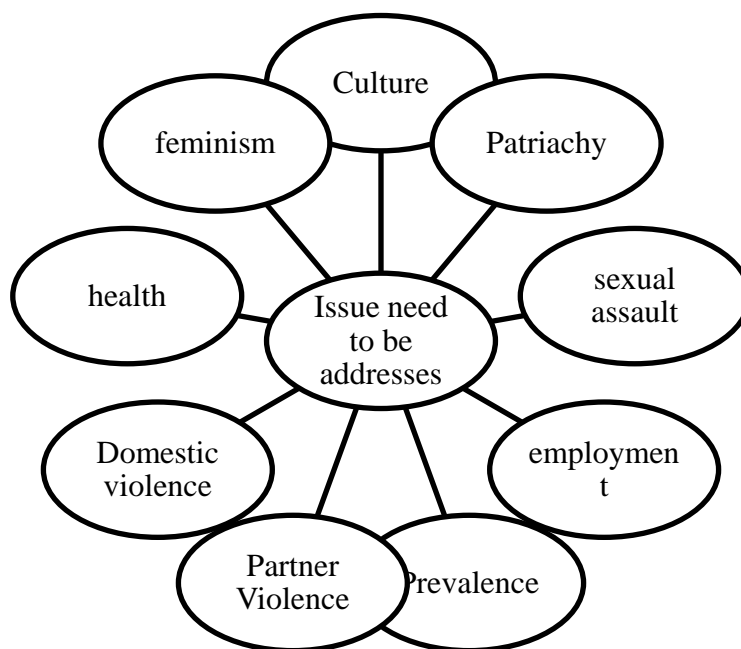


Fig. 3: Issues Need To Be Solve In Order To Restore the Position of Women in Society.

A major disadvantage in society is the discrimination at work place, it has been found by numerous studies that employers do discriminate between male and female. Despite having equal education and ability, the pay structure of male and female has extremely large difference. The pay structure only an example, there are many other instances, where females received less attention than male. Females are receiving fewer choice to work at higher position and they also receive less regularly advancement, even many time, they have to confront sexual violation at

their work place (Fig. 3). This kind of violation is not confined to poorly paid employment but this is frequently observed with women working at high position with a nice pay. Although, there are numerous laws and regulation have been established by the government and several existing authorities are working for women safety at work place (3).

The government is extremely eager towards the women empowerment and women safety as it is very well known fact that women is the back bone of growth and development of a country. There are many educational and job program have been established by the government and many NGO and charity organization come forward to work for empowerment of the women, and these organization are dedicated to make the changes in lives of women. Women are stop at many fronts to move forward and take choice their own. This is the cause behind backwardness of the women and today, circumstances are changing too quickly for the ladies and they are pursuing their goal and obtaining success.

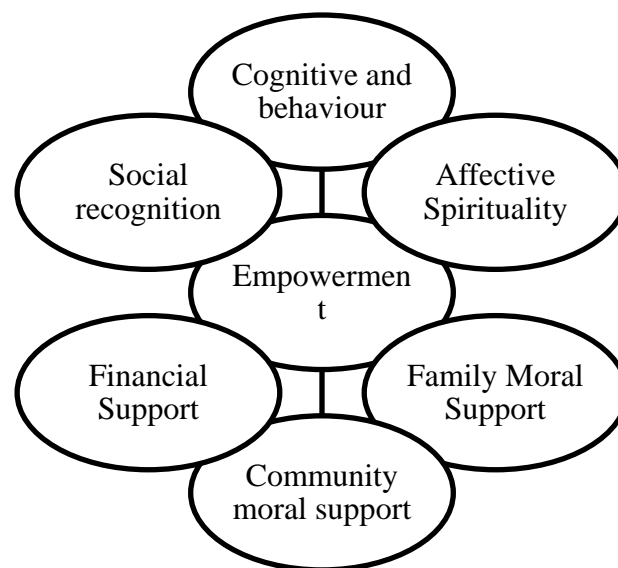


Fig. 4: The Society Need To Change These Factors in Order to Support Women.

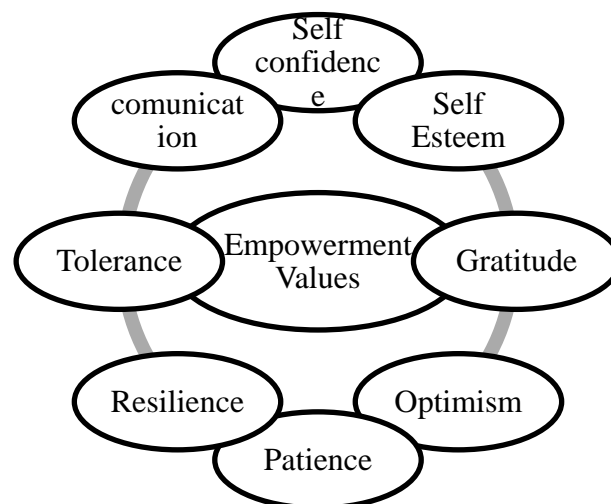


Fig. 5: The Personality Attributes of an Empowered Women.

Empowerment is not just a term but this provides give a complete identity to a woman by which she may live with dignity and be stand with their counterpart in genuine way. The empowerment have listed several characteristics including cognitive behavior, emotional spirituality, family moral support, financial assistance, social recognition, and community support as well (Fig. 4 and Fig. 5). If these qualities can contribute without any prejudice in her personality, then certainly she will feel powerful and will be accomplished many miles stone for which she had planned previously (4).

An empowered woman has certain qualities and these quality will represent the personality of that lady. For attaining the status of empowered woman, she needs embrace some of the characteristics like self-confidence, self-esteem, thankfulness, optimism, patience, resilience, tolerance, communication etc. It has been observed that these characteristics would emerge naturally if one may be inspired by other person. Moist significantly, these traits are essential to accomplish any mile stone in one's life since success is nothing but a reflection of your characteristics. Women empowerment process would reflect via these characteristics and one need to acquire them in order to confront the challenges and get over from them (5).

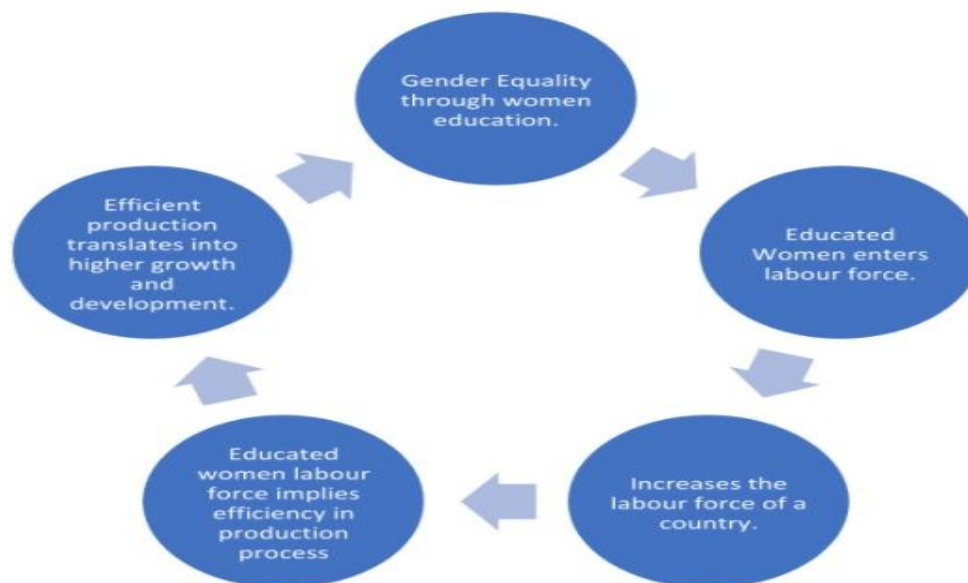


Fig. 6 Social, Economic and Political Benefit of Women Empowerment (6)

The women's program and an extensive system of Non-Government Organizations (NGOs) with strong grass-root attendance and profound knowledge into women's concerns have helped in inspiring efforts for authorization of women. Women nowadays are striving to understand their place in society (Fig. 6). Women have become more aware of sexual inequalities in every aspect of life and are searching for methods to fight them. She has originate to her own and continuing growing ranks of social loan with pride plus dignity. Women of India are now raised and emancipated and decided equal status with males in all gaits of life-political, social, national and educational.

India has, also her female prime minister, females ambassadors, females cabinet ministers, females legislators, females governors, females scientists, engineers-doctors-space researchers-giant IT authorities, women Generals, females public officers, bench officers and in numerous more accountable positions. No distinction is currently made in contents of instruction between

males and girls. Their singing is now as powerful and important as that of males. They are appealing equal participants in producing or discharge of an administration (7).

2. DISCUSSION

• Women Empowerment- Still An Illusion Of Reality:

Despite of numerous improvements in society as well as in the mentality of the people, there are a lot of work have to do to give women a comfortable environment. This is due of the inequalities existing in society and rights given by the constitution. The ground truth is that there are still many women who are living in a terrible and deprived situation and their life standard is constantly deteriorated, these women requires assistance from the government to restored themselves and return into main stream life again. Another sad fact is that most of programs and plans by different agencies had been benefited by the urban women most and majority of rural papulation of women don't know about these beneficiary schemes (8).

The rural women are still living in pitiful condition, and they have to confront many unpleasant situations owing to poverty, illiteracy, enslavement and superstition. Because of these unethical behaviors they have to be facing terrible situation. Therefore, it is being observed that despite numerous changes and rights provided in constitution, particularly women situation in rural is not excellent in contrast to metropolitan women. It is necessary to analyze the condition on of women on actual ground so that effective ness of the work done to enhance the women condition can be known on serious note and preventative action can be implemented to improve the scenario that would upgrade the living situation of women (9).

The human privileges situation in country continues to be gloomy and sad. Females are being dehumanized, commodified, appeared and subjected to inhuman abuse and judgement. Although, gender judgement has been disqualified by Constitution moreover women have been definite political equivalence with males, however nearby is an alteration between constitutional advantages and rights enjoyed by women. Even after half a century of individualism, lacking a few exclusions, women have frequently stayed outside sphere of power besides party authority. Though they institute around half of citizen and over years their participating by way of elective has increased, however their input and image in legislation creating and law applying figures are not very acceptable (10).

3. CONCLUSION

It may be determined that women have eliminated conventional assumptions regarding their duties besides abilities. There has been a significant change, and it has been for better. Many of its assistances nevertheless have yet to hit mainstream and all of us persist to encounter various kinds of masculine prejudice. If legislation intended to address apprehensions of females are to have a dramatic and beneficial effect on women's lives, they must be attentive to the social, economic and political disempowerment of females across globe. The most important quantity of their success should be degree to which they enable women to grasp, apply and apply rules of their own creating, including their own talks, values in addition to worries.

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MODERN CONTENT AND CONCEPT OF DIGITAL ECONOMY

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ABSTRACT

This article examines the features of the development of the digital economy in a large region in a pandemic. The key technologies of the digital economy of a particular region are given. The systems "Electronic polyclinic" "Electronic diary", "Electronic textbook", "Teachers' assessment" have been studied. The economic efficiency of using these systems in the region's economy has been determined. Important projects aimed at the development of "Electronic government" and telecommunications systems have been proposed. The effectiveness of the use of the digital economy in Uzbekistan is analyzed and a strategy for its development is proposed.

KEYWORDS: Digital Economy, Cognitive, Cloud Technologies, Internet Of Things, Big Data, Virtual Reality, 3D Printing, Quantum Computing, Distributed Ledgers, Artificial Intelligence And Robotics, Biotechnology.

INTRODUCTION

In Uzbekistan, 2020 has been declared the Year of Science, Education and Development of the Digital Economy. In connection with this event, on April 28, the President signed a decree "On measures for the widespread introduction of the digital economy and e-government." [1]

The document provides for the accelerated formation of the digital economy with an increase in its share in the country's gross domestic product by 2023 by 2 times. All healthcare institutions, schools, preschool education organizations, villages and makhallas should be connected to high-speed Internet in 2020-2021. In this regard, digital literacy is very relevant at this time. The term "digital economy" was coined over 25 years ago. This term was introduced into literary circulation in 1995 by Nicholas Negroponte, a scientist from the University of Massachusetts. The content of the term concept is still unclear. The World Bank report is also not clear-cut. [2]

In a generalized form, the digital economy can be presented as that part of economic relations that integrates mobile communications, information communication and Internet technologies. Modern digital technology effectively manages communications between companies, banks, government and the public, removing long existing chains of intermediaries and accelerating the implementation of diversified transactions and operations such as sales, loans, leases, taxes, fines, fees, other payments and settlements within the country and internationally. [3]

Research results

The digital economy is an economic activity in which the main key factor of production is digital data, the processing of large volumes and the use of the analysis results of which, in comparison with traditional forms of management, can significantly increase the efficiency of various types of production, technologies, equipment, storage, sale, delivery goods and services. In other words, a characteristic feature of the "Digital Economy" is the maximum satisfaction of the needs of all its participants through the use of information, including personal information. This becomes possible thanks to the development of information and communication and Internet technologies, as well as the availability of infrastructure, which together provide the possibility of full interaction in the hybrid world of all participants in economic activity: subjects and objects of the process of creation, distribution, exchange and consumption of goods and services. [4]

In a pandemic, the development of online business and sales of products using online broadcasting is taking place at an accelerated pace. Many of our compatriots have found new jobs related to the digital economy.

As the pandemic weakens, this trend will continue. Our digital economy is becoming a powerful "incubator" of new jobs.

The deepening integration of the digital economy with the real sector has influenced the emergence of new segments, new formats and new business models, and wages in the digital economy segment are becoming more competitive. [5]

The digital economy will continue to remain the key driving force behind the economic development of our country, becoming a powerful argument for attracting professionals and expanding employment.

The key technologies that determine the scale of the upcoming changes in the digital economy of Uzbekistan are: cognitive and cloud technologies; internet of things; big data; virtual and augmented reality; 3D printing; quantum computing; distributed ledgers; artificial intelligence robotics and biotechnology.

By the end of this year, 239 digital projects will be implemented in 14 regions of the country in the field of healthcare, cadastre, social protection, agriculture, education.

In addition, at present, we have implemented work on the implementation of the "Electronic Polyclinic" system, which will reduce paperwork in medical institutions by 40%, and the waiting time in a queue by 60%. [6]

Currently, the capital is already introducing electronic medical records, information systems for hospitals and ambulances. Next year, these software will also be launched in Andijan, Namangan, Fergana, Jizzakh, Syrdarya, Surkhandarya and Khorezm regions. In addition, the

Electronic Diary, Electronic Textbook, and Teacher Assessment systems have been launched in all regions. [7]

In addition, a national system of training and certification of information technology teachers will be introduced on the basis of the Tashkent University of Information Technologies and IT-parks. It is noted that the presence of this certificate will allow teachers to receive a 50 percent salary bonus. School teachers will also be rewarded if their students successfully complete the One Million Programmers course. The widespread introduction of digital technologies is planned at all stages of the education system. By 2022, digital knowledge training centers will open in all regions of the country as part of the Five Initiatives project. Until 2022, it is planned to implement 268 projects in Uzbekistan aimed at the development of the Electronic Government system, telecommunications, the Technological Park of software products and information technologies, as well as the introduction of digital technologies in the economy, agriculture and water management. [8]

These projects should become the basis for the emergence of new high-tech enterprises and the entire digitalization of the economy.

The transition to the digital economy is a requirement of the times. The world's largest merchandise and resource businesses are using digital technologies associated with e-business and commerce in their operations. This makes them participants in the market for digital goods and services, where they act as consumers and customers, and sometimes even create and offer new technologies.

The importance of further digitalization of the economy of Uzbekistan was noted in the January Address of the President of the Republic of Uzbekistan Shavkat Mirziyoyev to the Oliy Majlis. The head of our state outlined the active transition to the digital economy as one of the main priorities for the next five years. According to available data, the capacity of the servers operating in Uzbekistan is already running out, and the implementation of the planned projects requires 10 times more, so it is necessary to build a new data center worth \$ 30 million. [9]

According to the decree, it is planned to triple the share of the digital economy in the volume of services in this area by 2023, bringing their exports to \$ 100 million.

As it turned out, only 30 percent of more than 700 information systems in government agencies are connected to the "Electronic Government". Out of 80 departments providing public services, only 27 are integrated with the Agency for Public Services. Therefore, the task was set to introduce a new order, providing for an increase in the size of bonus payments to the heads of ministries and departments or its reduction based on the level of integration of information technologies into their activities. Among the tasks set for this year are the expansion of the local fiber-optic network, an increase in the coverage of fiber-optic communications in the preschool education system from 41 to 100%, in the public education system - from 40 to 70%, in health care - from 38 to 100%.

Conclusion. Recent studies show that information technology can improve the efficiency of agriculture, land registration and monitoring. So, space sounding of the soil can be used to study the cultivated areas, the vegetation process, the soil reclamation state and the degree of mineralization. This allows you to increase the yield by 25-30% due to the precise definition of the necessary agrotechnical measures.

Another important document aimed at developing the digital economy is the decree of the President of the Republic of Uzbekistan Shavkat Mirziyoyev "On measures for the widespread introduction of digital technologies in the city of Tashkent" dated March 17, 2020. It defines a comprehensive program "Digital Tashkent", which provides for the introduction of advanced ICT in education, health care, transport, catering, retail and wholesale trade in Tashkent. At the same time, it is inextricably linked with the Safe City project. At the first stage of this project in 2019-2020, a single technological platform is being created in Tashkent. By 2023, the Safe City project will be implemented in all regions of the country. By the end of the year, it is planned to introduce electronic medical records, electronic hospital systems and emergency medical care in the capital, and develop a Unified Register of Social Protection for keeping records of social benefits.

All these large-scale and urgent projects and tasks are undoubtedly important for the socio-economic development of Uzbekistan in the coming years, because the future of our country is inextricably linked with the widespread introduction and use of digital technologies.

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WAYS TO IMPROVE READING LITERACY IN PRIMARY CLASSES

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ABSTRACT

Reading is important in human life. A person who does not know how to read is no different from a blind person. Reading activities are carried out in all subjects in the primary classes, but teaching reading is the main task of reading lessons. When teaching a junior student to read, it is necessary to take into account their general development, psychology.

KEYWORDS: *Reading, Methodology, Education, Speech Cultivation, Pedagogical Education.*

INTRODUCTION

All conditions have been created and implemented for the education of a healthy and harmonious generation in our country, realization of its creative and social potential of young people. One way to accomplish these tasks is to deeply arm the younger generation with the foundations of science by continuously improving the standard system of Education. After all, the search for knowledge leads to the formation of the human personality and worldview, spiritual and moral perfection.

The new content of education and training: further raising the consciousness of students; further improvement of the educational process; raising the level of teaching methods to the requirements of the present day; the development of children's cognitive abilities at a high level; the achievement of conscious, thorough mastering of the given knowledge and skills; provides for such tasks as the development of independent The main part of the important tasks in teaching and learning to primary school students is through reading classes.

In the process of reading and speech development classes, students are given certain knowledge on the basis of the subjects established by the State Standard of Education. In addition to improving reading skills, the task of educating students in a harmonious mature human spirit is also in the center of attention. In primary education, students are taught to read correctly, consciously, fluently, quickly and expressively through reading sessions according to the goals and objectives of the reading and speech development program. Children will be able to master the skills of working with the book in the process, and they will be given a feeling of love for the book.

Native language reading classes, which are taught in the primary classes, are part of the science of literature. On the content of the lessons conducted in the Department of reading and speech development of programs; teaching students to read correctly, fluently, expressively at a certain level of speed; the knowledge of the child as a mother - Homeland, whose nature is such that the

ideas of heroism, courage, national independence in the labor of people are taught, formed and strengthened by the knowledge, skills

Elementary reading lessons provide the first basis for mastering Uzbek literature, history, geography, biology, and other subjects in the upper grades. Therefore, it is necessary to pay special attention to reading lessons in primary school. In order to conduct reading lessons as required, the teacher should pay special attention to the following. Children between the ages of 6 and 10 cannot listen patiently to an hour-long lesson. Their mental structure is in motion, their imagination is in play. You can't listen to speeches that last more than 10-15 minutes. As a result, educational activities in these classes are carried out mainly through games, singing, short-term interesting conversations, storytelling and expressive reading.

Expressive reading plays a key role for the teacher as one of the most important methods of mastering various literary and practical texts. Expressive reading does not allow students to be bored in the classroom, on the contrary, it activates them, increases their interest in works of art, and stimulates their interest in literature.

There are basically two ways to teach students to read expressively in reading lessons:

1. Teach students to read expressively based on the different nature of the text during the lesson;
2. Organize special expressive reading programs by reducing the number of hours devoted to reading materials.

Methods of teaching expressive reading to students in the primary grades include:

1. Read correctly. Serious attention is required in the first grade. Every word, syllable and sound must be pronounced correctly, audibly.
2. Conscious reading. The student must understand the meaning of each sentence, the word in the sentence, the syllables in the word.
3. Fast and fluent reading. It is important not to read slowly or too fast, but to speak at a moderate pace, as it were, to ensure that you read correctly, consciously, and fluently. If a student reads too fast or too slow without touching his lips, he may be blind - he may not understand the meaning.

The basis for reading at average speed is laid from the moment the student learns the letters and sounds. However, in the first place, the average speed of the process of correct and conscious reading is achieved.

Here are some tips to help you learn to read correctly. Read words in syllables. For example: "Fazliddin" Faz-lid-din, roz-no-ma. Also, if you can't read some of the words you mispronounced, read aloud some of the words you read aloud. Quick speaking is also a much more useful method. Methods such as interpreting unfamiliar words, teaching text-based questions, composing questions on the text, and shortening and expanding the content of a text based on a plan are also important help to teach conscious reading. For example, recite the poem "Germ" from the 2nd grade textbook in an expressive and fluent way.

MICROB



Germs are very cunning, cunning,
Ready laundry.
Someone is dirty,
They are taken immediately, captive.

Germs are everywhere now,
He knows his job.
Settling on animals,
It's free.

Colds, coughs, headaches
It hurts the patient.
Whoever is infected,
It hurts.



Clean and tidy
The germ will escape you.
Whoever does not wash,
She hugs him.

Ogden Nesh

Punctuation should be used in fluent reading. One of the most important ways to teach expressive reading is by using a teacher's expressive reading. To do this, the teacher must have sufficient knowledge and skills of technical and theoretical means of teaching, such as pause, emphasis, tone, speed, and thoroughly master the culture of oral speech.

Indeed, advanced pedagogical technologies increase the productivity of the educational process, form the process of independent thinking of students, increase students' enthusiasm and interest in knowledge, form the skills and abilities to master knowledge, their free use in practice.

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**ECOLOGICAL AND HYGIENIC APPLICATION OF THE
ACCUMULATION OF TOXIC SUBSTANCES IN SOIL AND FOOD
PRODUCTS UNDER THE INFLUENCE OF AGRICULTURAL FACTORS**

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ABSTRACT

Worldwide, more than 420,000 people die each year from consuming poor-quality food, and about 600 million people are diagnosed with health problems after consuming food that does not respond to sanitary-hygienic standards. In addition, food-related risks lead to the development of more than 200 acute and chronic diseases of the gastrointestinal tract.[1] . Accordingly, the cultivation of organic pure fruits and vegetables is now relevant. Nowadays, ensuring food safety in maintaining a healthy lifestyle depends to some extent on the composition of fruits and vegetables. It is known that the amount of nitrate in fruits and vegetables exceeds the allowable level due to the excessive use of mineral fertilizers to increase the productivity of agricultural products. Also, a number of scientific studies are being conducted to reduce and prevent these risks. According to T according to data from research ASSURE the amount of nitrate in the fruit fed with mineral fertilizers was 80.8 mg / kg (60 mg / kg according to GOST), and in the variant of biological fertilizers this figure was 50.9 mg / kg. At the same time, the amount of these nitrates also affected the sugar content and acidity of the fruit. %, 0.40% in the biological fertilizer option and 0.51% in the mineral fertilizer option, which is 0.21% higher than the control. It was also found experimentally that the dry matter content was 12.85% in the control variant, which is 0.9 times higher in the biological fertilizer variant than in the 13.6% mineral fertilizer variant. In addition, mineral and bio-fertilizers them the use of the fruit with a normal amount of nitrate present an updated mineral and organic contamination in the soil. In

conclusion, our research has shown that the use of biological (siderite) fertilizers as an alternative to mineral fertilizers in the prevention of nitrate poisoning is universally acceptable.

KEYWORDS: *Organic Product, Environmentally Friendly Product, Nitrate Content, Sugar Content, Acidity, Dry Matter, Soil Nutrients, Food Safety.*

INTRODUCTION

Improving food security is important in our country to improve the health of the population. Excessive use of nitrogen fertilizers to increase the productivity of agricultural products affects the quality of food, in particular, it is worth noting that the excess of nitrate in fruits and vegetables has a negative impact on human health. Also, the Action Strategy for the further development of the Republic of Uzbekistan for 2017-2021 identifies "... further strengthening of food security of the country, increasing the production of environmentally friendly export-oriented fruit products" as one of the important strategic tasks, in this regard the cultivation of safe, organic produce is now relevant. In recent years, a number of reforms have been carried out in the country to ensure food security, fully meet the needs of the population in fruit products, their processing and export, and the cultivation of ecologically clean products. Including national food security, there are a number of decisions and decrees, in particular, of agricultural products to ensure compliance with international standards of quality and safety indicators of the Cabinet of Ministers dated 18.11.2020 "Organic products and raw materials as well as organic and mineral fertilizers safety regulations - Resolution No. 729 "On Approval of Legal Documents" .

The aim of the study is to develop a technological system for the cultivation of hygienically environmentally friendly, organic products, as well as to protect the soil from mineral pollution.

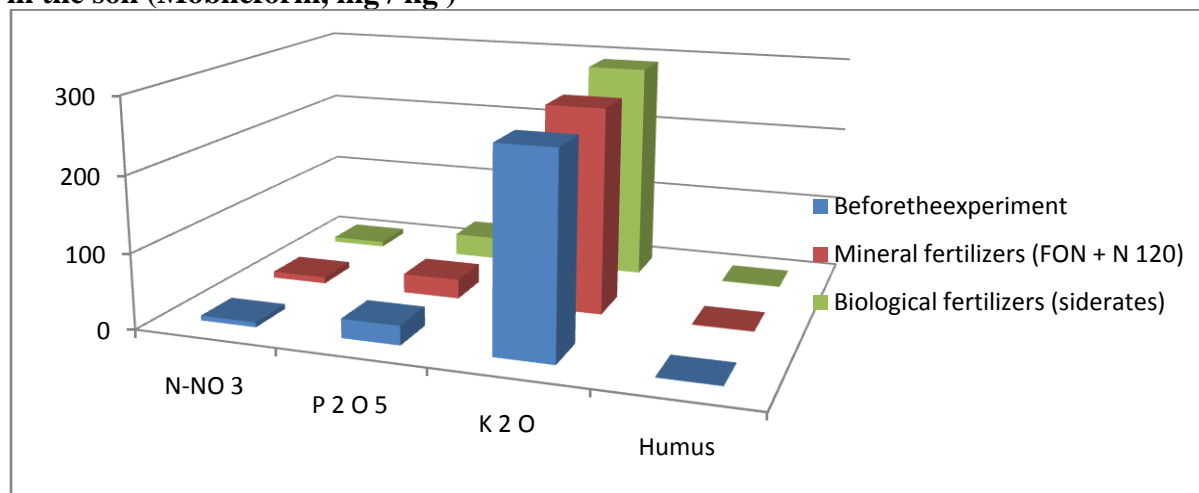
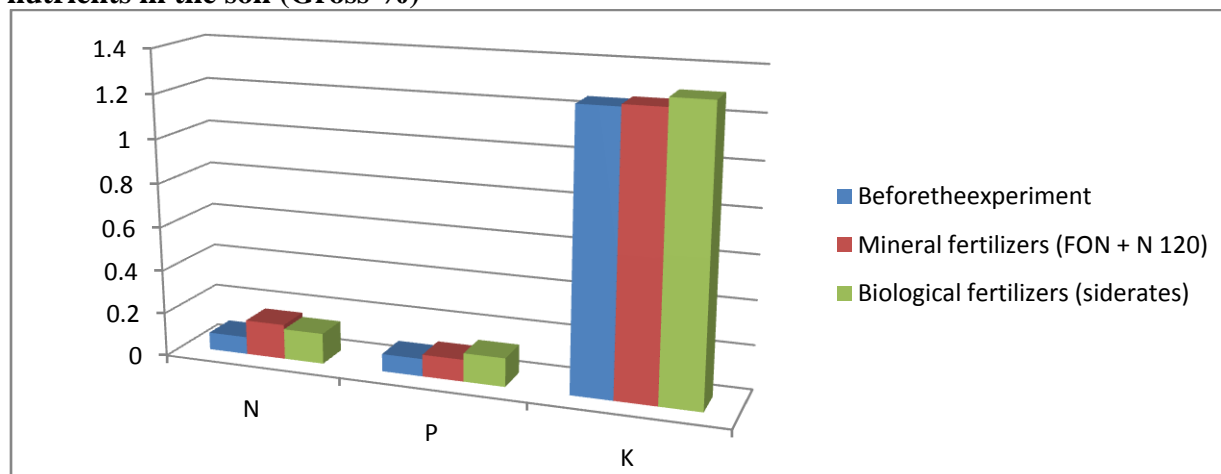
Research Methods

The experiments were carried out on the basis of methodological manuals and scientific recommendations, such as "Methods of agrochemical analysis of soil and plants" (1979), "Methods of state testing of agricultural crops" (1983).

Biochemical analysis of fruit composition is carried out on the basis of the method given in the manual "Methods of biochemical research of plants", edited by AI Ermakova, nitrate content of fruit in Soeks nitrate tester-2 (2009), sugar content of fruit on a refractometer, acidity titration. increased, and the dry matter was carried in the Bertrand method. The amount of humus in the tillage layer I.V.Tyurin, gross nitrogen, phosphorus, potassium content I.M.Maltsev and L.P.Gritsenko, interchangeable potassium flame photometer, nitrate nitrogen in the methods of Granvald-Lyaju, as well as mobile phosphorus B.P. Made in Machigin style .

Research Results

Experience 20 During the period 14-2016 in the foothills of the Zarafshan oasis acad. Horticulture, viticulture and winemaking named after M. Mirzaev was carried out in the peach orchard at the Samarkand Experimental Station. In the experiment, mineral fertilizers and alternative biological (siderite) fertilizers were used. The gross and mobile amounts of them in the soil were also analyzed. This is because every nutrient in the soil is directly absorbed into the fruit and affects its ecological and hygienic indicators, as well as our health by entering the human body through it.

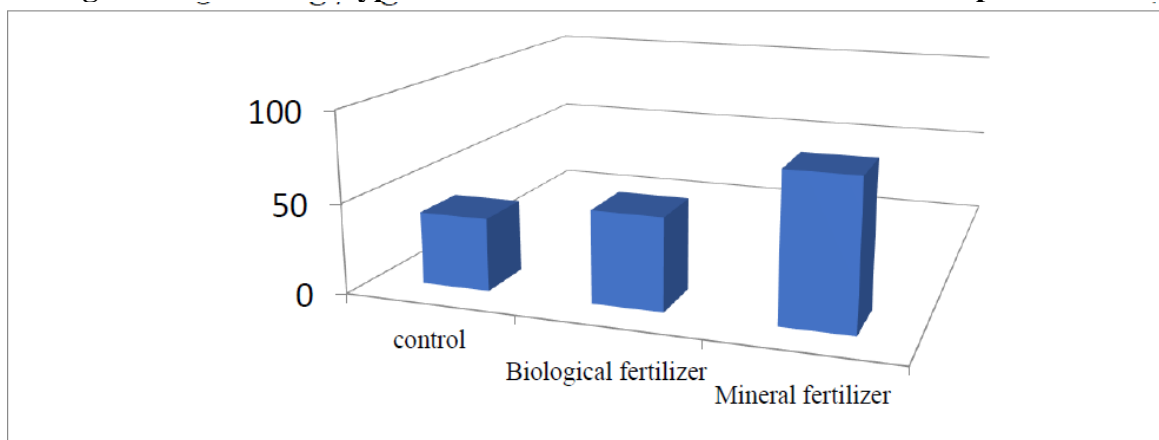
1a – Table Experience mineral fertilizers and biological Arda after the amount of nutrients in the soil (Mobileform, mg / kg)**1b – Table Experience mineral fertilizers and biological Arda after the amount of nutrients in the soil (Gross %)**

In this table, it was found that while the humus content was 0.80% before the experiment, the biological fertilizer options increased to 0.84% over three years. The total amount of nitrogen, phosphorus and potassium was 0.08% before the experiment and 0.10-0.13%, depending on the species, and their mobile forms increased accordingly. In the variant fed with mineral fertilizers, it was observed that the minerals in the soil are quickly assimilated and accumulate in the fruit. Also, chemical analysis of the composition of the fruit revealed that more nitrate was accumulated in the variant fed with mineral fertilizers than in biological fertilizers.

Quality of fruit content is one of the important conditions of export requirements. Fruits, with their healing, aroma and taste, satisfy the human body's need for vitamins. But now the fruits and vegetables in order to increase the productivity of excess use of fertilizers lie due to a negative impact on the amount of nitrate in the structure.

In the experiment, the nitrate content of the fruit in the biological fertilizer variant was 50.9 mg / kg, while in the mineral fertilized variant the figure was 80.9 mg / kg. The permissible amount of nitrate for the fruits was required to be 60 mg / kg and it was found that 30.0 mg / kg excess nitrate was accumulated in this variant (Fig. 2).

Figure 2 Influence of types of fertilizers on the amount of nitrate in peach fruit



Currently, the focus in global health is on food safety, and to date, nitrate poisoning has been observed due to the high content of nitrate in fruits and vegetables. The daily number of nitrates entering the human body should not exceed 600 mg. 222 mg per body weight of 60 kg on average is the daily nitrate norm. The above data show that not only nitrate itself but also the sugar and acidity of the fruit is a factor that regulates them.

Mineral fertilizers in the experiment was not only me, but the amount of nitrate contained in a sugarfruit, acidity and dry substances are also identified (3 picture is) .

Figure 3 Peach fruit biogeochemical effects of types of chemical fertilizers

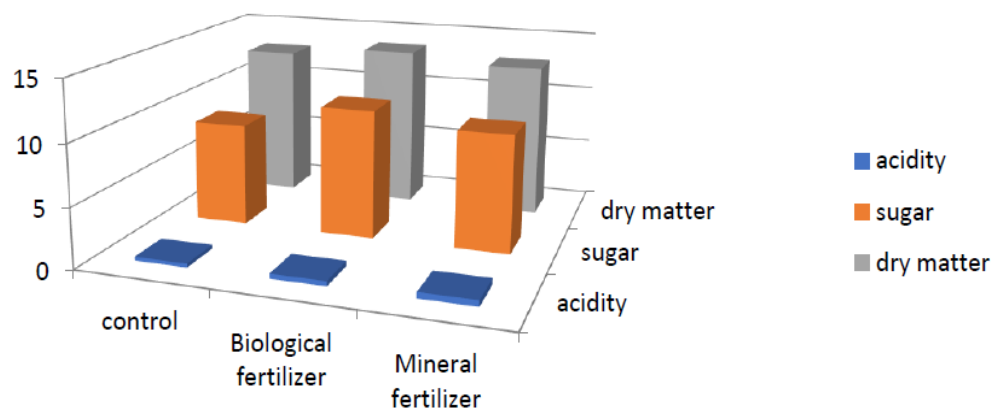


Figure 3 shows that in the experiment, the sugar content was 8.65% in the control (without fertilizers) variant, 10.80% in the biological fertilizer (siderates) variant, and the acidity was 0.30% in the control variant, and 0.40% mineral in the biological fertilizer variant. fertilizer control options were 0.51%, compared with 0, 21 % higher than the levels detected. It was also

found experimentally that the dry matter content was 12.85% in the control variant, which is 0.9 times higher in the biological fertilizer variant than in the 13.6% mineral fertilizer variant.

CONCLUSION

The growing population of the world is also leading to an increase in demand for food. Quality food is a guarantee of health. Based on the above data, it can be concluded that consumption without analyzing the amount of nitrate in fruits and vegetables is dangerous for our health. Not exceeding the daily norm guarantees our health. The presence of sugar, acids and vitamins, as well as other biologically active substances in the daily consumption of fruits and vegetables means a quality diet. Regulating the daily intake of nitrates is one of the important factors that everyone should follow.

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VERB CONJUNCTIVE SENTENCES AND THEIR USE IN COMPOUND SENTENCES

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ABSTRACT

Verb groups cannot have a sentence, no matter how many words they consist of. When the group of verbs ravishdosh, adjective, and action occurs separately, the owner of the main action participates in the sentence and expresses an additional secondary action to it. Non-function verb groups are connected to the main clause by verb forms, conjunctive affixes, and auxiliaries. When they move away from the main action and come to the center of the sentence, they have a special quality and are separated from the main part of the sentence by intonation.

KEYWORDS: *Adjective Verb, Case Verb, Action Verb, Independence By Expression, Independence By Meaning, Forms Of Possession And Agreement.*

INTRODUCTION

Syntax information in Turkic languages shows that verb groups have two structural features. One is the possessive and the other is the possessive. The ownerless type is an incomplete sentence related to the owner of the main sentence, the second type has a separate owner to the owner of the main sentence, and the eag and cut relation means predicative. The syntax constructions that come in these two different structures differ from each other depending on the expression, syntactic function, and intonation.

The task and non-function groups act as subordinate clauses if they have a predicative center, denoting the action of a second possessive in the form of an adverb other than the possessor of the preposition. For example: 1. Farhod went too far, and Aycholpon recognized the image of Elmurad, who was leaning on his chin and waving his hand. (J.Aymurzayev). 2. When the teacher came in, all the students took their seats. (T. Qayipbergenov).

These sentences meet the requirement of a subordinate clause. Parts of the verb, not the function, have their owners.

A sentence with a cross section of the subordinate clause of the subordinate clause is bilaterally dependent. Firstly, the cut is dependent on the form, and secondly, the meaning is dependent on the side, expressing a sentence or a single member (usually an action) that has a whole and is only an integral part of its integral costs The semantic integrity of the following sentence is ensured by the forms of the main sentence. The preposition is not subordinate, the preposition

cannot express a whole without the preposition. In fact, this feature applies not only to the components of the subordinate clause, but also to other types of subordinate clauses.

When parts of a subordinate clause are expressed by non-function verbs, they have the following characteristics: a) a subordinate clause has the meaning of a simple sentence and represents the whole clause or part of it: z has an owner: c) is separated from the main sentence by an incomplete intonation. Thus, the subjunctive mood of these verbs depends on their specific morphological features:

1. The case -b, -ib, -p, y, -gancha / -guncha, -ganlik, -ganlik, which are part of the following sentence, do not accept affixes and auxiliaries. Its forms -gilam / -geli, / mastan / -sanochten come in the same way and in an auxiliary form and serve as a cut-off sentence: The responsibility was made by nature without one end of the story (O. Khojaniyazov). The population did not return until Farhod disappeared (J. Aymurzaev). Since Sherimmat's departure, there have been many changes in the village (A. Aliev). 2. When adjective forms form a subordinate clause, the adverb has its own owner other than the possessor of the preposition, and the adjective forms in the participle service of the adverb with the preposition through the words in the auxiliary service that give meaning to the case As the helicopter moves farther and farther, the wind decreases (O. Khojaniyazov). The affix -gan / -gen, -ar / -er of the adverb of place comes together with adjectives and becomes a part of speech. In this case, the possessor of the following sentence is often one of the adverbs in the form of an adverb and comes with his own cut: When you see the flowers growing, you see the beautiful gardens of Moscow (J. Aymurzaev). When Otabeka came, the agronomist and the director were talking about their work (T. Najimov).

3. When the verbs of the verb express the subordinate clause, the verb that is the participle of the subordinate clause has the conjunctive affix and accepts some auxiliaries. In both cases, the verbs of the action come in the form of nouns and are used without any affixes: As soon as I approached him, Nurimbet spoke hurriedly. (Sh. Seytov). As soon as the sound of a gun was heard, a white light fell on his head (S. Khojaniyazov).

In the grammatical literature of modern Turkic languages: 1. With the rapid stopping of the cart, Taras's attention was diverted (O. Bekbavilov). 2. With the end of the cotton harvest in Mirzachol, their wedding began (N. Safarov). 3. With the advent of summer, the Turkish functions of the verb constructions are expressed differently, with the focus on the content of the sentences as if our house had moved from the city to a place called Zangorilisuv. In most grammars and literatures of Turkic languages, the last two types of these Turkic constructions are considered to be subordinate clauses. M. Z. Zakiev considers all three types of construction as a subordinate clause. In his view, the action of the verb construction is considered to be a follow-up sentence, taking into account the fact that the action expresses the action of a subject other than the possessive pronoun.

In his work on the relative study of verbs in Uzbek, Uyghur, and Kazakh, K. Meliev considers that a sentence with the following Turkic constructions is used in the form of a noun and the last third type is used without an affix. Species with morphological features are considered to be collections. The fact that the subject of such a set comes in the form of a definite and an indefinite consonant depends on whether the speaker adds a logical meaning to the word and distinguishes it from the other parts of the sentence.

In fact, in the last two sentences of constructions like the above, the subordinate clause can be a subordinate component of the compound sentence. The reason is that in the modern Karakalpak literary language, the possessive of the adverbial participle from the verb of the participle comes mainly in the form of an adjective, and their participle may or may not be formed. Types of action verb constructions, which have their own subject in the form of a consonant, often form a melodic construction and express the fact that the action is related to a particular subject. In this case, the action is considered a verb. Compare: The way is opened for our heroes to move forward (H. Seytov). As soon as the radio concert ended, the latest news began to be broadcast (from the newspaper).

In these examples, the subject of the construction emphasized in the first sentence is expressed in the form of a consonant, through the action verb. This Turkish construction does not meet the requirements of the sentence in terms of structure, essence and intonation. Although it is a subjective form, it cannot have a real grammar, and the action verb denoting the action of that subject is not the function of the participle of the following sentence, but the action group accompanied by the words it directs. corrects. They are related to a part of speech, grammatically connected to that word, and its explanatory member acts as an extended case.

The last construction presented is different from the Turkish construction in the first sentence. It is far from the group of verbs in the first sentence due to its possessive form, its relation to the main sentence, and its peculiar intonation. In this case, the signs associated with the following sentence, its specific sentence sign - predicative, the presence of the possessive pronoun and the intonation are sufficiently definite. It is said to be related to the content of its generality, not to a part of the main sentence. Depending on whether the following sentences are affixed to the participle or the participle from the adjectives, their possessive pronouns cannot be considered in the consonantal form, or in its indefinite form. This is due to the fact that Turkish constructions have a new meaning and function.

One of the peculiarities of the definition of the subordinate component of the subordinate clause and, at the same time, is the question of the coherence of their parts. Adverbial and adverbial verbs do not fully serve as part of speech. Adjectives and adverbs in these conjunctions retain their sign of action when they come as a cut.

There are also contradictions in the place of the adjective and the verb in the place and in the infinitive forms of the adverbial participle. For example, M. Z. Zakiev "was the benefit of his visit". The phrase "he felt he had failed miserably" is a follow-up to the place and exit agreement. If we take the adjective and adverbial verbs in such a construction as a sign of determining the action of a second subject other than the possessive sentence of the main sentence, then these constructions do not serve as a function of the following sentence. However, there are cases when the verb in these two sentences does not meet the requirements of the verb. Like one member of this sentence, it has a close grammatical connection with the last word. For example, in the first sentence, the combination of the benefits of your arrival forms the phrase in which the distributive determiner is present in the izafet relationship. In the second sentence, the verb sezdi is connected with the verb sezdi, and the extended verb in the object connection forms a phrase (felt satiated). Such a dream loses the verb meaning of the adjective forms in the agreement and expresses an objective meaning.

The participle use of adjectives and adverbs in such subordinate clauses is called a "predicative consonant" by researchers of the Altaic languages in Siberia. 'rsatadi.

In our view, when adjectives and adverbs express the participle of a sentence, the presence comes not in the form of a consonant, but in the form of a grammatically abstract consonant, and is connected with the main sentence in terms of meaning. They retain the meaning of action, without substantive or objective meaning, and are connected with the action of the main sentence in the sense of the case. For example: While Beckbergen was talking to Abat, a noise was heard in the distance. (X. Seytov). Thus, non-function verb groups differ from the subordinate clause of the subordinate clause in the following properties:

1. A verb cannot have a pronoun, no matter how many words it consists of. When they are not separated in the main sentence, they are related to one member of the sentence, not to the whole sentence, and an extended sentence is formed in conjunction with that member of the sentence. In the case of a separate case, it performs a service related to the whole sentence.
2. Verb groups have mainly secondary members in their structure. They don't have a complete predicative center.
3. When separated from the group of verbs ravishdosh, adjective and action, it is related to the possessive pronoun of the main action, expressing its additional secondary action.
4. Non-function verb groups are connected to the main clause by verb forms, conjunctive affixes, and auxiliaries.
5. Adjective, adjective, and verb groups are often close to the word in which they are present. When it moves away from the main action and arrives at the beginning of the sentence, the individual has a supat and is separated from the main part of the sentence by intonation. Non-function groups of verbs are distinguished from the subordinate part of the subordinate clause by these illuminated signs.

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A COMPREHENSIVE STUDY OF PLANT GROWTH REGULATORS AND VIRAL INFECTION

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ABSTRACT

Viral infections may stifle growth of plant and cause developmental distortions. The effects of infection on plant growth regulator metabolites are discussed in this article. In general, viral infections reduces gibberellin and auxin levels while increasing abscisic acid levels. In necrotic with chlorotic infections, ethylene synthesis is increased, but not when the disease infects systemically with necrosis. Though such general patterns are true for the majority of host-virus combinations examined, there have been a few instances when the virus has had different impacts on the concentration of growth substances. There is no consistent trend in cytokine changes following infection: both increases and reductions have been observed. Exogenous regulators' impact on viral growth and pathogenesis have been studied extensively. Diverse regulator, or even the similar regulators administered at varied periods or doses, showed extremely different effects, and in some instances changed viral proliferation and pathogenicity substantially. However, such research seems to have produced frustratingly little knowledge of the pharmacology of the host-virus relationship, as well as the potential role of growth factors. The potential for plant growth regulators to be used in viral disease treatment, as well as their role in natural or created resistance mechanisms, were addressed.

KEYWORDS: *Chemotherapy, Growth, Host-Virus Interaction, Infection, Plant Regulators.*

1. INTRODUCTION

Plant development may be severely slowed and yields can be lost as a result of virus infection. Deranged developmental processes may result in deformed plants or unusual growth forms like tumor and phyllody. These changes in host growth might be influenced by virus-induced fluctuates in growth regulator metabolisms. The buildup of enormous quantities of viral nucleoprotein occurs in certain virus infections. The mechanism through which viruses successfully overcomes the recipient's anabolic activity is unknown, although it may include changes in translation and transcription controls linking growth regulator [1]. Numerous instances have been documented in which plants exhibit genetically regulated resistance to viral infections that usually infects that species, or where deceptive resistance is produced in vulnerable plant by chemical treatments or earlier infections. In not any instance should authors have a full molecular knowledge of how these resistances work, although preliminary data suggests that plant growth regulators may play a role in certain resistance-like processes [2].

Altering the growth regulators metabolites of plants synthetically by supplying exogenous regulator has been used as an alternate method to studying viral infections and its connection with growth parameters metabolisms. Some of this research has been carried out in the hopes of finding chemical therapies that may interfere with pathogenesis and therefore be useful in the treatment of viral illness.

1.1. Influence Of Viral Infection On The Quantities Of Endogenous Growth Regulators:

Viruses that infect plants come in a variety of forms & sizes. The size and complexity of viroid particles range from single stranded exposed RNA rings with a sequence length of 350-450 nucleotides residue to gigantic sophisticated entities like clover wound tumour viruses, which includes more than 16 big, dsRNAs and numerous protein types. Majority of the particle are isometric or rod-shaped, with just one kind of proteins & genomes size of 5-15 kb and a genome length of 5-15 kb. Virus infection has a wide range of impacts on the organisms that it infects. Turnip yellow mosaic virus and TMV, for example, may travel systemically throughout the host and infiltrate and proliferate in almost every living tissue [3]. Several, like tobacco rattle and necrosis virus, generally only cause necrotic lesions surrounding infection sites. Some viruses spread by aphids are only found in phloem. With that kind of a wide range of forms and pathogenic consequences, it's fair to assume that various viruses in dissimilar crowds will have wildly diverse impacts on seed treatment metabolism. Furthermore, the high intensity of many viruses' symptoms may induce variations in growth regulator that are secondary reactions to the indications and not straightly engaged in controlling the virus - host relationship. Plants have a tough time measuring endogenous growth regulator concentrations since most occur at extremely low concentrations and in existence of chemicals that affect the concluding test. Bioassays have been utilized in several investigations of the impact of viral illness on growth regulator metabolism. These techniques are often only lack specificity, semi-quantitative, and don't provide unambiguous identification of the growth regulators under study [4].

1.1.1 Auxins:

Auxins were used in the first studies on the impact of infection upon growth regulators in stems with obvious stunting. After infection, most studies showed a decrease in auxin activity, such as with potato leafroll & tomato spottedwilt virus. Auxin concentrations in Beta vulgaris, Phaseolus vulgaris, and tomato susceptible lines were decreased by the beet curly top virus. TMV reduced the concentration of indole acetic acid and aromatic acetic acid in systemically infected tobacco. In these studies, dramatic decreases in leaf auxin concentration were seen after 24 hours of inoculation, whenever just a minor percentage cells of leaf were infested. If aforementioned findings are verified, it suggests that auxin concentration decrease is caused by a component that travels through the leaf quicker than the virus.

1.1.2 Absciscic acid:

Abscisic acid is a poisonous substance Up to this point, the effect of viral infections on abscisic acid levels have been inconsistent. TMV infection of tobacco resulted in unaltered activity, but enhanced activity in tungro virus (RTV)-infected and PMV-infected lupin rice. In studies using physical techniques to detect ABA, transmission of cucumber with cucumber mosaic virus caused no improvement, while other researchers observed a three-fold rise. Although a reduction in ABA content has been observed in TMV-infected tobacco, this research only looked at the very early phases of infection. Increases were reported by other employees. The White Burley

type of tobacco with the N' gene was utilized in our studies. According on the TMV strain utilized, this causes a localized necrotic response or enables the virus to propagate systemically. With systemic infection, we observed a two- to six-fold rise in ABA concentration, which lasted during the active viral growth phase. The TMV strain that produced the local lesion generated a significantly greater rise in ABA, up to 20-fold. This rise was linked to the lesion rather than the inter-lesion regions, and it was initially seen when the lesions appeared. Because of the timeframe, an increase in ABA was unlikely to be the main causes of lesion development; it was far more probable to subsequent result of necrosis.

1.1.3 Gibberellins:

The obvious and sometimes severe slowing of shoot development caused by viral infection prompted researchers to look into gibberellic acid levels. Hypocotyl elongation was reduced in cucumber seedlings affected with CMV. Gibberellin contents were shown to be decreased following infection in another research of the same system, although this was followed by increased in ethylene synthesis and ABA percentage. They couldn't figure out whether the lower gibberellin content were causes of inhibiting or just a side effect of illness symptoms with no regulating factor. BYDV infection of barley resulted in stunting and a reduction in gibberellin levels.

1.1.4 Cytokinins;

Infection of *Nicotiana glutinosa* or cowpea with the Tobacco Ringspot Virus has been shown to decrease Cytokinin activity. TMV and CMV infections, on the other hand, enhanced the activity of Cytokinins in tobacco. In a bioassay, chromatograms of extract from systemically and healthy infected plant revealed highest points of Cytokinin activity, which corresponded to zeatin riboside and zeatin. Both had greater activity in infected tissues, that still has two Cytokinin activities that weren't presented in leaves that were healthy. Inoculation using the tobacco cultivar Xanthi-nc, that only really allows TMV to infect necrotic local lesion, was similarly shown to enhance Cytokinin activity.

1.1.5 Ethylene:

In particular, infection that causes necrotic or chlorotic responses seems to enhance ethylene production, while viruses that proliferate systemically without causing necrosis do not. After TNV and TMV tobacco infections, ethylene production was increased 3 to 13 hours already when local lesions developed, although the greatest upsurges happened after lesion formed. A quick eruption of ethylene synthesis was detected prior to the formation of TMV lesions. In the early stages of necrosis, *Physalis floridana* leaves infected with Potato Virus Y generated more ethylene than cow-pea leaves infected by CPMV or CMV. Tobacco plants infected with TMV systemically did not generate additional ethylene, excluding in the very late infection stages in senescent leaves. Throughout beet mosaic and beet mild yellows virus infection, ethylene production remained steady; however, a necrotic infectious disease with certain fungus *Cercospora beticola* increased ethylene output.

In CMV-infected cucumber seedlings, virus-stimulated ethylene synthesis seems to occurs deprived of necrosis. When chlorotic lesions upon that cotyledons appeared, ethylene production had increased [5]. The significant epinasty of cotyledons seen afterwards infections was thought to be caused by amplified ethylene productions along with the upsurge in cotyledon resistance to

gaseous diffusions. On plant leaves, exogenous ethylene also produced cotyledon epinasty. Ethylene production had also been increased in the hypocotyls of contaminated seedlings; experiments using ethephon or ethylene on strong seedling proposed that Particular thread ethylene productions may play a role in downregulation of hypocotyl elongation afterwards infections, nonetheless it is unlikely to be the only factor. The eradication of ethylene by oxidation without potassium permanganate only sped up the development of infected plants for a short time.

1.2. Exogenous Growth Regulator's Effects On Viral Pathogenesis And Multiplication:

Exogenous growth inhibitors were given to annual crops to imitate variations in regulator concentrations produced by viruses, or to contaminated plants to correct a virus-induced decrease in growth regulator concentrations, as discussed above. The goal of these studies was to see whether virus-induced variations in regulator levels were involved in the regulation of host growth. Throughout this part, we'll look at the impact of exogenous growth regulator on viral increase and pathogenic growth. Senescence ABA and ethylene there have already been numerous reports indicating treatments that induce leaf senescence enhance viral susceptibility. Minor increases in the length and density of lesions induced by TMV infection, as well as a small abundant supply of infectious virus generated, were seen when tobacco leaf discs were infiltrated or connected leaves were injected with ABA. Unfortunately, no statistical significance analysis was performed on the data. On undamaged plants, aged tobacco leaves do not develop significant levels of ABA. When infected, old, blooming cv. Xanthi-nc plants produced much fewer lesions than immature plants. TMV replication was significantly higher in early leaves infected with the systemic cv. Samsun than in mature and completely grown leaves inoculated later [6]. These findings suggest that there is no link between senescence and infection susceptibility in intact plants, but that the apparent increased susceptibility caused by high ABA concentration treatment may have been due to non-specific effect of pollutants impairment, with slight relations to any ABA action *in vivo*.

1.2.1. Regional Lesion Response And Exogenous Regulators:

Many researchers have studied the impact of exogenous growth regulators on local lesion development in order to better understand how they interact with viral multiplication and host response. Because this experimental method produces data quickly yet is physiologically complicated, the results described are diverse and even inconsistent.

Kinetin decreased the amount of lesions and viral infectivity in TMV-infected *N. glutinosa* discs. Others have found that different Cytokinins limit lesion development but stimulate viral generation in the same host[7]. Two Cytokinins were found to either prevent or promote lesion development, according to the latter researchers. Aldwinckle later pointed out that they were both benzyl adenine disguised as two different compounds. Kinetin was shown to enhance the numbers and size of lesion produced on removed leaves at different doses; early studies showed that zeatin had a significant influence.

1.2.2. The Systemically Diseased Host And Exogenous Regulators

Applying exogenous growth regulators to plants that allow viral systemic proliferation is a simpler way to investigate the impact of exogenous growth regulator on viral development and pathogenicity. The complicated inhibitory effects of the local lesion response on viral growth

then reveal the findings. TMV mosaic symptoms on tobacco were delayed by the auxins NAA and indole butyric acid, but only when administered at near-phytotoxic doses. TMV multiplication was likewise inhibited by these auxins in tissue culture. TMV multiplication was decreased by approximately 30% in young, growing tobacco leaves when IAA was used. In *Physalis floridana* and tobacco, however, 2, 4-D has been shown to promote TMV multiplication.

1.2.3. Chemotherapy

Exogenous growth regulator's capacity to postpone or decrease the sternness of apparent signs of viral infections, as well as to limit virus replication in certain instances, has sparked study into new chemotherapeutic treatments. One strategy was to identify chemical currently in usage for agriculture those were identified to be systemically taken up and distributed. The fungicide thiabendazole made sugar beets less susceptible to yellowing viruses. Part of the impact was ascribed to aphid vectors' decreased capacity to colonize treated plants, although viral vulnerability of treated plants was also a possibility. The water breakdown product and fungal poisonous principle of benzoyl fungicides, methyl benzimidazol-2-yl carbamate, prevented the development of visible signs of beet western yellows virus in lettuce and TMV on tobacco.

1.3.Plant Growth Regulators And Viral Disease Resistance:

1.3.1. Resistance To Development Or Space:

Certain parts of the plant may be partly or fully resistant to viral invasion during systemic infection. Shoot and root meristems are common examples of these regions. Invasion of embryos or the whole seed is also unlikely. The apparent resilience of these tissues to infection has yet to be explained; one hypothesis worth investigating is that it is linked to their unique growth regulator status.

1.3.2. Resistance That Is Built Into The System:

Many instances have been documented in which certain types of a species have a gene or genes that give resistance or tolerance to a virus that usually affects that species. We don't have a complete knowledge of the biochemistry of gene activation in any event; on the surface, the different processes seem to be very varied. Although the resistant varieties of tomato, Phaseolus bean, and beet exhibited less severe symptoms and viral replication, BCTV caused auxin concentrations to decrease in both susceptible and virus resistant types.

1.3.3. Resistance That Has Been Induced:

The response of infected portions to a second or challenge inoculation may be changed when plants develop necrotic lesions following viral inoculation. Lesions that appear after the challenge inoculation are often smaller and fewer in number than those that appear on previously infected control plants. This phenomenon, known as induced or acquired systemic resistance, has been seen in a variety of host-virus combinations. At least four novel host-coded proteins are detected in areas of the plant indicating acquired systemic resistance in tobacco types that develop lesions following TMV infection. These 'pathogenesis-related' proteins have been proposed to have a role in resistance, perhaps in a similar manner as interferon in animals [8].

2. LITERATURE REVIEW

S. MARCO investigated hypocotyl growth retardation in cucumber seedlings after infection with cucumber mosaic virus. This was accompanied by an increase in abscisic acid and indeed the inhibitor-8 complex, as well as a decrease in gibberellin-like compounds. The rise in ABA, as determined by gas-liquid chromatography, was primarily responsible for the latter's increased inhibitory effects. Exogenous treatments with gibberellic acid at concentrations increased hypocotyl development in healthy seedlings, and that the same dosage of the hormone was ineffective in malware cucumbers. Healthy hypocotyls' development was significantly slowed only when ABA was given at a reasonably high concentration, while infected hypocotyls' growth was nearly entirely stopped even when ABA was supplied at a lower dosage. While alternative possibilities aren't ruled out, it's thought that virus-induced variations in endogenous levels of GA and ABA, which may counteract each other's effects, play a role in CMV-induced hypocotyl development suppression [9].

As the connected leaves of the spinach became older, the amount of and abscisic acid decreased. Increases in hormone levels throughout time as measured in detached various plant parts. A similar series of hormonal changes, although with additional steps, was found. As a result of accelerated senescence caused by Eteo or water stress. The breakdown of chlorophyll and the increase in ABA were decreased when kineti or GA3 was administered to detached leaves. In senescent leaves, bound GAs were discovered. They were not detected in the stems treated with kinetin, which had a high amount of free Gas [10]. Treatment with B-benzyl aminopurine 5-120 minutes after inoculation increased the quantity of tobacco mosaic virus among tobacco leaves, as measured in a local-lesion test on Pinto bean leaves. The amount of improvement was determined by the period between immunization and the commencement of BA therapy. When BA therapy was started 20 minutes before inoculation, the best results were obtained. TMV concentration was decreased by BA therapy, which began just 1 minute after inoculation [11].

3. DISCUSSION

This connection is further supported by the decrease in the lesions produced whenever healthy N. tabacum plants being doused with ABA preceding inoculation. It's unclear if ABA is engaged directly in increased susceptibility to infection, or whether it's implicated indirectly via an impact on leaves water relation & mechanical sensitivity of tissues to inoculations. The results of ethephon therapy are comparable to attained systemic resistance, suggesting that ethylene synthesis by lower, lesion-forming leaves may be accountable for higher leaf resistances. Growth regulators which have been shown to stimulate production of pathogenesis-related proteins in healthy plants, which is noteworthy in light of the suggested growth regulator interpretation of acquired systemic resistance. There will still be a lot of mystery around how virus-induced changes in host growth regulators may affect metabolism, development, and growth. This statement reflects our present lack of understanding of how growth regulators function in well vegetation. Virus infections may be a good way to investigate how growth regulators work and how they affect metabolism.

4. CONCLUSION

Conclusions Virus infection has been shown to produce significant changes in seed treatment concentration. These kinds of changes were demonstrated to be critical in managing the host's growth following infections, while others seem to be unintended consequences. There is a

paucity of evidence on how viral infection impacts the host's growth regulator's metabolism. The role of chloroplast in the production or compartmentalization of certain growth chemicals, as well as the early impacts of infection on chloroplast membranes and metabolism, offer new research directions. Exogenous growth stimulants have been shown to affect viral proliferation and pathogenesis in experiments. They've provided frustratingly little information into how growth regulator may influence multiplication and symptom development so far. Initial work with the role of growth regulator and chemotherapy in resistance mechanism suggests that manipulating endogenous growth regulators may lead to the development of novel antiviral treatments.

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HOW TO CHOOSE A MONETARY VALUE FOR GREENHOUSE GASES IN EVALUATION TOOLS

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ABSTRACT

There is a cultural interest for financial assessments of CO₂ and other ozone harming substance social impacts to be utilized in different assessment strategies like money saving advantage investigation and life-cycle evaluation. An assortment of assessments might be found in the writing. There is some vulnerability since they fluctuate by many significant degrees. An absence of clearness on which to utilize this survey endeavors to give some heading regarding the matter. The variety in carbon esteem assessments depends on various obscure elements that will keep on being indistinct, for example, environment affectability, future discharge evaluations, and leaders' moral contemplations points of view. Accordingly, there is nobody right money related incentive for CO₂ rather it will be controlled by moral contemplations. Client's perspective accordingly, assessments of the cultural expenses of CO₂ outflows are futile. They can't be utilized to compute an ideal discharge level, yet they might be utilized to illuminate such assessments. It has been recommended that in transient assessments, peripheral reduction quotes are utilized for outflows restricted by restricting objectives. For any remaining discharges, the social expense of carbon esteems ought to be applied. Benchmark Principles for deciding a financial carbon esteem, just as related assessments, are proposed. Contingent upon the moral choices taken and the expectations made with regards to what's to come. Appraisals of outflows and environment affectability might be extensively more noteworthy than those normally used in examinations. The present evaluation devices Estimates should be refreshed consistently, and a more profound information is required and an unmistakable comprehension of the limitations and vulnerabilities included.

KEYWORDS: Carbon Value, Ethical, Marginal Abatement Cost, Monetary Valuation, Social Cost of Carbon Uncertainties.

INTRODUCTION

Exhaustive translation of the climatic impact of various approach and creation choices are generally applied or required in strategy and making corporate assessment. Depictions of dynamic and detached CO₂ and other nursery discharges, yet additionally their costs included

and long haul benefits all in all, are increasingly becoming obligatory on the grounds that once settling on close to home desires, government drives, or key drives, or when presenting specific guidelines for effectively reassuring change towards existing set destinations (1). The average approach system is to quantify environment related outcomes in monetary terms and use these numbers in assessments and decision apparatuses like standard costing. Albeit less regularly, adaptation is utilized in life cycle for reasonable improvement inside assorted areas of the economy to assess particular discharges and assets streams. Adaptation is here and there applied in a few ecological evaluation draws near, like Environmental Impact, Life Cycle Analysis, and Strategic Environmental Analysis, just as in records of asset use and inaccessibility, Submitted for distribution). It very well may be difficult to discover which gauge to simply utilize, what the variations between results talk mean, nor what it will in general intend to utilize a particular conjecture in evaluation strategies since there are assortment of thousands financial worth projections of CO₂ and climate impacts in the examination writing and in rules (2).

For sure, these are average worries expressed by legislatures and business chiefs who wish to make judgment more powerful or straightforward. The reason for this article is to give some encourage to professionals who wish to or should apply a money an incentive for Co₂ in the environment in devices like Cost benefit investigation and LCA on which gauge to utilize and what the varieties between them imply and involve. An exploration was embraced using wellsprings of writing and master contacts, including research articles and dim writing generally from the years picked. Various evaluation procedures are utilized or would be utilized in approach and business where money related emanations esteems are utilized or may be applied.(3). The harm strategy for valuation (SCC) and the variable costs approach (MAC), two of the most common financial techniques for estimating CO₂ emanations outcomes, are portrayed to represent differentiations between them when utilized in choice emotionally supportive networks for strategy or business. We likewise go through when and why various approaches are OK in various situations, just as which variables drive SCC and MAC expectations the most and which suspicions are by a wide margin the most critical. Presents instances of existing carbon drawn from that part that are or might be utilized in arrangement and business sway appraisal apparatuses, with a determination of such being utilized in a fundamental report case in Section 5 to clarify what gauge decision means for the evaluation outcome.(4). We examine and propose a few ideas dependent on this, including future examination prerequisites and benchmark standards for choosing a money related carbon esteem in different applications. The last part finds some conclusion. Close joint effort with industry players, government associations, and scholastics from many disciplines was a significant piece of our methodology. To distinguish major functional issues, fundamental strategic components, and significant writing, studios, gatherings, and meetings were held (5).

The information for the contextual investigation came from two huge global enterprises. Suggestions are situated partially on earlier exploration and to a limited extent on discussions among project individuals and partners. Various types of assessments are utilized or might be utilized in both strategy and business where money related appraisals of CO₂ emanations and other natural impacts are utilized or might be used. A portion of these are definite in the two areas beneath. We distinguish four various types of strategy assessments in which financial appraisals of CO₂ and other ozone depleting substance costs are utilized. Proficiency CBA (target setting sway appraisal): computing the expenses and advantages of different environment strategy desire levels, for example, an outflow fixation level or an emanation decrease level, and

deciding if targets are set ideally (for example regardless of whether assessed expenses to meet the objective equivalent the advantages to meet the objective). Strategy CBA (administrative effect appraisal): assessing and assessing the expenses and advantages of outflow decreases coming from legislative guidelines, for example, quantitative impediments or commitments, for example, laws and portions, when one of the principle objectives is to diminish emanations (6). Financial instrument assessments incorporate observing the most effective pace of emanation duties, tolls, and endowments, just as changing such rates. Project CBA (project evaluation): ascertaining and looking at expenses and advantages of explicit measures, like transportation framework executions or changes, and deciding if the undertaking's advantages offset the venture's expenses. In any case, expenses of CO₂ might be applicable to survey in whatever strategy or undertaking is being evaluated, if there is some material effect on emanations (7).

Ex risk, as assessments of whether environment targets or duty rates have been forced in accordance with in general aspirations, and ex post, as assessments of whether environment targets or expense rates have been forced in accordance with by and large desires, every one of the four sorts of evaluations can be performed. Monetary assessments of the impacts of CO₂ and other ozone harming substance emanations might be used in an assortment of business choice situations. On the off chance that the cultural expenses of ozone harming substances have been disguised somewhat, for example, by means of a CO₂ assessment or market outflow grants, they will be incorporated into ordinary business activities. Organizations might be keen on thinking about cultural costs that poor person yet been disguised notwithstanding these costs. Coming up next is a rundown of situations wherein this could apply (8). Ecological administration requires the acknowledgment of an association's and its tasks' natural components, just as the ID of those viewpoints that have or may have generous natural impact(s). This ID might be finished utilizing a money related appraisal of the impacts. In LCA, a remove measure is now and then needed for figuring out which streams, unit cycles, and impact classes to remember for a LCA.

To set up such a remove measure, the aftereffects of a starter gauging utilizing money related measurements might be used. With regards to item improvement, there are two choices: go or off limits. The Gate Model is regularly utilized in item improvement, and it involves designated spots at different phases of the advancement interaction when explicit execution prerequisites should be satisfied. Natural execution norms might be communicated in actual terms or by working out financial impacts. Despite the fact that there are numerous strategies for assessing the expense of ozone depleting substance emanations that cause environmental change, getting financial appraisals for ozone depleting substance discharges is more troublesome than observing money related evaluations for externalities that are more limited in overall setting (9). This is one reason why model-based situation techniques are more predominant than direct situation draws near, for example, those dependent on individuals' readiness to pay to forestall environmental change. In the exploration on financial worth of environment impacts, two significant strategies as of now stand apart as the most pervasive. Both have monetary hypothesis and practice as an establishment. One of them endeavors to compute the cultural expenses of environmental change impacts. The elective technique includes computing the expense of decreasing CO₂ or other ozone depleting substance emanations. The first is known as the social expense of carbon (SCC) when expressed as a negligible worth (a gradual change), while the last option is known as the peripheral decrease cost (MAC). The worth of the damage from environmental change impacts related with an additional a huge load of CO₂ delivered into the air is described as a SCC gauge. Since the upside of staying away from that ton is something contrary to the harm cost of that ton,

SCC might be utilized to ascertain both the harm cost of exercises that raise emanations and the advantage of activities that diminish outflows.

A MAC gauge, then again, is produced from the peripheral expense of accomplishing a specific discharge decrease objective. The expense at the objective level is the cost per ton of CO₂ that society should pay essentially to meet the target. SCC and MAC assessments may hypothetically be equivalent: since a MAC esteem mirrors society's expense of staying away from environmental change harms, it is, under ideal conditions, a reflection of the advantage of keeping away from such misfortunes, similar as the SCC esteem. Macintosh at the objective level should coordinate with SCC at the objective level in the event that an outflow objective is set up properly (10). For different discharge levels, a schematic portrayal of MAC and SCC is shown. Harms are expected to expand more than proportionately to air fixation or temperature, as indicated by a successive finding in the writing. This is on the grounds that a SCC gauge depends on both all out emanations and temperature rise, and expenses related with one ton of CO₂ are hence subject to outflow timing. The MAC bend shows that the greater reduction is done (bringing about less outflows), the higher the decrease cost becomes at the edge. This is because of the market's assumption that decrease endeavors would be dispensed in at least two different ways. financially savvy way, executing minimal expense ventures prior to carrying out costlier ones. The place where MAC = SCC is alluded to as the ideal emanation level. Assuming that we decline outflows by not exactly this, the expense of decrease is not exactly the expense of mischief, making it productive to diminish discharges much more. Then again, assuming that we decline outflows beneath the ideal level, the expense of doing as such is more noteworthy than the benefits of staying away from hurt. This is for the most part the legitimate carbon esteem.

DISCUSSION ON MONETARY VALUE OF GREEN HOUSE GASES

As an outcome, assuming amazing conditions exist, both of the two procedures of valuation utilizing SCC or MAC can likewise be utilized to esteem nursery emanations in a CBA and other instrument where environmental change impacts are to be assessed financially. This is the financial supporting for carbon esteem. Notwithstanding, as amazing conditions don't exist, no "valid" gauge of harms costs is accessible; goals are likewise made in a fluffy way, bringing about SCC and MAC appraises that contrast. As an outcome, the two different ways are, somewhat, two autonomous exercises. A SCC gauge is a mathematical portrayal of existing comprehension of the measure of quantifiable outcomes of expanding ozone depleting substance discharges. Coordinated and comprehensive models (IAM) incorporate modules of environment dynamic frameworks with financial ramifications of environmental change to make SCC projections. These four models represent approximately 90% of friend investigated SCC gauges. An IAM evaluates the expense of anticipated expanded harm along an outflow pathway as an outcome of a moderate expansion in CO₂ discharges (for example a ton) at a particular point on schedule. The SCC not really set in stone as the all out of the general harm cost varieties between the reference case (for example the same old thing) and the additional ton situation. As an outcome, the harm cost is set up by suppositions made for both the updated and starting (reference) environmental change situations, which likewise depend on the current monetary development, CO₂ outflow, and moderating costs gauges. The suppositions created on environment affectability, the roundabout and prompted effect of expanding temperatures, society's adaptability and delicacy, and the financial worth of various results, are on the whole

basic components. Portions of a huge load of CO₂ transmitted endure in the climate for centuries. The consequences might bear significantly longer and be hopeless.

As a result, SCC computations ought to incorporate the expense of the additional ton's harms during its total lifetime. Since the heft of the harm is made by the demonstration of producing over ages, any consumption of diminishing strategies or other decrease activities today should be repaid by the advantages of future effects forestalled. Intertemporal adjusting in IAMs is dealt with, all things considered in other monetary appraisals, by applying a rebate factor that addresses the overall worth of utilization after some time in the perspective of current buyers, which might be considered as an indication of intergenerational concern. The standard rebate rate depends on a so markdown factor, wherein r is the unadulterated pace of abstract worth, h is the flexible of peripheral advantage of utilization, and g is use per capita development. The lower the current worth of potential environmental change uses, the more prominent the pace of emotional worth, and the lower the degree of time inclination, the more noteworthy the dread with regards to environmental change. Most of financial specialists advocate a pace of time inclination bigger than zero (p.844); the most ordinary supposition that is a pace of 3% . The adaptability of negligible utility of utilization plays out a few jobs, some of which are incongruent together. Since the influence organization got from additional utilization decreases with more elevated levels of utilization, declining minor utility is a justification behind setting a lower esteem on people in the future's government assistance assuming that they are determined to be more extravagant; notwithstanding, it likewise suggests hazard avoidance, which means despising vulnerability and pessimistic astonishments, which expands the readiness to pay to moderate environmental change assuming it is anticipated to be more awful. Besides, in light of the fact that a similar financial harm makes a more prominent utility misfortune a destitute individual than to a rich individual (a reality that implies utilization penances for emanation decrease are somewhat more costly in helpless nations than in rich), it is motivation to give more noteworthy load to environment impacts on poor people.

Distributional challenges are for the most part dealt with by alleged value weighting. At the point when a gauge is value weighted, hurt per financial unit in a similarly helpless nation is given a greater load than harm per money related unit in a generally rich one. While most SCC gauges are introduced as worldwide totals, they ought to preferably be territorially changed with value loads to represent distributional impacts because of contrasts in financial turn of events and weakness, just as the way that less fortunate nations are all the more seriously impacted by environment impacts overall. As an outcome, inconsistencies in SCC gauges are dictated by the value weight applied. As recently showed, the rebate rate used affects SCC computations. The normal SCC for preliminaries with a 3 percent occurrence of worldly inclination, for instance, is Weighting, just as the danger premium society ought to be prepared to pay to deflect catastrophe, are a portion of the essential grounds of debate in the limiting contention. The rebate rate is normally found out utilizing data from market costs, assuming that drawn out loan fees precisely mirror individuals' uncovered inclinations for use tomorrow versus use today, or virtues or political choices reflecting society's position on intra-and intergenerational value and hazard. There are discusses with respect to which approach is awesome.

Both might be considered regulating, since market rates are a long way from precise experimental evaluations of society's decisions on long haul social worries, remarkably ecological ones like environmental change. It ought to be featured, notwithstanding, that utilizing

monetary market information is bound to address dependent on bury rather than intergenerational inclinations. Regardless, there are factors inclining toward a low rebate factor (under 3%): long haul normal danger free markdown rates are as often as possible assessed to be lower than 2.7 percent, while genuine yields on (US) Treasury notes and government securities have arrived at the midpoint of 1.4 and 1.1 premise focuses since WWII, separately. There are critical hypothetical contentions for a bringing down markdown factor, as per, which would mirror the way that we know less with regards to the long future. Essentially, they contend that the markdown rate's projected expected development pace of per capita utilization should fall after some time to mirror the vulnerability about the future development possibilities. Where environmental change is projected to impact monetary development, particularly in more unfortunate nations, this is energized. The way that environmental change has no impact, or just a minuscule impact, on GDP development in the IAMs fortifies this significantly further. Environment affectability is a measurement that mirrors the drawn out temperature rise projected from multiplying CO₂ focuses noticeable all around; more noteworthy environment affectability infers higher temperatures or expanded fiasco hazards happen sooner. Recognize environment affectability as the main supporter of variety in SCC assessments autonomous of markdown rate level in a decay examination of the SCC utilizing the FUND model. The vulnerability is represented by the possible scope of environment responsiveness. For a given ascent in CO₂, a more noteworthy environment affectability prompts bigger temperature rises and thus more grounded outcomes. The opposite will occur on the off chance that environment affectability is overstated. Horticulture, cooling energy use, and movement are the other top ten most huge factors. As a result, there are significant vulnerabilities around SCC computations, and existing SCC assessments don't fulfill the hypothetical goals demonstrated.

A portion of the vulnerabilities get from an absence of logical data about the environment framework. Different vulnerabilities encompass the decisions that society will make later on, like alleviation drives. These two classifications might be considered as vulnerabilities in the effect examination (otherwise called the impact pathway investigation) (otherwise called the impact course examination). Another arrangement of questions concerns central moral and philosophical issues, for example, the pace of return to utilize, the degree of capital weighting and danger society ought to acknowledge, and which viewpoints to remember for the social and ecological worries, which are all essential for the genuine effect valuation step. Certain vulnerabilities might be diminished and logically clarified for a portion of these worries with more examination. Different difficulties will stay a wellspring of vulnerability. The moral worries, specifically, are extremely abstract assessments with respect to choice. Basically expressed, there are no "right" responses to the ethical difficulties encompassing environmental change. The presence of a limiting strategy point is a definitive viewpoint for producing a financial gauge for the cultural expense of CO₂ emanations. The defense for this is that assuming a predetermined quantitative goal for total CO₂ or ozone harming substance outflows in a given area is set up, in some measure on a fundamental level, the total environment related harm in that space will be set also.

However long the point is set up, an undertaking that outcomes in a slight expansion in outflows has no effect on generally discharges on the grounds that an equivalent decrease in emanations should be accomplished somewhere else in the designated region to fulfill the goal. In such circumstances, the unit cost of raising fossil fuel byproducts for society is the expense of bringing down discharges somewhere else in the economy. Since isolated organizations frequently have remarkable quantitative destinations, MAC esteems might vary drastically over

the long haul, even inside a solitary country. For instance, in the United Kingdom and Sweden, one part of the economy is limited under the EU ETS point, while one more is covered by country-explicit EU objectives up to 2020. In Sweden, non-exchanging area outflows are to a great extent restricted by a CO₂ charge, though the UK has had a Carbon Price Floor set up starting around 2013, which applies to coal and oil utilized for power age. Both the grant cost and a widespread discharges charge (or other financially savvy motivators) are fundamentally precise assessments of the variable expenses of reduction in the areas to which they apply. This is on the grounds that benefit augmenting entertainers are headed to cut emanations assuming their corresponding decrease cost is not exactly the license charge (or duty) (or expense). At the point when the expense of decrease surpasses the expense of the license, it is more expense proficient to look for grants instead of diminishing. As the minimal expenses of decrease move, as a result, it's reasonable for anticipate that all out emanations will be diminished up to where all entertainers' peripheral costs equivalent the current license cost (or assessment level) available. In any case, utilizing charges as MAC figures isn't basic in light of the fact that the real decrease coming about because of an emanation charge is probably not going to impeccably cling to a specific objective; to accomplish this, the policymaker will require ideal data about the properties of the total minimal expense of decrease at the market. Moreover, CO₂ charges are habitually determined by inspirations other than bringing down CO₂ discharges, like financial or redistributive worries.

CONCLUSION AND IMPLICATION

There are numerous money related carbon esteems accessible, all of which change by a few significant degrees. The figures depend on various obscure elements, including environment affectability, future outflow projections, and abstract moral perspectives. We reason that there is nobody right financial incentive for CO₂ to utilize in sway appraisal apparatuses; it will be controlled by the client's moral position. Since the impacts of rising temperatures are expected to develop, carbon esteems are probably going to ascend later on. Thus, appraisals might be impressively higher than the CO₂ levels regularly utilized today, contingent upon moral choices and suppositions about future discharges and environment affectability. Thus, SCC assessments can't be utilized to compute an ideal discharge level, despite the fact that they might assist with target-setting. In momentary assessments, MAC esteems ought to be utilized for assessing discharges under restricting objectives, though SCC esteems ought to be utilized in any remaining cases. The moral perspectives of the chief ought to be reflected in the SCC esteem picked. To help chiefs pick a financial worth in sway assessments, we furnish three arrangements of benchmark standards with relating SCC gauges. Gauges should be refreshed consistently, and there should be a more prominent arrangement and correspondence of the cutoff points and vulnerabilities associated with request for different partners to appropriately appreciate the discoveries.

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AN OVERVIEW ON EFFECT OF AIR POLLUTION ON HUMAN HEALTH

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ABSTRACT

The Human Health is inextricably linked to the surroundings. Impact of the air pollution on the human health has been a fascinating topic that has sparked a lot of study in the past 50 years. Polluted air is thought to be one of the main causes of many illnesses in humans, including cardiovascular and respiratory disease, as well as lung cancer. Furthermore, air pollution has a negative impact on animals and degrades the plant ecosystem. The total goal of the study is to look at past studies on the origins & source of the air pollution, as well as to manage it as well as its negative impacts on people's healthiness. Definition of the air pollution, as well as their causes, were thoroughly discussed. The impacts of major air contaminants were described in depth. Air pollution's negative effects on the human health were also discussed.

KEYWORDS: Air Pollution, Major Air Pollutants, Human Health, Harmful Effects, Cardiovascular Disease, Respiratory Disease, Asthma.

1. INTRODUCTION

Contamination of ambient atmospheric by chemical compounds, gases, or particle matter is known as air pollution. Each year, these polluting elements may cause discomfort, illnesses, and millions of fatalities. They may also harm plants as well as other living things like animals and food crops. These polluting elements may also cause smog and acid rain, resulting in respiratory and cancer illnesses as well as ozone layer depletion, which contributes to global warming (1). Air pollution has a negative impact on labor productivity, agricultural worker work hours, and school student cognitive performance. The primary goal of this review is to investigate prior recent research on air contamination & its negative impacts on the human health & well-being. The many kinds of main atmosphere contaminants, as well as their various origins, were discussed. The link between air pollution levels and cardiovascular, respiratory, and lung malignancies.

In 1999, the World Health Organization defines as air pollution's "substance emitted by the human activity in sufficient concentration to the have negative effects on the health, agricultural crop production, vegetation, or the enjoyment of property." Pollutants are natural or manmade substances that damage the environment (2).

To have a pollutant impact in the atmosphere, the pollutant must first be discharged and chemically mixed or changed, after which it affect the receptor, such as humans, animal, plant, or any other substance. Air pollutions may be classified into two groups based on the source: ordinary or pollution due to human activities, & stationary or moving pollution. Jungle fires, dust storms, volcanic eruptions, gasses produced by radioactive decaying of the earth's crusts are examples of natural pollutants. As part of the digestion process, cattle and other animals may release methane. Pine trees also produce volatile organic chemicals (VOCs). Natural pollutants have a little impact on our environment due to their capacity to regenerate (3).

Human activities cause anthropogenic (man-made) pollution. There are three types of man-made air pollution sources: point sources, area sources, and line sources. Point sources are confined, stationary, and originate from big facilities or locations where a significant amount of air-polluting pollutants is produced during industrial operations. The oil refinery, power plant, steel work, foundry, paper mill, chemical station, wood as well as pulp processor, as well as storage and disposal facility are examples of point sources. The majority of human made point source release pollutants chemicals into atmospheric through chimney that are high enough in the sky to allow significant contaminants. Certainly meteorological circumstances, like low temperatures & wind, as well as highly stable atmospheric, may hinder or a decrease effectiveness of dispersions, causing pollutant to get confined around the points sources as well as fall to the ground surfaces, resulting in degradation of air quality (4).

2. MAJOR AIR POLLUTION

As previously stated, there are many air contaminants that have been categorized and have negative effects on the individual health, plants, and animals. Detrimental effects of the pollutant are mostly determined by the quantity and duration of exposure, as well as the kind of pollutants and their accumulation over time. Nitrogen oxide, carbon monoxide, sulfur oxide, ground-level ozone, volatile air compounds (VOCs), lead, and particulate matter are examples of “criteria air pollutants” or approximately “basic pollutants.”

2.1. Carbon Monoxide (CO):

The Carbon monoxide, the dangerous contaminant in the atmosphere. It is odorless, colorless, & tasteless gas which does not dissolve in water. It has a little lower density than air. Humans are poisoned by it, and it merely interacts with hemoglobin to produce carboxyhemoglobin (COHb).

Carbon monoxide is projected to be released into the atmosphere at a global rate of 2600 million tons per year. 60 percent comes from human-made activity, while the remainder comes from natural processes. CO emissions from humans are mostly caused by incomplete combustion of carbonaceous materials. The exhaust from gasoline-powered vehicles accounts for the majority of these pollutants (5). Other common sources include various industrial operations, trash incineration, and coal-fired power stations. Heaters and furnaces that are not adequately maintained also produce carbon monoxide.

2.2. Nitrogen Oxides (Nox):

Nitrogen oxides (NO_x) are a category of polluting gases that include stable oxides as a consequence of the interaction between nitrogen and oxygen. NO_x is made up of seven distinct chemicals. Volcanic eruptions, thunderstorm lightning, and soil emissions may all produce these chemicals at a low level. However, human action like burning of fuels in the motor vehicle and

stationary source is primary sources of nitrogen oxide. The road traffic is biggest producer of nitrogen oxides (NO_x), accounting for about 39% of total NO_x emissions.

The nitric oxide (NO) & nitrogen dioxide (NO₂) are two most significant & prevalent NO_x molecules among these seven. The most common source of nitric oxide (NO) is the high-temperature combustion of fossil fuels. The nitric oxide are converted to nitrogen dioxide (NO₂) in atmosphere when it is oxidized by atmospheric oxidants like ozone. The oxidation process happens quickly even at low levels of reactants in the environment (6).

2.3. Sulfur Oxides (Sox):

Sulfur oxide are divided into types: sulfur dioxide (SO₂) and sulfur trioxide (SO₃). Sulfur dioxides is colorless, acidic gas with a noxious odor. Chemically, it is a reducing agent since it sends off electrons while receiving oxygen. As a result, it's extensively employed as a bleaching agent, a grain & citrus food fumigant, & disinfectant in breweries & food mill, as well as in the food preservation. SO₂ is a common air pollutant that may be produced naturally, such as from volcanoes, or anthropogenic ally, such as through the burning of fuels & biomass at big industrial facilities like oil refinery & power plants. Oceans, soils, and plants may also release volatile organic sulfur compounds.

Sulfur compounds are one of the most common air pollutants, according to reports, and they play an important roles in altering chemistry of earth's atmospheres. For example, they have a significant impact on the weather and climate. SO₂ is recognized as most of the corrosive gas in atmosphere, particularly when additional contaminants are present. Under low humidity, nitrogen dioxides increased SO₂ corrosively by twofold. In the presence of O₃, the corrosively of SO₂ is greater than in presence of NO₂.

2.4. Particulate Matter (2.3):

Particulate matter in the air is one of the most common contaminants in the atmosphere. This is due to the fact that human breath is combination of extremely small solid and liquid particles in the ambient air. Particulate matter may be categorized as coarser particles with an aerodynamic diameter of less than or equal to 10 m (PM₁₀), or tiny particles having an aerodynamic diameter of less than or equal to 2.5 m. Ultra-fine particulate matter, on the other hand, has a diameter of less than 0.1 m. Particulate matter may be naturally or anthropogenic ally emitted into the atmosphere (7). Volcanic eruptions, mineral dust, sea salt, and wildfires are among natural sources of particulate matter. Fuel combustion, industrial emissions, burning biomass, road dust, and combustion in car engines and heating boilers are all examples of anthropogenic activities that contribute to particulate matter in the atmosphere.

3. HARMFUL EFFECTS OF AIR POLLUTION

Air pollution is widely recognized to be one of the leading causes of severe human health problems such as cardiovascular and respiratory diseases. Numerous studies have shown the negative effects of air pollution on productivity, behavior, and well-being of people who are exposed. It was also shown that air pollution had a negative impact on agricultural employees' productivity and working hours.

3.1. Respiratory Illnesses:

To have a pollutant impact in the atmosphere, the pollutant must first be discharged and chemically mixed or changed, after which it affect the receptor, such as humans, animal, plant, or any other substance. Air pollutions may be classified into two groups based on the source: ordinary or pollution due to human activities, & stationary or moving pollution. Jungle fires, dust storms, volcanic eruptions, gasses produced by radioactive decaying of the earth's crusts are examples of natural pollutants. The effects of gender and age were also looked at. Males were shown to be more affected by SO₂ and PM₁₀ than females, while the elderly were found to be more affected than young individuals. The impact of NO₂ was shown to be more apparent in youngsters, particularly those under the age of 15. For PM₁₀, SO₂, and NO₂, increasing ambient air pollution by roughly 10 g/m³ resulted with increases in emergency department admissions of 2.8 percent, 3.6 percent, and 7.7 percent, respectively (8).

The interplay of severe weather and air pollutants, especially PM₁₀, and their effects on respiratory hospital admission were investigated. It was shown that respiratory hospital admissions rise substantially during hot, dry weather, which is accompanied by high water vapor, as well as during cold, overcast days, which are linked with higher precipitation levels.

The researchers looked at the link between key air pollutants including SO₂, NO₂, and PM₁₀ and respiratory illness and lung cancer mortality. With an increase of 10 g/m³ in SO₂, NO₂, and PM₁₀, it was calculated that the proportion of respiratory illness mortality rose by around 7.69%, 4.38%, and 1.55 percent, respectively. The only air pollutant that was shown to be linked to lung cancer mortality was SO₂.

3.2. Asthma:

Asthma is a kind of inflammatory lung disease that affects individuals of all ages and leads to an increase in mortality and morbidity. Asthma affects about 300 million individuals worldwide, with an ongoing rise in the number of children and young adults, as shown in recent years. In China, for example, the number of asthma sufferers reached 30 million among 2010, and 7 million in American children and teenagers under the age of 18 in 2012. Numerous papers have looked into the effect of air pollution on the development of asthma, particularly in youngsters (9).

3.3. Cancer:

Because of the accumulating evidence from researchers across the world showing air pollutants are predisposing factors to lung, nasopharyngeal, head, and neck cancer, the WHO has classified air pollution to be a human carcinogen. It was also stated that ambient air pollution is the main cause of cancer mortality; furthermore, particulate matter may enter the alveoli depending on its size. PM may induce carcinogenesis in the respiratory system when it travels to the alveoli. The researchers also discovered that lung cancer is responsible for 7% of all deaths caused by PM_{2.5} exposure.

To have a pollutant impact in the atmosphere, the pollutant must first be discharged and chemically mixed or changed, after which it affect the receptor, such as humans, animal, plant, or any other substance. Air pollutions may be classified into two groups based on the source: ordinary or pollution due to human activities, & stationary or moving pollution. Jungle fires, dust storms, volcanic eruptions, gasses produced by radioactive decaying of the earth's crusts are

examples of natural pollutants. As part of the digestion process, cattle and other animals may release methane. Pine trees also produce volatile organic chemicals (VOCs). Natural pollutants have a little impact on our environment due to their capacity to regenerate.

3.4. COPD (Chronic Obstructive Pulmonary Disease):

COPD, which includes bronchial asthma, chronic bronchitis, and pulmonary emphysema, is one of the leading causes of morbidity and death in the United States. COPD kills more than 3.2 million people per year across the world. COPD is expected to rank fifth among variables with a high societal burden by 2020, and third among the most significant causes of mortality for both genders worldwide. There have been less studies on the link between major air contaminants and COPD. In Sao Paulo, Brazil, Arbex and co-authors investigated the impact of daily concentrations of main air pollutants on COPD emergency department visits. Their results indicated that PM₁₀ and SO₂ exposure had an immediate impact on COPD emergency room visits. COPD admissions increased by 16 percent and 19 percent, respectively, while PM₁₀ and SO₂ levels increased by 28.3 and 7.8 g/m³, respectively. Women and the elderly were disproportionately affected by both types of air pollution. In a similar study, researchers discovered that even low amounts of SO₂ exacerbate COPD symptoms. Climate factors, particularly temperature, were discovered to have a synergetic impact.

3.5. Cardiovascular Disease (CVD):

The detrimental effects of breathing air pollutants on the cardiovascular system have been shown beyond reasonable doubt in observational and epidemiologic research. Human activities cause anthropogenic (man-made) pollution. There are three types of man-made air pollution sources: point sources, area sources, and line sources. Point sources are confined, stationary, and originate from big facilities or locations where a significant amount of air-polluting pollutants is produced during industrial operations. The oil refinery, power plant, steel work, foundry, paper mill, chemical station, wood as well as pulp processor, as well as storage and disposal facility are examples of point sources. The majority of human made point source release pollutants chemicals into atmospheric through chimney that are high enough in the sky to allow significant contaminants. Certainly meteorological circumstances, like low temperatures & wind, as well as highly stable atmospheric, may hinder or a decrease effectiveness of dispersions, causing pollutant to get confined around the points sources as well as fall to the ground surfaces, resulting in degradation of air quality. It will have a particularly negative impact on the most vulnerable members of society, such as low-income or elderly people, or those with a history of cardiovascular disease (10).

3.6. Diabetes Disease:

Type 1 diabetes is insulin-dependent and has a childhood start. Type 2 diabetes is insulin-independent and has a childhood onset. Type 2 diabetes, on the other hand, is linked to adult onset. Evidence has accumulated over the past decade suggesting air pollutants such as NO₂, O₃, and particulate matter (PM) have deleterious effects on glucose metabolism, affecting insulin sensitivity and hemoglobin A1C. (Hb A1C). People with type 2 diabetes, as well as the general public. Furthermore, it has been suggested that air pollution may raise the incidence of type 2 diabetes.

It is apparent that experts have paid less attention to the link between air pollution and diabetes. Several studies have looked at the negative consequences of air pollution on diabetes. NO and particulate matter with a diameter of less than 10 m are also found to be the air pollutants that have the greatest impact on diabetes.

3.7. Epilepsy Effects:

Epilepsy is a common neurological disorder characterized by excessive neuronal excitability manifested as uncontrollable and frequent episodes. It is a common and complicated illness that affects over 70 million individuals worldwide, from infants to the elderly. In general, epilepsy's impact is not limited to physical pain; it may also result in mental effects and psychological issues. Air pollution and its link to or effect on epilepsy sufferers is a relatively recent topic that has received little attention from academics. The majority of research rely on data from registries or hospital databases.

3.8. Effects on Mumps:

The mumps virus causes a common pediatric illness known as mumps (Mu V). The primary symptom of this condition is swelling on one or both sides of the parotid gland. Although many research have looked into the impact of climatic factors on mumps epidemics, only a few have looked into the impact of air pollution. The relationship between short-term exposure to ambient air pollution and the incidence of mumps in Wuhan, China has been documented using a time-series research. Their results showed that there is a link between exposure to air pollutants, particularly NO₂ and SO₂, and an increased chance of getting mumps. The negative impacts of air pollution were more pronounced in the summer than in the winter. It is evident that the link between air pollution and mumps patients is a relatively new topic that has been addressed by a small number of studies. NO₂ and SO₂ are the air pollutants that most often induce mumps illness, particularly in youngsters, according to the research mentioned above.

4. DISCUSSION

Air pollution has a significant and negative impact on human behavior, productivity, and well-being, according to recent research. According to reports, air pollution has a detrimental impact on agricultural laborers' labor productivity. Air pollution, particularly small particulate matter with a diameter of less than 2.5 microns (PM_{2.5}), reduces productivity, especially in less physically demanding jobs like communication centers. It has also been discovered that air pollution is linked to behavioral changes and well-being, particularly unethical and illegal conduct, as well as lower levels of perceived pleasure. High levels of stress hormones including adrenaline, cortisone, and cortisol have been linked to fine particulate matter, particularly PM_{2.5}. Furthermore, certain PM_{2.5} components may pass through the blood-brain barrier and enter the brain. Additionally, increased amounts of stress hormones may result in behavioral changes, particularly an increase in impatience. A substantial increase in air pollution has also been shown to have harmed the productivity of low-skilled industrial and agricultural employees. Because of the rise in the amount of tiny particulate matter below 2.5 m, high school pupils' T-test scores and cognitive function have been harmed (PM_{2.5}).

During games, the correct passes are used to evaluate the performance and production of football players. During the seasons 1999/2000 to 2010/2011, the right passes of professional players in the Bundesliga league were studied and linked to ambient air pollution surrounding stadiums.

Particulate matter in the ambient air has a detrimental effect on the players' productivity in terms of total number of passes, according to their results. Players of a certain age and those who play in environments that require greater physical effort had the most effect.

Human activities cause anthropogenic (man-made) pollution. There are three types of man-made air pollution sources: point sources, area sources, and line sources. Point sources are confined, stationary, and originate from big facilities or locations where a significant amount of air-polluting pollutants is produced during industrial operations. The oil refinery, power plant, steel work, foundry, paper mill, chemical station, wood as well as pulp processor, as well as storage and disposal facility are examples of point sources. The majority of human made point source release pollutants chemicals into atmospheric through chimney that are high enough in the sky to allow significant contaminants. Certainly meteorological circumstances, like low temperatures & wind, as well as highly stable atmospheric, may hinder or a decrease effectiveness of dispersions, causing pollutant to get confined around the points sources as well as fall to the ground surfaces, resulting in degradation of air quality.

5. CONCLUSION

The study of the main causes and negative consequences of air pollution is exploding these days. Air pollution has a negative impact on human health and the environment, as well as a physiological, psychological, and economic impact on society. This review study compiled information from more than 170 peer-reviewed publications on human and natural causes of air pollution. Air pollution's many negative impacts on cardiovascular and respiratory illnesses were also discussed. There were also links discovered between the concentrations of several air contaminants and diabetes, mumps, and epilepsy. Finally, the effects of air pollution on productivity, working hours, and human health are discussed.

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PECULIARITIES OF TRANSLATING SELF-HELP BOOK TITLES INTO THE UZBEK LANGUAGE

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ABSTRACT

The article discusses the peculiarities of self-help books and their titles, as well as the strategies of translating self-help book titles into the Uzbek language. As the compared languages, that is English and Uzbek, belong to different language families, they have different language structure, which influences the result of translation by making various changes in the form and meaning.

KEYWORDS: *Self-Help, Self-Improvement, Transformation, Calque, Transcription, Transliteration, Literal Translation.*

INTRODUCTION

XXth century saw a dramatic rise in the publication and translation of self-help books. According to the definition given by Merriam-Webster dictionary the term “self-help” means *the action or process of bettering oneself or overcoming one's problems without the aid of others especially: the coping with one's personal or emotional problems without professional help*. Self-help books frequently concentrate on popular psychology, such as relationships, or characteristics of the mind and human behavior that self-help proponents believe can be influenced with effort. Self-help books usually promote themselves as being able to improve self-awareness and performance, as well as life satisfaction. They frequently claim that they can help you do this faster than traditional therapies.

DISCUSSION

As self-help books are getting popular and read by millions of people in their original language, the translation of such books is making it possible to reach hundred millions of people all around the world. However, modern translation still considers adequate translation with full pragmatic function as its main focus, and translation of self-help books that evokes the same pragmatic effect on the target receptors is of great importance to research and analyse.

As a scope of analyses we have chosen the translation of self-help book titles into the Uzbek language for the several reasons. Firstly, for quite a long time, the names of books of fiction and non-fiction, as a linguistic phenomenon, have attracted the attention of researchers. Secondly, analysing the titles and their translation is important because they are probably one of the first things that potential readers encounter, and from which they decide whether to read on. According to L.L. Nelyubin, the heading is the most important means of rubrication and an element of structural formalization, reflecting the subject matter and the main idea of the

highlighted part of the document in an extremely concise and laconic form; acts as an important unit of message that conveys certain information. At the same time, the translation of a title, which has a number of specific features, can be considered a separate translation problem. First of all, it is necessary to mention the difficulties in understanding the titles of works, which are due to two reasons:

- 1) The fact that they are allowed to violate language norms;
- 2) Insufficient complete and deep knowledge of the realia and culture of the country of the target language, as well as gaps in the knowledge of phraseology.

ANALYSES

When it comes to the titles or headings of self-help books, they have special grammatical form to make them sound more attractive and more promising to the reader. According to K.D.Liang the grammatical structure of self-help books written in English are as follows:

Noun phrases: "The power of now"

Imperative clause: "Wreck this journal: Now in colour"

Ing-clause: "Crying in H Mart"

Declarative clause: "Good days start with gratitude"

Non-finite wh clause: "How to win friends and influence people"

Adjective phrase: "Untamed"

Finite wh-clause: "What happened to you?"

Prepositional phrase: "From panic to power"

Ambiguous: "Greenlights"

An important problem when translating a title of a self-improvement book is the definition of its functions. As a rule, book titles perform such functions as: informational and explanatory, predictive, nominative, relay and, finally, stylistic functions. The informational and explanatory function informs the reader of a brief content of the given text, forms the mindset for understanding the text, since the main task of the title is to attract attention, interest the reader, establish contact with him and even amaze him. After reading the title, the reader gets a first impression of the work. This testifies to the predictive function of the title, which is involved in the formation of the reader's attitude towards the perception of a work of art. The title also performs the nominative function, defines and highlights the subject of the image, at the same time embodying the author's idea of this subject. The relay function is a kind of "amplifier" of the artistic meaning of the title and, thus, the meaning of the artistic text. And, finally, the stylistic function is the expressive potential of the interaction of the linguistic means of a work of art, providing the transfer of emotional, expressive and evaluative information.

Thus, speaking about the features of the translation of headings, the following features of headings should be taken into account:

- 1) in English, there is a significant predominance of verb phrases over nominal ones. At the same time, nominal phrases are much more common among Uzbek headlines;

- 2) English headings are characterized by the omission of the article, possessive pronouns and other official words, the forms of the verb 'to be' are often omitted, sometimes semantic verbs and other words that can only be guessed after viewing the text are omitted;
- 3) In English headings, instead of the past tense verb forms, the present tense forms are used; instead of personal forms of the future tense verb, the infinitive is used;
- 4) The English title is an extremely concise version of the main content of the text. At the same time, many headings of Uzbek texts are built on a different principle: they, rather, serve as a signal focusing attention on one of the elements of the text content;
- 5) Colons and question marks are used to attract attention in headings;
- 6) Full sentences as headings are not so common. Even if the title is a complete sentence in structure, for its translation it is sometimes necessary to read the text in order to understand the meaning;
- 7) English titles can be represented by a phrase with a participle or gerund;
- 8) The use of colloquial forms and slang in names;
- 9) The greatest difficulty in translation, obviously, is the use of phraseological units, word games and deliberately modified fixed expressions in the headings, the meaning of which is transparent only for those who know the culture of English-speaking countries well.

The simplest translation strategy is a direct or literal translation of book titles into Uzbek, which is used in the absence of untranslatable sociocultural realia and a conflict between form and content.

Direct translation techniques are used when the structural and conceptual elements of the source language can be transferred to the target language. They include:

- 1) Borrowing, transcription and transliteration.

"Monk who sold his Ferrari" Robin Sharma – "Ferrari" sinisotganrohib

As a type of direct translation, in the Uzbek title car brand "Ferrari" is given as the original, because using any other equivalent instead of the original brand name would have no sense, as this very brand is known to potential Uzbek readers.

- 2) Calque

"Leader without a title" Robin Sharma – "Unvonsizlider"

- 3) Literal translation

"The Secret" Rhonda Byrne - "Sir"

"Who will cry when you die?" Robin Sharma – "O'lsangkimiyig'laydi?"

"The 21 Irrefutable Laws of Leadership" John Maxwell - "Liderlikning 21 muqarrarqonuni"

"Think and Grow rich" Napoleon Hill – "O'ylava boy bo'l"

In the given examples above, titles in original and in translated variants have almost the same grammatical structure. "The Secret" – "Sir" noun, "Who will cry when you die? – "O'lsangkimiyig'laydi?" finite wh-clause, "The 21 Irrefutable Laws of Leadership" -

“Liderlikning 21 muqarrarqonuni” noun phrase, “Think and Grow rich”– “O’ylava boy bo’l” imperative mood.

The second strategy is the **transformation** of the name, which is due to various factors, such as lexical, stylistic, functional, pragmatic. “*The Cafe on the Edge of the World*” John Strelecky – “Yerchekkasidagiqahvaxona”, “*The subtle art of not giving a f*ck*” Mark Manson – “Beparvolikningnoziksani”, “*Everything is f*cked*” Mark Manson – “*Hammasirasvo*”, “*The 7 habits of highly effective people*” Steven Covey – “*Muvaffaqiyatliinsonlarning 7 ko’nikmasi*”, “*Tuesdays with Morrie*” Mitch Albom – “*Morringeshaanbadarlari*”, “*How to stop worrying and start living*” Dale Carnegie – “*Bezovtalikdanxalosbo’lishvayangihayotboshlashsirlari*”, “*Men are from Mars, Women are from Venus*” John Grey – “*Erkaklar Mars, ayollarVenerasayorasidan*”

Most of the book titles taken for analyses were translated with the help of transformations, for literal or direct translation of these titles were impossible due to the nature of the English and Uzbek languages.

And finally, the last strategy used by translators is to replace titles of works due to the impossibility of conveying the pragmatic meaning of the original text. “*You Are A Badass: How to Stop Doubting Your Greatness and Start Living an Awesome Life*” Jen Sincero – “*Nisi.O’znishakllantirish*”, “*You Are a Badass at Making Money: Master the Mindset of Wealth*” Jen Sincero – “*Nolimang*”, “*The Power of Ambition*” Jim Rohn – “*AqlVitaminlari*”, “*Beyond positive thinking*” Robert Anthony – “*O’ylashni bas qil*”, “*The 48 laws of Power*” Robert Greene – “*Hayotning 48 qoidasi*”.

CONCLUSION

Translating titles is often a significant problem. The main task in translating titles of self-help books is to convey the content of such books in a way that the meaning of the title should be close to the original. The translator must take into account these functions of the title and be guided not only by linguistic knowledge, but also take into account a lot of other nuances when translating it. The data of our research show that in order to achieve the adequacy of translation and understanding of the name, methods such as literal translation, calque, transcription and transliteration are used less, but transformations were the most used type of translation. The strategy of replace or change of the title was done in cases when it was necessary due to linguistic and cultural differences of the two languages. Thus, the peculiarity of the translation of book titles lies, first of all, in the peculiarities of the language itself, its structure, features, and then in the translator's ability to summarize all the above-mentioned subtleties and convey not only the information embedded in the title of the book, but also the meaning embedded by the author.

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EFFECTS OF IRRIGATION REGULATIONS ON THE GROWTH AND DEVELOPMENT OF COTTON

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ABSTRACT

This article describes the results of a study conducted in the conditions of typical gray soils of Tashkent region. In the experiment, cotton variety "Navruz" was planted, and irrigation was carried out by laying black polyethylene film between the rows using pipes.

KEYWORDS: *Typical Gray Soil, Irrigation, Cotton Navruz Variety, Film, Flexible Pipe Yield.*

INTRODUCTION

One of the important measures in the system of agro-technologies of cotton cultivation is irrigation and feeding with mineral fertilizers and tillage. Saving available resources through minimal tillage of the soil, the source of mineral fertilizers and irrigation water resources is scarce today, and their rational use is becoming a requirement of the times.

Physical evaporation of soil moisture is reduced when mulching between rows of cotton, soil washing is prevented, water is not wasted through the ditches when water is distributed to the field through flexible artificial pipes.

The main purpose of the study

Under typical gray soil conditions, cotton is irrigated with a simple polyethylene and black polyethylene film between rows, fertilization of mineral fertilizers in different norms and proportions, ie the study of the effect of water-soluble application on plant growth and cotton yield.

Scientific novelty

For the first time in typical gray soils, the study of the effectiveness of fertilization of different norms of mineral fertilizers, as well as increasing the efficiency of irrigation water use and mineral fertilizers, as well as increasing the efficiency of irrigation, soil and soil fertility. to achieve a high and quality cotton crop as a result of the application of irrigation technology that reduces the leaching of nutrients from it.

Research results

All the factors studied in the study, including irrigation of cotton and feeding with mineral fertilizers in different norms and forms, have different effects on plant growth and development. In order to study the effect of different irrigation methods and the application of different annual norms of mineral fertilizers in water on the growth and development of cotton, phenological observations were made on 50 selected plants in June, July, August and early September in each variant and return.

The data obtained show that no significant difference was observed between the experimental options for plant growth and development in the phenological observations conducted in June.

According to phenological observations on plant growth and development in July, in the 1st variant of mineral fertilizers applied in the traditional way at a rate of 100%, the average plant height is 40.0 cm, yield 5.6 pieces, stem 5.2 pieces, with irrigation of mineral fertilizers In variant 2, which was used 100% in water, the average plant height was 41.1 cm, the yield was 6.4, and the stem was 5.7. In the 3rd variant, when mineral fertilizers were applied in film-coated fields with water dissolved in water at a rate of 100%, the average plant height was 44.8 cm, the yield was 7.2 and the yield was 6.1.

According to phenological observations on plant growth and development in July, in the 1st variant of mineral fertilizers applied in the traditional way at a rate of 100%, the average plant height is 40.0 cm, yield 5.6 pieces, stem 5.2 pieces, with irrigation of mineral fertilizers In variant 2, which was used 100% in water, the average plant height was 41.1 cm, the yield was 6.4, and the stem was 5.7. In the 3rd variant, when mineral fertilizers were applied in film-coated fields with water dissolved in water at a rate of 100%, the average plant height was 44.8 cm, the yield was 7.2 and the yield was 6.1.

This figure is 41.2-42.5 cm in height, yield 6.6-6.7 pieces, stem 6.5-4.9 pieces in 4-7 variants of mineral fertilizers applied in the traditional way at the rate of 75-50% per annum. In 5-8 variants used in 75-50% annual norms, dissolved in water with irrigation of mineral fertilizers, the average plant height is 42.5-43.8 cm, the yield is 6.9-7.0, the stem is 6.5. 5.4 units.

In 6-9 variants, when mineral fertilizers are applied in the film-coated fields with water dissolved in water at a rate of 75-50% per annum, the average plant height is 43.6-44.2 cm, the yield is 7.1-7.4, the stem is 7.4. 6.8 units.

As of September, the number of pods in the 1st variant, which was applied 100% of the traditional method of mineral fertilizers, was 4.7, of which 5.1 were opened, and the number of pods in the 2nd variant, which was applied 100% in the form of mineral fertilizers with irrigation, was 5.3, of which 5.2 were opened. In variant 3, when mineral fertilizers were applied in film-coated furrows with water dissolved in water at a rate of 100%, the number of buckets

was 8.8, of which 7.7 were opened. This figure is 4.8-4.4 pieces in 4-7 variants of mineral fertilizers used in the traditional way at the rate of 75-50% per annum, of which 4.2-4.8 pieces are opened, 75-50 when dissolved in water with mineral fertilizers % In the 5-8 variants used in the annual norms, the number of cocoons was found to be 4.5-5.4, of which 5.9-4.8 were opened.

It was found that the number of cocoons was 6.6-6.3, of which 5.4-5.9 were opened in 6-9 variants, which were applied at a rate of 75-50% per annum, dissolved in water, along with irrigation of mineral fertilizers in film-covered areas.

CONCLUSION

Based on the results of research conducted in 2016-2018 to study the effectiveness of fertilization of cotton in the conditions of typical gray soils of Tashkent region by mulching cotton with ordinary polyethylene and black polyethylene film between rows and dissolving various norms of annual mineral water in water:

An additional 3.2-6.4 quintals of cotton per hectare was obtained in 2-3 variants given by the method of fertigation dissolved in water compared to variant 1, which was fed with mineral fertilizers in the traditional way at a rate of 100% per annum.

Average 2.5-4.9 and 5.4-6.9 centners per hectare in 5-8 and 6-9 variants given by water-soluble fertilization method compared to 4-7 variants fed 75-50% of the annual norm with mineral fertilizers. to achieve an additional cotton harvest.

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EFFECTS OF SOIL TREATMENT ON COTTON YIELD

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ABSTRACT

In the conditions of light gray soils of Andijan region, using a new combined unit, various tillage of the soil and planting of Andijan-36 variety of cotton at different times and high-quality cotton. Due to the positive features of the new combined technology of tillage, the soil moisture was created for the longest time, the effectiveness of mineral fertilizers was high, the soil was adequately supplied with nutrients. Seedling thickness is important in the care of cotton, which has shown that in all respects it depends in many respects on the biological properties of cotton and the technologies used.

KEYWORDS: *Tillage, Irrigation Cotton Plant, Soil Conditions, Growth And Development, Yield.*

INTRODUCTION

In recent years, the world agricultural practice has taken into account the biological characteristics of crops, the widespread introduction of resource-saving advanced technologies that improve soil fertility through the use of soil and climatic technologies, high use of techniques, maintaining soil fertility, reducing the cost of production of cotton due to the saving of mineral fertilizers.

The purpose of the study

In the conditions of light gray soils of Andijan region, the technology of cultivating the soil with the help of a new combinatorial aggregate, maintaining and increasing the soil fertility of the technology of one-time application of fertilizer under the pile, and developing resource-efficient agrotechnology for planting Andijan-36 variety of cotton.

The object of the study is light gray soils, resource-efficient agrotechnology, combinatorial units, planting system, liquid ammonia, Andijan-36 variety of cotton.

Practical results of the research

When using the combined unit, the seeds are sown individually and in combination, 50% of the annual norm of nitrogen is applied in the form of liquid ammonia in the fall, and the remaining 50% is stratified in the form of ammonium nitrate (granules) during the growing season. cm³, porosity increased to 1.1%, soil water permeability increased to 21.3 m³ / ha.

According to the results of experiments conducted in 2020, the soil was treated with a combination of aggregates, one-time plowing, under the piles in the fall nitrogen was added to the annual norm of 200 kg / ha in the form of 100% liquid ammonia, seeds of Andijan-36 cotton variety planted separately and in combination of 3-4 observations on August 20, the ripening of the cotton crop was 27.8-30.0% of the seedling thickness, on August 23 - 51.8-57.7%, and on August 26 - 89.6-96.7%. the values of the annual norm of nitrogen in the soil treated with conventional methods during the period of application of cotton fed with ammonium nitrate form (NH₄NO₃) for 1-2 variants are observed that it was more than 3.8-3.7, 3.7-4.1; 2.1-4.3% depending on the seedling thickness.

By means of a combined aggregate, a single batch is taken, and then 50% of the annual rate of nitrogen is added to the bottom of the batch in the form of liquid ammonia. During the growing season of Andijan-36 cotton, the remaining nitrogen content during the growing season was observed in 5-6 variants of single-row and double-seeded seeds in the form of ammonium nitrate (granules). It was 57.2-65.3% on August 23 and it was 92.6-98.7% on August 26. The values of the annual rate of nitrogen in the soil treated with conventional methods, compared to the variants fed with ammonium nitrate form (NH₄NO₃) during the period of application of cotton, the indicators are observed to be more than 5.0-5.7, 9.1-11.7, 5.1-6.3% in accordance with the seedling thickness. In 3-4 variants treated with a combination of aggregates and 100% of the annual rate of nitrogen under the pile, it was observed that it was more than 1.2-2.0, 5.4-7.6, 3.0-2.0%.

It should be noted that the ripening of the cotton crop in resource-efficient agro-technology with the use of a new combined tillage unit depends on the application of the annual rate of nitrogen in the form of liquid ammonia and the amount of seedling thickness in the fall and the soil was treated in the traditional way, the annual rate of nitrogen was ripened 4-5 days earlier than the options fed with ammonium nitrate form (NN₄NO₃) during the period of application of cotton. As a result, new resource-efficient agro technology and the positive properties of nitrogen nutrition in the form of liquid ammonia allowed growing a fairy-tale cotton crop.

Seedling thickness is important in the care of cotton, which has shown that in all respects it depends in many respects on the biological properties of cotton and the technologies used. In addition, the use of new combined tillage technology improves soil volume weight, porosity,

water permeability and moisture storage capacity, as well as the creation of favorable soil conditions enriched with nutrients that are effectively absorbed by the plant. created the opportunity to grow crops.

New resource-efficient agrotechnology of soil tillage, ie combined tillage in autumn and taken the pile, in the variants of nitrogen at the rate of 200 kg / ha per year in the form of 100 and 50% liquid ammonia, and the seeds are sown in single-row and double sowing (3-4 and 5-6 var.), Thanks to the new resource-saving agrotechnology and the positive properties of liquid ammonia, the cotton crop was fully 100% ripe in 118-122 days.

It was observed that the annual rate of nitrogen (plowing + baronization + plowing), which was controlled by the soil in the traditional way, matured 2-4 days earlier than the variants fed with ammonium nitrate form (NN₄NO₃) during the period of application of cotton.

CONCLUSION

Due to the positive features of the new combined technology of tillage, the soil moisture was created for the longest time, the effectiveness of mineral fertilizers was high, the soil was adequately supplied with nutrients. As a result, the growth and development of cotton in these variants is significantly accelerated compared to the usual 30-35 cm plowing control 1-2 variants, and the yield process begins early, especially in variants with a seedling thickness of 140-150 thousand bushes / ha. observed.

In all cases where the number of seedlings was reduced to 90-100 thousand bushes / ha, in all cases, as mentioned above, the plants grew taller and were more prone to weeding, so the yield elements matured later than plants with seedlings of 140-150 thousand bushes.

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STUDYING THE POSSIBILITIES OF SYNTHETIC FINING AND ANTISTATIC COSTS

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ABSTRACT

The possibilities of reducing the electrical conductivity of fibers formed by the dry method from polyethylene terephthalate granules are investigated. The effect of the antistatic drug concentration on the fiber color parameters was analyzed. It has been shown that as a result of antistatic finishing, the color intensity of the dyed fiber increases, the difference in color tone is relatively small.

KEYWORDS: Polyethylene Terephthalate Granules, Polyester Fiber, Fiber Forming, Masterbach Concentrate, Color Chart, Color Space, Color Intensity.

INTRODUCTION

Manufacturing chemical fibers and yarns is an important sector of the modern world economy, which is developing dynamically despite market volatility. Today, polyester fibers occupy the highest position in terms of production volume among all fibers produced worldwide. In recent decades, the world's production of chemical fibers and yarns has grown significantly, including 64% of chemical fibers and yarns, which account for 70% of the world textile market, and 6% of cellulose-based fibers.

Main part

Primary and secondary PET granules produced by foreign (Russian and Korean) companies and scientists of the Tashkent Institute of Chemical Technology obtained a product of alcoholization of secondary polyethylene terephthalate with ethylene glycol on the basis of bishydroxyethylene terephthalate (Fig. 1).



Figure 1. Primary (A), secondary (B) PET granules and

BGET (C) based PET

It is known that prolonged exposure of a fiber-forming polymer to high temperatures leads to a decrease in the viscosity of the resulting polymer solution, inter-packing bonding forces, and increased mobility of structural elements. Although the temperature of liquefaction of polyethylene terephthalate is 240 ° C, due to its high viscosity, its processing is carried out at a temperature of 290-295 ° C, but the beginning of the decomposition process in the polymer is not neglected. The results of heating PET granules are given in Table 1. No change was observed in the temperature range of 240–250 ° C in the primary and secondary PET granules, but the temperature rise resulted in a reduction in the transition time to the liquid. In BGTF-based polyethylene terephthalate there was no change at a temperature of 200-220 0S, although the polymer was melted at a temperature of 230-240 0S, no fiber was formed, at a temperature of 250-260 0S the polymer viscosity decreased, became liquid.

TABLE 1 THE EFFECT OF TEMPERATURE ON THE TRANSITION TIME OF PET GRANULES TO LIQUEFACTION

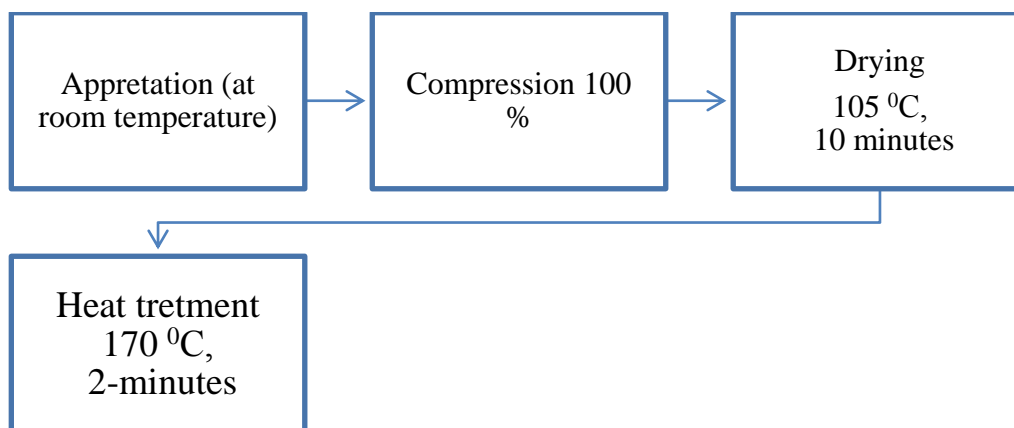
Types of granules	Effect of temperature, °S				
	200-220	230-240	240-250	260	270
Primary PET	-	-	-	410 sec	240 sec
Secondary PET	-	-	-	402 sec	227 sec
BGTF based PET	-	420 sec	300 sec	180 sec	125 sec

The fiber was formed based on the conditions proposed before the selected granules. Fiber forming process speed 60 m / min, fiber extraction temperature 270-280 ° C. The realization of the fiber was not due to the flow of the polymer liquid under pressure from the filler holes, but due to the immersion and gradual pulling of the end of the colored wire connected to the thin wire into the PET solution.

Typically, a tendency to accumulate and store high levels of electrical charge is observed in hydrophobic synthetic fibers, whereas hydrophilic cellulose and protein fibers accumulate a small amount of electrical charge and lose it much more rapidly. The effect of air humidity on the electrostatic charge of hydrophobic synthetic fibers is very low, so they undergo special antistatic treatment. Textile auxiliary surfactants of noionogenic, cationic and anionactive types based on fatty acids or alcohols are used as antistatic drugs. The cation-active SAM-triamonewas selected for the study. In order to give antistatic finish to the fibers formed from primary and secondary PET granules, the drug triamone was added to the proposed composition for dyeing in solution with a disperse dye in an amount of 3-9% by weight of fiber. Antistatic make-up was applied to the fibers in both white and dyed state, and the finishing process was carried out in one- and two-bath methods. CIE L*a*b* color space and color graph were used to represent the color of the processed samples.

In the first stage of double-bath finishing of fibers obtained on the basis of polyethylene terephthalate granules, the placement of the dye in the fiber structure revealed the formation of high-intensity and water-resistant dyes in the fiber. In the second stage, experimental results showed that the active cation - triamone - binds to the functional groups of fibers and reduces the specific surface electrical resistance.

Mass dyed fibers with Masterbach concentrate were antistatic treated in the following technological sequence:



CIE $L^*a^*b^*$ color space and color graph were used to represent the color of the processed samples (Figure 1).

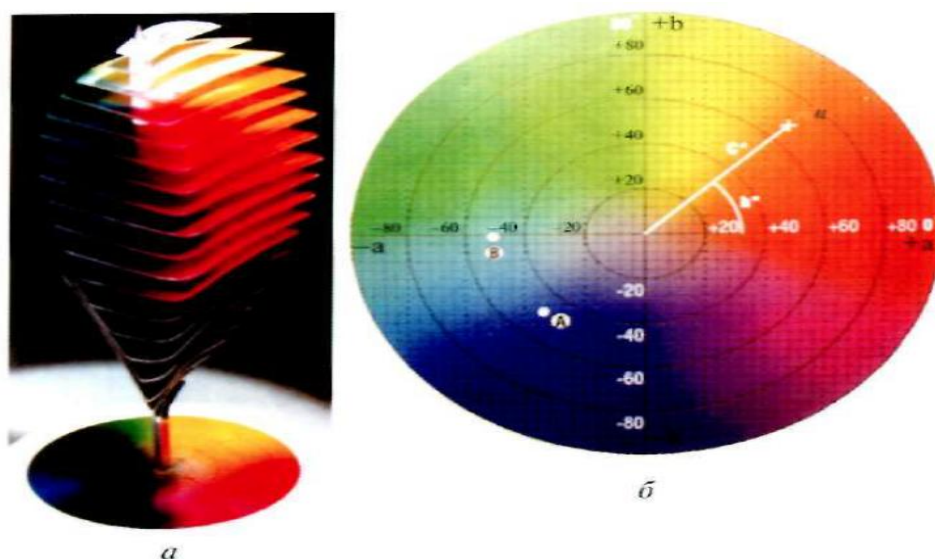


Figure 2. CIE $L^*a^*b^*$ color space and color graph

The brightness L^* in this space varies along an achromatic axis perpendicular to the plane of the a^* and b^* axes. a^* corresponds to the change of the arrow in the "red-green" direction, b^* corresponds to the change of the arrow in the "yellow-blue" direction.

The concentration of triamone in the composition of the appraisal was changed in the range of 3-9%. The color performance of the processed samples was measured (Table 2).

TABLE 2 EFFECT OF TRIAMONE CONCENTRATION ON FIBER COLOR PERFORMANCE

Triamone concentration, %	Color difference, d E*	Color brightness, L*	Color coordinates, a*	Rangkoordinatasi, b*
3	0.02	31.02	34.07	24.84
5	0.10	29.81	38.77	18.87
7	0.05	28.27	39.03	17.23
9	0.10	27.91	46.55	15.46
Dyed fiber	0.04	28.87	41.81	24.18

As the triamon concentration increases, the L* whiteness of the fiber color decreases, the color intensity increases, and in the color space, the color shifts along the a* axis to the red side, and along the b* axis, the color shifts from yellow to blue.

In addition, for the purpose of antistatic coating of fibers formed from primary and secondary PET granules, triamone was added to the proposed composition for dyeing in solution with a disperse dye in an amount of 3-9% by weight of fiber. As a result of the research, a content and technological sequence for a combined dyeing and antistatic finishing process was proposed.

Disperse dye – 3 %

Intensifier -3 g/l

SAM – 2 g/l

Acetic acid – rN=5,5-6

Triamon – 3-9%

Process duration – 1 hour

CONCLUSION

Intensifier - high-intensity coloring was achieved as a result of sorption of dye particles dispersed under the influence of SAM on the loose fiber structure under the action of salicylic acid.

An antistatic drug - an increase in the amount of triamone causes the formation of a blue color in the red color of the fiber. The color difference dE in the processed fiber samples will have a small value.

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DETERMINING THE POSSIBLE SOWING TIMES FOR MORNING PUMPKIN GROWING

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ABSTRACT

With the world's growing population and limited land areas, agricultural officials will have a major role to play in ensuring food security in the future. Increasing the volume of agricultural products requires increasing the yield per hectare, not by increasing the area under crops, but by increasing the yield from two to three times a year. It is known that the sustainable development of any country depends in many respects on the fact that the population of the country is provided with food. In our country, there are sufficient conditions for the cultivation of abundant and high-quality, low-cost vegetables and melons. The contribution of pumpkin plant in these products is incomparable.

KEYWORDS: Eggplant, Variety, Seed, Hybrid, Sample, Thermostat, Temperature, Forgetfulness, Tumor, Heat, Drought.

INTRODUCTION

In addition to its nutritional value, pumpkin product contains many valuable trace elements and has a positive effect on the human body. It contains vitamins A, C, E, K, T, PP, as well as vitamins B1, B2, B5 and B6, which improve digestion and strengthen immunity. Pumpkin contains beta-carotene, which is converted into vitamin A in the body and improves vision, as well as helps to better absorb light. Pumpkin seeds have a healing effect on heart problems, it lowers blood pressure and regulates blood sugar levels. It also dilates blood vessels and improves blood circulation, increases the amount of hemoglobin by removing toxins from the body, and normalizes heart function by improving the metabolic process. Pumpkin is a leader in medicinal products, the fleshy part of the pumpkin is useful in the treatment of asthma, anemia, varicose veins, pneumonia and colds. Pumpkin seed oil is rich in omega-3 fatty acids, potassium, calcium, magnesium and iron, and is effective in preventing many serious diseases.

According to the latest data from FAOSTAT (2019), world production of pumpkin fruits is 246 million tons. Leading countries in pumpkin production are China (7.1 million tons) and India

(4.9 million tons), Russia (0.9-1.1 million tons) and the third largest producer. The average yield of squash in the world is 200 ts / ha. Russia ranks 11th in Europe with an average yield of 200-210 ts / ha. The Netherlands (650 ts / ha), Spain (more than 480 ts / ha), Austria, Finland and Poland (over 300 ts / ha) are the top pumpkin growers.

One of the factors that ensures the early ripening of vegetables, melons, and high yields is the optimal planting times of the plant. In a set of agro-technical measures aimed at obtaining high and guaranteed yields, it is very important to determine the optimal sowing dates for seeds. Seeds are sown at different times, depending on the biological characteristics of melons, primarily on temperature and duration of the growing season, soil, climate, weather conditions, as well as the production plan and the purpose for which the product is grown. In addition, the seeds can be sown at different times to prolong the period of consumption of the product.

For many years, a number of researchers have studied the biological properties of pumpkin vegetable crops, their cultivation technologies, varieties in the conditions of our republic [2; 4; 6; 7;], in the CIS countries [3; 8; 9;] and expressed different opinions. The weather and soil climate of the country is changing from year to year. This requires our scientists to conduct research on the selection, creation and improvement of technologies for the cultivation of new vegetables and melons in accordance with the climatic conditions of the country, to determine the optimal planting dates, increase productivity and meet the population's demand for vegetables and melons throughout the year.

Research style and methods

In the study to determine the most optimal planting dates for squash for early maturation, April 4: 01-; 10-; (Control variant 20) and on the 30th experiments were carried out on local varieties Shirintoy and Palov kadi. Tashkent region was selected on April 20 as a control, taking into account climatic conditions. Ekat length 12 m, planting scheme (280 + 70) / 2 × 70 cm. Each option was placed in 3 returns. Each option area is 40 m². The total area of the experiment is 960 m². [1; 5;].

Research results

At different times, from the date of sowing the seeds of the Shirintoy variety of squash to the emergence of the paternal flowers, the control variant of the Shirintoy variety (April 20) required an average of 62 days for plants and 68 days for the emergence of maternal flowers. It took the plants 74 days to flower and 112 days to bear fruit. In the variant planted on April 10, the plants required 61 days shorter paternal flowers, 66 days maternal flower emergence, 72 days fruit set and 110 days before fruit ripening compared to plants planted at other times. Experiments showed that in the fourth (April 30) term, the late planted variant of the sweet variety had 63 days later than the control variant (April 20), 69 days for the mother flowers, 75 days for fruiting and 115 days for the fruits to ripen.

In the rice kadi variety control (April 20) variant, the days from sowing the seeds to the emergence of the paternal flowers were 57 days, and the emergence of the maternal flowers was 62 days. It took 74 days from germination to flowering to fruiting and 101 days to the biological ripening of the first fruits. In variants planted 10–20 days earlier than the control variant (April 1; April 10), the emergence of paternal flowers was 56 days shorter than that of the control variant, and the emergence of maternal flowers required 63 days. It took 73 days from the day the plants

sprouted, while it took 99 days for the first fruits to reach biological maturity. In the fourth variant (April 30), which was planted the latest, the control period was lower than in 59 days, and the mother flowers bloomed in 59 days. In this variant, the time from germination to fruiting was 76 days and the biological ripening of the first fruits was 103 days. At different times, biometric measurements were made on the length of the main stem, number of side branches, number of leaves and leaf surface of a single plant of squash cultivar samples (Table 1).

TABLE 1 THE LENGTH OF THE MAIN STEM, NUMBER OF SIDE BRANCHES, NUMBER OF LEAVES AND LEAF SURFACE (2020-2021) OF PUMPKIN VARIETIES PLANTED AT DIFFERENT TIMES IN THE PLANT

Planting terms	The length of the main stem		Number of side branches		The number of leaves in a bush		Leaf size, cm	
	cm	relative to control, %	thing	relative to control, %	thing	relative to control, %	height	width
Shirintoy								
April 1	465	104,4	6,2	101,6	527	100,7	15,1	19,2
April 10	481	108,0	6,4	104,9	536	102,4	15,3	19,6
April 20 (control)	445	100,0	6,1	100,0	523	100,0	15,0	19,5
April 30th	428	96,1	5,8	95,0	519	99,2	14,7	19,1
Rice pudding								
April 1	585	101,0	4,5	104,6	496	101,0	17,0	20,1
April 10	571	98,6	4,1	95,3	481	97,9	16,6	19,5
April 20 (control)	579	100,0	4,3	100,0	491	100,0	16,9	20,0
April 30th	576	99,4	4,2	97,6	486	98,9	16,8	19,8

In the control variant of the Shirintoy variety, the length of the main stem was 445 cm, in the 2nd period the length of the main stem (481 cm) was 108%, and in the 4th period, the opposite (428 cm) was 96.1%. In the control variant of Shirintoy variety, the number of side branches was 6.1. In the variant planted on April 10 (6.4 units), the control variant differed by 104.9%. In the fourth variant, which was planted on April 30 at the latest, the figure was 5.8, down 5 percent.

The number of leaves per bush of the sweet variety (April 20) was 523 in the control variant, compared to 102% in the variant planted 10 days earlier (April 10).

In the control variant of the pilaf kadi variety (April 20), the length of the main stem was 579 cm, while in the 1st variant (585 cm) planted earlier, it was 101 percent. In variant 2, which was planted 10 days earlier than the control variant, the length of the main stem (571 cm) was 98% shorter.

When studying the number of lateral branches of plants in the pilaf kadi variety, the number of lateral branches of control (April 20) variant plants was 4.3, while in Option 1 planted 20 days earlier it was 4.5, an increase of 4%. In variant 4, planted late (April 30), the opposite (4.1 units) was 3% less. When calculating the number of leaves per plant in the rice paddy variety, the

number of leaves per bush plant was 491 in the control (April 20) variant, compared to 496 in the 1st variant planted 20 days earlier. When the Shirintoy variety of squash was planted at different times and the size of the biologically ripe fruit was measured, the control variant planted on April 20 was 25.9 cm long and 11.6 cm wide. In variant 2, planted 10 days later than the control variant, the figure was 26.2 cm; 12.0 cm, which was 0.3 cm longer and 0.4 cm wider than the control variant fruits. In the 4th variant, planted on April 30, the fruit was 25.5 cm long and 10.9 cm wide, which was 3% smaller and 7% wider than the control variant. In the variant planted on April 1, the fruit was 25.9 cm long and 11.0 cm wide, and although the control variant was not much, it was 2-6% smaller, respectively.

When examining the thickness of the flesh of the cut fruit, the control variant was 1.8 cm. The highest rate was 1.9 cm or 105 percent of the 2nd variant planted on April 10. In variant 4, planted on 30 April, the contrast was 1.6 cm, which was 12 per cent lower than in the control variant (88 per cent). Compared to the latest variant planted on April 30, the flesh thickness of the fruits in the variant planted on April 10, 20 days earlier, was 18 percent higher.

In the case of rice kadi, when planted at different times, the length of the fruit in the control variant was 29.8 cm, and the width was 18.1 cm. In variant 1, planted 20 days earlier than the control variant, the figure was 30.1 cm; 18.5 cm, not more than 1-2% higher, and 28 cm in variant 2, planted on April 10; 17.7 cm, was 7% smaller in height and 2% smaller in width. In the variant planted late on April 30, the length of the fruit (28.9 cm) was 4% of the fruit of the control variant, and the width (17.9 cm) was 99%. Fruit length was 104 percent and width was 103.3 percent higher in Option 1 than in April 1, the earliest planted variety, and April 30, a month later (Table 2).

TABLE 2 INDICATORS OF FRUIT LENGTH, WIDTH AND FLESH THICKNESS OF PUMPKIN VARIETIES PLANTED AT DIFFERENT TIMES (2020-2021)

Sowing dates	Biologically ripe fruits					
	length		width		the thickness of the flesh	
	cm	relative to control, %	cm	relative to control, %	cm	relative to control, %
Shirintoy						
April 1	25,6	98	11,0	94	1,7	94
April 10	26,2	101	12,0	103	1,9	105
April 20 (control)	25,9	100	11,6	100	1,8	100
April 30th	25,5	98,4	10,9	93	1,6	88
Rice pudding						
April 1	30,1	101	18,5	102	2,3	115
April 10	28,0	93	17,7	98	1,8	90
April 20 (control)	29,8	100	18,1	100	2,0	100
April 30th	28,9	96	17,9	99	1,9	95

When measuring the thickness of the flesh of ripe fruit kadi planted at different times and cut the ripe fruit (April 20) in the control variant was 2.0 cm, the highest rate was 15% in the fruits of plants planted on April 1 (2.3 cm). was high. In the variant planted on April 10, on the contrary (1.8 cm) was 10% lower. The variant planted late on 30 April was 5 per cent lower, though not

more than the control variant. The variant planted on April 1 was found to be 27.7% higher than the variant planted on April 10.

The following results were obtained when the local varieties of squash Shirintoy and Palov kadi were planted in spring on different dates of April (1-10-20-30) and plant growth, development, number of fruits in the bush, weight and yield were determined. Shirintoy was planted on April 20 (control) and the number of fruits per bush was 1.8, with an average weight of 2.1 kg per fruit. The yield from 1 bush was 3.8 kg. Although the number of fruits in the variant planted 10 days late on April 30 did not differ from the control variant, the weight of the fruit was less than 100 grams and the yield per bush was 5.3% lower (Table 3).

TABLE 3 COMMERCIAL FRUIT WEIGHT OF SQUASH VARIETIES PLANTED AT DIFFERENT TIMES AND THE NUMBER OF FRUITS PER PLANT (2020-2021)

Sowing dates	During the ripening of fruits							
	the number of fruits per plant		the average weight of a single fruit		yield from a single plant		Overall productivity	
	дона	%	кг	%	кг	%	т/га	%
Shirintoy								
April 1	1,9	105,5	2,2	104,7	4,2	110,5	34,2	110,3
April 10	2,0	111,1	2,3	109,5	4,6	121,0	37,5	120,9
April 20 (control)	1,8	100,0	2,1	100,0	3,8	100,0	31,0	100,0
April 30th	1,8	100,0	2,0	95,2	3,6	94,7	29,3	94,5
Rice pudding								
April 1	1,6	106,6	3,0	115,3	4,8	123,0	39,1	122,9
April 10	1,5	100,0	2,8	107,6	4,2	107,6	34,2	107,5
April 20 (control)	1,5	100,0	2,6	100,0	3,9	100,0	31,8	100
April 30th	1,4	93,3	2,5	96,1	3,5	89,7	28,5	89,6

In the earliest planted variant on April 1, the number and weight of fruits in the bush were 10.5 percent higher than the control variant, although the yield per bush was 5.5 and 4.7 percent higher, respectively. Option 2, planted 10 days earlier than the control variant, showed a 5.5-11.1% increase in the number of fruits, an average fruit weight of 4.5-15.0%, and a yield of 9.5-27.7% per bush. turned out to be high. Yield per hectare of sweet variety was 31.0 t / ha in the planted (control) variant on April 20, which is 5.5% higher than in the variant planted on April 30, and 10 per hectare higher than in the variant sown on April 1. Was down 3 percent. The yield per hectare in our variant sown on April 10 was 37.5 t / ha, which is 20.9% higher than in the control variant, and 28.0% higher than in the variant sown on April 30.

It was determined that April 10 is the best time to plant the Shirintoy variety of squash in the spring for tomorrow.

The number of fruits obtained from one bush of rice variety (April 20) in the control variant plants was 1.5, the average weight of one fruit was 2.6 kg and the yield from one bush was 3.9 kg. Although the number of fruits per bush in the variant plants planted on April 10 did not differ from the control variant, the average weight of the fruit was 7.6 percent, and the yield per bush

was 7.6 percent higher, respectively. In the variant sown on April 30, the number of fruits in the bush was 6.7% lower than in the control variant, the weight of the fruit was 3.9% lower and the yield per bush was 10.3% lower. In the earliest planted variety of rice on April 1, the average yield of 1.6 grains per bush was 6.6% higher than the control variant, the average weight of the fruit was 15.3% higher and the yield per bush was 23.0% higher. The earliest planted variant varieties on April 1 were 14.3, respectively, from the variant varieties planted on April 30, one month later; 20; Which was as high as 37.2 percent.

When sowing the seeds of the Pilaf kadi variety of squash in the morning on April 1, it was found to be the most favorable period, from 14.3% to 37.2% higher than all variants.

CONCLUSIONS

In the study, the best time to sow the seeds of the local Shirintoy variety of squash in the field on April 10 was 1-20 controls and 20.9-28.0% higher than the options sown on April 30.

In our variant sown on April 1, the variety of pilaf was 14-20-37.2% higher than in the variant sown on April 30 and 30, and the optimal time for sowing the seeds of pilaf on April 1 was determined.

The local Shirintoy variety of squash $(280 + 70) / 2 \times 70$ cm is grown in the climatic conditions of farmers and farms of Tashkent region. in the planting scheme on April 10, we recommend planting the Pilaf kadi variety on April 1.

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HYPERACOUSTIC PARAMETERS OF A SERIES OF ALCOHOLS AT DIFFERENT STATE PARAMETERS

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ABSTRACT

A great contribution to the study of the liquid state can be made by elucidating the nature of the structural changes in liquid molecules at various parameters of the state. Optical methods will enable us to obtain more complete information about the nature of structural changes in a liquid molecule. The aim of this work is to study the manifestation of changes in the structure and intermolecular interaction in the spectra of Mandelstam-Brillouin scattering of light and in hyperacoustic parameters at various parameters of state in a number of alcohols. The experimental results showed that with increasing temperature, the speed of hypersound in normal alcohols decreases nonlinearly, and at high temperatures the ends of the curves depending on T at 450 K approaches each other. If you build a graph of the dependence on pressure (P), you will notice that at high pressures, these curves for alcohols also approach each other. We associate this tendency in the case of an increase in temperature with destruction, and with an increase in pressure, apparently with an increase in the probability of the formation of H - bonds.

KEYWORDS: *Hypersound, Scattering, Liquid, Alcohols, Temperature, Pressure, Spectrum, Intermolecular Interaction,*

INTRODUCTION

The development of the molecular theory of the liquid state of matter contributes to the solution of applied problems in many branches of science and technology. However, the molecular theory of the liquid state of matter lags far behind in its development from a similar theory of gases and solids.

A great contribution to the study of the liquid state can be made by elucidating the nature of structural changes in liquid molecules at various parameters of the state.

Optical methods will enable us to obtain more complete information about the nature of structural changes in molecules. One of these methods is based on the study of the spectra of Mandelstam-Brillouin light scattering.

The aim of this work is to study the manifestation of changes in the structure and intermolecular interaction in the spectra of Mandelstam-Brillouin scattering of light and on hyperacoustic parameters for various parameters of state.

Normal alcohols have been the subject of acoustic research many times. However, the study has mainly focused on ultrasonic parameters. Hyperacoustic parameters with variation of state parameters have not been adequately studied. In work / 1 / the acoustic properties of a number of alcohols were investigated in the temperature range of 180-293 K. redistribution of intermolecular hydrogen bonds.

To solve this problem, a spectral apparatus was used, assembled on the basis of a Fabry-Pierrot interferometer with a dispersion region of 0.625 cm^{-2} .

The hypersound speed is determined from the shift of the Mandelstam-Brillouin scattering spectrum with the formula:

$$\vartheta_{23} = \frac{\Delta v \cdot c \cdot \lambda}{2 \cdot n \cdot \sin \frac{\theta}{2}} \quad (1)$$

Where, Δv is the displacement of the Mandelstam-Brillouin components (cm^{-1}), c is the speed of light, λ is the wavelength of the laser radiation, n is the index of liquid refraction, θ is the scattering angle

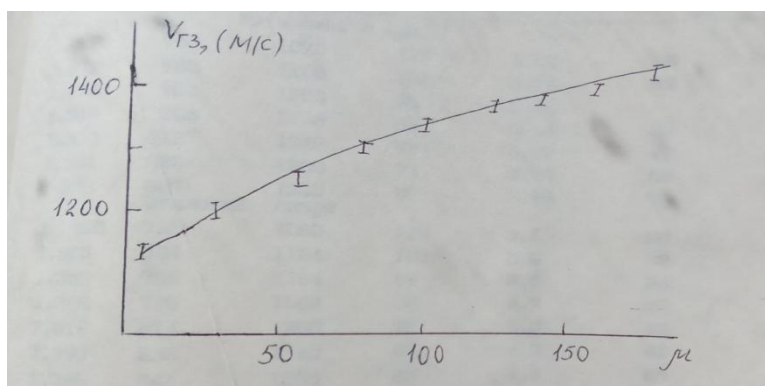
In order to study the relationship between sequential changes in structure and hyperacoustic parameters, as well as the effect of complexation through hydrogen bonding, ten normal alcohols were studied at various temperatures and pressures.

An increase in the molecular weight of alcohol in a homologous series corresponds to an increase in the speed of hypersound, and this dependence is nonlinear. Using the methods of mathematical statistics, an empirical equation was found that expresses the dependence of the speed of hypersound on the molecular weight of alcohols.

$$\vartheta_{23} = \sum_{i=1}^n \vartheta_i \prod_{i \neq j} \frac{\mu - \mu_i}{\mu_1 - \mu_j} \quad (2)$$

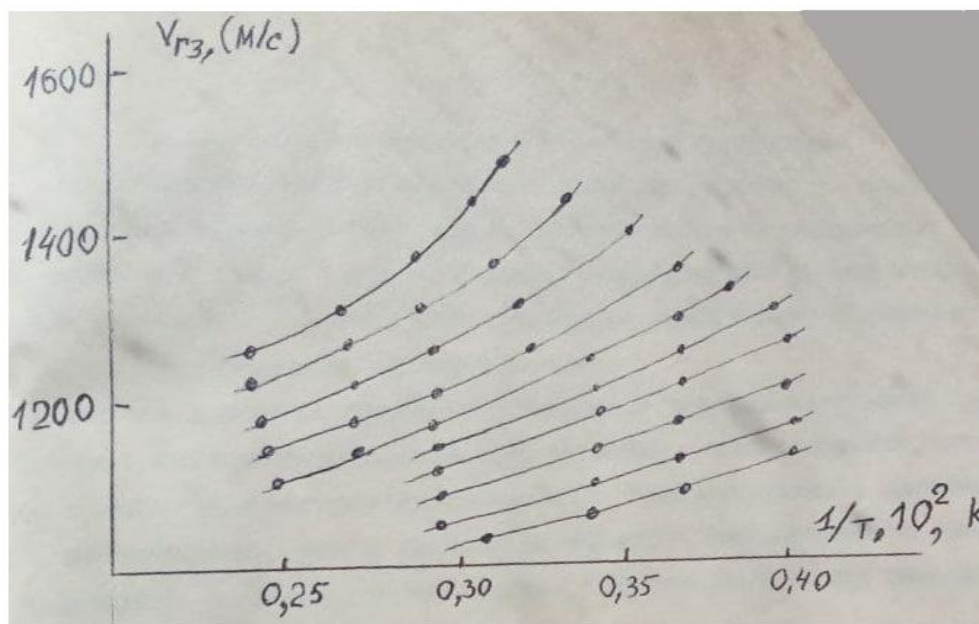
Where μ and μ_i - molecular weight alcohols with known hypersonic velocities, ϑ_i - hypersonic velocity of alcohol with molecular mass μ_i and μ_1 - at hypersonic velocity of alcohol with molecular mass μ_1 . Mandelstam-Brillouin spectra, corresponding to molecular weight.

The results of measurements of the speed of propagation of hypersound at various molar masses () are shown in Fig. 1.



Rice. 1 Dependences of the speed of hypersound on the molecular weight for alcohols

With increasing temperature, the speed of hypersound decreases (Fig. 2). Such a decrease in all alcohols is qualitatively the same, and the tendency is such that the higher the temperature, the closer the hypersound velocity in these alcohols. The variance for the first members of the homologous series is small, however, for the higher members there is a tendency to increase.



Rice. 2. Dependences of the speed of propagation of hypersound on temperature for a number of alcohols $C_n H_{2n+1} OH$.

As we know, aliphatic alcohols are typical representatives of associated liquids with intermolecular hydrogen bonds. An increase in pressure leads to an increase in the number of H-bonds. This is consistent with Le Chatelier's principle / 2 /, according to which H bonds reduce the volume occupied by molecules, therefore, their formation is facilitated by those processes that lead to a decrease in the volume per molecule / 3 /.

An increase in temperature, on the contrary, leads to the destruction of associates. The experimental results showed that with increasing temperature the speed of hypersound in normal

alcohols decreases nonlinearly, and at high temperatures the ends of the curves of the dependence on T at 450 K approach each other. If you build a graph of the dependence on pressure (P), you will notice that at high pressures, these curves for alcohols also approach each other. It can be concluded that at high temperatures and pressures, the quantitative difference in the speed of hypersound in normal alcohols tends to decrease. We associate such a tendency in the case of an increase in temperature with destruction, and with an increase in pressure, apparently, with an increase in the probability of the formation of H - bonds.

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A REVIEW ON EFFECTS OF CLIMATE CHANGE ON PLANT DISEASES

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ABSTRACT

Increasing greenhouse gas emission to the atmosphere are causing global warming. The observed climate changes on the world during the last 50 years are mostly due to human activities. As the atmosphere's temperature and carbon dioxide levels increase, plants' physiological responses change, and crop disease severity worsens. As a consequence of host plant migration to new places, warming may promote agroclimatic zone alterations, leading in the establishment of novel disease complexes. Global temperatures have increased by around 0.9°C in the previous century, but by 2100, they are expected to climb by 0.8 to 3.6°C. Not only would such changes have an influence on crop growth as well as cultivation, but they will also have had an impact on the reproduction, distribution, or severity of a variety of plant diseases. To include more detailed climatic forecasts at different levels, several plant disease models have been created. Plant or pathogen population adaptation capacity may out to be one of most significant indicator of extents of weather change impacts at the population level. With appropriate examples, this paper emphasizes different impacts of weather changes on plants diseases or their consequences.

KEYWORDS:*Climate Changes, CO₂ GHG, Plants Diseases, Plant Pathogen, Temperature.*

1. INTRODUCTION

Climate changes are a significant ecological issue that affects the whole global. Water vapours, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons or ozone are examples of greenhouse gases (GHGs) that trap reflected energy and warm the earth's surface. Human activities have a large role in accelerating global climate changes, which has direct impacts on the environment. Global warming has been seen in India's west coast, middle India, interior peninsula, and northeast. As per the Intergovernmental Panel on Climate Changes, the earth's climate is changing, or atmospheric CO₂ is a significant greenhouse gas (GHG) that has grown by over 31 percentage points increasing temperature by 0.4-0.8°C. Climate change occurs for a multitude of causes. Impacting the disease triangle's three key components: Pathogen, host, and environment. High atmospheric CO₂ concentration, temperatures, fluctuations in precipitation patterns, the regularity of extreme weather events, and the prevalence of pathogens may all have a significant influence on crop growth and productivity. When diseases with short half-lives are present in the host, reproduction rates are high, so dispersion mechanism react rapidly or adapt to climatic change (1).

Climate change, in conjunction with human activities like as air, water, or soils pollutions, long distance introductions of alien species, or urbanizations, would have an impact on plant diseases. These factors lead to illnesses like sudden oak death spreading. Increased temperature or CO₂ concentrations have an effect on plants disease interactions, making late blight of potatoes and blast or sheath blight (*Rhizoctonia solani*) of rice seem to be more dangerous. Phoma in rape seed was detected as a result of the climate changes using a model that predicts temperature or rainfall below CO₂ emission situations for 2020 or 2050s in the UK, as well as sporulation's of the teleomorphs on the climate changes. Disease control methods should be reoriented in a changing environment for sustainable agricultural production. Plant diseases, on the other hand, play an essential part in agriculture. There is just a little quantity of data on the possible effects of the climate changes on plants diseases (2).

Temperature has an impact on plant diseases. Plants and diseases both need a certain minimum temperature to thrive. For many diseases, temperature has an impact on the sequence of event in the disease cycles, including like survival, dispersion, penetrations, growth, or reproduction rates. The rust fungus *Puccinia substrata*'s spore germination increases as the temperature rises. *Cercospora beticola*, a sugar beet leaf spot, shifted northward in southern Germany owing to an increase in annual means temperature of 0.8-2°C. Temperature changes favour overwintering of the sexual propagule, increasing a population's evolutionary potential. High moisture and warmth favour and begin disease development, as well as the germination and multiplication of fungal spores of many illnesses. Powdery mildew conidia have the potential to grow even at 0% relative humidity (RH) Conidia of *Erysiphe cichoracearum* sprout at temperatures ranging from 7 to 32 degrees Celsius, with relative humidity levels ranging from 60 to 81 percent. *Erysiphe nicotianae* spores thrive at temperatures ranging from 6 to 23°C and relative humidity values of 33 to 90% (3).

Temperature influences the susceptibility of cereal crops to rust infections. *Pg3* and *Pg4* resistance genes for oat stem rust fail at temperatures over 21°C. *Lr217*, *Lr210*, and *Lr2a*, for example, are temperature sensitive wheat leaf rust resistance genes. Above 25°C, only the *Lr2a* gene is temperature resistant. Lignification of fodder crops, on the other hand, increases when the temperature rises. Fungal development that produces plants disease thrives in a temperate environment. When temperatures are between 7.3°C and 27.8°C, *Phytophthora infestans*, the early blight of potato or tomato, infects but rather perpetuates most effectively. Increased soil temperatures of 12-30°C produce *Phytophthora cinnamomi* infection in *Eucalyptus* sp. Temperature affects bacterial illnesses including *Ralstonia solanacearum*, *Acidovorax avenae*, because *Burkholderia glumae*, but instead bacteria flourish in places where air temp diseases were never seen before. Virus as well as other vector-borne diseases may have a fluctuating prevalence. Warmer winters make it easier for aphids to survive, leading in the spread of viruses like the Barley Yellow Dwarf Virus (BYDV) including potato or sugar beet viruses (4).

Moisture's impact on plant disease Various climate change models anticipate more frequent and severe rainfall events as well as greater impressive water vapours concentration as temperatures rise. These encourage crops to grow larger but also healthier canopies that retain moistures as leaf wetness or relative humidity for extended period of time, allowing pathogens including diseases such as late blights but also powdery mildews to thrive. In high moisture settings, *Phytophthora*, *Pythium*, *R. solani*, or *Sclerotium*, as well as other soil-borne pathogens, thrive. Drought stress affects viruses like the Maize dwarf mosaic virus (MDMV) as well as the Beet

yellow virus (BYV). The impact of CO₂ on plant disease Increased CO₂ levels have a number of effects on both the host and the pathogen. The size of plant organs, leaf area, number of leaves, the leaf number on an unit, the total leaf area/plant, and the width of stems and branches have all grown as CO₂ levels have risen. Under a thick canopy, diseases including rust, powdery mildew, Alternaria blight, Stemphylium blight, or anthracnose flourish. When CO₂ levels are greater, more fungal spores are generated. CO₂ enhances leaf area, plants height, increasing crops yield, as well as improving photosynthesis, boosting water use efficiency, or reducing ozone damage. CO₂ increases produce physiological changes in the host plants, that might lead to greater disease resistance.

1.1. Microbial Interactions And Climate Change:

Increased CO₂ level in atmosphere have a significant impact on carbon cycling or ecosystem function. The amount of nitrogen deposited, CO₂ content, or temperature all have an impact on soil microbial populations. Changes in abiotic environments, both short- and long-term, influence not just plant development and production, but also the population of microorganism that live on the plants surface. Any alteration in the phyllo sphere microflora has an impact on plant development and the capacity of plants to resist pathogen assault.

1.2. Climate Change's Impact On Vectors Borne Illnesses:

Plants virus works in tandem with the hosts plant or vector to achieve their goals. The climatic needs of disease vectors restrict the danger of vector borne illness at local s well as a regional level. Climate change affects both host plants and insect vectors population, which transmit plant viruses. The initial infection of host, the propagation of illness inside the hosts, or horizontal transfer of the virus to additional hosts via the vectors are all influenced by global warming. Climate changes affects the host phenology or physiology, which affects the virus's susceptibility and capacity to infect. As a result, changes in host physiology may have an impact on the host's attraction to vector or viral transmissibility. Climate change has a variety of impacts on vectors, including changes in phenology, overwintering, density, movement, and stability. Elevated CO₂ levels have a little impact on insect herbivores' natural adversaries. By altering the size or compositions of insect prey populations, increased CO₂ has an indirect impact on the third trophic level (5).

1.3. Models Of Plant Patho Systems

To better understand the consequences of climate change on plant pathogens or diseases, patho systems are being studied. For a few plant-pathogen systems, predictive models have been constructed. Powdery mildew is one of the most common grapevine diseases, as well as the European grapevine moth is among Europe's and the Mediterranean's more destructive vineyard pests. Grapevine phenological models were combined with grape downy mildew as well as the European grapevine moth phenological models, and the designs have been used to anticipate climate change in the western Italian Alps, including probable changes in interactions between some of these organisms. They resemble a decrease in the severity of powdery mildew outbreaks, especially in years when sickness symptoms appear later and temperatures are greater.

1.4. Plant Disease Situation In The North-East:

This area has a subtropical climate and receives a lot of rain. and a variety of agricultural diseases with different degrees of occurrence Many illnesses harm cereals, spices, and vegetables

when the environment changes. Paddy brown spot, paddy bacterial blight, and blast *Curvularia* leaf blight, king chilli anthracnose as well as fruit rot, turmeric plant blotch and leaf blight, powdery mildew but not downy mildew of crops, leaf spot curl, sigatoka or anthracnose of bananas, as well as citrus canker diseases are all more frequent in *Colocasia* leaves. Drought or flood are two other severe climatic conditions caused by a lack about or excess of precipitation, which both cause considerable crop damage (6).

1.5. Adapting To Climate Change's Impact On Plant Diseases:

The growth of disease is the result of a number of variables affecting both host or the pathogens. Microbial populations or control agents may also affect plant pathogen associations. Climate change has a variety of effects on plant pathogen systems. Crops need more fungicide spray treatments with higher application rates due to the adverse weather conditions, which increases farmer costs, consumer prices, and the danger of fungicide resistance. Because annual crops are more responsive to new cultivars or cultural approaches than perennials, they have a competitive advantage. To prepare for climate change, present physical, chemical, and biological management approaches might be evaluated, as well as new instruments and procedures established. Weather conditions have a significant impact on the lifespan of plant protection compounds in the phyllosphere. Variations in the length, intensity, or regularity of precipitation events might affect the effectiveness of chemical pesticides. Pharmacological breakdown, plant breeding, including morphology are all affected by temperature, as are systemic fungicide absorption, transport, duration, or action mechanisms (7).

2. LITERATURE REVIEW

Kumar Singh and his colleagues looked into it. Arid and semi-arid areas throughout the globe have seen an unusual and severe environment, as well as a steady increase in temperature and CO₂ concentration, affecting agricultural, livestock, and fisheries output and productivity. As a result of changing climatic circumstances, some minor pest species have gained significant status in recent years, with increased insect occurrences potentially resulting in a 40% decline in agricultural productivity by 2100 across South Asia, including India. By 2100, global average temperatures are predicted to have increased by 1–2 degrees Celsius. As a result, higher temperatures, storms, and droughts are expected more often, as well as a large rise in pesticide usage, a shift in virulence patterns, and the spread of diseases to new places. In a climate change scenario, abiotic stress resistant cultivars and coordinated pest management have increased yield and production. In the face of climate change, a new pest management innovation and a commitment to anticipatory research using interdisciplinary techniques to address emerging diseases may be preferable options (8).

Gautam et al investigated the Climate change is the greatest danger to humanity, causing approximately 0.4 million lives per year and costing the global economy more than US\$ 1.2 trillion. Due to a 0.74°C average global temperature rise in the past 100 years and an increase in atmospheric CO₂ concentration from 280ppm in 1750 to 400ppm in 2013, climate change is impacting our agriculture. Such change will have a significant impact on the development and production of many crops throughout the world. Simultaneously, those changes will have an impact on the reproduction, spread, and severity of numerous plant diseases, putting our food security at risk. Stem rust resistance owing to Sr31 is also under danger from the Ug99 race of stem rust produced by *Puccinia graminis* f. sp. *tritici*, which is driven by climate change.

Temperature and CO₂ concentrations are also increasing the danger perception of late blight (*Phytophthora infestans*), a potato disease, including two major rice diseases. The necessity for further research on such models that can forecast the severity of key diseases of major crops in real-field settings has been emphasized by the changing disease situation as a result of climate change. Simultaneously, disease control methods should be reoriented under changing circumstances, including new sustainable food production strategies (9).

Haggag and his colleagues looked into it. However, there is currently no systematic assessment of how climate change may effect the spread of plant diseases and primary production in most agricultural environments. There have been few research on the influence of climate change on disease transmission in field crops. Plant diseases, which may be caused by biotic or abiotic pathogens, are an essential part of plant and ecosystem health. Organisms such as fungus, bacteria, viruses, nematodes, phytoplasmas, and parasites cause plant biotic illnesses. Abiotic illnesses, on the other hand, have long been linked to chemical and physical climatic elements including temperature and moisture extremes, as well as agricultural challenges like nutrient shortages, mineral toxicities, and pollution. It is now feasible to detect responses to a variety of biotic and abiotic stimuli, as well as potential trade-offs in responses, thanks to developments in genomic technology for high-throughput gene expression investigations. Most plant disease models employ different climatic variables than global climate models and operate on a different geographical and temporal scale. The present study examines environmental parameters that influence the severity of agricultural disease epidemics in order to estimate the effects of climate change on plant development and harvest, as well as disease epidemic severity. In view of shifting worldwide opinions on future environmental needs, the effects of climate change on chemical and biological plant disease management are also examined (10).

Wakelin and his colleagues investigated Droughts are anticipated to become more common and last longer in many places of New Zealand as a result of climate change. Plant pathogen lifecycles, host susceptibility to infection or disease manifestation, pathogen natural ranges, and pathogen population genetic change rates might all be affected. These factors are expected to affect a number of pathosystems critical to New Zealand's productive usage. Drought is likely to increase illness manifestation in most patho systems. Drought, on the other hand, may make certain diseases less severe, such as kiwifruit *Scelerotina* rot and radiata pine red needle cast. The red needle cast of radiata pine is used as a case study to demonstrate how drought may impact several components of the host-pathogen-environment relationship. We believe that New Zealand's ground-based productive sectors should better prepare for the negative consequences of greater drought for plant diseases, as well as the possible advantages (11).

3. DISCUSSION

Climate change is a huge environmental issue that affects everyone on the planet. Water vapour, carbon dioxide (CO₂), methane nitrous oxide, hydrofluorocarbons (HFCs), and ozone (O₃) are examples of greenhouse gases (GHGs) that trap reflected energy and warm the earth's surface. Human activities have a major role in the acceleration of global climate change, which has a direct impact on the environment. Global warming has been seen in India's west coast, middle India, interior peninsula, and northeast. Rising greenhouse gas (GHG) concentrations in the atmosphere are causing global climate change. The observed climate changes on the world during the last 50 years are mostly due to human activities. In the preceding century, global temperatures rose by around 0.8°C, and by 2100, they are anticipated to rise by 0.9 to 3.5°C.

Such alterations would have an effect not just on crop development and cultivation, but also on the reproduction, spread, and severity of a number of plant diseases. To include more detailed climatic forecasts at different levels, many plant disease models have been constructed. The focus now has to move away from impact assessment and toward the creation of adaptation and mitigation strategies and options. Existing physical, chemical, and biological management measures, including disease-resistant cultivars, must be evaluated in the context of climate change, and any research targeted at producing new tools and tactics must take into account future climatic situations. To understand how an anticipated alteration in the environment may affect plant illnesses, disease risk assessments based on host pathogen interactions, as well as studies on host response and adaptability, should be done.

4. CONCLUSION

Climate change is a serious environmental issue that affects everyone on the planet. Water vapour, carbon dioxide, methane, nitrogen dioxide, hydrofluorocarbons, and ozone (O₃) are examples of greenhouse gases that absorb reflected radiation and warm the earth's surface. The acceleration of anthropogenic climate change, which has a direct impact on the environment, is mostly due to human activity. Global warming has affected the west coast, central India, the interior peninsula, and the northeast of India. Rising greenhouse gas (GHG) concentrations in the atmosphere are causing global climate change. Climate change has been seen all across the globe. The impact of climate change on plant diseases in the field, as well as disease management in the context of climate change, has gotten little attention. Specific assessments for a few countries, localities, plants, and illnesses that affect food security are already available. The attention must now shift from impact assessment to the development of adaptation and mitigation methods and solutions. Existing physical, chemical, and physiological management methods, especially disease-resistant cultivars, must be reviewed in light of climate change, and any study aimed at developing new tools and strategies must take future climatic conditions into consideration. Disease risk assessments based on host–pathogen interactions, as well as research on host response and adaptation, should be conducted to understand how a predicted change in the environment may influence plant diseases.

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AN ANALYSIS OF HEALTH BENEFITS OF ALMONDS

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ABSTRACT

Almonds are highly rich in vitamin E, copper manganese, fiber magnesium, phosphorus, monounsaturated fatty acids, & riboflavin protein, among or nutrients. Despite fact that almost half of an weight of almond is fat, daily intakes of 7 grams of this tree nut decrease LDL cholesterol content by 1%, particularly when combined with diets advised by National Cholesterol Education Program. Consumption of almonds on a regular basis does not cause weight gain, & its inclusion in low-calorie diets seems for promoting greater weight reduction compared to diet depending upon carbohydrate low-calorie. Almonds have lower glycemic index & have no negative effects on sensitivity of insulin. Almond is good source of bioavailable - tocopherol, & eating more of m increases LDL's resistance to oxidation. Furrmore, polyphenolic components of almonds have recently studied & shown to have antioxidant properties. While advantages of almonds for cardiachealth & obesity-related illnesses seem to be promising, allergic reactions in sensitive people may be a problem. More study is needed to get a better knowledge of function of bioavailability & bio-accessibility of almond components, along with synergy between m, in health consequences associated with m.

KEYWORDS: Almonds, Cholesterol, Food, Nutrient, Vitamin.

1. INTRODUCTION

With demographic & epidemiological imperative of an ageing society, re is an underst&able focus presently in food& agricultural production industry on manufacturing stuff that can be categorised with promoting health & chronic illness preventative measures claims, such as adding vegetation stanols/sterols in margarines & orange juice for aid in reduction of serum cholesterol & risk for heart disease. Furrmore, producers of natural foods high in one component are increasingly attempting to connect that ingredient to health advantages, such as presence of lycopene in tomatoes being linked to prostate cancer protection (1).

However, many studies have shown that in order to have a true effect on health, many distinct dietary variables must not only converge, but also interact in a dynamic manner. Despite some deceptive marketing attempts to promote particular "superfoods," humans might become able for glean instructions related to food. Although most studies indicate almonds' potential cardiacadvantages are due to ir high concentration of monounsaturated fats, ir nutritional profile

implies that additional bioactive components may also influence heart disease, along with health outcomes including cancer & diabetes. However, even when assessing a food's health advantages, its possible negative consequences, such as allergic potential, must be taken into account (2).

California's almond manufacturing has almost doubled in last 20 years, possibly due to consumer awareness of health benefits of almonds, they are leading agronomic product, with 6000 growers cultivating greater than 500,000 acres & over 30 major varieties for supply 80 percent of global market for this tree nut. This paper investigated how nutritional composition of almonds, with components acting independently & in synergy with one another or in conjunction with or foods, may contribute to health reimbursements connected with everyday consumption (3).

Almonds are a nutrient-dense food, & significant research over past decade has connected almond consumption habits to a lower risk of chronic illnesses including coronary heart disease (CHD) & type 2 diabetes, along with weight management & control. Almonds, for example, have a staple of humanity's diet since pre-agricultural times, & its popularity has only grown in recent years, whether as snacks or as part of a meal. Almonds may be consumed whole (fresh or roasted), as spreads such as almond butter, or incorporated in a variety of culinary items & recipes. Almonds have complex food matrices that include a variety of nutrients & phyto protective compounds that have a positive impact on human health. All nuts are rich in calories & contain a lot of fat, though most of it is unsaturated. However, there is still some scepticism regarding overt nut intake recommendations, along with lack of knowledge & awareness of how nuts may fit into a well-balanced diet. linked article emphasises that almonds are a great source of several vital nutrients, which include vitamin E & several essential minerals, that there is substantial evidence that almonds lessen plasma levels of cholesterol & or risk factors for heart disease, & that scientific proof is arising that almonds might well perform a factor in maintaining weight(4).

1.1 Almond Nutrient Composition:

Almond is nutrient-dense food that provide tremendous source (i.e. >20 percent DV) of vitamin E (36.4 percent) & manganese in typical 28 g serving (as percent of US Daily Value or DV) according to US Food & Drug Administration (FDA) (36.0 percent). Almonds are also a rich source of magnesium (19.5 percent), copper (16.0 percent), phosphorus (13.4 percent), fiber (13.2 percent, with insoluble/soluble fiber in a 4:1 ratio), riboflavin (13.5 percent), & protein (12.1%). Furthermore, almond proteins have a high arginine content & are easily digestible. Almonds' 164 calories come mostly from its fat content (49.4 percent of weight), but it's worth noting that monounsaturated fatty acids account for majority (67 percent) (MUFA). Almonds contain a wide variety of phenolic & polyphenolic chemicals, according to recent research, with 118.5 mg per serving (5).

1.2 Almond Consumption & Risk Of Cardiovascular Disease:

In 2003, FDA issued a qualified B-level health claim that consuming 42 g daily of almonds & or nuts (except Brazil, cashew, macadamia, & certain pine nuts) is inversely related with occurrence of cardiovascular disease (CVD). 16 Because of high MUFA concentration of almonds, this component is often mentioned as subsidizing significantly to this benefit full nutritional status of almonds, on or off, discloses a dosage sequence closely correlated with most dietary recommendations, along with nutritional modes of action that encourage cardiovascular health, like

hypocholesterolemic effects of fibre, phytosterols, polyphenolics, & a high unsaturated/saturated fat ratio; enhanced vascular ability to respond caused by arginine; & reduction of dyslipidemia, homocysteine, & oxidative stress. According to one research, including 52 g of almonds into daily diet of 43 free-living adults led in a 66% increase in dietary intake of -tocopherol (66%), MUFA (42%), polyunsaturated fatty acids (PUFA, 24%), magnesium (23%), & vegetable protein (19%) (6).

1.3 Potential Action Of Almond Intake On Obesity-Related Diseases:

Speedily rising incidence of weighty & fatness, along with its implications for obesity-related illnesses such as cancer, cardiac disease, & diabetes, is mostly attributable to insufficient physical activity & excessive calorie intake. Nuts, which are high in energy, seem to be contra indicated as part of explanation to this issue. Nut intake, on or h&, is not linked to a higher BMI in free-living people & is inversely connected to risk of cardiac disease (CVD). A study found that adding 56 g of almonds per day (320 kcal per day) in regular diet of eight healthy individuals for six months lead to non-significant weight increase of 0.4 kg & no alteration in waist/hip ratio. Absence of impact wascribed to energy displacement from or meals, satiating properties of almonds, & inadequate absorption of almond lipids. In terms of final aspect, research by another researcher suggests that almond lipids are poorly absorbed because its cell walls restrict fat bio accessibility to physical & chemical processes in gastrointestinal system. Preliminary data from a research by Zemaitis & Sabate showed higher lipid excretion in individuals who ate almonds, which backed up these findings (7).

1.4 Almonds & Cancer:

While there are theoretical grounds to think diets rich in nuts & seeds may defend against certain cancers, data is presently insufficient, according to a 1997 study by World Cancer Research Fund. 41 Following that, Herbert et al. compiled data from a 59-country observational research & discovered evidence that regular intake of nuts, grains, & cereal is protective contrary to prostate cancer. Large-scale European Prospective Investigation into Cancer & Nutrition (EPIC) found that mean nut & seed consumption ranged from 0.8 g per day in Swedish women to 12.4 g per day in Dutch men between 1992 & 2000, with total intakes reaching 265 & 300 g per day for women & men, respectively. Jenab et al. 43 found a significant inverse association between high intakes (>6.2 g day⁻¹) & non-consumers for colon cancer in women in a subgroup analysis, despite finding no overall association between nut & seed intake & risk of colorectal, colon, & rectal cancers among 478 040 subjects in EPIC cohort (Hazard Ratio 0.89; 95 percent confidence interval 0.80–0.9).

1.5 Allergy To Almonds:

While almonds provide a number of health advantages, they may also cause unpleasant responses in those who are sensitive to them. Almond allergy is similar to other tree nut allergies in that it causes angioedema, , nausea swelling itching hives, , trouble breathing, shortness of breath, & swallowing, &, in rare cases, anaphylaxis. A study found that 50 percent of 3 million Americans with food allergies were allergic to peanuts, 30 percent to walnuts, 10% to almonds, & 4% to both peanuts & tree nuts, based on a telephone survey. Another study calculated that 10% of allergic persons would respond to two or more nuts, resulting in a global population of approximately 500 000 people. It has discovered that two main almond allergens, with molecular weights of 45–50 & 70 kDa, bind substantially to IgE. In this respect, Poltronieri et al. report's has

established in Europe for identification of allergenic proteins in almonds, & techniques for its detection have been created. Am&in has discovered a significant almond storage protein in United States, & it is used to identify almonds in food items.

1.6 Perception On Almonds Regarding Nutrition & Health:

Noneless not exclusive to United States, 2005 version of Dietary Guidelines for Americans emphasizes particular worry about insufficient vitamin E, magnesium, & fiber consumption by children, adolescents, & adults, based on dietary intake statistics or evidence of public health concerns. Almonds seem to be part of answer to enhancing nutritional profile of diet, especially when combined with advice that fat consumption should come mainly from sources of MUFA & PUFA, such as nuts. While health claim for advantages of almonds & or tree nuts in lowering heart disease has been authorized, further research is needed to show its involvement in chemoprevention, value as satiating meal, & effects on inflammation & insulin resistance. Despite potential for almonds to play a significant role in health promotion, further research is needed to better understand & bioavailability & bio accessibility of almond components, along with apparent synergy between them. More study is required on nature & cause of allergic reactions to almonds & or tree nuts in those who are allergic to them.

1.7 Nutritional Attributes Of Almonds:

1.7.1 Almonds As Source Of Energy & Macro Nutrients:

Almonds have a caloric content of approximately 575 kcal per 100 g & a fat content of around 50%. However, almonds have a beneficial fatty acid composition since mono unsaturated fatty acids (MUFA) predominate & saturated fat level (3.7 g per 100 g almonds) is lowermost of all nuts. There are 62 percent MUFA & 24 percent poly unsaturated fatty acids in total fat composition. Almond fatty acids play a key role in health benefits of nut intake, including a decreased risk of cardiovascular disease & sudden cardiac death, lower blood cholesterol, preservation or augmentation of low density lipoprotein (LDL) oxidation resistance, & improved endothelial function. Almonds have 21.2 percent total protein, making them an excellent source of plant protein, & their proteins are strong in arginine. Almonds also have approximately 3.9 g total sugars per 100 g, & since they have less than 5 g sugars per 100 g, they qualify as "naturally low in sugars" under new European nutrition regulation 1924/2006 on nutrition & health claims.

1.7.2 Almonds Are Naturally High In fibre:

Whole natural almonds provide around 12 g of dietary fiber per 100 g, which is enough to qualify as "naturally rich in fiber" under new European standard. As per epidemiologic & human interventional research, dietary fibre from plant cell walls of foods such as whole grain cereals, vegetables, beans, fruits, & nuts is associated with a variety of health advantages. These advantages include a lower incidence of coronary heart disease & diabetes, along with beneficial effects on digestive system, such as prebiotic effects. Plant cell walls are composed of supramolecular networks of cellulose, hemicelluloses, pectic chemicals, & non-carbohydrate components (e.g. phenolic compounds) & are primary source of dietary fibre. Different kinds of dietary fiber may aid to diminish postprandial glycemia & cholesterol levels in blood. Increasing dietary fiber consumption may aid you feel more satiated & lose weight over time. When nuts, such as almonds, are added to low-calorie diets for weight reduction, they may enhance satiation & result in inadequate fat absorption in intestine. These last two effects may be attributed to nuts' high fibre

& protein content. pace & amount of lipid release from plant food tissues during digestion is known to be influenced by plant cell walls, & structural characteristics of almond cell walls (dietary fibre) play a significant role.

1.7.3 Micronutrients:

Almonds are among most nutrient-dense foods accessible. Almonds are abundant in vitamin E, riboflavin (vitamin B2), & minerals copper calcium, magnesium manganese, phosphorus, , zinc, , & potassium.

1.7.4 Phytosterols & Antioxidants:

Tree nuts, like almonds, have no dietary fat but are abundant in phytonutrients, class of compounds that impede absorption of cholesterol & hence aid maintaining balanced levels of cholesterol. Most common phytosterols in plants are campesterol, b-sitosterol, 5-avenasterol, & stigmasterol. Cholesterol-lowering activity of nuts in human studies has typically been larger than expected due to fatty acid exchange & high concentrations of MUFAs. This effect may be due in part to phytosterols contained in nuts.. Several nuts, in addition to antioxidant vitamin E, are among dietary plants with greatest overall antioxidant content. Dietary flavonoids are thought to act as antioxidants in vivo, lowering risk of chronic illness. However, its effectiveness has been questioned due to findings showing only very little quantities of flavonoids are found in plasma after eating flavonoid-rich meals. Flavonoids from almondskins are bioavailable & work synergistically with vitamins C & E to improve LDL cholesterol resistance to oxidation, according to in vitro & animal studies. There has also been research on impact of almond intake on DNA damage & oxidative stress in cigarette smokers. complete characterisation & quantification of almond polyphenolics & antioxidants, antioxidant activity of almond seed extracts, flavonoids from almond skins, & effects of almond skin polyphenols & quercetin on human LDLs & lipid peroxidation biomarkers are currently focus of research.

1.8 Bio Accessibility Of Protein, Lipid & Vitamin E From Almonds:

Almonds are unique among tree nuts in terms of quantity of protein & vitamin E (atocopherol) they contain. Almonds are mostly composed of fat, & it has been found in human volunteers that a significant part of this lipid is either slowly digested & absorbed or stays totally undigested. Word "bioaccessibility" refers to amount of nutrition that may be liberated from a complex food matrix & therefore become potentially accessible for absorption in gastrointestinal system. Assessment of almond nutrients' bioaccessibility is a hot topic in study since it may have consequences for treatment of overweight & obesity, along with lower risk of cardiac disease. Effects of mastication on particle size have a direct impact on lipid, protein, & vitamin E bioavailability, & preliminary research suggests that longer chewing increases number of broken plant cells, thus boosting vitamin E & lipid bioavailability. Almonds' potential contribution to energy intake may be reduced by approximately 7% as result of this reduction in fat energy absorption. Furthermore, postprandial lipaemia is influenced by rate & amount of lipid bioaccessibility in almonds, which is mainly controlled by integrity of plant cell walls (dietary fibre) that encapsulate lipids. In vitro & ileostomy digestibility experiments have shown that following duodenal digestion, dietary fibre, fat, & protein contained in almond tissue are accessible for fermentation in colon by gut bacteria. More research has been done utilizing a complete model of gastrointestinal system that mimics in vitro gastric & duodenal digestion to look into possible prebiotic impact of almond seeds. Resulting residues are utilized as substrates in colonic model to evaluate its impact

on gut bacteria population composition & metabolic activity. After a 24-hour incubation, finely powdered almonds significantly boosted populations of Bifidobacteria & Enterobacterium rectale, resulting in a higher prebiotic index than commercial prebiotic fructooligosaccharide. As number of E. coli infections rises, so does number of E. coli amount of rectal produced during this in vitro fermentation was linked to amount of butyrate produced. se preliminary findings suggest that almond seeds have potential to be used as source of prebiotics, & that more in-depth research on human volunteers is needed. Data from epidemiological studies & human trials show that including nuts like almonds in one's diet does not cause weight gain, owing to ir strong satiety properties & effects on resting energy. A significant increase in faecal energy loss, accounting for approximately 5–15 percent of energy content of almonds, has shown in human studies. Moderate nut intake, it is hyposized, does not cause weight gain via three mechanisms: satiety, stimulation of energy expenditure, & efficient energy use.

2. LITERATURE REVIEW

Soumik Kalita et al. discussed Almonds & CardiacHealth in which y explained how several preventative methods for lowering dyslipidemia have proposed, with dietary modification being one of most significant. Dyslipidemia is a significant risk factor for coronary heart disease, & efforts to control it have proven to lower risk of cardiacdisease (CVD). Although re are effective pharmaceutical treatments for this disease, dietary strategies are a safer alternative for preventing & managing dyslipidemia. It has suggested that include almonds in one's regular diet may improve one's lipid profile. existing data evaluating impact of almonds on dyslipidemia in South Asian (especially Indian) setting is critically examined in this study (8).

David P. Richardson et al. discussed nutritional & health benefits of almonds in which y explained how study on benefits of almonds on lowering blood cholesterol levels & lowering risk of heart disease has exploded in past decade. Almonds are also showing promise in terms of health benefits related to body weight management & diabetes, according to new study. Almonds are rich in monounsaturated & polyunsaturated fatty acids, protein, & dietary fiber, along withrange of important nutrients such as vitamin E & a number of trace elements. Almonds have a low salt content & a high potassium content, along withvariety of phyto protective compounds. existing data also suggests that when nuts are eaten in moderation, weight gain is unlikely, & that regular intake of nuts may be advised as part of a healthy balanced diet (9). Hao J et al. studied almond shell characteristics in which y discussed how every year, a significant number of almond shells are discarded. In this article, morphological & chemical features of almond shells are studied in order to aid in ir better use. Almond shells are studied for ir micromorphology, surface elements, rmal stability, crystallization, chemical composition, & relative characteristics. Almond shells have a diameter of 300-500 m for big holes & 40-60 m for tiny holes, as measured by a microscope & an electron microscope (10).

3. DISCUSSION

Despite being high in calories, almonds are high in monounsaturated fat, fiber, -tocopherol, minerals including magnesium & copper, & phytonutrients. Almond intake has hypocholesterolaemia advantage due to its favourable fat composition & fiber content. Almonds are expected to improve or controllable cardiac& diabetes risks, such as body weight, glucose homeostasis, inflammation, & oxidative stress, due to ir unique nutritional makeup. This article goes through nutritional content & hypocholesterolaemia advantages of almonds, along with

impact of almond intake on body weight. Although additional research is needed, accumulating data suggests that almond intake reduces risk of chronic degenerative disease beyond cholesterol lowering, especially in those with metabolic syndrome & type 2 diabetes.

4. CONCLUSION

Almond member of Rosaceae family, have long recognized as basis of vital nutrients; se days, y are high in dem& as nutritious diet among consumers & farmers. Almond macro- & micronutrient composition & characterization studies have shown that nut contains a wide range of nutrients, including fatty, lipids, amino, carbohydrates, , vitamins proteins & minerals, along withsecondary metabolites. Almond nutritional quality is influenced by a number of variables, including genetic & environmental influences. As result, studies examining impact of various variables on almond quality were also included. Almond intake has linked to various curative & preventive health effects in epidemiological research. Clinical trials have confirmed modulatory effects on blood glucose, lipid, & uric acid levels, along with regulatory function on body weight & protective benefits against diabetes, obesity, metabolic syndrome, & cardiacdisease. Furrmore, new study has verified almonds' prebiotic properties. Purpose of this study was to highlight significance of almonds as nutritious food & source of beneficial components for human health, along with to evaluate variables that influence qualityof almond kernel. Previously published papers on almonds in terms of components & bioactivity potentials were investigated using electronic databases such as PubMed, Scopus, Web of Science, & SciFinder, with a special emphasis on clinical trials.

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AN ANALYSIS OF HEALTH BENEFITS OF FLAX SEED

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ABSTRACT

Flaxseed is gaining popularity as a multifunctional food component owing to high levels of -linolenic acid (ALA, omega-3 fatty acid), lignans, & fibre. Flaxseed oil, fibres, & flax lignans might aid in lessening heart disease risk, atherosclerosis, diabetes, cancer, arthritis, osteoporosis, autoimmune diseases, & neurodegenerative problems. Flax protein aids in management & cure of heart disease, along with immune system support. Flax or flaxseed oil has used as a multifunctional food component in baked goods, juices, milk, pastries, dry pasta products, macaroni, & chicken products. Current review focuses on evidence of flaxseed's potential health benefits from recent human & animal research, along with commercial application in a variety of food items.

KEYWORDS: Fiber, Flax, Flaxseed, Obesity, Oil.

1. INTRODUCTION

Flaxseed is an essential oilseed crop used in industry, along with for feed, food & fiber. Nearly each component of flaxseed is economically viable, whether raw or processed. Stem produces high-quality fiber that is both strong & long-lasting. Seed contains lignans, omega-3 fatty acids, digestible proteins, &c. Flaxseed is an important resource of higher quality protein & soluble fiber, along with possible source of phenolic compounds, & is one of the greatest sources of -linolenic acid oil & lignans. Flaxseed is acquiring popularity in form of functional food owing to its increased level of -linolenic acid (ALA), fiber, & lignans. Lignans seem anticancer substances. Flaxseed omega-3s & lignan phytoestrogens are being studied for their potential benefits in a variety of health problems, & they might have chemoprotective effects in both animals & humans (1).

1.1 Culinary Uses Of Flax Seed:

Gluten-free flaxseed meal has a nice nutty flavor. Protein level of flax meal, along with gelling/binding qualities of food's soluble fibre, makes it perfect for use in gluten-free baked goods or gluten-free thickening agent. Allowing one spoonful of meal of flaxseed to gel with 3 tablespoon of water can be used in form of egg replacer in baked products. In morning, flake complements both hot & cold breakfast cereals & is a good source of fibre (2).

1.2 Nutrient in Flaxseed:

1.2.1 Omega-3 Fatty Acid:

There is optimum omega-6 to omega-3 ratio in diet of humans. Flaxseed, walnut, & canola oils all help to maintain this balance. While just a small percentage of ALA transforms in long-chain

polyunsaturated omega-3 found in marine oil, it nevertheless provides health advantages. Researcher are examining whether omega-3 fatty acid present in flaxseed can aid prevent contaminations & cure illnesses such as psoriasis ulcer, migraine, attention deficit, eating disorders, premature labour, emphysema, & others (3).

1.2.2 Proteins:

Flax protein has an amino acid sequence that is comparable to soybean protein, considered one among most nourishing plant protein. Flax seed proteins, like other plants, have techno-functional characteristics that influence their behavior in food system by interacting with other components. For solubility & water/oil retention capacity, these characteristics are mostly reliant on its hydration processes. Flax protein contains an amino acid sequence similar to soybean protein, which itself is regarded as among most nutrient-dense plant proteins. Flaxseed grain & paste contain roughly 21% & 34% protein, however this varies depending on genetic & environmental variables. Cool-climate seeds have a high oil content & a low protein content (4).

1.2.3 Dietary Fiber:

Flaxseed meal contains a lot of fiber, with a lot of it soluble (20%) in gums & mucilages form. Soluble fiber, furthermore to accounting for flaxmeal's laxative action, is known to have strong cholesterol-reduction properties, decreasing a key risk factor for cardiac disease. There is currently an authorized fitness claim for using ground flaxseed for reducing cholesterol in Canada, where extensive study has been conducted. Insoluble dietary fiber lowers insulin resistance, relieves constipation, & promotes overall bowel health. Amplified stool volume, standardised intestinal transit time, fit gut flora, & synthesis of shorter-chain fatty acid like butyrate are benefits of a high-fiber diet for colon. Low-fiber diets have been linked to fatness inflammatory bowel disease, fatness, heart disease, & colon cancer, among other chronic illnesses. Flaxmeal's high fiber content makes it an excellent complement to a well-balanced diet aiming at lowering risk of various chronic illnesses (5).

1.2.3 Carbohydrates:

Carbohydrates are a kind of carbohydrate that might be found in a variety. Flax has just 1 gram (g) of carbs (sugars & starches) per 100 g. As a result, flax contributes tiny in total carbohydrate consumption & is only advised for individuals suffering from certain diseases. Polysaccharide in flaxseed is made up of 2 main fractions. Non-communicable diseases (NCDs) were responsible for 36 million (63 percent) of worldwide deaths in 2008, with diabetes accounting for 1.3 million (3 percent) of those fatalities, with figure expected to quadruple by 2030. A more intriguing statistic is that, according to a recent WHO study, one out of every ten people has diabetes (6).

1.3 Health Benefits:

Flaxseed is widely recognised for possessing chemical constituents with unique biological activity & functional qualities, such as omega-3 polyunsaturated fatty acids (PUFA), carbohydrates, soluble dietary fibres, lignans, & proteins. It does, however, contain trace amounts of potentially hazardous substances such as Cadmium, protease inhibitors, & cyanogenic compounds.

1.3.1 Flaxseed & Cancer:

Many remarkable investigations have undertaken by Lilian Thompson's research group on anti-cancer potential of ground flax seeds. In a study, flax seed, lignan fraction, or oil were added to diet of mice that were formerly exposed to chemical carcinogen that caused cancer. tumour burden was lessen by all three treatments, with lignan fraction comprising secoisolariciresinol diglycoside (SDG) & flax seed lowering metastasis.. In other research, mice were given flax lignan SDG for one week after being exposed to carcinogen dimethylbenzanthra-cene. In this research, no. of tumors per rat decreased through 46% when matched to control group. Flax or its lignan (SDG) were studied to determine wher y might stop melanoma from spreading. Mice were given flax or lignan fraction 2 week before & after melanoma cells were injected. When compared to control, flax rapy reduced number of tumors by 32, 54, & 63 percent. SDG, which was given in quantities equal to 2.5, 5, or 10% flax seed, also decreased no. of tumors per mouse, from 62 in control group to 38, 36, & 29 tumors per mouse in SDG groups, respectively (7).

1.3.2 Flaxseed & Heart Disease:

Flaxseed has lately acquired popularity in field of cardiacdisease, owing to its higher content of alpha-linolenic acid (ALA) & phytoestrogen lignans, along with being excellent basis of soluble ber. Flaxseed has found in human trials to lower total & lesser-density lipoprotein cholesterol levels, reduce postpr&ial glucose absorption, reduce inflammation indicators, & increase blood levels of omega-3 fatty acids ALA & eicosapentaenoic acid. However, re is no conclusive evidence that flaxseed has antiplatelet, antioxidant, or hypotensive properties. Total cholesterol, LDL cholesterol, apolipoprotein B (5.4 1.4 percent; $P = 0.001$), & apolipoprotein A-I (5.8 1.9 percent; $P = 0.005$) were all decreased by partially defatted flaxseed, but serum lipoprotein ratios were not affected. Ex vivo &rogen & progestin action, serum HDL cholesterol, serum protein carbonyl concentration, & serum HDL cholesterol were all unaffected. Surprisingly, serum proteinthiol groups were suggestively lower (10.8 3.6 percent; $P = 0.007$), indicating that oxidation was enhanced. In rabbits, dietary flaxseed has demonstrated to have strong antiarogenic effects. When LDL receptor deficient mice (LD-LrKO) were fed a 10% flaxseed-supplemented diet for 24 hours, circulating cholesterol levels were found to be lower, suggesting that flax seeds had an anti-arogenic impact.

1.3.3 Menopause & Flaxseed:

Lignans compete with estrogen for receptor sites, resulting in a two-fold impact. Because lignan has a modest hormonal effect, prolonged flaxseed use might have an antiestrogenic effect throughout periods of life when estrogen synsis is high since it contends with estrogen for similar receptors. Flaxseed might defend women at risk of cancer by reducing hormonal signaling involved in early stages of tumor formation via this method. Consuming lignans might help decrease severity of osteoporosis & reduce risk of endometrial cancer in postmenopausal women. Flax treatments on menopausal symptom & bone health in premenopausal & postmenopausal women were studied by Dew et al. in a systematic review published in 2013. Bulk of research looked at indicated that flax intake changes circulating sex hormones & raises urine 2-hydroxyestrone/16-hydroxyestrone ratio, which is linked to a reduced risk of breast cancer. Fewer studies, however, looked at bone mineral density or indicators of bone turnover;

additional research is required to confirm effect of flax lignan on postmenopausal bone mineral density.

1.3.4 In Treatment Of Diabetes Mellitus:

Increased blood sugar (Diabetes mellitus), which is acknowledged as fasting plasma glucose level of 126 mg/dl or above, is significant risk factor for cardiac illnesses. Diabetes mellitus is characterized by hyperglycemia & is linked to abnormalities in carbohydrate, protein, & lipid metabolism, which might lead to secondary problems. Non-communicable diseases (NCDs) were responsible for 36 million (63 percent) of worldwide deaths in 2008, with diabetes accounting for 1.3 million (3 percent) of those fatalities, with figure expected to quadruple by 2030. A more intriguing statistic is that, according to a recent WHO study, one out of every ten people has diabetes). Diabetes has risen in prevalence from 153 million in 1980 to 347 million in 2008. India has world's biggest diabetic population along with one of world's highest diabetes prevalence rates. Diabetes was predicted to be responsible for approximately 2% of all fatalities in India in 2008. Diabetes, if left untreated, might lead to heart disease, renal failure, & blindness. A link has discovered between high blood glucose levels & risk of cardiac disease. Furthermore, diabetes is linked to additional risk factors such as fatness, hypertension, poor HDL cholesterol, & high triglyceride levels.

1.3.5 Preventing From Kidney Diseases:

Chronic kidney disease (CKD) is a major well-being concern in elderly, & it might progress to end-stage renal failure, necessitating dialysis or transplantation to survive. It has hypothesized that -3 fatty acids might protect kidneys from injury in adults due to its anti-inflammatory characteristics. In animal models, PUFA supplementation was shown to reduce renal inflammation & fibrosis. Increased dietary consumption of long-chain -3 PUFA was shown to be inversely related to prevalence of CKD, according to a study. Long-term omega-3 fatty acid intake was linked to a substantial decrease in systolic & diastolic blood pressure, according to another study. Because hypertension is a risk factor for CKD, effect of long-chain n-3 PUFA on blood pressure might be one way in which it protects kidneys. Another study, on or h&, discovered a link between -linolenic acid & mild CKD. One explanation for findings might be a lower conversion of -linolenic acid to EPA & DHA, which have proven to protect heart.

1.3.6 Prevention & Dealing With Obesity:

Fatness-related disease conditions have traditionally treated &/or prevented with a variety of plant materials, including flax. When flaxseed fibers are hydrated, they produce highly viscous solutions similar to those seen in gums. Hunger inhibition seems to be more effective with viscous fibers. Flaxseed mucilage soluble nonstarch dietary fibers are multibranched hydrophilic substances that form viscous solutions that delay gastric emptying & nutrient absorption in small intestine.

Flaxseed might defend women at risk of cancer by reducing hormonal signaling involved in early stages of tumor formation via this method. Consuming lignans might help decrease severity of osteoporosis & reduce risk of endometrial cancer in postmenopausal women. Flax treatments on menopausal symptom & bone health in premenopausal & postmenopausal women were studied by Dew et al. in a systematic review published in 2013. Bulk of research looked at indicated that flax intake changes circulating sex hormones & raises urine 2-hydroxyestrone/16-hydroxyestrone

ratio, which is linked to a reduced risk of breast cancer. Changes in leptin expression were inversely correlated with atherosclerosis risk & strongly & positively correlated with adipose ALA levels.

1.3.7 Natural Treatment Of Bowel Syndrome:

Constipation is still a significant health issue in Western cultures, owing to a refined diet. A adequate quantity of dietary fiber is widely recognized as a key component in prevention & treatment of constipation. Flaxseed fiber metabolism is similar to that of any or dietary fiber. During 1970s & 1980s, dietary fiber was first line therapy for irritable bowel syndrome since it was a natural approach to control disease. A study looked at effects of eating 50 grams of flaxseed each day for four weeks on a variety of nutrition indicators in ten young healthy individuals. GI motility, constipation, glucose tolerance, hypocholesterolemic impact, & fermentation are all effects of flax fiber that have well documented in many reviews & publications.

1.4 Uses Of Flaxseed By-Product By Means Of Protein Source:

Flaxseed is oilseed that is grown primarily for its oil yield & fatty acid profile, with protein-rich meals produced as a byproduct. To yet, flaxseed has not widely used as a protein supplement for human utilization.. Consumer concerns (e.g., prion disease), religious inhibitions, & dietary & moral choices connected with eating animal by-products are driving industry to discover plant-based alternatives to animal-derived components in food protein ingredient market. Primary product of flaxseed is oil, & leftover paste is used to make animal feed. Flaxseed grain & flaxseed paste, on or h&, contain approximately 21% & 34% protein, respectively. Converting flaxseed paste into protein concentrate is one method to include it into traditional meals. In this manner, a product with a high protein content & certain desired functional properties might be produced. Flaxseed proteins have studied for its emulsifying capabilities, however findings have inconsistent (8).

2. LITERATURE REVIEW

Vivek Sharma et al. discussed Flax & flaxseed oil in which y discussed how an adequate quantity of dietary fiber is widely recognized as a key component in prevention & treatment of constipation. Flaxseed fiber metabolism is similar to that of any or dietary fiber. During 1970s & 1980s, dietary fiber was first line therapy for irritable bowel syndrome since it was a natural approach to control disease. Flaxseed oil, fibers, & lignans might help to prevent cardiovascular disease, atherosclerosis, autoimmune diseases, & neurological problems. Flax protein aids in heart disease prevention & therapy, along with immune system support. Flax or flaxseed oil has used in baked goods, juices, milk & dairy products, muffins, dry pasta products, macaroni, & meat products as an useful food component. current review focuses on evidence of flaxseed's potential health benefits from recent human & animal research, along with commercial usage in a variety of food items (3).

Rajalakshmy Prasanth discussed Flax Seed & Its Health Benefits in which he discussed how with average levels of 55 percent in oil, flaxseed oil is worthy resource of omega-3 fatty and linolenic acid. there are a variety of flaxseed products available, each with its own set of health benefits. Whole flaxseed is generally regarded as a nutritious food with anticancer properties. In female rat mammary glands, dietary flaxseed flour decreases epithelial cell proliferation & nuclear abnormalities. This suggests that flaxseed might slow progression of breast cancer. Furthermore,

flaxseed lignan has shown to decrease breast tumor development in later phases of carcinogenesis. Lignans & polysaccharide mucilage are abundant in flaxseed coat components. It also demonstrates positive benefits on digestive health (9).

Pierce G et al. discussed bioactive components & cardiac benefits of flaxseed in which y discussed how cardiaccisease continues to be major cause of death & morbidity throughout globe. An adequate quantity of dietary fiber is widely recognized as a key component in prevention& treatment of constipation. Flaxseed fiber metabolism is similar to that of any or dietary fiber. During 1970s& 1980s, dietary fiber was first line rapy for irritable bowel syndrome since it was a natural approach to control disease. Dietary flaxseed has shown to have antihypertensive, anti arogenic, cholesterol-lowering, anti-inflammatory, & arrhythmia-inhibiting actions in cardiacsystem. Its high fiber content, along with its high levels of -3 fatty acid - linolenic acid & antioxidant lignan secoisolariciresinol diglucoside, have linked to its favorable cardiaceffects. Flaxseed also contains additional possible bioactive substances such as proteins, cyclolino peptides, & cyanogenic glycosides, which might have biological effects but are less well known. se chemicals might also be responsible for flaxseed's cardiacbenefits. This article will cover cardiaceffects of flaxseed supplementation along with its bioactive components, including ir characteristics, biological effects, & potential mechanisms of action. It will also address future research paths that might lead to discovery of new health advantages of eating flaxseed (10).

3. DISCUSSION

Flaxseed is one of world's oldest crops, having grown since dawn of time. *Linum usitatissimum* is Latin word for flax seed, which means "extremely helpful." Flax was originally brought to United States by colonists, who used it to make textile fabric.. Flax was primarily utilized in manufacture of textiles (linen) & papers until 1990s, while flax seed oil & its by-products are used in animal feed formulation. Words flax seed & linseed have a little variation in meaning.. Flax seed has sparked renewed attention in area of food & disease research during past two decades, owing to possible health advantages associated with certain of its biologically active components.. Its popularity is increasing because to its health advantages, which include reduced cardiaccisease risk, reduced risk of cancer, especially of breast& prostate gl&s, anti-inflammatory action, laxative impact, & relief of menopausal symptoms & osteoporosis. Gluten-free flaxseed meal has a nice nutty flavor. Protein level of flax meal, along with gelling/binding qualities of food's soluble fibre, makes it perfect for use in gluten-free baked goods or gluten-free thickening agent. Allowing one spoonful of meal of flaxseed to gel with 3 tablespoon of water can be used in form of egg replacer in baked products. In morning, flake complements both hot & cold breakfast cereals & is a good source of fibre (2).

4. CONCLUSION

Flax seed proteins, like or plants, have techno-functional characteristics that influence their behavior in food system by interacting with or components. For solubility & wateroil retention capacity, se characteristics are mostly reliant on ir hydration processes. Flax protein contains an amino acid sequence similar to soybean protein, which itself is regarded as among most nutrient-dense plant proteins. When one of most sought & highly requested health advantages from functional foods is a healthy heart, & food industry's aim is to create new ways to solve nutritional problems, flaxseed will play a critical role. Flaxseed might help to increase

availability of healthy food options by enhancing nutritional profile of meals by lowering salt, sugar, & saturated fat levels while also boosting amount of omega-3 fatty acids & or bioactive components. Global market for healthy heart meals is expected to expand significantly in future years as a result of such factors. As a consequence, flax & flaxseed oil might become more popular in future as components in functional meals & nutraceuticals. There is no question that switching to a high-fiber, omega-3-rich diet would be helpful. As a result, flaxseed, whether whole or ground, might be prescribed as a dietary supplement. New methods to processing, stabilization, & use of flaxseed oil will be paved by modern techniques such as high-powered ultrasound, micro fluidization, spray granulation, & Nano encapsulation. Another way to use flaxseeds is to supplement animal diets with flax/flaxseed oil for production of omega-3 enriched eggs, milk, meat, & or animal origin products.

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ESSENTIAL OILS ANTICANCER PROPERTIES: A REVIEW

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ABSTRACT

Essential oil components have an important role in disease development and treatment. Monoterpenes, sesquiterpenes, phenolic, oxygenated sesquiterpenes, oxygenated monoterpenes, as well as other volatile oils components from aromatic herbs as well as nutritional plants include sesquiterpenes, Monoterpenes, oxygenated sesquiterpenes, phenolic, as well as other volatile oils components. Anti-oxidant, anti-mutagenic, anti-proliferative, immunological function and surveillance improvement, enzyme activation as well as increased detoxification, regulation of multi-drug resistance, as well as synergistic processes of volatile ingredients are all responsible for their cytoprotective qualities. Based on the most recent research, this article describes structural groups as well as molecular anti-cancer mechanisms of components from aromatics herbs as well as food plants.

KEYWORDS:Anticancer Mechanisms; Essential Oils; Synergism; Terpenes.

INTRODUCTION

Cancer is the second greatest cause of mortality after heart disease, and it is becoming a global health issue. Upwards of 10 million cancer cases are diagnosed each year across the globe, including greater than a hundred illnesses like cancer of the lung, stomach, breast, liver, colon, and others organs. Interfering with modulation stages and related signal transduction pathways is the most logical approach to influence carcinogenesis. UV as well as ionizing asbestos radiations, as well as cigarette smokers, bacterial, viral, as well as parasitic diseases, and mycotoxins foodborne illness are only a few examples of physiological and biochemical carcinogens. Overproduction of oxygen-centered allowed radicals as well as others sensitive oxygen species may cause oxidatives damage to bio molecules, which is why certain cancers are caused by them (1). There is currently no very effective medication on the market to treat the majority of malignancies. New medicines that are extremely effective, have minimal toxicity, and have a small environmental impact are in great demand. Natural compounds that are novel provide possibilities for drug development innovation. Natural ingredients, in fact, play a significant roles in cancer preventions as well as therapy.

Natural antitumor agents make up a significant portion of the anticancer drugs presently in use in clinics. Natural products or their derivatives, for example, accounted for more than half among

all anticancer prescription medicines authorized globally between the 1940s and 2006. Since then, natural chemicals derived from medicinal plants have piqued attention as promising sources of new anticancer medicines. Significant proof from population as well as explanatory studies has discovered an inverse connection among adequate fruit and vegetable consumption and also the take the chance of exact cancer, indicating that a nutritional supplementation consumption of the fruits as well as whole grains, as well as vegetables, is powerfully linked to a lower cancer risk (2). There are many clinical studies involving the uses of nutritional additions as well as changed diets to stop cancer. These dietary substances are thought to protect against cancer by inducing cellular defense mechanisms likes detoxifying as well as antioxidant enzymes, and inhibiting anti-inflammatory as well as anti-cell development signaling path ways, resulting in cells cycle arrest as well as cell death. Essential oil components, which have a broad range of bioactivities, have piqued curiosity and received the most attention among phytochemicals due to their structural diversity (3).

Essential Oils Have Anticancer Properties

Since oxidations damages numerous biological substances as well as reasons numerous diseases, including Alzheimer's disease, liver disease, atherosclerosis, cancer, aging, inflammation, arthritis, diabetes, Parkinson's disease, as well as AIDS, antioxidant action is one of the greatest intensively studied subjects in significant oils research. As a consequence, antioxidants have been used to treat a variety of illnesses in order to avoid oxidative damage. Many researchers have recently started looking into the antioxidant activities of various vital oils in attempt to find nontoxic natural anti-oxidants. As a result, many studies have exposed that important oils are excellent natural antioxidant sources. Superoxide anions and hydrogen-peroxide generate in eukaryotes, which are extremely destructive to mitochondrial DNA. Damaged mitochondrial DNA prevents electron transport protein production, resulting in the buildup of reactive species of oxygen. When free radicals from a injured mitochondrial membrane interact with essential oils, they form reactive phenoxy radicals that association with ROS to stop further injury (4). Among twenty five essential oils evaluated in one research, thyme essential oil had the strongest antioxidant impact, following by basil, clover leaf, cinnamon leaf, eucalyptus, and chamomile.

Antimutagen

Essential oils' anti-mutagenic properties are attributed to a number of mechanisms, including mutagen inhibition, direct scavenging of mutagens, antioxidant captures of mutagen-produced radicals, inhibition of metabolic conversion of promutagens into mutagens by P450, activation of cell antioxidant enzymes, and activation of enzymatic detoxification(5). 50 antimutagenic drugs function by either promoting or inhibiting error-free or error-prone DNA repair. In the yeast, essential oils have been found to reduce mitochondrial harm as well as apoptosis and necrosis. *Saccharomyces cerevisiae* is a kind of yeast.

Anti-proliferation

Lavandula officinalis, *Satureja hortensis*, *Salvia officinalis*, *Satureja montana*, *Thymus vulgaris*, *Foeniculum vulgare*, *Calamintha origanifolia*, as well as *Mentha arvensison* have anti-proliferative effects in human erythroleukemic K562 cells. Lime volatile oils induced DNA fragmentations as well as caspase-3 activation by up to 1.80 as well as two-folds after twenty four as well as fourty hours, indicating that apoptosis is involved. Apoptosis-related protein expression investigations corroborated the inductions of apoptosis by lime volatile oil,

suggesting that lime volatile oil may have potential advantages in colon cancer prevention. Carvacrol, a phenolic monoterpene, is found in *Thymus vulgaris*, *Carum copticum*, *origanum*, and *oregano*, among other plants. Carvacrol's anti-proliferative effects in metastatic breast cancer cells were attributed to the stimulation of the traditional apoptosis response, that included a decrease in mitochondrial membrane and an increase in cytosolic released from mitochondria, a decrease in the Bcl-two /Bax ratios, an increase in caspase activities, proteolytic processing of polypeptide, and DNA fragmentation.

Enhancement Of Immune Functions And Surveillance

Whenever these variables are taken into account, including such supporting healthy gut flora, stress reduction, as well as encouraging improved blood and lymph quality, mechanism that help strengthen the immune systems are successful. Aromatherapy has shown to be a very effective approach. Aromatherapy is the uses of vital oils to improve immune function via different media(6). It has a critical role in improving immune function. Controlling the hormones produced by the adrenal glands, likely to result in stress relief, inspiring the immune reaction by assisting the lymphatic system in removing toxins as well as stimulating the productions of immune improvement cells, as well as destroying damaging microorganisms are just a few of the ways it works. Citrus limonum and *Lavendula angustifolia* were used in one study to see how aromatherapy affected human immune function. Inhaling lemon essential oil improved mood and increased norepinephrine production, although neither essential oil was beneficial in other immunological tests. Inflammation is a crucial component of many illnesses, particularly multiple sclerosis, inflammatory bowel disease, arthritis, asthma, as well as atherosclerosis, and it is a reaction to harm produced by unpleasant physical or chemical stimuli.

Enhancing Detoxification And Inducing Enzymes

Consumptions of the *Allium* species have linked to a lower risk of cancer incidence in epidemiological studies. Organosulfur compounds produced from these plants are thought to be responsible for *Allium*'s anticarcinogenic effects. Sulfur-containing substances have been found to prevent chemically induced carcinogenesis in a variety of organs in animal models. Sulfur-containing compounds suppress carcinogenesis and modify procarcinogen metabolism. By raising the amounts of phase two enzymes like UDP-glucuronyl transferase, glutathione S-transferase, or lowering the levels of phase one enzymes such cytochromes P450, quinone reductase, these drugs may boost detoxification (7).

Multidrug Resistance

Due to increased efflux pumps such as through energy-dependent drug transporters related to the ABC family of proteins, multidrug resistant phenotypes have been described in several of malignancies, with decreased intracellular drug concentration as well as damage of one or more phases of the apoptotic signaling flows. Thymo quinone, the active component in thyme and black seed essential oils, has antioxidant and anti-neoplastic characteristics that may affect doxorubicin's multidrug resistance. In vitro, tea tree oil was tested against human melanoma M sixteen wild type cells and their drug-resistant counterparts, M fourteen Adriamycin-resistant cells, which were chosen following protracted doxorubicin therapy.

Compounds from Plants That Have Anticancer Characteristics

Medicinal plants have been utilized in traditional medicine in Asian and African communities for thousands of years, and many plants are taken for their health advantages in industrialized countries. According to the World Health, many nations continue to rely on plant-based medicine as their primary supply of medications, while emerging economies are increasingly turning to organically manufactured chemicals for their medical advantages. Polyphenols, brassinosteroids, including taxols have all been discovered and isolated from terrestrial plants as anticancer compounds.

Poly Phenols

Polyphenolic compounds such as flavonoids, curcumin, resveratrol, tannins, as well as gallacatechins are careful to be anti-cancer. Resveratrol may be present in a variety of foods, such as peanuts, grapes, and red wine. Green tea contains gallacatechins, which are antioxidants. Polyphenols, which are natural antioxidants, are believed to enhance health and decrease cancer risk when included in a person's diet. Poly phenols have been demonstrated to have cytotoxicity and antioxidant properties against a range of cancer cells. Polyphenols are considered to induce apoptosis, and so may have anticancer characteristics. Polyphenols are considered to cause apoptosis by controlling the mobilization of copper ions linked to chromatin, which causes DNA destruction.

Flavonoids

Flavonoids are polyphenolic chemicals with over 10,000 identified structures that make up a wide family of secondary metabolites found in plants. They are physiologically active compounds generated from plants that are attracting scientific attention due to their possible health advantages. Various plants, including fern species including plants used in traditional Chinese medicine, such as the litchi leaf, have been studied for their flavonoid content and how these chemicals effect cancer cells. Only one component of the plant, the seed, has large amounts of anthocyanins, flavones, flavonols, chalcones, as well as other flavonoid chemicals. Flavonoids have been shown to have both cytotoxicity and significant free radical scavenging properties in cancer cells.

Brassino Steroids

Brassino steroids are naturally occurring compounds present in plants that regulate cell growth and differentiation, as well as stem and root cell elongation and other activities including disease and stress resistance. Plant senescence is also controlled by BRs. They are necessary for the growth and development of plants. BRs are another naturally occurring chemical with therapeutic potential in the battle against cancer.

Plant-Based Anticancer Medicines

Plant-based anticancer treatments are favoured since they are natural and easy to get. Patients may simply take them orally as part of their usual diet. Because they are produced from plants, they are usually more tolerant and non-toxic to normal human cells. Lignans, cyanogenetic glycosides, lectins, saponins, lectins, as well as several taxanes are exceptions. Plant-derived drugs may be advanced into clinical trials for further therapeutic development if they exhibit

selectivity in research, are non-toxic to normal cell lines, and show cytotoxicity in cancer cell lines.

Improving The Administration Of Drugs

New methods for the application and dosing of these anticancer substances are developing as a result of advances and discoveries in naturally produced medicines. In order for a substance to be a viable alternative to conventional therapies like chemotherapy, it must be administered effectively. Any use of nanoparticles as a delivery method for pharmaceuticals to reach specified regions is becoming more common in nanotechnology. Due to the requirement for large doses, certain drugs with anticancer activity may be restricted in their clinical development.

The Medicinal Plant

Plant-based medications have shown to be effective in clinical trials, making them a preferred alternative for clinical research. They are in great demand due to their non-toxic effects on immunological tissues and cytotoxic effects on cancer cells. Many of the species studied are from poor African and Asian nations, where herbal cures are common because medicinal plants are used as first-line treatments. In rising nations, there is a significant demand for therapeutic herbs, placing strain on plant populations. Several medicinal herbs are cultivated for informal commerce from wild populations, but this cultivation also isn't controlled. The preservation of medicinal plants is becoming an issue as a result of fast population expansion, deforestation, and urbanization. High-value medicinal plants may go extinct if over-exploitation persists as a consequence of growing demand. At all costs, these plants must be safeguarded. Only some portions of wild medicinal plants are utilized in therapy, such as the bark of a tree or the bulbs as well as tubers of bulbous and tuberous plants. Taking just a little portion of a plant might be damaging to it and limit its chances of survival. To ensure the long-term viability of medicinal plants in poor nations, all plant components, including some of the stem, leaf, root, as well as bark, should be included in the therapy. Germplasm preservation, viable seed conservation, cryopreservation, keeping biological material in liquid nitrogen, and notably tissue culture, which propagates plant in sterile conditions and may swiftly generate growing plant clones of rare species, are all conservation methods. In developed areas, these preservation processes will also enable for industrial use.

LITERATURE REVIEW

Aromatic herbs have a longer as well as important history in modern medicine in many nations, according to Aglaia Pappa. There is a growing interest in examining the biological features of aromatic plant extracts due to their diversity, broad availability, and low toxicity. The country's geographic position, landscape form, and various hilly and insular areas are all factors in the profusion of aromatic plants. A variety of aromatic plant extracts from Greece have been researched for their bioactivities, notably their anti-proliferative potential against various forms of cancer, during the last fifteen years. Despite the fact that particular Greek species' pharmacological characteristics have been studied in the past, no data on specific Greek species has been created. We summarize existing data, mainly on the anti-proliferative activity of extracts isolated from Greek lamiaceae family, and begin debating their small molecule mechanism of action, where available, in order to identify hopeful extracts for scientific experimentation and link chemical constituents held to account for their own activity, in this review. We conclude that although essential oils are the most well-studied plant compounds,

with a wide range of composition and antitumor potential, other cancer chemoprevention excerpts are also worth investigating(8).

Arnica Montana L. is a medicinal herb with a wide range of biological activity that is widely used in pharmacy and cosmetics, according to Danuta Sugier et al. The chemical composition as well as the concentration of essential oils define the qualities of A. montana. The goal of this study was to characterize the chemicals compositions of EOs derived from A. Montana rhizomes as well as roots while taking into account the maturity level of the plants, as well as to examine the impact of EO analysis on apoptosis, necrosis, as well as autophagy in human glioblastoma T98G and anaplastic astrocytoma MOGGCCM cell lines. The rhizomes and roots of mountain arnica were gathered at the conclusion of the third and fourth vegetative cycles, respectively. The composition of essential oils and, as a result, their biological activity, may be influenced by plant component and age. Essential oils extracted from A. Montana rhizomes as well as roots have never been studied for their anticancer properties(9).

The phytochemical components of methanolic extracts of the therapeutic plants Aloe castellorum and Aloe pseudorubroviolacea were investigated by Anis Ahamed et al. The cytotoxic efficiency of leaf extracts from Aloe castellorum and Aloe pseudorubroviolacea against a human colon cancer cell line was also studied. The two medicinal plant extracts have high cytotoxic activity, with Aloe castellorum's methanolic extract having stronger cytotoxic activity than Aloe pseudorubroviolacea's extract. Against the cell line in question, Aloe castellorum is more efficient than the control. Gas chromatography and mass spectrometry were used to identify the chemical constituents of Aloe castellorum and Aloe pseudo rubroviolacea leaf extracts. Molecular docking experiments show that the impact is also damaging(10).

DISCUSSION

Cancer incidence and death are on the rise, necessitating the development of new preventive and treatment methods. Natural products have been utilized for their therapeutic qualities since ancient times, and interest in these characteristics has grown in recent years. Numerous research are now being conducted to determine their pharmacological potential, as well as their chemo preventive as well as chemotherapeutic belongings. Although few aromatic plants extracts from Greece have been researched for their anti-proliferative capabilities, existing evidence against a variety of cancer types is encouraging, prompting further study into the country's diverse flora. Clearly, further research into the molecular mechanisms of actions of the extracts as well as their components is needed, both in vitro and in vivo, to confirm and establish their usefulness in the fight against cancer.

CONCLUSION

Despite their direct impact on tumor cells, essential oils have been proven to have a chemical influence on the immune system. When essential oils are employed, white blood cells become more effective in removing foreign material and pathogens from the body. Other small molecules are expected to alter the action of the essential oil's major components. Cell penetration, lipophilic or hydrophilic attraction and adherence to cell walls and membranes, and cellular dispersion are all likely to be influenced by a variety of factors. However, since the idea of synergism seems to be more relevant, it is more necessary to examine a complete essential oil rather than certain of its components for biological reasons. As a result, essential oils, like many other plant medicines, operate in a variety of ways to treat a variety of illnesses, including

cancer. It is also hoped to test the anticancer effects of certain new essential oils and undiscovered compounds. Furthermore, specific molecules must be synthesized to improve their activity.

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LABORATORY STUDY OF EGGPLANT VARIETIES IN DROUGHT RESISTANCE

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ABSTRACT

In this paper, 15 foreign and domestic varieties and hybrids were used in laboratory experiments for the initial assessment of the germination ability of eggplant seedlings and their resistance to variable high temperatures. In this case, seeds of each variety and hybrid are placed in 50 cups of petri dish in 4 turns in a special thermostat at 25°C, and after 5 days the seeds in the cup petri are turned into 1 thermostat (control), 2-3-4 turns into 2 thermostats. data on forgetfulness and tumor growth at high temperatures were placed.

KEYWORDS: *Eggplant, Variety, Seed, Hybrid, Sample, Thermostat, Temperature, Forgetfulness, Tumor, Heat, Drought.*

INTRODUCTION

The role and importance of the agricultural sector in ensuring food security of the world's population is growing day by day. In particular, the rational use of available resources and opportunities in our country, the guaranteed supply of agricultural products to the population, further increase productivity and interest, the introduction of scientific advances and modern approaches in agriculture impose many tasks on scientists. the study of heat resistance of some varieties of eggplant from vegetable crops resistant to high temperatures and drought was identified as the main goal of our study.

Research conditions and methods

The research was conducted in the laboratory of the Research Institute of Vegetables, Melons and Potatoes, based on methodological guidelines such as "Methods of conducting experiments in vegetables, melons and potatoes", "Methodological guidelines for the study and maintenance of the world collection of vegetable solanaceous crops", "Methodology of field experiment", "Methods of agrochemical analyzes of soils in Central Asia".

Research results and their discussion

Primary assessment of heat resistance of eggplant seedlings by heating in the laboratory. In order to study the heat resistance of eggplant, 15 foreign and domestic varieties and hybrids were used in laboratory experiments. In this case, the seeds of each variety and hybrid were placed in 50 cups of petri dish and placed in a special thermostat at a temperature of 25°C for 4 turns. After 5

days, the seeds in the germinated cup petri dish were placed in the 1st return thermostat (control), 2-3-4 return in the 2nd thermostat. Unripe, unripe seeds were removed from the cup petri dish (Table 1).

TABLE 1 ABILITY TO GERMINATE EGGPLANT SEEDS (2020-2021)

№	Variety and hybrid name	Seeds in a thermostat, pcs	The amount of sprouted seeds	
			things	%
1.	NC 10250	50	40	80
2.	NC 37309	50	49	98
3.	NC 39628	50	38	76
4.	NC 33363	50	43	86
5.	NC 10253	50	41	82
6.	NC 37780	50	49	98
7.	NC 39638	50	45	90
8.	NC 37762	50	48	96
9.	NC 39857	50	39	78
10.	NC 37318	50	44	88
11.	NC 37785	50	40	80
12.	NC 38046	50	41	82
13.	NC 37797	50	41	82
14.	Aurora	50	49	98
15.	Surkhan is beautiful	50	48	96

In the first control thermostat, the air temperature was increased by 1 ° C per day, and the number of tumors and tumor height in each variety were measured every 3 days. The tumors also grew rapidly to a temperature of 27 ° C, and their growth slowed considerably at subsequent successive temperatures. The best results in terms of fertility and growth height were observed in foreign hybrids NC 37309, NC 37780, NC 39638 and in the local Surkhan beauty variety (Table 2).

TABLE 2 EVALUATE THE RESISTANCE OF EGGPLANT TO HIGH TEMPERATURES. (CONTROL)

Variety and hybrid name		Options											
		25°C Control		26°C		27°C		28°C		29°C		30°C	
		quantity, piece	height, cm	quantity, piece	height, cm	quantity, piece	height, cm	quantity, piece	height, cm	quantity, piece	height, cm	quantity, piece	height, cm
1.	NC 10250	40	0,2	38	0,5	38	0,9	38	1,4	38	1,9	38	2,4
2.	NC 37309	49	0,5	46	0,9	46	1,5	46	2,3	46	2,9	46	3,1
3.	NC 39628	38	0,3	26	0,7	26	1	26	2,1	26	2,7	26	2,9
4.	NC 33363	43	0,3	41	0,6	41	1,1	41	2,2	41	2,6	41	2,9

5.	NC 10253	41	0,2	38	0,6	38	1	38	1,9	38	2,4	38	2,7
6.	NC 37780	49	0,4	46	1,1	45	1,7	45	2,5	45	3	45	3,2
7.	NC 39638	45	0,6	43	1,3	43	1,9	43	2,6	43	3,1	43	3,3
8.	NC 37762	48	0,5	42	1,2	42	1,8	42	2,4	42	2,9	42	3,1
9.	NC 39857	39	0,4	35	1	35	1,5	35	2,2	35	2,6	35	2,9
10	NC 37318	44	0,3	40	0,9	40	1,5	40	2,3	40	2,7	40	3
11	NC 37785	40	0,2	37	0,8	37	1,4	37	2	37	2,4	37	2,8
12	NC 38046	41	0,2	38	0,7	38	1,4	38	2,1	38	2,5	38	2,8
13	NC 37797	41	0,3	39	0,8	39	1,5	39	2,2	39	2,6	39	2,9
14	Aurora	49	0,4	47	0,9	45	1,6	45	2,3	45	2,7	45	3
15	Surkhan is beautiful	48	0,5	46	1,1	46	1,8	46	2,7	46	3,1	46	3,3

Varieties and hybrids isolated for the experiment and placed in thermostat 2 were first kept at 25°C for 3 days and then at 40°C for 6 hours, and the air temperature in the thermostat was increased by 1°C every 3 days. As a result, in foreign hybrids NC 37309, NC 37780, NC 39638 and seeds of local Surkhan gozali variety and NC 37318, NC 37785, NC 38046, Aurora varieties, the growth of tumors continued rapidly at 25°C for 3 days and 6 hours 40°C for 3 days. did. Tumor growth was observed in the indicated varieties of eggplant for 25 days at 25°C and 6 hours at a temperature of 41°C. At the same time, growth continued at 25°C for 3 days.

Local Aurora, Surkhan beautiful varieties and foreign varieties, hybrids of NC 39638, NC 37309, NC 37309 are 1.3 cm, 1.2 cm, 1.4 cm, 1.7 cm, 1.6 cm, respectively. Grew to 0.8 cm, 1.7 cm, 1.8 cm, 2.0 cm. Hybrids NC 39628, NC 33363, NC 10253 could not withstand the temperature of 44°C for 6 hours in variant 5. Native Aurora, Surkhan beautiful varieties and foreign hybrids NC 37780 NC 37309 NC 39638 tolerated a temperature of 44°C in variant 6, and the tumors died at a temperature of 45°C in 6 hours (Table 3).

TABLE 3 PRIMARY ASSESSMENT OF EGGPLANT RESISTANCE TO VARIABLE HIGH TEMPERATURES (2020-2021)

Variety and hybrid name		Вариантлар											
		40°C		41°C		42°C		43°C		44°C		45°C	
		quantity, piece	height, cm	quantity, piece	height, cm	quantity, piece	height, cm	quantity, piece	height, cm	quantity, piece	height, cm	quantity, piece	height, cm
1.	NC 10250	40	0,2	38	0,6	34	1,1	22	1,3	4	1,3	-	-
2.	NC 37309	49	0,4	46	0,9	41	2	29	2,3	18	2,3	-	-
3.	NC 39628	38	0,3	35	0,7	30	1,3	20	1,5	-	-	-	-
4.	NC 33363	43	0,3	41	0,6	37	1,2	24	1,4	8	1,4	-	-
5.	NC 10253	41	0,2	39	0,5	35	1,2	23	1,5	-	-	-	-
6.	NC 37780	49	0,5	47	0,9	41	2	28	2,2	16	2,2	-	-
7.	NC 39638	45	0,5	44	1,1	40	1,7	27	1,9	15	1,9	-	-
8.	NC 37762	48	0,3	46	0,8	39	1,4	24	1,6	11	1,6	-	-

9.	NC 39857	39	0,4	38	0,7	35	1,3	23	1,5	8	1,5	-	-
10.	NC 37318	44	0,3	42	0,7	38	1,4	21	1,6	-	-	-	-
11.	NC 37785	40	0,2	39	0,6	34	1,2	20	1,4	-	-	-	-
12.	NC 38046	41	0,2	40	0,5	35	1	21	1,2	-	-	-	-
13.	NC 37797	41	0,3	39	0,7	35	1,3	22	1,5	6	1,5	-	-
14.	Aurora	49	0,5	47	1	40	1,9	28	2,1	16	2,1	-	-
15.	Surkhan beautiful is	48	0,4	46	0,9	40	1,8	29	2,1	18	2,1	-	-

So, based on years of experiments conducted on several reps, it has been proved that the above five hybrids of eggplant cannot withstand a temperature of 44°C. 10 varieties and hybrids are resistant to temperatures up to 44°C, and 5 of them showed good resistance to high temperatures. In general, seedlings of eggplant varieties and hybrids were found to die at a temperature of 45°C.

Хулоса. It was found that different varieties and hybrids of eggplant have different germination and tolerance to hot weather. All varieties and hybrids of eggplant tested were resistant to temperatures of 43°C.

NC 10250, NC 37309, NC 33363, NC 37780, NC 39638, NC 37762, NC 39857, NC 37797, Aurora, Surkhan beautiful cultivars and hybrids were found to be the most resistant to hot temperatures of 44°C according to research.

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MODERN LANDSCAPE ARCHITECTURE

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ABSTRACT

This article discusses the fact that landscape architecture is a meaningful and elegant profession, and that a landscape architect uses elements of nature to create an environment for human needs. These include streets, squares, flower beds, alleys, beaches, neighborhood gardens, squares, boulevards, private parks, parks, national parks, alleys, parks and historical landscapes. The list of such artificial open spaces can go on and on. Regular planning style in landscape architecture means a tree placed in parallel in the landscaping of gardens, alleys, corridors, areas with parallel and transverse straight lines, symmetrically along the canals, on the basis of an orderly plan.

KEYWORDS: *Landscape, nature, content, architect, experience, ability, problem, structure, formation, city, place, population.*

INTRODUCTION

Getting acquainted with the rich and profound experiences of landscape architecture is equally important not only for architects, but also for architects working in other fields of architecture, especially rural architects. The term “landscape architecture” first appeared 150 years ago in England after the 1850s and in the United States from 1872 in connection with the problems of organizing large international exhibition parks and national parks there. In Uzbekistan, the science of landscape architecture was formed and developed mainly during the years of independence. In order to fully understand the development path of landscape architecture, it is important to define the essence of this term, what landscape architects do and a deeper understanding of the industry’s place in the wider architectural world.

Architects are known not only for the construction of buildings and structures, the creation of cities, but also for the architecture and organization of open spaces. These include streets, squares, flower beds, alleys, beaches, neighborhood gardens, squares, boulevards, private parks, parks, national parks, alleys, parks and historical landscapes. The list of such artificial open spaces can go on and on. The main purpose of landscape architecture is to create a compositional artistic, architectural-planned landscape of such open spaces through natural landscape and artificial elements, including small architectural forms, elements of external beautification and information devices.

Architecture, urban planning and landscape architecture are inextricably linked and differ from each other in the materials and tools used to shape the environment. All three spheres have served for a common direction and purpose in the history of the development of human society.

Landscape architecture has also met the needs of society at all historical social stages, such as architecture and urban planning, and incorporated the artistic, cultural and universal achievements of its time.

A distinctive feature of the art of gardening, which is an important branch of landscape architecture, is the natural "building materials" used in their creation. These include, first of all, the flora, the aquatic world, the earth, the rocks and all the features of the terrain in general. It is these materials that are the main source in shaping the open space environment.

Landscape architecture is an infinite and vast field of artistic and general cultural heritage inherent in human society. Of course, it is difficult to fully describe the secular description of landscape architecture. The science of landscape architecture is the formation of students' architectural landscape outlook, the acquisition of skills in landscape design and their application in practical design work.

Objects of landscape architecture are surface - open and semi-open areas at different planning levels, serving different functional purposes. These are urban, rural, industrial, recreational, conservation, and other areas of the national economy. Only on the basis of landscape landscaping can its social, ecological, aesthetic convenience and profitability be achieved.

Landscape architecture enhances access to urban and recreational land, as it enhances the attractiveness and scenery of the area and attracts people living in urban and rural areas and enjoying recreational opportunities. Landscaping, landscaping of areas used for recreation, recreation, health, microclimate and other purposes, as well as improving the quality of cultural and social services provided by trade and other services. as profits increase, the profitability of these areas for the urban economy and the economy as a whole will rise further.

Landscaping trees and shrubs, flowers, creeping and perennial plants, and lawns play an important role in the landscaping of landscape architecture. That's why those who study this art need to know the science of dendrology. For this reason, attention is paid to teaching students the world of plants used in landscape architecture, the various green compositions made of them, and how to apply them in practice.

Landscape architecture is so closely associated with open landscape devices that the history of landscape architecture is entirely intertwined with landscape devices. While landscape architecture is a general term, landscape devices complement it, giving quality and content to all its objects, small architectural forms associated with the landscape, elements of landscaping, all of which shape the landscape. devices.

It is difficult for any specialist or creator studying the theory and practice of landscape architecture to achieve any success in this field without studying its components - landscape devices, their shapes, classification systems and types, methods of their implementation. When we compare landscape architecture with traditional architectural practice, we see that the decisive factor is its revitalizing nature, the healing role of the aesthetic, ecological and architectural environment, and, if possible, the beginning of humanity. No matter how important the traditional functional and especially technical aspects that shape the environment are, they play a supporting role in landscape architecture. The flora, the water, the natural relief of the place come first. It is this situation that has led to the proliferation of landscape architecture in the context of a particular art form.

The landscape architect seems to be working with living nature, basically using these elements of nature to create an environment for human need. In doing so, it seeks to minimize and effectively use natural elements and the environment. On the other hand, it creates a completely new "artificial nature" and adapts it to human goals and artistic needs. This trend has been and continues to be manifested in various forms and connections throughout the historical development of landscape architecture.

The genesis of landscape architecture means the forms of its initial appearance on the earth, its historical roots, causes, objective and subjective factors in its emergence.

The earliest roots of landscape architecture go back to ancient horticulture. With the emergence of the first cities on earth, fruit and ornamental varieties of horticulture are formed. They are designed to meet the utilitarian aesthetic, economic and recreational needs of human society. Such gardens originally belonged to the class of officials, rulers, priests of society.

They occurred in the regions where the first civilizations of the world developed, in the process of increasing human needs for nature, the formation of a system of water and irrigation facilities. With the development of horticulture, the art of gardening also emerged based on the recreational needs of society. The first countries of horticulture were Ancient Egypt, Babylonia, Iran, Ancient Greece, Rome, India and China, which are tropical and subtropical regions with warm climates, rich geographical rivers.

From time immemorial, unique styles, landscape compositions, traditions and devices have been formed and used in the relationship between man and nature, especially in the art of landscaping and gardening. The basics, beliefs, and practice of these styles and traditions have become the rules and regulations of the art of gardening, and the landscape in this field. architecture formed the structural foundations of science and practice.

This means that modern landscape architecture has been formed and developed over a long history, and includes its various traditions and styles, landscape devices and design elements. In different cultural and educational, climatic, socio-economic conditions of different regions and peoples, these methods are adapted, improved, changed and updated in those regions. For example, not only the usual horizontal landscaping, but also the method of vertical landscaping, the method of growing trees and shrubs not only in natural forms, but also by pruning and giving them a variety of artificial green forms, and so on.

Regular planning style in landscape architecture means a tree placed in parallel in the landscaping of gardens, alleys, corridors, areas with parallel and transverse straight lines, symmetrically along the canals, on the basis of an orderly plan. and the holistic composition of shrubs, flower beds, squares, roads, and landscape structures. Modern landscape architecture can also be a mixture of the two different planning styles described above: a regular style in areas where public visits and events take place, and a free-style landscape style in areas of leisure and travel. In the regions of Uzbekistan, most parks are formed in such a mixed style.

The peculiarity of the theme "Landscape Architecture" is that it solves this problem not only in terms of studying the art of gardening, but also in terms of using landscape architecture for modern aesthetic and ecological purposes and enriching our culture in this area. a new approach is needed.

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A REVIEW ON BIODIESEL SEPARATION AND PURIFICATION

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ABSTRACT

Biodiesel as a biodegradable, sustainable, and clean energy has sparked fresh and increasing interest across the globe in recent years, owing to advances in biodiesel fuel and environmental constraints such as climate change. Separation and purification of biodiesel is a key technique in the manufacture of biodiesel from biomass. Traditional biodiesel separation technologies like gravitational settling, decantation, and filtration, as well as biodiesel purification techniques like water washing, acid washing, and washing with ether and absorbents, have proven to be inefficient, time and energy consuming, and less cost effective. The use of a membrane reactor and a separative membrane in the separation and purification of biodiesel shows tremendous potential. To address the problems often encountered in the separation and purification of biodiesel, membrane technology must be researched and utilized. Both traditional and cutting-edge membrane methods for biodiesel refining have been critically examined in this study. Catalysts, free fatty acids, water content, and oil to methanol ratios all have an impact on the purity and quality of biodiesel.

KEYWORDS: *Biodiesel, Membrane Technology, Purification, Separation, Transesterification.*

INTRODUCTION

Increased energy consumption, rising crude oil prices, global warming owing to greenhouse gas emissions, pollution, and a rapidly decreasing supply of fossil fuels are all significant reasons driving the quest for alternative energy sources (1). Water, sun oriented and wind energy, and biofuels are among the most conspicuous elective energy sources equipped for supplanting petroleum products. Nonrenewable petroleum derivatives presently supply 86% of worldwide energy utilization and very nearly 100% of energy interest in the transportation area. The European Union (EU) is supporting biofuel creation with the objectives of expanding fuel supply sources, helping decarbonization of transportation powers, decreasing dangerous vaporous outflows that cause a worldwide temperature alteration, giving additional acquiring open doors in country networks, and fostering a drawn out arrangement to supplant limited petroleum derivatives. Biofuels, for example, biodiesel and bioethanol are as of now utilized in numerous countries, including the United States, Germany, Australia, Italy, and Austria. The measure of

biodiesel created in different countries(2). This pattern is expected to proceed worldwide, as more countries use biofuels as an energy source.

Biodiesel unsaturated fat alkyl esters, a feasible regular fuel elective for diesel, is produced using vegetable oils, creature fats, and microalgal oil. It is biodegradable, enduring, and biologically cordial, bringing about a diminished gas outflow profile. Biodiesel is viewed as carbon impartial in light of the fact that establishes that produce biodiesel, for example, jatropha body, assault plant, and palm trees, assimilate more carbon dioxide than is delivered into the climate when utilized as a fuel in diesel motors(3). Biodiesel additionally has tantamount physicochemical attributes to diesel produced from raw petroleum, and it could be utilized straightforwardly in current diesel motors without huge changes, or blended in with petrol diesel to make less risky gas emanations like sulfur oxide. In any case, inferable from their high thickness multiple times that of diesel fuel and low instability, utilizing vegetable oils straightforwardly as fuel in pressure start motors is troublesome. These oils don't consume completely and leave carbon stores in diesel motors' fuel injectors. The transesterification response might upgrade the thickness of vegetable oils, a strategy that appears to give great outcomes as far as lessening consistency and working on other physicochemical qualities. Transesterification is a substance interaction where fatty oils and a lower atomic weight liquor are joined with a homogeneous or heterogeneous impetus to create biodiesel and glycerol (4).

Notwithstanding the way that transesterification responses catalyzed by salt homogeneous impetuses, for example, sodium and potassium hydroxides produce more noteworthy change of vegetable oil to methyl esters quicker than expected, the interaction has many detriments: It burns-through a great deal of energy; glycerol recuperation is troublesome; the impetus should be taken out from the item; soluble wastewater should be dealt with; and free unsaturated fats (FFA) and water hinder the response. Water diminishes the action of the impetus, while FFA responds with the impetus to create a saponified item. The development of cleanser brings down biodiesel result and makes item division and purging really testing. Hence, biodiesel and its side-effect, glycerol, should be refined a few times with hot deionized water, bringing about huge time, energy, and water squander (5). The improvement of innovation for the division, decontamination, and change of biomass into bio synthetics and biofuels is a critical restricting variable for biomass utilization. Right now, "down-stream handling" represents 60e80% of the absolute expense of the cycle. Channel obstructing, coking on injectors, expanded carbon stores, extreme motor wear, oil ring staying, motor banging, and thickening and gelling of greasing up oil are largely manifestations of inadequate biodiesel partition and filtration. An assortment of biodiesel partition and filtration techniques have been researched (6). This article analyzes the innovations utilized, zeroing in on the best practice for fruitful detachment.

Film partition is by all accounts the most suitable technique for this objective, and it is the subject of this examination. A few examinations took a gander at an assortment of customary biodiesel partition strategies top to bottom. This article gives a fast outline of biodiesel partition techniques. When a legitimate biodiesel partition technique is utilized, top notch biodiesel that is financially doable might be created, as per most of the scientists(7). Glycerol is regularly handled first later transesterification, what isolates biodiesel and side-effects. The way that the biodiesel and glycerol created are generally scantily solvent together, and that there is a noticeable distinction in thickness between the biodiesel (880 kg/m³) and glycerol (1050 kg/m³, or higher) stages, individually, supports this biodiesel detachment technique. All the more significantly, the

thickness distinction is adequately huge to permit basic techniques like gravity settling or centrifugation to isolate the biodiesel and glycerol stages. Moreover, a few factors influence the detachment pace of biodiesel blends, including enthusiastic blending, emulsion development, biodiesel solvency in glycerol, and glycerol in biodiesel. The supercritical methanol strategy is non-synergist, includes extensively simpler transesterification item cleaning, has a more limited response time, is all the more naturally harmless, and utilizes less energy. The hardships found with the work of substance impetuses incorporate critical energy and methanol utilization, just as a significant amount of basic wastewater. The utilization of chemicals like lipase has of late stood out enough to be noticed and is believed to be a decent way to deal with address these issues. Partition of glycerol without complex treatment, specifically. Regardless of the way that cost is a huge bottleneck in enzymatic catalysis. Methanol contains a polar hydroxyl bunch that might fill in as an emulsifier, delivering emulsification and making it hard to isolate the methyl ester layer from water(8).

The high energy utilization and high cost of isolating the homogeneous impetus from the response combination has required the advancement of heterogeneous impetuses for the transesterification cycle that are promptly eliminated from the response blend and recyclable. A few essayists used heterogeneous impetuses to keep away from the balance and washing stages needed by homogeneous impetus strategies, yet they ran over critical issues, for example, more noteworthy transesterification response temperatures, longer response times, and less fortunate ester yields. A few examinations are currently in progress utilizing enzymatic methanolysis using lipases for biodiesel blend, determined to beat issues with side-effect recuperation and treatment, which requires refined handling gear (9). The significant expense of lipases as an impetus is the principle issue with protein catalyzed processes. Catalyst immobilization was created to diminish costs by making it simpler to recuperate and reuse chemicals. They said that, albeit the lipase-catalyzed transesterification process is an engaging choice, reasonable use of the strategy has been postponed because of attainability issues and specialized hardships. Notwithstanding the difficulties looked in item detachment and purging, the homogeneous base-catalyzed process is still extensively more beneficial in biodiesel blend. The fundamental explanation is that homogeneous responses have altogether faster motor rates than heterogeneously catalyzed transesterification responses and are all the more monetarily possible. Synthetic cycles are utilized to give high transformation of fatty substances to their comparing methyl ester in a short response time, however they accompany various downsides, including high energy utilization, trouble recuperating glycerol, the need to eliminate basic impetus, wastewater treatment, and response impedance by FFA and water. They found that enzymatic strategies can tackle these issues, yet that they presently can't seem to be industrialized because of the significant expense of catalysts(10).

DISCUSSION ON VARIOUS METHOD OF BIO DIESEL SEPARATION AND REFINING

The objective of fostering a lipase constant three-venture stream response strategy was to lessen the expense of compounds. A heterogeneous corrosive impetus, strong saps, proteins, or a supercritical technique are utilized to catalyze feed stocks with undeniable degrees of FFA. The utilization of essential homogeneous impetuses in the transesterification cycle will expand cleanser creation and make item detachment troublesome. A rotator was utilized for 20 minutes to upgrade the detachment of the stages. Utilizing a homogeneous antacid impetus delivers the

best biodiesel, however the interaction has a few disadvantages, including trouble recuperating glycerol and eliminating the impetus, especially a few phases like dissipation of lingering methanol, evacuation of cleanser, and balance. To address the disservices, the researchers contrived an enzymatic technique including extracellular and intracellular lipases, in spite of the way that lipase union is extravagant. Different medicines are utilized to diminish the shade of biodiesel and eliminate glycerides, sulfur, and phosphorus from the fuel. Water has the ability to kill the unreacted basic homogeneous impetus by permitting corrosive to be added. This strategy makes it simpler to eliminate the salt items immediately. To decrease the measure of liquor in the wastewater gushing, the unreacted methanol from the transesterification interaction ought to be dispensed with before the washing step. Notwithstanding, in the wake of washing with water, certain strategies dispose of the abundance methanol. The creators utilized deionized water to stay away from the precipitation of soaked unsaturated fat esters. At the point when gentle water washing is utilized, the arrangement of emulsions is eased back, considering quick and intensive stage detachment. Relaxed water somewhat acidic is utilized to eliminate calcium and magnesium contamination, since it has the ability to kill any leftover unreacted antacid impetuses. Likewise, eliminating iron and copper particles dispenses with an inventory of impetuses, which brings down fuel solidness. A basic biodiesel cleansing cycle and the recuperation of great glycerin are the main components to think about when bringing down the expense of biodiesel fuel and making it cutthroat with standard diesel fuel. The transesterification cycle is an all-around respected and widely utilized strategy for creating business biodiesel. To decontaminate biodiesel from glycerol and other results, the Trans esterified items are exposed to a few refinement strategies.

Be that as it may, the balance of the soluble base impetus and the refinement step, which utilizes a more noteworthy amount of water, bring about more emanating, which is one of the cycle's fundamental deterrents. Recuperation of leftover liquor, cleaning of unsaturated fat alkyl esters from the impetus, and division of glycerol as a critical optional item are completely wanted downstream from the reactor. When there is a huge amount of FFA in vegetable oils or waste vegetable oils, the impetus is devoured during the transesterification cycle because of corrosive balance, easing back the response rate and making detachment and cleansing troublesome. Investigate the simplicity of cleansing and energy reserve funds of natural and inorganic compound cycles. The creators guarantee that albeit the enzymatic synergist technique is slower, it kills the limitations forced on water content or free unsaturated fat levels, just as the saponification response and liquor recuperation. This strategy made the division of esters from glycerol, recuperation of glycerol, and filtration of esters extensively less difficult and more financially savvy than the customary compound technique, which ended up being exorbitantly intricate and energy-concentrated. Water extraction and biodiesel washing by washing biodiesel with water extraction in a solitary stage mixed tank for 20 minutes, the glycerol content was diminished from 0.9331 percent to at minimum 0.09 percent by adding 50% water to the biodiesel volume. The glycerol fixation was under 0.05 percent and the pH was 7.3 when the water was 300% biodiesel volume. The washing was done in a multistage cycle to meet the administrative model of glycerol content in biodiesel being under 0.02 percent. The temperature of extraction and the volume proportion of dissolvable to biodiesel both affected the pace of mass exchange of glycerol from biodiesel into water. With a more noteworthy biodiesel to water volume proportion and a higher temperature, a quicker mass exchange rate was acquired. The more noteworthy the mass exchange region, and along these lines the higher the volumetric mass

exchange coefficient, the more water is added. Bigger washing temperatures brought about additional glycerol diffusivity from biodiesel to water stage, bringing about a higher mass exchange coefficient. Layer gear, which is principally utilized for the division and cleansing of rough biodiesel, seems to enjoy a few upper hands over regular hardware, including the disposal/minimization of higher capital expenses and other creation related expenses, just as an enormous explicit space of mass exchange. Film hardware for biodiesel refining is regularly made out of inorganic microporous fired layers and has a wide scope of biotechnological applications. The utilization of these films for biofuels holds some guarantee. Layer reactors and separative earthenware films are two of the best advancements for isolating and cleaning unrefined biodiesel. Selectivity or partition factor, just as penetrability, are by and large overseeing factors in film execution. Selectivity is a component of material qualities under determined working conditions without any blemishes. Usefulness is dictated by material qualities just as layer film thickness; the lesser the thickness, the more prominent the efficiency.

Film reactors' innate properties of proficiency, functional effortlessness and adaptability, somewhat high selectivity and porousness, low energy necessities, great strength under a wide scope of working conditions, climate similarity, simple control, and scale-up have been affirmed in a wide scope of utilizations and tasks, including sub-atomic partitions, fractionation, and chromatography. The creators contrast film extraction with customary biodiesel refining extraction methods. In the accompanying regards, layer partition demonstrated to be more effective and proficient than conventional scattered stage detachment: no emulsification happened, no thickness distinction between liquids was seen for empty fiber films, and the interfacial region was high. The utilization of an empty fiber film forestalls water emulsification, bringing about close to 100% virtue of methyl esters. Utilizing a film reactor, high-immaculateness FAME might be created from vegetable oils and fats with lower and higher FFA fixations, like canola, soybean, palm, earthy colored oil, and yellow oil. The reactor framework's layer had a MWCO of 300 kDa. This element was essential in offering a decent method for keeping emulsion set up. The glycerin centralization of the FAME created was extensively lower than that delivered utilizing a commonplace cluster transesterification process, as controlled by Gas Chromatography (GC) investigation dependent on the ASTM D6584 standard. The unsaturated fat substance of the lipid feedstock was found to modestly affect FAME quality. Before washing with hot refined water, the creators noticed the absence of glycerin following stage partition and revealed FAME virtue of 79.07e86.36 percent. Since methanol and glycerin are both hydrophilic, all of the glycerin was scattered in the methanol/glycerin rich stage. Diglyceride, then again, was recognized in the FAME-rich stage because of its hydrophobicity. The FAME-rich stage from the penetrate stream was blessed to receive six water washes at 33% the volume of the FAME-rich stage for each wash to fulfill the American norm of testing materials (ASTM). They additionally talked about the advantages and downsides of utilizing high-temperature layer reactors. Methanol reusing in a layer reactor for biodiesel combination. The creators asserted that a microporous inorganic layer reactor could specifically extricate FAME, methanol, and glycerol from fatty oils during the transesterification interaction. The reactor depends on the essential idea that in a hydrophilic climate, oil particles structure beads.

Oil drops with more noteworthy pore widths are delivered when the reactants are joined. In the film reactor, the least assessed oil drop size was 12 mm, which is far bigger than a large portion of the layer opening widths (0.01e0.04 mm) utilized. This special property permits unreacted vegetable oil to be kept in the retented stream and the item to be eliminated. For the treatment of

EAME for more noteworthy immaculateness, there was a generous abatement in the amount of water washing. Film reactors might be utilized to complete both a transesterification interaction and a partition response in a similar actual fenced in area, as per the creators. The pore size of the film is significant in the partition and cleansing of rough biodiesel. For a compelling refining process, it is basic to decide the insignificant molecule sizes in the vegetable oil liquor emulsion. Decontamination of trans esterified items has turned into a huge issue in business biodiesel fuel creation and use. The presentation of layer reactor innovation for biodiesel fabricating has essentially improved on the detachment and filtration of rough biodiesel. This procedure has empowered the partition of unreacted emulsified oil from Trans esterified items, which is a significant stage in the biodiesel fabricating process. There have been more endeavors to decontaminate rough biodiesel without using the water washing strategy. The strategy of washing the biodiesel with water demonstrated to be essential in the production of industrially feasible biodiesel. The outcomes for calcium, magnesium, and free glycerol were a lot of prevalent than those got with water washing. As per the researchers, the size of the opposite micelle delivered by glycerol and cleanser atomic weight was higher than that of biodiesel sub-atomic weight, with a mean of 2.21 mm, and was less difficult to eliminate during film partition. This unmistakably showed that utilizing film innovation to filter biodiesel would lessen the troubles related with customary biodiesel refinement.

CONCLUSION AND IMPLICATION

In spite of the way that homogeneous impetuses like sodium and potassium hydroxides showed faster rates in business biodiesel union. The transesterification cycle utilizing these impetuses produces cleanser, making disconnection and sanitization of biodiesel from the resultant blend extremely testing. To battle the results of cleanser arrangement, the improvement of minimal expense heterogeneous impetuses for biodiesel amalgamation ought to be advanced. This will have a critical effect in decreasing the expense of biodiesel detachment and sanitization. It has been found that utilizing water for biodiesel cleaning brings about expanded wastewater treatment costs, huge energy and time utilization, and poor biodiesel yields. More prominent oil-to-methanol proportions in the transesterification interaction were displayed to contribute generously to higher biodiesel detachment and purging expenses. The utilization of unrefined components with higher water content than required brought about impetus deactivation and, in certain examples, advanced cleanser creation. The utilization of more noteworthy free unsaturated fat vegetable and creature fats was displayed to increment saponified items, which exacerbated the difficulties in isolating and purging biodiesel from trans esterified items. The appearance of film innovation has diminished the difficulties related with biodiesel division and refinement. To assess its expected uses for the partition and refinement of biodiesel item blends, this innovation should be widely contemplated and taken advantage of various properties.

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ANALYSIS OF DATA OBTAINED FROM THE PROCESSING OF LANDSAT AND ASTER SPACE IMAGES (ON THE EXAMPLE OF DERBEZ-KOKPATAS)

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ABSTRACT

The article presents the results of visual and automatic decoding of Landsat and ASTER space images from cosmogeological studies conducted on the example of the Derbez mine area and the western slopes of the Kokpatas deposit. As a result of the processing of space images, tectonic faults, which play a key role in the formation of many ores in the region, have been identified.

KEYWORDS: *Derbez - Kokpatas, Landsat, ASTER, visual and automatic decoding, space photography.*

INTRODUCTION

It should be noted that today there is a lot of work on geological research in the territory of the Republic of Uzbekistan, which requires the creation of basic baseline maps based on geoinformation technologies using space research materials. Such a map is a remote basis - a cosmogeological map, which effectively contributes to a more in-depth study of areas, including closed areas covered by sedimentary-effusive deposits.

Many literary sources have different views on the interpretation of aerospace images.

From the point of view of L.A. Bogomolov, decryption means obtaining information about the objects of the place (or, in a relatively broad sense, objects and events in the geographical view). According to L.A. Bogomolov, decryption is the process of obtaining information about objects (or objects and phenomena of the geographical environment) from their photographic image based on the knowledge of the laws of photographic reproduction of their optical and geometric properties, as well as determining the integral relationship of spatial location of objects. . The above definitions reflect a general interpretation of the term " дешифровка" [1].

Research method. Decoding images in remotely captured space images provide objective, thematic (mostly qualitative) information about the object or process being studied and their relationship to the surrounding object. In visual decoding, photographs are separated based on reading and their interpretation is understood.

Knowing how to visually distinguish images in a picture is based on identifying the signs of image interpretation and image properties. The accuracy of the results of the interpretation of the images depends on the level of training of the specialist. The better the interpreter understands

the subject of his research, the more reliably he will be able to extract information from the image [2].

A certain degree of subjectivity of the results of visual interpretation is not always a negative feature, i.e. they are similar to the subjectivity of the map. In the process of interpretation, the expert makes a cartographic generalization based on personal opinion: generalizes boundaries, does not focus on small or insignificant objects [3].

Three main methodological approaches are used in the interpretation of aerospace images: 1) comparison of images with photographs of geological objects; 2) compare objects within a single image; 3) logical interpretation of decoded geological objects.

Their direct and indirect features are used in the interpretation of geological objects and processes using aerial photographs. According to E. Barret and A. Curtis, there are 9 such signs: [4]:

Figure; size; photon; soy; tusmol; texture; location; possibility of detection; stereo effect.

In addition to the important features listed above, in practice, relief, vegetation, surface moisture level, etc. are also very effective in interpreting aerospace images.

Automatic decoding is mainly carried out by processing satellite images (Landsat 7 TM, Landsat 8 OLI, Aster), which are known and reliable to us, using the following methods: SS (color composition), ASR, Mincomp, Hydrocomp, ITS, Kirsh, Sobel, Laplace, Robert and Index IV [5].

In the prediction and prospecting of minerals, tectonic and structural decipherment is carried out in the detection of linear and annular structures on the basis of aerospace images. Many well-known deposits occur at the nodes at the intersection of land faults, in which the structural factor plays a key role in the fold regions, the separation of linear and circular structures is carried out by visual and automatic decoding of digital remote sensing materials (Figure 1).

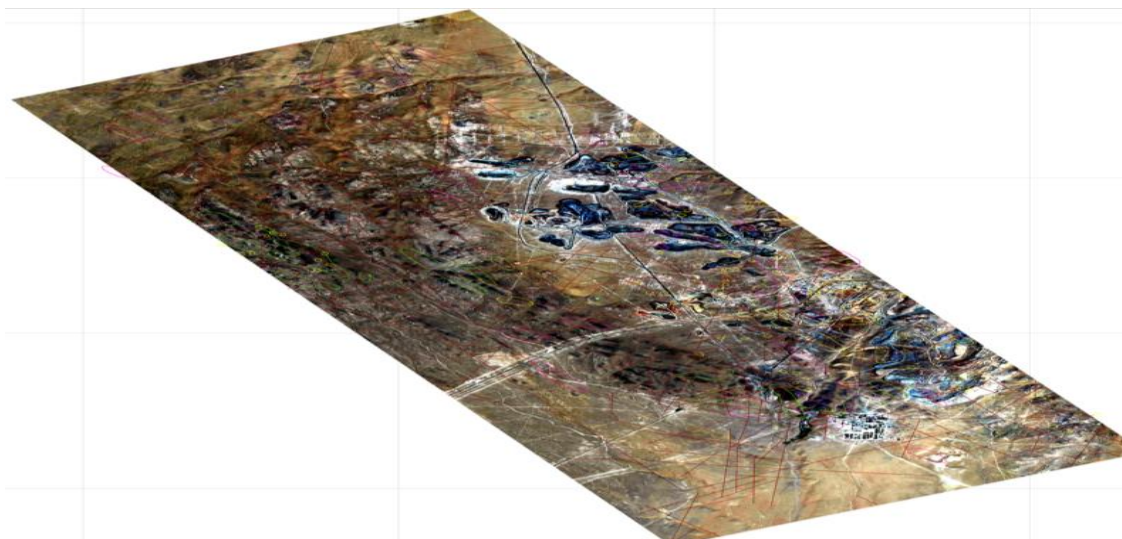


Figure 1. Visually and automatically decoded satellite image of the Derbez mine site and the western slopes of the Kokpatas deposit

There are now many phrases and real data of the reference object of the Earth to understand the decoding of aerospace image materials, and no one can deny the informativeness and reliability

of their materials. Well-known modern materials and various spectral channels in the electromagnetic range are innovative methods of processing materials for remote sensing of the earth, as well as the algorithms used in it have been used for a long time and have yielded positive results on geological objects in many parts of the world. As a result of automatic desalination works in the area, a linear analysis was carried out and a more in-depth study using geological, geochemical and geophysical methods was recommended at the intersections of the faults.

CONCLUSION

As a result of visual and automatic processing of space images, a zone of gold-sulfide mineralization was identified in the region. Also, as a result of cosmogeological research and visual and automatic decoding of space images and rock processing, tectonic faults, which play a key role in the formation of ore in the region, were identified.

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A REVIEW ON FACTOR EFFECTING EFFECTIVE COMMUNICATION BETWEEN REGISTERED NURSES AND ADULT CANCER PATIENTS

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ABSTRACT

To gather the most up-to-date information on the variables that influence successful communication amongst registered nurses and inpatient cancer patients. Method To find relevant quantity and quality studies published in English, a three-step search approach was used to explore electronic databases. The review did not contain any grey literature. The studies were reviewed using the Joanna Briggs Institute System for the Unified Management, Assessment, and Review of Information standards. The quantitative component of the evaluation comprised three investigations, with the results provided in a narrative overview. The qualitative approach of the review comprised five studies, and the results were categorized in a meta-synthesis, yielding four synthesised conclusions. Results The qualities of nurses, clients, and the environment were identified as variables that affect successful communication. Genuineness, competence, and good communication skills were among the promoting characteristics in nurses. The effectiveness of post-basic training in enhancing nurse–patient interaction has yet to be determined. Nurses who were task-oriented, fearful of death, and had poor self-awareness of their own linguistic behaviors, on the other hand, restricted communication. When providing psychosocial elements of treatment and in emotionally charged circumstances, nurses were also found to communicate less successfully. Patients who took an active role in their own treatment and sought information from the nurses, on the other hand, were more likely to communicate with the nurses. Patients' reluctance to share their disease/feelings, desire for seeking emotional support from family/friends, and usage of implicit signals were shown to be some of the variables that limit communication. Nurses who worked in a supportive ward setting were more likely to employ facilitative behavior, while those who worked in a conflict-filled workplace were more likely to use blocking behavior.

KEYWORDS: *Communication, Hematology, Nursing, Oncology, Systematic review*

INTRODUCTION

Effective communication is described as a "two methods" in which "the proper message is sent, and the other receives and understands it correctly." Through verbal and nonverbal signals, communication allows people to share knowledge, meanings, and emotions. When a nurse and a patient engage, one sees the other in the circumstance and, via dialogue, establishes objectives and agrees on how to accomplish them. However, communications are complicated, and owing

to different human reactions, it is often not linear nor accurate. The patient's life-threatening condition complicates communication in the cancer context(1). A cancer patient will certainly experience psychological discomfort and have a significant need for knowledge and psychological support. Furthermore, cancer patients may experience anxiety as a result of the complicated therapy options. The emotional strain that cancer treatment takes may make nurse–patient interactions even more difficult. Internal and external variables affect nurse–patient communication in a cancer context, according to data from current research. In terms of nursing qualities, many studies have shown that self-awareness, attitudes about mortality, and the degree of positive and constructive communication abilities may all influence successful communication. Nurses often worry that patients may express powerful emotions that they will be unable to manage, so they divert attention away from their concerns by changing the subject or refusing to start the discussion. 8 Nurses often prefer to avoid open discussion of the patients' emotions by providing facts and providing practical treatment. Language difficulties, in particular, may impede patients' comprehension of nurses' recommendations, limiting nurses' emotional support for patients. The context in which communicating has been recognized as an influence from the outside. Organizational culture may either encourage or discourage nurses from establishing therapeutic connections with patients. Time allotted for communication may be hampered by institutional conditions and a high workload. The cornerstone of therapeutic nurse–patient interactions is effective communication(2).

For example, it fosters a trusting atmosphere in which the patient is valued and engaged. Effective communication also encourages patients to express their emotions, which provides emotional relief. As a result of these variables, the quality of nurse–patient communication and patient outcomes increases. Finally, in the cancer inpatient environment, good communication is particularly essential. Complex cancer diagnoses and treatment methods have been recognized as miscommunication. Effective communication aids in the reduction of psychological distress in patients by encouraging disclosure, as well as satisfying their cognitive and emotional needs. Efficient communication enhances the overall quality of care. The goal of this study was to compile the best available data on the variables that facilitated or hampered successful communication between registered nurses and adult cancer patients in an inpatient environment(3).

This overview used a multiple search strategy: (ii) a limited search of MEDLINE and CINAHL, provides an analysis of a content words that appear in the title, abstract, and key phrases used to define the article; (ii) an exploration using all identified important expression and index terms; and (iii) a search of all identified reports and articles' reference lists. Two independent reviewers evaluated the titles and abstracts found via the search against the inclusion criteria. Full texts were obtained and evaluated for relevance to the review goals for all papers that fulfilled the inclusion criteria, or in instances where the name and abstract were ambiguous.(4)

1. Criteria for inclusion:

This review included both quantitate studies that: They looked at the factors that influence effective communication between oncology nurses and adult oncology inpatients who were 21 years old (the legal age of consent in Singapore); (ii) took place in an inpatient unit, regardless of hospital specialty, while active or palliative cancer drugs were administered; and (iii) looked at the factors that influence communication skills between oncology nurses as well as adult oncology inpatients who were 21 years old(5).

2. *Criteria for exclusion:*

Studies including (i) people with intellectual and cognitive impairments; (ii) patients who were ignorant of their cancer cases; and (iii) simulated cancer patients were not included in this study. This study eliminated articles that looked at variables that affected effective communication during (i) end-of-life care and cancer support group counseling; and (ii) cancer diagnostic disclosure to patients. The study also omitted studies that were performed to verify communication assessment methods and to evaluate the efficacy of communication skills training courses(6).

3. *Methodology of evaluation:*

The Joanna Briggs Institute System for the Unified Management, Assessment, and Review of Information was used to conduct this systematic review, which took place from November 2009 to April 2010. Made by mixing research and descriptive surveys were also evaluated for inclusion. Standard information extraction methods developed from the Joanna Briggs Centre Meta Analysis of Stats Assessment and Review Instrument were used to extract data(7–10)

Because the studies included used various outcome data and/or treatments, quantitative pooling of the data (i.e. meta-analysis) was not feasible, therefore the results were reported in a narrative format. Any interpretative works, including but not limited to phenomenological, qualitative research, and ethnography, were examined for the qualitative component of the review. Data from the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI) were retrieved using standard information extraction methods and combined in a meta-synthesis. This entailed three steps: (i) gathering the observations based on their quality; (ii) categorizing these research results based on similarities in meaning; and (iii) going to subject these classifications to a meta-synthesis to produce a single comprehensive set of synthesized findings that could be used as a basis for proof practice(11–13).

4. *The review's quantitative component:*

In this section, studies conducted were included. Sivesind et al. used soul surveys to look at clinical settings where nurses felt challenged. This is a research of relatively poor quality. Participants' inclusion criteria were explicit, and confounding variables were addressed. The questionnaire's contents were validated via a focus group. The data's data analysis was solid. Many issues, however, remained unresolved. The methods by which participants were selected and the results were assessed were among them.

Comparisons were conducted, but each group's descriptions were inadequate. Furthermore, while the results of those who dropped out of the trial were reported, it was unclear if they were included in the analysis. Uitterhoeve et al. performed a mixed method research to examine the connection between nurses' cue-responding behavior and improved patient using recorded nurse–patient talks and questionnaires. This was a study of fairly good quality. Participants' inclusion criteria were explicit, and confounding variables were addressed. The same researcher gave validated questionnaires (Hospital Anxiety and Depression Scale and Heaven & Maguire's Concerns Checklist). Using the Medical Interview Aural Rating Scale, qualified professionals deciphered the recorded talks. The statistical analysis of the data was accurate. The sampling technique, as well as whether the results of individuals who dropped out of the research were included in the analysis, remained unknown(14)(9).

DISCUSSION

In this field, just a few primary studies were performed. There were no randomized controlled studies relevant to the review's study goals after a thorough survey of the literature. Randomized controlled studies were not anticipated, however, since it would be unethical to fail to communicate effectively with individuals in a control group. In addition, this evaluation included other qualitative research than quantitative studies, since a qualitative methodology was more suitable for the study's research goals. Only one paper was based in an Asian nation, Beijing, when it came to cultural/geographical contexts. The role of China cultural norms in inhibiting effective communication – the awareness that psychological needs should be managed to meet by family members and the socioeconomic rule to use implicit interaction with outsiders – is predominant among its findings, which differ from those of studies based in Western cultures. Because more data from Asian nations is lacking, further study into the impact of Asian culture on successful nurse–patient communication is required(15,16).

The notion that variables influencing nurse–patient communication in an oncology context may come from the patient, the nurse, or the environment is apparent from this study. During their stay in the hospital, patients often seek informal contact with nurses and approach them for information about their illness and self-care. Patients who are actively engaged in their own treatment exhibit this information-seeking behavior, which improves nurse–patient contact. Furthermore, elderly patients and patients receiving palliative care have been found to be more pleased with nurse communication than younger patients and patients receiving curative therapy(17).

Patients' reluctance to share their illness and emotions, on the other hand, stifles nurse–patient contact. Patients are more likely to seek emotional support from family members, friends, and other patients than from health care providers, according to studies. Implicit signals, which are utilized to discreetly convey worries in both Western and Asian cultures, are also seen to be a barrier to successful communication. This is particularly true given the fact that nurses have been found to react poorly to patient signals(18).

From the viewpoint of a nurse, this study found that excellent facilitators of supportive communication enhance successful communication. Work competency and genuineness are also mentioned as positive characteristics that enhance communication between nurses. Stress caused by not delivering the level of care that the patient or circumstance demanded is also linked to increased facilitative behavior in nurses.

Some discrepancies have been discovered when studying the effect of post-basic courses in influencing nurse–patient interactions. Nurses who've already completed an oncology course⁷ and APNs, for example, were shown to be more communicative than that of other nurses. On the other hand, the opposite has also been documented. Nurses who did not get post-basic communication skills training had substantially greater facilitative ratings and lower blocking scores than those who did(10,19).

These contradictory results do not offer conclusive evidence of the value of post-secondary education in improving effective communication. When it comes to limiting issues, it was discovered that when nurses concentrate more on the job at hand than on the individual, communication becomes routine and lacks sincerity and care, hindering effective

communication. In emotionally charged circumstances, nurses were shown to perceive more difficulties and to be less skilled in resolving patients' problems(9,20).

They were less comprehensive in their psychological evaluations, particularly for patients hospitalized with a cancer recurrence. Nurses who are atheists, dread death, or deliberately employ blocking behaviors are more likely to prevent patients from expressing their worries, according to the study. Finally, there is little data on the impact of the environment on successful communication in this review. A friendly ward atmosphere seems to enhance the adoption of positive and constructive behavior among nurses as a promoter. Conflict among employees, on the other hand, promotes the usage of blocking behaviors. Ward sisters (nurse supervisors) do, however, play an essential role in encouraging nurses to interact with their patients and fostering a cooperative environment(21).

CONCLUSION

Within the limitations of the research and based on few high-quality studies available, it seems that, like in other nurse settings, personal qualities of patients and nurses are the most important influencing variables for successful nurse–patient interaction in cancer. There is very little research on the impact of the environment on successful nurse–patient communications, especially in Asian settings.

Given nurses' high inhibitive behaviors when trying to discuss emotionally charged topics and one's negative reaction to patient cues, trainings could be put in place to provide nursing staff with the skills necessary for effective communication and improve their receptivity to patient cues in emotionally loaded oncology settings. Nurses felt less secure in giving psycho-emotional care to cancer patients and had more trouble coping with specific clinical situations, such as dealing with death/dying. Nurses may be informed about such potential problems and create ways to overcome them via educational programs or sharing sessions. Because nurses are seen as a reliable and accessible source of knowledge, sharing information with patients may be a non-threatening way to establish rapport and actively engage them in their own treatment. Patients are more inclined to voice their worries freely and seek emotional support from nurses after rapport has been formed. Because some patients prefer to discuss their problems with family/friends, nurses should be aware of their patients' psychological preparedness to communicate and respect their wishes about who they share their thoughts/emotions with. Nurses may also enlist the help of patients' family and friends in providing appropriate social care. According to the research, nurses should abandon task-oriented care delivery and adopt a positive attitude toward delivering psycho-emotional care to patients via communicating effectively. As a result, institutions have to provide ward arrangements (such as a supportive ward culture and decreased workload) that allow nurses to offer comprehensive care.

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A BRIEF REVIEW ON THE ANCIENT CLOSE EASTERN CULTURE

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ABSTRACT

The ancient Near Eastern civilizations (ca. 3000– 300 BCE) were tyrannical, cruel, vicious, and acquisitive, yet they were also strategic, intelligent, and architectural masters, leaving strong legacies behind. Who were these people, and what factors shaped their civilizations' unique characteristics? Individuals' otherworldly convictions; the type of government; business exercises; battle as well as times of political flimsiness were five intelligent socio-political powers that decided the idea of societies in the antiquated Near East during the third and second centuries BCE, some more significantly than others. Finally, each civilization was shown by a beginning, a rise, and a conclusion.

KEYWORDS: Ancient, Art, Culture, civilizations, Eastern.

1. INTRODUCTION

The ancient Near Eastern style of life (ca. 3000–300 BCE) was harsh, cruel, callous, and avaricious, yet it was also vibrant, sophisticated, and constructing aces, leaving incredible legacies. Who were these people, and what shaped the fascinating aspects of their societies? During the third and second centuries BCE, five intelligent sociopolitical powers, some less significant than others, decided the idea of societies in the ancient Near East: individuals' otherworldly convictions; the type of government; business exercises; battles, as well as times of political shakiness.(1). Finally, each civilization was characterized by a beginning, a rise, and a conclusion. Fig 1 shows the ancient near eastern art.



Fig 1: Ancient Near Eastern Art

1.1 Cultures of the ancient Near East: Third and Second Millennia BCE:

Anatolia – The Hittites:

With periods of political unrest, the Hittite civilization, an outstanding medieval aristocracy, is divided into the Old Kingdom, Middle Realm, and Hittite Empire. Hattusili I founded Hattusa, Anatolia's capital, in north-central Anatolia. 'The Great King,' the chief commander of the conflict, who peacefully presided over different free city-states, such as Kanesh and Purushatum, was at the pinnacle of Hittite civilization (2).

The king demanded absolute loyalty from his subject-dynasties ('arru'), as shown by the many intermarriages as well as the famous 'vassal-settlements,' 'guidelines,' and 'dependability pledges.' Furthermore, the Kurunta-settlement demonstrates that the ruler established progress-directed norms, and that any offenders, as shown by the 'Expression of regret of Hattusili III,' required to justify their actions (3).

An unmistakable political structure emerged in Hittite culture as a result of the ruler's monstrous planning: in the Old Kingdom, a 'get together' (panko) supervised authoritatively obligations and was made up of strict, military, and illustrious people; during the Hittite Empire, positions such as a city hall leader (HAZANNU), officials, instructing contingents, and 'the extraordinary' were made up of strict, military, and il Similarly, city old people in more humble communities were dealing with day-to-day problems. In terms of agriculture and commercial activities, the Hittite economy defined Anatolia's triumph. Storage facility administrators checked goods (such as agricultural products, materials, and metals) entering and departing the domain, much as krums and warbartums (exchange stations) had a significant impact on Hittite society. Mursili I, Supiluliuma I, and Hattusili II, for example, increased their wealth via battle and regional growth, primarily in search of tin to match copper and make bronze (4). Fig 2 shows the ancient near east.



Fig 2: Ancient near East

In Hittite polytheistic worship, the lord was responsible to divine beings and the assembly (panko). Hittites worshipped Hattusa's tempest divine force and Arinna's sun-goddess, both of which were in Hattusa. The Anatolian area has also been frequented by other religious organizations, such as Samuha(5–8). Hittites were concerned with sanitization rites and sought pardon from celestial beings when required, as shown by Mursili II's 'plaque supplications.' The supernatural had an impact on titles as well, with 'The Great King' referring to himself as 'my child,' underlining his superiority over his subject dynasties. Following his death, the Hittite king's body was burnt and put into a Storehouse, where an interment cult looked after him. Despite being a revolutionary empire, the Hittite Empire, forerunners of the Iron Age, came to an end about 1190, perhaps as a result of the 'Ocean People's' influence and growth. (9).

1.2 Cultures of the Levant:

Different autonomous city-states in the Levant were shown, notably Mittani, Emar, and Ugarit. Rich city-states under Hittite rule, Ugarit and Emar, were engaged in a wide range of commercial and agricultural activities. Emar was a major focal point for jackass parades, while 'The Hittite Treaty' indicates that Ugarit was the primary location for food supply and trade, with gold and silver being a speciality (10). Many individuals were involved in the economy, and since there was no incorporated force, the majority of society was made up of 'free inhabitants(11–14).

The 'Decree of Hattusili' demonstrates that the lord allowed, but regulated, the impact of new merchants becoming used to the area. Not only was their trading limited to the late spring season, but they were also forbidden from purchasing property or accepting any obligation-related property owed to them by locals. The act of separation, referred to in the 'Judgment of Hittite King Tudhaliyah IV,' was also recorded in the Levant, as was designating a dead benefactor's better half as the head of the family, a procedure known to exist in Nuzi. Residents of Emar worshipped Ishtar, Teshub, and Hetap (like in Mitanni), in contrast to Ugarit, who seemed to venerate Baal and Dagan, according to the polytheistic rigid norm of the ancient Near East.

Different autonomous city-states in the Levant were shown, notably Mittani, Emar, and Ugarit. Rich city-states under Hittite rule, Ugarit and Emar, were engaged in a wide range of commercial and agricultural activities. Omar was a major focal point for jackass parades, while 'The Hittite Treaty' indicates that Ugarit was the primary location for grain supply and trade, with gold and silver being a particular speciality. Many individuals were involved in the economy, and since there was no incorporated force, the majority of society was made up of 'free inhabitants.'(15–18).

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Residents of Emar worshipped Ishtar, Teshub, and Hetap (as in Mitanni) in accordance with the polytheistic rigid norm of the ancient Near East, in contrast to Ugarit, who seemed to venerate Baal and Dagan. The king was accountable to the divine entities and the gathering in the Hittite polytheistic faith (panko). Hittites worshiped Hattusa's tempest lord and Arinna's sun-goddess, both of whom were based in Hattusa. The Anatolian district was also dubbed by other clique locations, such as Samuha. As shown in Mursili II's 'plaque petitions,' Hittites were preoccupied with refining rituals and, when necessary, sought forgiveness from heavenly entities.

The supernatural also had an effect on royal titles, with 'The Great King' referring to himself as 'my child,' emphasizing his superiority over his subject dynasties. The Hittite ruler was cared for by an entombment clique following his death, when his corpse was singed and buried in a Stone house. Despite the fact that the Hittite Empire was a pioneer in the Iron Age, it came to an end about 1190, perhaps due to the influence and expansion of the 'Ocean People'(19–22).

2. DISCUSSION

This paper discusses about the ancient Near Eastern way of life (ca. 3000–300 BCE) was harsh, brutal, heartless, and avaricious, yet it was also lively, clever, and capable of building amazing legacies. What created the interesting features of their civilizations and who were these people? Five intelligent sociopolitical powers, some less significant than others, decided the idea of societies in the ancient Near East during the third and second centuries BCE: individuals' otherworldly convictions; the type of government; business exercises; battles, as well as times of political turbulence. At the end of the day, each civilisation had a beginning, a rise, and a fall.

The lord was accountable to heavenly entities and the assembly in Hittite polytheistic worship (panko). Hattusa's tempest divine force and Arinna's sun-goddess, both of which were in Hattusa, were revered by the Hittites. Other religious groups, such as Samuha, have also visited the Anatolian region. Mursili II's 'plaque supplications' indicate that the Hittites were concerned with sanitization rituals and asked forgiveness from heavenly creatures when necessary. The supernatural also influenced titles, with 'The Great King' referring to himself as 'my child,' emphasizing his supremacy over his subject dynasties. Following his death, the Hittite king's corpse was burned and buried in a Storehouse, where he was cared for by an interment cult. Despite being a revolutionary kingdom, the Hittite Empire, forerunners of the Iron Age, came to an end about 1190, perhaps due to the influence and development of the 'Ocean People.'

Various independent city-states in the Levant, like Mittani, Emar, and Ugarit, were shown. Ugarit and Emar, two wealthy city-states under Hittite control, were involved in a broad variety of economic and agricultural enterprises. Emar was a significant gathering place for jackass parades, whereas 'The Hittite Treaty' claims that Ugarit was the principal source of food and commerce, with gold and silver being particularly valuable [6]. Many people worked in the economy, and since there was no organized labor force, the bulk of society consisted of 'free residents.'

The ruler tolerated, but controlled, the effect of new merchants getting used to the region, as shown by the 'Decree of Hattusili.' They were not only prohibited from buying property or taking any obligation-related property due to them by locals, but they were also prohibited from purchasing or accepting any obligation-related property owed to them by locals. The act of separation, as described in the 'Judgment of Hittite King Tudhaliyah IV,' was also documented in the Levant, as was the process of appointing a deceased benefactor's better half as the family's head. In contrast to Ugarit, who appeared to revere Baal and Dagan, residents of Emar worshipped Ishtar, Teshub, and Hetap (like in Mitanni), in accordance with the polytheistic strict norm of the ancient Near East.

Various independent city-states in the Levant, like Mittani, Emar, and Ugarit, were shown. Ugarit and Emar, two wealthy city-states under Hittite control, were involved in a broad variety of economic and agricultural enterprises. While 'The Hittite Treaty' reveals that Ugarit was the main site for grain supply and commerce, with gold and silver being a particular specialty, Omar was a significant focal point for jackass parades. Many people worked in the economy, and since there was no organized labor force, the bulk of society consisted of 'free residents.'

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3. CONCLUSION

In contrast to Ugarit, who appeared to revere Baal and Dagan, residents of Emar worshipped Ishtar, Teshub, and Hetap (like in Mitanni) in line with the polytheistic strict norm of the ancient Near East. In the Hittite polytheistic religion, the king was responsible to the divine beings and the assembly (panko). Hattusa's tempest lord and Arinna's sun-goddess, both of whom were located in Hattusa, were worshipped by Hittites. Other clique areas, such as Samuha, called the Anatolian district. Hittites were concerned with perfecting rituals and, when required, sought pardon from celestial beings, as shown by Mursili II's 'plaque petitions.'

Despite the fact that sources as some of the time-restricted, obviously the way of life of the old Near East were altogether different from our own. The way of life was not described by steadily expanding components, or maybe times of strife and offense that brought about the development of better than ever social viewpoints. By the day's end, the way of life of the antiquated Near East during the third and second centuries BCE permit us to comprehend our past just as our present and perhaps our future.

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A STUDY ON MYOCARDIAL TISSUE ENGINEERING

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ABSTRACT

Myocardial tissue engineering, a technique that helps to solve the barriers to extending patients' lives after a heart attack, is developing all the time. It consists of a biomaterial-based 'vehicle,' which may be either a porous scaffold or a thick patch composed of natural or synthetic polymeric materials, to facilitate cell movement into the sick area of the heart. For cell treatment and cardiac tissue engineering, a variety of cell types have been proposed. Those also include the autologous and embryonic stem cells, each with its own set of benefits and drawbacks. Biomaterials recommended for this tissue-engineering activity must be biocompatible with cardiac myocytes and have mechanical characteristics that are similar to native myocardium, allowing the supplied donor cells to integrate and stay intact in vivo. Despite the fact that considerable study is being done, many questions remain unsolved, necessitating more investigation. We address the different methods described in the area of cardiac tissue engineering in this review, concentrating on the successes of merging biomaterials and cells using various strategies to heal the infarcted region, as well as clinical trials and potential cell resources in cell therapy. Myocardial xenotransplantation, in situ engineering, and intraventricular devices are all considered as alternatives.

KEYWORDS: Biomaterials, Cell therapy, Myocardial infarction, Scaffolds, Tissue Engineering.

1. INTRODUCTION

Cardiovascular disease is a significant health issue in the Western world and the main cause of mortality. The damage to the heart suffered by the remaining patients who survive their first acute episode may ultimately evolve into heart failure. When one or more of the blood arteries feeding the heart abruptly occlude, it causes a heart attack, also known as a myocardial infarction (MI). The coronary arteries are these vessels, and when they are suddenly stopped, the supply of nutrients and oxygen to the part of heart muscle served by the artery is cut off(1–4).

If blood flow is not restored quickly, the damaged portion of the heart muscle will experience permanent cell death. The mature contracting cardiac cells, the cardio myocytes, are unable to divide, thus the adult heart cannot heal the injured tissue. Scar tissue forms as a consequence of a myocardial infarction, and it lacks the contractile, mechanical, and electrical characteristics of normal myocardium(5). The pounding performance of the ventricles, the heart's major pumping chambers, is reduced when contractile myocardium is replaced by a non-contracting fibrous scar. In response to the decreased cardiac output, several compensation mechanisms are triggered.

These help to stabilize the injured heart and keep cardiac output at a reasonable level at first. In the end, these "compensatory mechanisms" put an additional strain on the weakening heart muscle. This causes a downward spiral in cardiac function and the development of the heart failure clinical condition. As heart failure develops, the decrease of cardiac function becomes more rapid. Mechanical ventricular support devices or heart transplantation are the sole alternatives in the end-stage of heart failure. Nevertheless, many people die while waiting on the waitlist owing to the exorbitant expense of VADs and the scarcity of donor organs. As a result, alternatives are needed, with cell therapy being one of them. It has been suggested that scarred tissue be replaced by skeletal muscle cells, bone marrow cells, or embryonic stem cells. Injection of cells in suspension, either into the circulating blood or directly into the dead myocardium, is now the preferred technique of delivering these cells into the dead myocardium. Both methods of cell administration are ineffective, resulting in significant cell loss. This has led researchers to look at other cell transport methods, such as tissue engineering (TE). The goal of cardiac tissue engineering is to restore or rejuvenate a portion of the heart that has been injured(6–9).

It's been suggested for heart valves and myocardial muscle, the latter of which is the focus of this study. CTE entails the creation of a scaffold or patch composed of a biomaterial and cells. The biomaterial's primary purpose is to serve as a vehicle for delivering cells to the injured region, i.e. scarred tissue(10). The aim is that once the cells are given to the appropriate location, they will integrate with the host tissue and create new myocardium. Engineers and material scientists are always searching for better candidates suited for use as scaffolds in TE, and biomaterials research is a wide topic field. Synthetic and natural polysaccharides, including that of collagen and alginate, have been suggested as CTE treatments to date. The current study is focused on worldwide research in the broad area of CTE.

1.1 Cardiac arrest

Cardiac failure is caused by the heart's inability to supply enough blood to satisfy the body's metabolic needs. It is a leading cause of mortality in developed countries, and it may be caused by any illness that destroys the myocardium, causing it to lose its capacity to pump blood. Coronary artery disease and hypertension (high blood pressure) are the most frequent causes, although injury to any portion of the heart's complex anatomy may impede cardiac function and lead to heart failure. This includes heart valve dysfunction, the heart's electrical conduction system, and external pressure surrounding the heart caused by constriction of the pericardial sac in which the heart is located. MI is caused by a prolonged decrease in coronary blood flow to a portion of the heart, resulting in non-contractile fibrous scar tissue with decreased or nonexistent contractile capacity relative to the remainder of the healthy heart. It is unable to compensate for the loss of cells that happens after a MI, resulting in maladaptive left ventricular remodeling and end-stage heart failure. As a result, there is a lot of interest in finding novel ways to repair and regenerate a myocardial infarct(11–14).

1.2 Heart failure therapy methods including cardiac regeneration or repair:

a. The heart's own cardiac stem cells can regenerate missing tissue:

Stem cells are cells that have the ability to self-renew and specialize along particular lineages. They are referred to as either embryonic stem cells (ESCs) or adult stem cells, depending on their origin. Pluripotent stem cells (ESCs) are generated from early embryos and have the potential to develop into any cell type in the body. Adult stem cells found in tissues and organs

are called multipotent because they can only develop into a limited number of cell lineages. Adult stem cells comprise bone marrow hematopoietic and mesenchymal stem cells, liver and brain stem cells, and cardiac stem cells. However, their origin is unknown, and theories differ — these cells may migrate to the heart from the bone marrow, or they may have been present in the heart since fetal life. They may contribute to cell turnover and heart repair on a modest scale throughout normal life, but myocardial damage from acquired heart disorders, such as myocardial infarction, overwhelms this ability(15). Even though these cells have been demonstrated to be able to develop into cardiac myocytes and vascular cells when separated from human myocardium, their low population and lack of evidence for myocardial regeneration prevents their rapid application in clinical studies. Cells from a variety of sources, comprising bone marrow, skeletal muscle, and ESCs, as well as primary cardiac myocytes generated from newborn rat hearts, have been used to try to repair and regenerate myocardial tissue(16). Although primary myocytes implant successfully, constraints such as limited yield and poor proliferative capability have prompted tissue engineers to use stem cells as an alternate cell source to address this problem.

b. Regeneration by the bone marrow stem cells:

i. Bone marrow mobilization of progenitor cells:

Progenitor cell release from either the bone marrow is known to be stimulated by cytokines including granulocyte-colony stimulating factor and stem cell factor. This has been proposed that even these undifferentiated stem cells may relocate to the infarcted area of the heart after mobilization, which involves releasing a pool of stem cells into the peripheral circulation. There is much disagreement about whether this process happens in people, and if it does, whether the homing bone marrow cells have the ability to develop into cardiac myocytes, thus aiding myocardial regeneration. Some studies have shown an improvement in infarcted area and cardiac function, whereas others have reported that G-SCF and SCF had no impact on infarct size but promoted vessel development.

ii. Injection of bone marrow stem cells:

Bone marrow has received a lot of interest as a source of stem cells for cell therapy throughout the years. It is made up of two parts: stromal and hematopoietic, the former of which produces mesenchymal stem cells and the latter of which is involved in the creation of new blood cells. BMSCs have many advantages, including their ease of use and the fact that they are autologous, which means they will not be rejected. Mice that had hematopoietic stem cells infused into their bloodstream after a heart attack had a 26 percent survival rate(17). According to the findings, the transplanted stem cells reacted to signals in the infarcted region of the heart, prompting them to move to the injured area and develop into the cells needed for cardiac repair, resulting in neovascularization. selected Link-kit⁺ bone marrow cells from mice using a fluorescence-activated cell sorting technique; the cells were then injected directly into the infarcted area, creating new cardio myocytes, smooth muscle cells, and vascular endothelium, resulting in the formation of de novo myocardium with living tissue 9 days after cell transplantation.

iii. Myocardium repair with skeletal myoblasts:

After a muscular injury, a subset of skeletal muscle cells has the capacity to become active, self-renew, and differentiate, allowing for muscle regeneration. These autologous cells were injected

into the heart to heal the infarcted region because of their capacity to contract and continually mend the injured muscle, as well as their ability to be readily grown, multiplied, and identified in vitro. The outcomes of experiments trying to restore cardiac function have been varied, with some being effective and showing some promise in clinical trials, while others showed no signs of physiological improvement or cardiac differentiation. The apparent inability of these cells to transdifferentiate into cardiac myocytes is a major roadblock to their application in myocardial regeneration. Because the impulse cannot travel uniformly throughout the heart and transplanted cells, this inhibits electrical connection with native cardiac myocytes, resulting in a pro-arrhythmic substrate(18). This is due to the lack of expression of the gap junctional protein connexin43 in skeletal myoblasts. Pacemakers or defibrillators are needed to guarantee synchronized heartbeats and to address any hazardous cardiac rhythms that may be caused(19–21). Connexin43 has not been successfully introduced into cells via genetic modification since it has been proven to impact cell life span. Despite these disadvantages, it has been proposed that injecting fibrin glue and skeletal myoblasts into a myocardial infarcted area may maintain heart function.

1.2 Biomaterials in the regeneration of cardiac tissue

i. Tissue engineering in the heart:

TE is a technique that includes mixing biomaterials and live cells to create tissue equivalents that may be utilized in the repair, maintenance, replacement, and augmentation of tissues or organs. CTE is still in its early stages. However, it is a new area that has great promise for improving heart disease therapy. CTE will help patients who may not need heart transplants; some patients may just require smaller tissues, such as muscle, valves, or even arteries, and they will enjoy the vast possibilities provided by CTE. Miller and colleagues in Philadelphia, USA, developed the heart–lung machine, which was one of the earliest methods to treating cardiac illness. Mitral valve replacement followed soon after, with the valve being surgically created using either cadavers or fascia lata. Initially, researchers focused on autologous tissues and cells, but recent advances in the utilization of synthetic materials and cells are paving the way for novel cardiac tissue engineering methods. CTE is a materials-based method that includes the growth of cells on prefabricated three-dimensional (3D) scaffolds in the form of mesh, patch, or foam, with several organizations focusing on the creation of replacement tissues for different regions of the heart. A material scientist's role is to design, manufacture, and characterize materials for scaffolds or patches that serve as supports for tissue development and, in certain instances, organ support. MTE is a new treatment idea that has a lot of potential. In order for tissue regeneration to be effective, sufficient numbers of cells must be generated in order to retain certain biological activities and develop to the proper phenotype. Producing extracellular matrix in the proper structure and secreting signaling molecules are two important cell activities when communicating with adjacent cells/tissue. Biomaterials are critical to the strategy's success.

ii. Biomaterials:

A biomaterial is a non-viable material that is utilized in medical devices to interact with biological systems. Most TE methods need the use of biomaterials. Enhancing cell adhesion, proliferation, and differentiation are the primary functions of an optimal biomaterial for TE. In order to start tissue regeneration, the biomaterial must promote in vivo revascularization as well as integration with the host tissue. At the same time, it should be able to be replaced with newly

created tissue by deteriorating at a pace that is comparable to that of new tissue development and ultimately being eliminated from the body via normal metabolic pathways without generating harmful by-products. In TE, the fundamental criteria for cardiac bioengineered structures are strong but flexible mechanical qualities, the ability to contract, electrically physiologically stable, easily vascularized, and ideally autologous.

2. DISCUSSION

The results presented in this study contribute to a possible breakthrough in the area of MTE by emphasizing many key aspects. To begin, it is necessary to determine which cell type is appropriate for human usage in order to aid in the regeneration of the infarcted area. The absence of a viable human cell supply is still the biggest obstacle to regenerating the human myocardium, whether by cell injection or TE development. Adult cardio myocytes were formerly believed to be terminally differentiated and incapable of proliferating. As a result, studies have concentrated on alternate cell sources such skeletal myoblasts and bone marrow stem cells, which have demonstrated modest therapeutic benefits. Although progenitor cells have been found in the heart, there are several limitations, such as the contradictory findings that have been published, with various research groups claiming distinct subpopulations present in the heart. It will need further research to see whether these progenitor cells are present in sufficient quantities in human biopsies. Cells having higher ability to regenerate the heart and an endless supply, such as ESCMs, should be the focus of research. To maximize the potential of hESCs, further research is needed to address critical problems such as immunogenicity, tetraomic formation, animal product involvement, and, last but not least, ethical concerns. MTE is a rapidly growing area that includes a wide range of biomaterials, both synthetic and natural, whose contributions are presently being studied.

3. CONCLUSION

The significance of biomaterials in future heart regeneration has been shown in this review of the specialist literature. For MTE to succeed, a number of problems must be addressed. To guarantee that cells on the graft or patch beat in unison, electrical connection between them is needed first. Second, there is still a worry about electrical connection between the construct and the natural myocardial for synchronous beating. Cell sheeting has been claimed to solve this issue, with graft integration and no arrhythmias recorded. There is some debate over whether or not a thick 'patch' is helpful. It may be claimed that the cells must be implanted in a 3D scaffold with pores in order to live and perform their full potential activities. In this case, the engineered construct's necessary functions must be considered. A patch may be appropriate if the construct's only purpose is to serve as a "vehicle" to carry the cells into the patient and subsequently disintegrate over time. If, on the other hand, the construct is intended to support the injured region for a long time, it is critical, among other things, that it has a porous structure to enable cell survival throughout the time they are in touch with the scaffold. The optimal cell density and scaffold/patch composition, as well as the time of implantation, must yet be addressed. Which cell, if any, should you use? Finally, the ideal myocardial construct should have morphological, physiological, and functional characteristics that are similar to those of the original heart muscle it is intended to replace and be viable after implantation. As the damaged myocardium integrates with the heart, MTE should enhance its function, lowering the morbidity and mortality of individuals with heart failure.

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KNEE OSTEOARTHRITIS: A REVIEW

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ABSTRACT

Osteoarthritis of the knee is a common chronic joint condition that causes pain and impairment. Physiotherapy is a non-invasive treatment option for OA management that includes a variety of techniques. The evidence for widely used physiotherapy treatments is summarized in this study. Although the kind of exercise does not seem to affect treatment success, there is substantial evidence that exercise has short-term positive benefits on pain and function. Individual, group, and home exercise are all effective delivery modalities, but therapist interaction may enhance effects. To get the best long-term results, it is necessary to focus on increasing exercise adherence. Knee taping may help relieve discomfort by realigning the patella and unloading soft tissues. In individuals with knee OA, there is additional evidence to support the use of knee braces. Although biomechanical studies indicate that lateral wedge shoe insoles decrease knee stress, clinical trials have not shown that they help with symptoms. Individual shoe features have been shown to influence knee stress in recent research, and there is now a lot of interest in the impact of changed shoe designs. While manual therapy should not be utilized as a stand-alone treatment, it may be helpful. In conclusion, although the study is not conclusive, there is enough data to suggest that physiotherapy treatments may help people with knee OA decrease pain and enhance recovery.

KEYWORDS: Braces, Exercise, Knee, Osteoarthritis, Patellar Taping, Physiotherapy.

1. INTRODUCTION

Osteoarthritis is a kind of arthritis that mostly affects the knee. Pain, stiffness, edema, joint instability, and muscle weakness are all symptoms of OA, and they may all contribute to decreased physical productivity and a worse quality of life. Non-pharmacological therapies to alleviate symptoms are recommended, and physiotherapy treatments are increasingly recognized as essential in the multidisciplinary care of patients with knee OA(1–3). This article will summarize the evidence supporting the efficacy of various popular physiotherapy therapies in decreasing knee OA symptoms, including exercise, taping, bracing, insoles and shoes, and muscle relaxation. Even though some of the therapies may have the potential to delay the development of structural disease by affecting knee load, this is beyond the scope of this brief study.

1.1 Exercises:

Exercise treatment is considered as the cornerstone of conservative care and is recommended by clinical recommendations, given the vast body of data showing the positive therapeutic benefits of exercise in individuals with knee OA of different severity. Importantly, unlike medications and surgery, exercise has comparable effect sizes to basic analgesics and non-steroidal anti-inflammatory drugs, but with fewer contraindications and a wider range of benefits. Trials exploring a range of land-based therapeutic exercise regimens were found in a recent Cochrane review. A meta-analysis found that average treatment improvements for both knee pain and physical function were found(4–7). Although there is less solid evidence on the benefits of water exercise, another recent Cochrane review found a small-to-moderate impact on function and a small-to-moderate effect on quality of life. Muscle strength, neuromuscular control, functional mobility, joint stability, and fitness are all examples of physiological changes that may occur as a consequence of a good exercise program. Strengthening exercises are often advised. As a result of decreased physical activity and pain suppression, patients with knee OA have lower muscular strength. The quadriceps are the biggest set of muscles that span the knee joint and have the greatest ability to produce and absorb forces. In individuals with knee OA, several clinical trials have demonstrated consistent increases in knee extension strength as well as decreases in pain and physical impairment following training. However, no one strength-training technique has been shown to be better to others(8). Recent research has also emphasized the importance of hip muscle strengthening in the treatment of knee OA. The findings indicate that improving hip muscle strength may help with pain and function. This may be especially helpful if discomfort prevents you from doing certain knee workouts. Local mechanical factors such as knee malalignment may affect the symptomatic response to strength training, despite the fact that this has not been extensively researched. For individuals with knee OA, this emphasizes the need of individualized evaluation and treatment methods. Although a mix of strengthening, aerobic, and functional exercise is suggested, there is no evidence to support the efficacy of one kind of exercise over another at this time. Individualized therapies, supervised group courses, and at-home exercise are all options.

Although all three modalities of exercise delivery seem to be helpful in decreasing symptoms^{7,18}, therapist interaction may enhance results. The frequency and length of a workout regimen are other factors to consider. Most exercise recommendations indicate that a physiological response may be achieved with as little as three exercise sessions per week, and exercise programs in people with knee OA have shown to alleviate symptoms in as little as three weeks. The ideal exercise dose, on the other hand, has yet to be established and should be tailored to each patient. Exercise adherence is typically excellent in the first few months after starting an exercise program, but it quickly decreases with time. Patient adherence is a critical element in deciding whether or not exercise treatment improves outcomes in individuals with knee OA(9). Patients who get attention from health experts, believe in the efficacy of the intervention, and understand the etiology of knee OA have better adherence. Self-efficacy, or one's confidence in one's own capacity to do tasks, has also been linked to improved adherence and results(10–13). As either an outcome, techniques also including educating patients more about disorder and the economic advantages of exercise, protracted monitoring by such a clinical exercise professional, regular follow-up or booster sessions, through use of pedometers or a self-reported diary, and help and support should indeed be implemented.

1.2 Taping:

Some therapeutic regulations suggest taping the knee, particularly the patella, as a physiotherapy treatment technique in the management of knee OA. Taping the patella and/or related soft tissue structures using adhesive stiff strapping tape is known as knee taping. The goal of taping is to realign the patella to decrease patellofemoral joint tension and unload uncomfortable soft tissues surrounding the knee joint, with the goal of decreasing knee discomfort. Several randomized controlled studies in individuals with knee OA, both with and without PFJ involvement, have shown immediate and short-term pain decreases. While it's natural to assume that the pain-relieving effects of tape are limited to the time it's worn, one research discovered that advantages were still there three weeks after the tape was removed(14). The method by which tape decreases pain is unknown, although it may include improvements in patellar alignment as well as improved muscle function and activation. The latter, on the other hand, has only been shown in individuals with patellofemoral pain and has yet to be validated in patients with OA. Knee taping has a number of practical issues that must be addressed(15). To reduce the danger of side effects, it's crucial to take care of your skin. Patients should be evaluated beforehand to verify they are suitable for taping, and hypoallergenic underwear should be worn to prevent skin from direct contact with the hard strapping tape used to straighten the patellar and unload soft tissues. The removal of tape on a regular basis causes the bulk of skin injury. As a result, tape should be removed and reapplied less often in older patients with knee OA than in younger individuals.

1.3 Bracing:

For knee OA, a number of commercial braces are available, each with its own price, construction, and design. A single-piece neoprene sleeve is the most basic of designs, yet there is evidence that it may decrease discomfort. In the case of uni-compartmental OA, a 'unloader knee brace' may be utilized. It's a semi-rigid brace composed of molded plastic and foam with metal side struts that's frequently custom-built(16). The brace's design attempts to alter the way force is distributed at the knee by shifting the weight away from the painful side, and biomechanical studies back up this load-shifting effect. Several clinical studies on these braces indicate that they provide symptomatic relief for individuals with unicompartmental OA, although the impact may vary according on the patient and brace. On obese patients, braces were shown to be less effective, and custom-made braces were found to be superior than off-the-shelf designs. Adherence is considered to be one of the main factors limiting the advantages of a brace for knee OA. After 6 months, 42–50% of patients stopped using the brace, according to two studies. Bulkiness, style, ease of application, fit, and comfort are all factors that may contribute to poor adherence. Because there is little data on the efficacy of knee braces in OA, they should not be used as a stand-alone therapy and should be chosen depending on the particular patient's reaction.

1.4 Insoles and Shoes:

Insoles and footwear have a lot of promise as simple, low-cost therapy options for knee OA. Lateral wedge insoles for medial compartment OA and medial wedge insoles for lateral compartment disease have been recommended. Because of the high incidence of medial compartment OA, the majority of research has focused on lateral wedge insoles. In medial knee OA, biomechanical studies indicate that lateral wedges decrease the adduction moment while running by 4–12percent of total compared to walking barefoot or in shoes alone. As a result, the

load in the medial compartment is reduced. Wedge design characteristics such as length and inclination angle are thought to influence biomechanical benefits, with full-length insoles with a 50–100 tilt offering the greatest benefit, according to research(17–19). Despite evidence of lateral wedges' biomechanical benefits, randomized controlled studies have yet to demonstrate their efficacy in reducing symptoms of knee OA, such as discomfort, stiffness, and functionality. It's possible that certain subgroups react better than others, with advantages being more probable in individuals with less severe illness, lower lean mass, and who are younger⁵³ and less obese. Therapeutic outcomes may be influenced by variations in daily wedged insole use, with a nonrandomized study showing the highest clinical benefits from 5 to 10 hours of daily use.

1.5 Therapeutic manual treatment:

Joint mobilization and manipulation are the most frequent methods used in manual therapy. Manipulation is defined as forceful small amplitude, high-velocity movements of a joint performed at the end of the range, while mobilization is described as repeated passive movement of low velocity and changing amplitudes applied at various locations along a range. Manual therapy is widely utilized in clinical practice for OA, with studies showing that 96 percent of Irish physical therapists and 64% of UK physical therapists employ it in the treatment of patients with hip and knee OA, respectively. Despite its widespread use, little study has been done on the benefits of manual therapy in the treatment of knee OA, and few studies have looked at it in isolation from other treatments like exercise(20–23). In a randomized controlled study, the effectiveness of manual treatment and exercise in alleviating pain and decreasing physical impairment in knee arthritis patients was shown. The observed effect magnitude was similar to that found after complete knee arthroplasty. Two studies looking at the impact of manual therapy on pain in knee OA patients found a hyperalgesia effect, indicating that manual treatment may have a pain-relieving effect.

1.6 Management:

The present treatment for OA, which includes both non-pharmacologic and pharmacologic options, is mainly focused on pain relief and functional improvement.

i. Education on non-pharmacological therapies:

Patient education is a continuous and important component of patient care. Aspects of the illness process, as well as the advantages and dangers of treatment choices, should be discussed by the practitioner. Empowering patients by engaging them in joint decision-making and equipping them with positive skills aimed at lifestyle improvements may help guarantee treatment adherence.

ii. Reduction of negative mechanical influences:

Obesity increases the risk of developing and progressing OA in the knee and hip. Weight loss is an excellent primary and secondary disease prevention approach. It remains one of the greatest modifiable risk factors for OA. Weight reduction helps with pain and function in knee OA and, to a lesser degree, hip OA. It should be accomplished via a mix of proper food habits (eating properly, frequently, and in moderation) and exercise. Many people with OA also have chronic cardiac and metabolic problems, thus weight reduction may be quite beneficial. All patients with OA of the lower limbs should be counseled on proper footwear. It's best to wear a shoe with

thick, soft bottoms and no high heel. Patients with medial or lateral tibiofemoral OA may benefit from lateral or medial wedged insoles to relieve pain and enhance function.

iii. Assistive devices:

In individuals with hip or knee OA, using a cane, frame, or wheeled walker decreases mechanical stress and discomfort. The correct usage of canes should be taught to the patient. The cane or crutch should be held in the hand on the opposite side of the afflicted limb and moved with it. The height here between upper border of both the lateral epicondyle of the femur and the bottom of the heel of both the shoe should really be comparable to the entire length of the cane. Elbow flexion should occur as a consequence of this. Patients with OA with mild-to-moderate Varus or valgus malalignment may benefit from knee braces. Overuse and improper usage of braces may exacerbate joint instability by causing muscle atrophy. They should only be used when an inflammatory flare-up occurs, to protect the joint during unusual activity, and when all other therapeutic options have failed.

iv. Clinical Observations:

During the clinical examination, there are many symptoms of knee OA that may be detected. These include limping owing to joint discomfort, slowed walking pace, and shorter and more frequent strides. For a patient with knee OA, squatting may have become difficult. The presence of a deformity in the knee joint is generally indicative of advanced knee OA. Varus or valgus instability in the knee joint that may be clinically detected is considered a late indication of the illness. The lack of joint congruency is thought to be indicated by coarse crepitus. The tenderness of the knee joint may be detected by palpating it. Pain and point tenderness along the joint line indicate to an intra capsular origin. A per articular lesion is indicated by pain distant from the joint line. Physical disability is linked to a reduced range of motion, which may be assessed using a goniometer. Osteophytes, remodeling, and capsular thickening are the primary causes of reduced ROM, which may be exacerbated by soft tissue swelling. Muscle atrophy and weakening are difficult to detect in knee OA, although they may occur. Synovitis in knee OA is indicated by the typical symptoms of inflammation, such as heat, discomfort, and effusion. Although laboratory tests are not used to diagnose knee OA, they may aid in the differential diagnosis.

1.7 Outcomes from Radiological Exams:

The plain radiograph is the main study used to diagnose and evaluate the severity of knee OA. The benefits of radiography are obvious: it is inexpensive and reasonably safe, and it is widely available. The subjective discomfort and radiographic changes, on the other hand, are not always related. Joint space narrowing, osteophytes, subchondral bone sclerosis, cyst development, osteochondral bodies, and bone deformities are common radiographic findings of knee OA. The loss of cartilage is an early and crucial characteristic of OA, resulting in a narrowing of joint space on plain radiographs. Individuals and joint surfaces have different articular cartilage thicknesses. As a result, there are no reference values for joint gap thickness. Osteophytes are a characteristic of OA, and they are produced by endochondral ossification at the joint border. They suggest redistribution of aberrant joint loads and may be considered a repair effort. Cysts are another common radiographic finding in OA, and they tend to appear in regions of bony sclerosis where there is greater pressure transmission. Osteochondral fragments are formed when

the joint surface disintegrates due to OA. As these pieces are discharged into the joint area, they manifest with the other well-known symptoms of OA.

2. DISCUSSION

Knee osteoarthritis (OA) is a significant public health issue that affects people all over the globe and is one of the leading causes of persistent impairment in older people. Identification of risk factors for the development of incident knee OA is necessary for preventive treatment. The symptoms are often linked to severe cognitive disability, as well as inflammation-related signs and symptoms such as pain, stiffness, and loss of mobility. Exercise's efficacy in decreasing pain and impairment has been proven in conservative therapy. Stretching and strengthening exercises have been shown to reduce pain and increase physical strength, functional capacity, and psychological well-being. Exercise enhances muscular endurance, improves proprioceptive acuity, and reduces arthrogenic quadriceps muscle inhibition.

3. CONCLUSION

There is evidence that physiotherapy treatments may help people with knee OA decrease pain and improve function. Treatments aimed at dissipating knee joint stress, changing lower limb posture, improving range of motion, and restoring normal neuromuscular function are all part of physiotherapy. The reactions of patients vary, and more study is needed to figure out which subgroups are most likely to respond to particular therapies. No one physiotherapy intervention has been proven to be more successful than the others, therefore a mix of therapies is likely to be the most beneficial. There is some evidence that physiotherapy in conjunction with other treatment methods, such as weight reduction and psychological issues, may provide better results than any of these strategies alone. To identify which therapies are most suitable for each patient, a personalized approach to patient care is required.

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HEADACHE AND SLEEP DISORDERS: REVIEW AND CLINICAL IMPLICATIONS

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ABSTRACT

Sleep-related headaches increase the possibility of a sleep problem. OSA has been linked to awakening headache types such as migraine, tension-type, cluster, and unclassifiable headaches, and it has gotten a lot of attention because of the possibility for headache relief as well as the serious cardiovascular and other health consequences. Despite the fact that it has not yet been studied in headache patients, there is now awareness of a spectrum of sleep-disordered breathing that may help explain the known link between chronic headache and snoring in the absence of conventional OSA risk factors. Primary headache therapy is compatible with pharmacologic and behavioral sleep management methods for insomnia and circadian rhythm disorders. With methods like a headache/sleep diary, progressive relaxation training, and sleep hygiene, behavioral therapies for headache may easily be extended to evaluate and treat insomnia.

KEYWORDS: *Circadian Rhythm, Cognitive Behavior Therapy, Headache, Migraine, Sleep.*

1. INTRODUCTION

Both headache and sleep problems are linked with substantial mental comorbidity, and both are disproportionately common among headache patients. Sleep problems are disproportionately seen in certain headache diagnostic groups and other headache patterns, regardless of diagnosis, as detailed below(1–4). Sleep problems linked to headaches are unusual in that they include respiratory, movement, and circadian rhythm abnormalities, as well as insomnia. Variations in sleep length and schedule are frequently recognized headache causes in the absence of a sleep problem. These links between sleep and headache are varied in form, but one thing they all have in common is a dysregulation of sleep processes that seems to influence headache threshold. Both headache and sleep problems are associated with similar mental illnesses. As described elsewhere in this book and the Headache journal supplement dedicated to Psychiatric Headaches(5–8).

The link between headache, sleep, and mental illnesses is most likely due to common pathogenic mechanisms. Taking into account the whole headache-sleep affective symptom constellation may lead to new ways to influence headache threshold and improve therapy. Identification and treatment of primary sleep problems, management of insomnia with or without concomitant emotional illness, and improving the schedule, length, and quality of sleep are all part of the sleep regulation process in headache management(9–12). Through relevant epidemiological and

clinical prevalence studies, clinical implications for headache evaluation, sleep screening strategies, identification of primary sleep disorders, and behavioral sleep regulation strategies for the primary headache patient, this paper reviews the nature and magnitude of comorbidity between headache and sleep disorders.

1.1 Comorbidity of Headache and Sleep Disorders:

Too far, no epidemiological research has looked at the relationship between headache and the whole range of sleep problems in the general population. Several relevant research, on the other hand, have looked at one or more elements of the headache-sleep comorbidity spectrum. Morning headaches were not linked to caffeine use, as those who did not drink coffee had more headaches in the morning than those who consumed at least 1 cup per day, refuting the notion that morning headaches were caused by caffeine withdrawal in this large sample. Aspects of sleep have been explored in large cross-sectional epidemiological studies of headache. headache severity, sleep problems and affective disorders were all linked; headache frequency was linked to mild, moderate, and severe insufficient sleep, along with depressed mood(13–16).

1.2 Clinical Studies:

The nature and clinical significance of headache-sleep comorbidity among headache patients and sleep-disordered patients has been established via research involving these two groups. Patient Populations with Headaches. Sleep disturbances and complaints are common among headache sufferers. This information comes from descriptive research as well as studies that use objective polysomnography to measure sleep. The biggest clinical research to date looked at the incidence of sleep problems among migraineurs seeking treatment for their headaches. Sleep disruption and oversleeping were identified as headache precipitants by 50 percent and 37 percent of patients, respectively, in this migraine group, whereas 85 percent reported sleeping as a way to alleviate headache. Many patients said they had trouble falling asleep and staying asleep on occasion. 71 percent of migraineurs said they had morning headaches. Though insomnia was not systematically evaluated, 38 percent of migraineurs had persistently reduced sleep patterns that were comparable to those of insomnia(17–20).

1.3 Sleep disturbances have been related to cluster headaches:

An 8.4-fold increase in the incidence of OSA was seen in a study of cluster headache patients who underwent polysomnography compared to age and gender-matched controls, and this risk rose over 24-fold among patients with a BMI(21). As a result, the data shows that cluster patients have a higher rate of sleep disordered breathing, and that treating the apnea may help with this kind of headache. Dysregulation of sleep cycles may cause headaches, or “trigger” them. Changes in sleep patterns are regularly included among the most often reported precipitants of headache in individuals with migraine and tension-type headache(22).

1.4 Patient Populations with Sleep Disorders:

Only one published research that looked at the prevalence of headache in sleep disturbed individuals who had a wide spectrum of sleep disorders was found in this review. Morning headaches were investigated in sleep clinic patients who had polysomnography and healthy controls. Polysomnographic recordings from the evenings before a morning headache were compared to nights without a headache the following day. The number of headaches reported by patients with sleep problems was considerably higher than that of healthy controls.

1.5 Implications in Clinical Practice:

While no empirically proven methods exist to guide clinical practice, there are at least a few scientifically validated tenets today.

According to the review:

1. A persistent daily headache, particularly a "morning headache," is a distinct, though vague, indication of sleep problems;
2. In the context of a headache, identifying and treating a main sleep problem may help to alleviate or eliminate the headache (headache secondary to primary sleep disorder);
3. There is a significant prevalence of sleep disruption in headache sufferers, which may cause or worsen headache; and
4. Sleep management may help with such main headaches. These results support the screening and treatment of headache patients with sleep disturbances.

1.6 Screening for Sleep Disorders in Headache Patients:

Several publications have highlighted the need of a comprehensive clinical interview evaluating the headache pattern and history in connection to the sleep/wake cycle for headache practitioners. When a headache persists on a daily basis or is present often throughout sleep or upon waking, it is very important to check for a sleep abnormality. A thorough sleep history may reveal important details that are frequently overlooked in a conventional headache history(23). The timing of sleep and wake, habits, pre-sleep routine, sleep environment, a description of the sleep period itself, daily alertness vs tiredness, and any specific efforts to encourage sleep or wake are all important factors to include. When feasible, collect useful information not just from the patient, but also from the bed partner or other observer. Patients who mainly complain of sleeplessness should be questioned about behavioral issues in particular(24).

The following are some of the factors that influence sleep:

1. an unsuitable sleeping environment in the bedroom
2. an erratic sleeping pattern
3. side effects of the medication

a. Sleep Diary:

The sleep diary, which may be kept on written but on an electronic device, is one of the most widely used systematic self-report methods for sleep evaluation. Subjective assessments of sleep regularity, length, and quality may be acquired over time using once-daily monitoring. Other particular factors that may be linked to sleep, such as headache, may also be monitored. The diary provides data on sleep/wake cycle regularity, sleep onset and maintenance problems, total sleep duration vs. time in bed (i.e. sleep efficiency), napping, and other topics(25).

b. Obstructive Sleep Apnea (OSA) is a kind of sleep apnea:

OSA syndrome is the most significant sleep-related breathing disorder to evaluate because of its prevalence, proven link to headache, and possibility for headache improvement with therapy. Intervention is needed to help with headache control and to prevent the substantial morbidity and

death that sleep apnea causes. OSA clinical signs and risk factors an overweight headache patient who wakes up with a headache should be questioned about snoring and other sleep apnea symptoms.

c. Upper Airway Resistance Syndrome and Snoring:

While the majority of sleep-disordered breathing research has concentrated on OSA/hypopnea to far, a wider range of irregular breathing is increasingly recognized as clinically significant. OSA, snoring, and upper airway resistance syndrome are all part of the sleep-disordered breathing continuum. In addition to apneas and hypopneas, respiratory effort-related arousal must be considered. These are sleep arousals caused by increased upper airway resistance that do not satisfy the criteria for apnea or hypopnea.

d. Sleep-Disordered Breathing Treatment:

OSA must be identified and treated not only for optimum head pain management, but also for bettering general medical condition, such as blood pressure control. In most cases, a referral for a polysomnographic test is required to confirm the diagnosis and begin therapy. Reevaluation of the headache syndrome after OSA treatment is beneficial, as it may open up additional headache management choices now that the possible trigger from the sleep disturbance is no longer present. As previously stated, headaches caused by sleep-disordered breathing may be tension-type, migraine, cluster, or other nonspecific headaches.

e. Insomnia:

As previously discussed, insomnia is the most common sleep complaint in clinical headache groups. Insomnia is defined as trouble getting asleep, remaining asleep, or waking up too early the following day, resulting in impairment of day-to-day functioning, including psychological discomfort. Insomnia may be a standalone symptom or a sign of another condition like depression, chronic pain, or restless legs syndrome. That is, the complaint of sleeplessness should be treated as a symptom before moving on to a differential diagnosis. When particular causes of insomnia have been ruled out or addressed, fundamental insomnia is defined as a state of hypervigilance or hyper alertness combined with a reduced capacity to sleep. There is evidence of aberrant activation in the hypothalamus pituitary system as well as in some central nervous system measurements.

1.7 Training in Relaxation:

As previously stated, sleeplessness is linked to increased physiological arousal. Relaxation training, which is comparable to popular behavioral headache therapies, is extensively used in the treatment of insomnia, especially when patients have significant physiologic, cognitive, or emotional arousal. Physiologic self-management techniques are used to reduce the incompatible with sleep awake state of arousal and therefore promote nighttime sleep. Guided imagery creates a tranquil mental state in which patients may consciously avoid unwanted stimulating ideas, while progressive muscle relaxation therapy addresses physical tension.

1.8 Cognitive Therapy:

Cognitive arousal, which includes racing thoughts, anxiety, and intrusive thoughts, is considered to obstruct sleep in addition to physiological arousal. Traditional cognitive therapy techniques, such as those used in headache stress management, are used to identify, question, and replace

illogical ideas and concerns about sleep and sleep loss that cause anxiety and contribute to insomnia recurrence. Patients may be asked to self-monitor or elicit thoughts and concerns about sleep, or they may be asked to complete a standardized questionnaire to detect insomnia-causing cognitions. Cognitive therapy is appropriate for patients who have racing or obsessive thoughts around bedtime, as well as catastrophizing or ruminative anxiety about sleep. Techniques to confront dysfunctional worries and reconstruct logical statements are given, which the patient will use when the dysfunctional thinking or emotional state arises. Cognitive therapy is also often utilized in the treatment of behavioral headaches and mood disorders.

1.9 Control of Stimulus:

The goal of stimulus control, which is based on operant conditioning principles, is to strengthen connections between the "state of drowsiness" and the sleep environment. Patients are told to stay in bed just while they are asleep and to wake up physically.

2. DISCUSSION

Sleep-related headaches increase the possibility of a sleep problem. OSA has been linked to awakening headache types such as migraine, tension-type, cluster, and unclassifiable headaches, and it has gotten a lot of attention because of the possibility for headache relief as well as the serious cardiovascular and other health consequences. Despite the fact that it has not yet been studied in headache patients, there is now awareness of a spectrum of sleep-disordered breathing that may help explain the known link between chronic headache and snoring in the absence of conventional OSA risk factors. Primary headache therapy is compatible with pharmacologic and behavioral sleep management methods for insomnia and circadian rhythm disorders. With methods like a headache/sleep diary, progressive relaxation training, and sleep hygiene, behavioral therapies for headache may easily be extended to evaluate and treat insomnia.

3. CONCLUSIONS

Sleep deprivation has been linked to more frequent and severe headaches. OSA, primary insomnia, and circadian phase disorders are among the most common. By eliminating a physiologic trigger for headache, treatment of sleep disorders, particularly sleep breathing problems, may alleviate and in some instances cure headache. Sleep problems, particularly insomnia, may overlap or coexist with mental illnesses like depression or anxiety, which can indicate a worsening headache prognosis and need care. As a result, sleep disturbances should be screened for, evaluated for, and treated in individuals with persistent headache. Although pharmacologic therapy of primary insomnia is likely to alleviate headache, there is insufficient clinical data to provide precise recommendations. Benzodiazepine receptor agonists, antidepressants, and membrane stabilizing medicines are among the medications utilized for sleeplessness in headache patients.

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AN OVERVIEW OF PRIVACY AND SECURITY OF IOT BASED SMART HOME

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ABSTRACT

The smart home is an environment in which disparate electronic gadgets and appliances are networked together to offer smart services to people in a ubiquitous way. Smart home applications are being accepted and used by a broad range of organizations and individuals. This may be due to the numerous benefits offered by the growing internet of Things (IoT) technologies and gadgets, which are connected with sensors, cameras, or actuators and capable of gathering information from the environment or performing certain activities. Real-time monitoring, remote control, intruder protection, gas/fire alarm, and other amenities are common in smart houses. Because sensitive and personal data is handled in smart homes, security and privacy solutions should be implemented to safeguard users'/businesses' data from unauthorized access while still ensuring the provision of dependable services. The study's results and suggestions add to a wider understanding of consumers' changing attitudes about privacy in smart homes as IoT home devices grow more prevalent.

KEYWORDS: *Internet of Things (IoT), Monitoring, Privacy, Security, Smart Home.*

1. INTRODUCTION

The advancement of information and communication technology in the globalization age is a phenomena that poses a significant challenge to the company's ability to expand and flourish(1). The implementation of a good security system, as well as the availability of many security technologies, both pro and anti, provide a challenge to the development of system vulnerability. In addition, network quality and data transmission medium may have a role in information integrity and availability vulnerability(2). To compete in their individual markets, many businesses continue to change their goods, services, and marketing tactics. In the area of telecommunications services, the business must continue to offer the finest service in order to preserve the company's stability as well as maximize profits. In the future, computers will control human labor and overcome human computing skills such as remote use of electronic equipment, usage of Internet media, and Internet of Things (IoT) (Internet of Things)(3–5).

This enables users to manage and optimize Internet-connected electrical devices. This implies that computers and electrical devices will be able to communicate information via these channels in the near future, eliminating the need for direct human contact. With different Internet facilities and services, this will also boost the number of Internet users. The primary issue in the Internet of Things is to bridge the gap between the physical and digital worlds, such as how to handle

data received from electronic equipment through a user-equipment interface(6). The emerging IoT framework has come up against critical requirements for influencing it to be safe. Many security problems have become a difficulty for the IoT industry. Since the IoT idea was originally proposed in the late 1990s, security experts have warned about the potential danger of huge numbers of unprotected devices connected to the Internet(7–10). A code layer, perception layer, network layer, middleware layer, application layer, and business layer are all part of the Six Layer IoT Architecture. All of these layers can be used in a smart home.

The perception layer, network layer, and applications layer are the three layers that make up the architecture of a typical IoT system. On a wireless network, an attacker may gain access to or infiltrate a smart device(11). The security needs for a secure smart home service, such as integrity, availability, and authentication, are discussed in this research. The goal of the Internet of Objects is to enable things to connect with each other at anytime, anywhere, and with anybody via routes, networks, and services. The Internet of Things is a new Internet revolution. Goods will become readily identifiable, and they will gain intelligence by creating or permitting circumstances that are linked to their ability to convey information about themselves. This coincides with the development of a cloud system or cloud computing that handles constrained capacity by transitioning from the Internet to IPv6(12).

Digital devices can efficiently interact with each other using Internet Protocol (IP) addresses, and IoT smart home services are growing day by day. In a smart home setting, all smart home gadgets are linked to the internet. The risks of malicious assaults rise as the number of devices in the smart home environment grows. Malicious assaults are less likely when smart home gadgets are controlled autonomously. Smart home gadgets may now be accessible over the internet from anywhere at any time. As a result, malicious assaults on these devices are more likely. The service platform, smart devices, home gateway, and home network are the four components of a smart home. Many gadgets are linked in the smart home, and information is shared intelligently through a home network. As a result, there is a home gateway that manages the flow of data between smart devices linked to the internet. The service platform makes advantage of a service provider's offerings to provide various services to the home network(13).

1.1 Security Issues in Smart Homes:

The word "security" refers to the state of not being afraid. Security is concerned with secure communication channels that protect the secrecy, authenticity, and integrity of messages. IoT devices gather and analyze a large quantity of very sensitive personal data. Biometric identity recognition systems, such as fingerprint matching, voice identification, and face recognition, are included in the home security system, as are RFIDs and smart cards, which offer access control to guests. Furthermore, this system incorporates alert systems that prompt quick action. In a Smart Home, a CCTV surveillance mechanism is an essential component of the Home Security system for monitoring and detecting an intruder(14). Finally, this system includes health monitoring for handicapped and elderly individuals, as well as children. Confidentiality, Availability, Integrity, Authentication, Authorization, and Non-repudiation are the seven key security goals of the Smart Home Environment. Confidentiality is a network security feature that prevents unauthorized users from accessing data produced in a smart home environment.

A symmetric cryptographic method may be used to do this(15). The availability of network services and resources indicates that they are accessible and secure against malicious assaults.

Because of its Internet connectivity, the Smart Home internal network is particularly susceptible to direct denial of service (DDOS) assaults (16–20). Integrity is a kind of security service that protects data against unauthorized changes. It ensures that data hasn't been tampered with, deleted, or lost. Integrity, in other terms, guarantees that data is consistent and accurate. Malicious attackers who eavesdrop on communications to or from a Smart Home's internal network may undermine its integrity. Authentication is a security service that confirms an individual's actual identity using a password or secret key given by the communicating parties. Authentication is the process of one entity confirming the identity of another. The process of authorizing someone to do something is known as authorization. It defines the user's network and device access privileges and what they are permitted to perform in the Smart Home environment.

Non-repudiation is a security feature that protects against denial of association in a transaction. Non-repudiation prevents both the sender and the recipient from rejecting a message or access that has been sent. Digital signatures based on public keys may provide non-repudiation.

1.2 Privacy in Smart Homes:

Privacy is a broad word whose meaning varies according to culture, period, and age. Privacy, according to Brandeis, is the right to be left alone. Privacy may also be described as a condition of not being watched or bothered by others. In a nutshell, privacy focuses on safeguarding a user's personal information, which may include a person's identity, location, movements, or any other information about a person (that the individual does not wish to share with others). Sensitive data, such as personal photographs, movies, and digital information, is stored in a smart home. Images and videos may be accessed from anywhere using smart devices that run remotely active IP cameras.

Additionally, feature microphones may be used to listen in on private talks. New gadgets, such as Amazon Alexa and Google Home, are designed to respond to voice instructions. As a result, stringent security measures are required to safeguard private information. There are two major kinds of threats: data privacy and context aware privacy. When it comes to sharing vital information about anything, data privacy is a major issue. Because everything will be linked and accessible through the internet, hackers will have an easy time breaking into the network. The hacker learns everything about a person simply by accessing a portion of the network. Context aware or situational privacy is the second option. Context awareness entails identifying, detecting, and finding users' movements, activities, and behaviors, and then utilizing that knowledge to offer services that the user may find useful. Context Awareness is the capacity to detect and react when the context of a Thing changes, such as when it is relocated to a new place or when the surrounding environment changes. Context aware technology is a valuable tool in the corporate sector, particularly in mobile business, since it offers substantial understanding of the situation or data, but it also raises security risks owing to possible abuse of identity, location, mobility, and behavior. As a result, both security and trust must be thoughtfully handled.

1.3 Existing studies of smart home security:

In today's world of technology, the internet of things is a relatively new concept. The Internet of Things, on the other hand, is expected to be a huge trend in the future. The past efforts relating to security and privacy in the smart home are examined in this part. Applications for security and privacy. Other works are divided into separate groups depending on the security activities and efficiency in IoT-based smart home systems. These projects are focused on IoT-based security

systems and applications for smart homes. Security improvement in smart home systems and apps, and network system security and privacy control for home intelligence and IoT devices are all examples of secure data management in different devices. Other papers discuss secure healthcare architecture and node communication in a Constrained Application Protocol (CoAP; an application layer protocol prepared for use in Internet devices in IoT smart homes, such as wireless sensor network nodes) network, as well as security challenges between heterogeneous devices and different smart home applications. Password security and applications for IoT smart home systems are the subject of several research. Secure software updates in smart home devices, and security system equipment (such as surveillance cameras) and their usage in smart houses Threats to home automation and security are also defined.

In smart energy management systems, a novel approach is proposed to address risk reduction in instances of privacy breaches. Proposed that radio frequency identification (RFID) tags be used to effectively identify different products within a smart refrigerator. This method may be used to enhance house security, but it necessitates the use of RFID tags on most objects within the home, including the residents, which is unpleasant and difficult to execute given human nature's proclivity for forgetfulness. Proposes a privacy-enhanced security architecture, which is implemented in a smart home context. Personal information hijacking and burst assaults between an attacker and gadgets in a smart home setting are protected by architecture. Encryption, access control, digital signature, authentication, and logging are all included in the study's suggested security architecture for a smart home setting. The suggested framework is built on the open source framework 'AllJoyn.' Device, AllJoyn Core, permission module, ACLs, and policy certificate trust anchor are all part of it. Critical data is transferred between devices following authentication in the framework. The end-user security manager is in charge of device security provisioning and maintenance(21–23).

For data transfer, a session is created between the apps of devices. A group key and a certificate are used to authenticate the user. Authenticated devices send communications that are encrypted according to a policy. encrypts a message using smart device authentication and a lightweight lattice-based homomorphic cryptosystem. It is split into two phases: setup and reading aggregation. The control center may decode an encrypted message to enhance device secrecy and privacy since the method allows for monitoring authentication between smart devices, control centers, smart meters, and communication between APs. utilizes an encryption technique and a hash function to securely authenticate cellphones and transmit communications in a smart home setting. AES256, ephemeral Diffie-Hellman key exchange, and an RC4-based hash function are used in the method. All messages to transmit are monitored via the usage of a central hub, and messages transmitted by smartphones travel through the central hub for transmission.

A hash value is produced when a message is encrypted using three methods. In 2014, the concept of the Internet of Things evolved in tandem with technological advancements and the incorporation of several technologies, ranging from wireless communication to the Internet, embedded systems to microelectromechanical systems (MEMS), implying that all fields around the world will contribute to the development of the Internet of Things. Although IoT-based smart homes have many advantages, they are vulnerable to a variety of threats. An interconnection device (e.g., gateway) or field device may be directly attacked via its network or local communication interface (i.e., assaulting the device), and a device can be impersonated using its defective certificate. The home gateway can link household appliances to a wired or wireless

network. Because it is the place where an outside connection may be established, an assault on the home gateway can quickly lead to an attack on the whole household network.

2. DISCUSSION

In the Smart Home setting, the security system is a system that may assist security personnel and inhabitants in monitoring the surrounding environment. This aims to reduce the risk of criminal intervention from both outside and inside the environment. The smart home is a branch of ubiquitous and pervasive computing in and of itself. Smart Home introduces automation of home equipment and household helpers, resulting in a more practical quality of life. Automation is based on a context-aware model derived from the outcomes of home environment monitoring. Users may manage their home appliances remotely, such as turning on the air conditioner to chill the room, controlling the water heater for bathing, and so on, while still on their way home. One of the security issues with IoT devices is that the default password cannot be changed simply by the user. In a DDoS attack, this enables a hacker to take control of the device. Mirai is a bundle of malware that was used to control the device. The software's source code was released to the public earlier this month, but the culprits remain unknown. The Mirai virus was originally posted on a hacking forum by a hacker called Anna-senpai. Mirai is said to have infected millions of IoT devices across the globe since then. One worry was that the Mirai botnet will launch another DDoS assault, crippling the internet. Furthermore, since Mirai is difficult to trace, hackers will feel comfortable utilizing it. Girai is a botnet that is especially intended to target Internet-connected IoT devices such as routers, CCTV cameras, and printers. The Mirai botnet can automatically scan a variety of IoT devices. The objective is an IoT device with a shoddy security mechanism, particularly those with usernames and passwords that haven't been updated in a long time.

Even if they are linked to the Internet network, devices infected by Mirai will continue to search for IP addresses from other IoT devices. The private network and IP addresses of various departments in America, as well as some businesses, are among the IP addresses that will not be affected by Mirai. Mirai waited for a command from the hacker to activate the IoT device after successfully locating the target. Mirai will transmit an anonymous data packet to the server that is the target of the assault after it has been started. Although the data packet is tiny, if it is transmitted by hundreds of millions of IoT devices at the same time, it will result in a DDoS assault that will not be stopped. Hundreds of thousands of IoT devices are susceptible to malware since they utilize default settings. The device will connect to the command and control server after being infected, which will display the attack's target. By restarting the machine, the Mirai attack may be avoided. Experts, on the other hand, claim that restarting Mirai did not eliminate it, but simply halted assaults for a short time. Because Mirai can re-deploy his soldiers in a matter of minutes. Changing the default password on IoT devices is another way to prevent Mirai attacks. Mirai's creator claimed that the botnet was created in anticipation of different institutions' increased security awareness. It was blamed on the rising degree of security awareness. A Bricker Bot attack is also included, in addition to Mirai and key installation (KRACKs).

Bricker Bot made headlines a few weeks ago when it was found to be responsible for taking an unprotected IoT device down rather than hijacking it and utilizing it for DDoS assaults, as was the case with DYN last year. This is the third botnet to target untrustworthy IoT devices, but it is the only one that is malicious. The second, called Hajime, damages IoT devices, but instead of

bricking them, it disables internet remote access to them. Mirai is the first, but it has the same aim as previous botnets: to enslave IoT devices and utilize the computing power of the botnet's collection for whatever the threat actors behind it want. While a Bricker bot may not be a mass-adoption worm, it may be a sign of things to come. Because it has greater appeal, it has all the early signs of becoming very hazardous (much more so than today). There are millions of unprotected devices ready to be hacked, and hundreds of thousands being added to the network every day. Because so many of these gadgets are insecure, they represent a significant threat to the digital economy. Because of their broad deployment, deploying them to participate in assaults like a major DDoS attack last autumn would almost likely put a significant section of the Internet to a halt, disrupting commerce, impairing services, and possibly damaging vital infrastructure.

3. CONCLUSION

Internet of Things (IoT) applications will have a significant impact on human existence. With accelerating innovation, IoT applications will move from a spectacular house to sharp human services. IoT applications are crucial to consider. The general public need innovative, adaptive, flawless, and secure solutions for both the administration of the constantly expanding, unpredictable Internet of Things and the support of various plans of action. Many IoT devices become soft targets due to a lack of security mechanisms, and the victims are unaware that they have been infected. Confidentiality, integrity, and authentication are the security criteria. According to the data survey, there are four kinds of assaults: low-level attacks, medium-level attacks, high-level attacks, and very high-level attacks, as well as their nature/behavior and recommended methods for dealing with these attacks. Given the significance of security in IoT applications, installing security mechanisms in IoT devices and communication networks is critical.

Furthermore, it is advised not to use default passwords for devices and to understand the security requirements for devices before using them for the first time to safeguard against intruders or security threats. Disabling features that aren't in use may help to reduce the risk of security breaches. Furthermore, various security protocols utilized in IoT devices and networks should be studied. IoT devices, particularly smart home and healthcare devices, have gathered, transmitted, and utilized more sensitive data, resulting in increased privacy concerns. New IoT devices and protocols are more likely to include security flaws, necessitating more efforts to address these issues. As previously stated, the main reason of inadequate security configurations and insecure cloud and online services is a lack of security awareness. Furthermore, despite the fact that security research on IoT operating systems and mobile applications has decreased in recent years, owing to the "constrained" and "interdependence" IoT characteristics, more attackers will discover and exploit possible system and application vulnerabilities in the future. These results inspire a number of suggestions for device manufacturers, academics, and industry standards to better match device privacy features to smart homeowner expectations and preferences.

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WORLDWIDE OF COLORECTAL CANCER: A REVIEW

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ABSTRACT

Colorectal cancer is the third most frequently diagnosed cancer and the fourth leading cause of cancer mortality globally, making it a significant public health issue. Due to varying exposure to risk factors, screening introduction and uptake, and availability to appropriate treatment options, there is significant variance over time across various geographic regions. Indeed, socioeconomic position accounts for a significant part of the differences. Although colorectal cancer is still mostly a disease of the developed world, it is becoming more common in emerging nations. Furthermore, the worldwide burden is projected to rise owing to population expansion and aging, as well as the adoption of westernized habits and lifestyles. Colorectal cancer screening has been shown to significantly lower death rates, which have decreased in many industrialized and developing nations. Statistics on colorectal cancer incidence are necessary for developing focused measures to reduce the disease's impact. The purpose of this article is to give an overview of colorectal cancer incidence, mortality, and survival rates, as well as regional differences and historical trends.

KEYWORDS: *Colorectal Cancer, Diagnosed Cancer, Epidemiology, Health Issue, Incidence Mortality.*

1. INTRODUCTION

Colorectal cancer is one of the main causes of death and morbidity all over the globe, making it a significant public health issue. It is the third most prevalent cancer in the world (after lung and breast cancers) and the fourth leading cause of oncological mortality. Due to varying exposure to risk factors, the introduction of preventative measures, and the development of therapies, epidemiological data varies throughout time across various geographic regions. Accurate data on cancer incidence and outcome are critical for research as well as the design and assessment of cancer control initiatives. The purpose of this article is to provide a thorough review of CRC incidence, mortality, and survival rates, as well as regional variations and temporal trends.

Incidence CRC is the third most prevalent cancer in men and the second most common cancer in women globally. It is responsible for more than 9% of all cancer cases, with an estimated 1.4 million cases in 2012. The frequency of the disease varies greatly throughout the globe, with almost 55 percent of cases happening in more developed nations. Different food and environmental exposures may be placed on a backdrop of genetically determined sensitivity, resulting in regional variations. Australia, New Zealand, Europe, and Northern America have the greatest rates of infection(1–4).

In Africa, South-Central Asia, and Central America, on the other hand, incidence rates are low. CRC was the second most prevalent cancer after breast cancer, according to statistics from the Italian Association of Cancer Registries from 2007 to 2011. CRC is now the most common cancer in the Italian population, with almost 52,000 new cases predicted in 2015. It is the third most prevalent cancer in males, behind prostate and lung cancers, accounting for 14% of all cancer cases. CRCs account for 13% of all new malignancies in women, and they are the second most common malignancy after breast cancer(5). Incidence rates vary tenfold across the world, with the greatest rates estimated in Australia/New Zealand and the lowest in Western Africa. Both sexes have comparable geographic trends.

CRC rates, on the other hand, have been increasing in emerging nations. Western Asia (Kuwait and Israel) and Eastern Europe have seen the most significant rises (Czech Republic, Slovakia and Slovenia). This rise may be due to an increase in the prevalence of CRC risk factors linked to westernization, such as poor nutrition, obesity, and smoking(6–10). Furthermore, owing to population expansion and aging, the worldwide burden of CRC is projected to rise much more. Low socioeconomic status has been linked to a higher risk of CRC. Even after controlling for other risk factors, a study of 7676 patients diagnosed with primary CRC among 506,488 participants found that people with low educational levels or who lived in low-socioeconomic status neighborhoods had a significantly higher incidence rate than those with higher educational levels or who lived in high-socioeconomic status neighborhoods. This disparity may be explained by a greater prevalence of theoretically modifiable risk factors (physical inactivity, poor diet, smoking, obesity) as well as lower rates of smoking(11–14).

In most areas of the globe, males have much greater incidence of cancer than women. The causes for this variation are unknown, although they are likely to represent complicated interactions between sex-specific risk factor exposure and protective effects of both endogenous and exogenous hormones, as well as gender-specific screening methods. The age gap between men and women varies. For example, the male-to-female incidence ratio in the United States was found to be 1.1 from birth to 49 years, 1.4 from 50 to 79 years, and 1.2 from 80 years and older. The risk of CRC increases as one gets older. CRC is rare in individuals under the age of 40; however, between the ages of 40 and 50, the incidence of CRC starts to rise substantially, and age-specific incidence rates continue to rise in each subsequent decade. However, several cancer registries showed an increase in the incidence of large bowel cancer, especially rectal cancer, among young people under the age of 40(15). A change in the colonic site localization of CRC has been observed in many investigations, with a greater percentage of tumors developing in the right colon. Females have a higher percentage of proximal tumors than males, and older individuals have a higher proportion of proximal tumors than younger ones. Although biologic changes may have happened, enhanced screening, which is more successful in identifying and preventing left-sided CRCs than right-sided CRCs, may have contributed to this shift in the anatomic location of CRC.

1.1 Mortality CRC:

Mortality CRC is the fourth most common cause of cancer death in men and the third in woman worldwide. Almost 693,900 deaths from CRC are estimated to have occurred in 2012, accounting for approximately 8 % of all cancer deaths. There is less variability in mortality rates worldwide (sixfold in men, fivefold in women), with the highest mortality rates in both sexes estimated in Central and Eastern Europe (20.3 per 100,000 for males, 12.1 per 100,000 for

females), and the lowest in Middle Africa. Conducted a study about mortality trends for 29 selected countries. The authors found that CRC mortality rates have declined in many longstanding as well as newly economically developed countries such as the United States, Australia, New Zealand, the majority of Western Europe (Austria, France, Germany, Spain, Ireland, and the United Kingdom), some Asian (Japan) and Eastern European countries (Czech Republic, Latvia, Slovakia), and South Africa. These improvements in mortality rates are thought to be a result of CRC prevention and earlier diagnosis through screening as well as reduced prevalence of risk factors, and/or availability of improved treatment regimens. In Italy, CRC was the second most common cause of cancer death (preceded by lung cancer in men and breast cancer in woman), with 19,202 cases occurred in 2012. CRC mortality rates have been decreasing since 1999 of 0.6 % per year in men and 1.2 % per year in women. However, increases in mortality rates are still occurring among both males and females in some low-resource countries, including Mexico, Brazil, Chile and Ecuador in Southcentral America and Romania and Russia in Eastern Europe. Increasing mortality rates may reflect increasing CRC incidence trends as well as a lack of prevention measures(16–19).

1.2 Natural history of colorectal cancer:

i. Key stages and features:

The natural history of CRC can be divided into four major stages: initiation, promotion, progression and metastasis. Initiation involves irreversible genetic damage that predisposes the affected cells to subsequent neoplastic transformation. In the promotion stage, the initiated cells proliferate, inducing abnormal growth. In the subsequent progression phase, by undergoing further genetic and epigenetic alterations that could confer a selective growth advantage to cells, benign tumor cells transform into malignant cancer cells and acquire aggressive characteristics and metastatic potential(20). Metastasis is marked by the spread of cancer cells from the primary organ to other organs or tissues through the bloodstream or the lymphatic system. The duration of each phase is difficult to accurately estimate and has wide ranges; these processes generally take a long time and decades are required for all stages to be completed in CRC30. For hereditary CRCs, progression through some of the stages can be more rapid. Notably, there has been an increasing consideration of the presence of cancer stem cells, which could have a role in colorectal carcinogenesis by dividing rapidly and continuously into cancer cells or identical daughter cells and thus forming a proliferative cancer cell population.

ii. Carcinogenic pathways:

CRCs arise through distinct carcinogenic pathways: adenoma–carcinoma sequence, serrated pathway and inflammatory pathway. The adenoma–carcinoma sequence, wherein adenoma serves as the precursor to CRC, is the classic pathway that explains the majority of CRCs. In this model, gradual stepwise accumulation of genetic and epigenetic alterations drives the transformation of normal cells to small adenoma, to large adenoma and, finally, to cancer. Inactivating mutations in APC, a tumor suppressor gene regarded as the gatekeeper against colorectal neoplasms, result in over activation of the Wnt/ β -catenin signaling pathway, triggering dysregulated cell proliferation and adenoma development. Subsequent mutations of the oncogene KRAS promote adenoma growth and ensuing inactivation of TP53 tumor suppressor gene contributes to the progression to CRC47. The adenoma– carcinoma pathway is predominantly associated with the development of the CIN-positive CRC subtype, although it remains unclear

whether CIN underlies the accumulation of mutations in the critical tumors suppressor genes and oncogenes, or vice versa⁴⁸. Nevertheless, in a mouse model with established colorectal tumors induced by Apc knockout, restoration of APC function led to tumor cell differentiation and sustained regression regardless of Kras and Tp53 mutation status in lesion.

iii. Subtypes of colorectal cancer:

Although CRC develops in a single organ, namely the large intestine, it is a highly heterogeneous disease consisting of subtypes with variant etiology and clinical outcomes. Traditionally, subtypes of CRC have been defined by tumor anatomical site in three segments of the colorectal: proximal colon (caecum, ascending colon, hepatic flexure and transverse colon), distal colon (splenic flexure, descending colon and sigmoid colon) and rectum. Studies have shown that CRCs at different anatomical subsides have distinct risk factors (for example, smoking was associated with increased risk of proximal colon cancer and rectal cancer but not with distal colon cancer). Etiological heterogeneity of CRC across the tumor locations might, in part, relate to variations in microbial and host characteristics of the large intestine⁽²¹⁾. Along the colorectal axis from proximal colon to rectum, there is a progressive increase in pH, microbial loads and short-chain fatty acid abundance, which could have divergent implications for colorectal carcinogenesis.

iv. Genetic risk factors:

The cumulative risk of developing CRC before age 75 years is estimated to be 5% in the general population from a high-incidence country. The lifetime risk of CRC is considerably increased when individuals have a family history of CRC or hereditary cancer syndromes. For individuals with a family history of CRC, a meta- analysis of observational studies found the risk of CRC increased by fold for those with at least one affected first-degree relative for those with at least two affected first-degree relatives⁽²²⁾. The associations became stronger when the relatives were diagnosed with CRC before age 50 years. Except for rare hereditary cancer syndromes, most of the known inherited mutations, albeit genetically predisposing to CRC, are of low penetrance. Thus, a substantial proportion of CRCs clustered in families are not inherited, but occur through acquired genomic aberrations, which points to the importance of environmental risk factors in modulating CRC risk.

v. Lifestyle and nutritional factors:

Genetics contribute to individual risk², but CRC incidence in a population are largely affected by modifiable diet and lifestyle factors because rates can change dramatically over short courses of time and migrants from countries with low CRC rates rapidly take on the high rates of their adoptive country^{15,99}. The 2017 extensive summary report by the World Cancer Research Fund and American Institute of Cancer Research, based on a systematic review of studies available globally, concluded that obesity, low physical activity, poor diets and alcohol increase CRC risk. By population-attributable fraction, a measure of public health impact of exposure to a risk factor on a disease outcome in a population¹⁰⁰, 47% of CRC cases in the USA and 45% in the UK were estimated to be attributable to the aforementioned modifiable risk factors. In addition, smoking increases CRC risk¹⁰¹. This constellation of factors is probably the driver of increasing CRC incidence in populations undergoing economic transition.

vi. Obesity:

Excess adiposity is an established risk factor for CRC, which is consistently supported by epidemiological studies using diverse anthropometric measures^{97,98}. The two most commonly used measures are BMI, which represents overall body fatness, and waist circumference, which largely reflects abdominal fatness. Some evidence suggests that WC is a stronger risk factor for CRC than BMI^{102,103}. For instance, when BMI and WC were simultaneously included in the statistical model for colon cancer risk, the relative risk for BMI diminished but not the relative risk for WC.

Abdominal fat is further categorized into two distinct compartments: visceral adipose tissue and subcutaneous adipose tissue. Compared with SAT, VAT secretes more pro-inflammatory adipocytes and less adiponectin, and is more heavily infiltrated with immune cells. All of these traits contribute to the development of chronic low-grade systemic inflammation and insulin resistance¹⁰⁶. As exemplified by colitis-induced CRC, inflammatory conditions in the tumor microenvironment promote tumor growth and progression⁽²³⁾.

2. DISCUSSION

The optimal reduction of CRC incidence and mortality will require concerted efforts to reduce modifiable risk factors, to leverage chemoprevention research and to promote population-wide and targeted screening. The effort devoted to each approach needs to be balanced with the overall health priorities of the specific population, taking economic resources and health-care infrastructure into account. The current study was limited by data availability, because incidence data are not available for all countries and in most instances are only region-specific. Although mortality data are more complete, it is possible that the increasing mortality trends noted in some countries could be the result of improvements in death certification systems or data abstraction. screening and/or improved treatment, have been observed in a large number of countries examined; however, decreasing colorectal cancer mortality rates, most likely due to colorectal cancer increases in mortality rates are still occurring in countries that may have more limited resources, including Mexico and Brazil in South America and Romania and Russia in Eastern Europe, compared with longstanding, economically developed countries

3. CONCLUSION

Worldwide, colorectal cancer incidence rates are highest in the registries of newly economically developed countries such as the Czech Republic and Slovakia in Eastern Europe, and also remain high in longstanding, economically developed countries such as Japan and Australia as well as the majority of registries in Western Europe and North America. CRC constitutes an enormous burden worldwide that is expected to increase due to the growth and aging of the population, and because of the adoption of at-risk behaviors and lifestyle, especially in economically less developed countries. Low socioeconomic status may be an important underlying factor accounting for disparities in incidence, mortality and survival rates for CRC. Screening has been proven to greatly reduce mortality and may prevent the onset of the disease. Greater international efforts are needed to put into practice targeted prevention strategies that could alleviate the burden of CRC worldwide. In addition, as people continue to live longer, colorectal cancer will become an even greater public health problem worldwide. Colorectal cancer screening has been proven to greatly reduce mortality and in some instances may prevent the onset of disease through the removal of precancerous polyps. The variety of existing screening tests makes

colorectal cancer screening accessible for most countries, and therefore, greater international consideration of targeted screening programs and/or screening recommendations could help to alleviate the burden of colorectal cancer worldwide.

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AN OVERVIEW ON GREENHOUSE EFFECT

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ABSTRACT

The Greenhouse effect is one of the most important factors in keeping the Earth warm because it prevents part of the planet's heat from escaping into space. Greenhouse gases and their effect on global warming is the subject of a research report. The Earth's average global temperature would be considerably cooler without the greenhouse effect and life on Earth as we know it would be impossible. Water vapor, CO₂, methane, nitrous oxide (N₂O), and other gases are examples of greenhouse gases. CO₂ and other greenhouse gases wrap around Infrared radiation like a blanket, preventing it from escaping into space. The obvious consequence of greenhouse gases is a steady heating of the Earth's atmosphere and surface, resulting in global warming. One of the most amazing still occurrences in atmospheric science is the capacity of some gases, such as greenhouse gases, to be transparent to incoming visible light from the sun yet opaque to energy radiated from the earth. The presence of the greenhouse effect is responsible for making the planet a pleasant place to live. The research also demonstrates the significance of greenhouse gases in global warming.

KEYWORDS: Atmosphere, Greenhouse Gases, Global Warming, Greenhouse Effect, Global Temperature.

1. INTRODUCTION

The fact that Earth's average surface temperature is pleasant between the boiling and freezing points of water, making it suitable for our kind of life, cannot be explained simply by claiming that the planet Earth orbits the sun at just the right distance from it to absorb just the right amount of solar radiation. The mild temperatures are also the result of having the right type of environment. The atmosphere of Venus would create hellish, Venus-like conditions on Earth, while the troposphere of Mars would leave Earth shivering in a Martian-like cold frost(1–4). The greenhouse effect is shown in Figure 1.

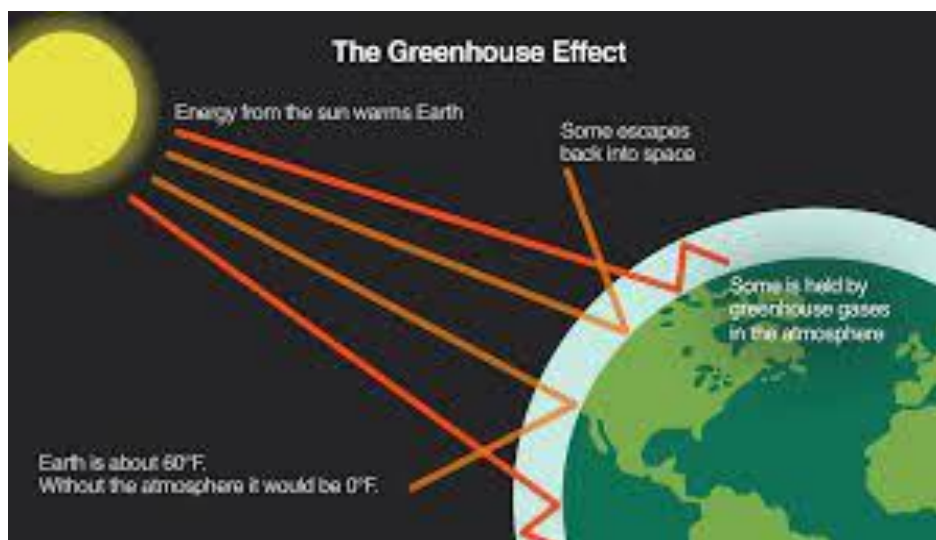


Figure 1: Illustrates the greenhouse effect(5)

Furthermore, portions of the earth's atmosphere serve as a thin shielding blanket, receiving just enough solar radiation to maintain the world average temperature in a pleasant range. The blanket on Mars is too thin, while the blanket on Venus is much too thick. The 'blanket,' as defined above, is a collection of atmospheric gases known as greenhouse gases, which absorb heat in the same way as the glass walls of a greenhouse do(6–9).

Inbound UV light readily penetrates through the greenhouse's glass walls and is absorbed by the plants and hard surfaces within. Weaker infrared (IR) radiation, on the other hand, has a hard time passing through the glass walls and becomes trapped within, warming the greenhouse. This result allows tropical plants to thrive in a greenhouse, even in the dead of winter.

By trapping heat in our atmosphere, the greenhouse effect raises Earth's temperature. This keeps the Earth's temperature higher than it would be if the Sun's direct heating was the sole source of warmth. The greenhouse effect is one of the most important factors in keeping the Earth warm because it prevents part of the planet's heat from escaping into space. The Earth's average global temperature would be considerably cooler without the greenhouse effect and life on Earth as we know it would be impossible. The difference between the Earth's actual average temperature of 14°C (57.2°F) and the anticipated effective temperature of -19°C (-2.2°F) with only the Sun's radiation gives us the greenhouse effect intensity, which is 33°C.

1.1 Foundations of Greenhouse Effect:

The combination of the sun's radiation with greenhouse gases such as carbon dioxide, methane, nitrous oxide, and fluorinated gases in the Earth's atmosphere causes the greenhouse effect. The greenhouse effect is caused by these gases' capacity to absorb heat.

Three or more atoms make up greenhouse gases. Because of their molecular structure, these gases may retain heat in the atmosphere and then transmit it to the surface, further warming the Earth. This continuous cycle of heat trapping points to an overall rise in world temperatures. The process, which is remarkably similar to how a greenhouse works, is the primary reason why the gases that may cause this result are referred to as greenhouse gases together(10–14).

1.2 Reaction Gas (Water vapor) of the Greenhouse Effect:

Carbon dioxide is one of the greenhouse gases to some degree. It consists of one carbon atom linked to two oxygen atoms on either side. The carbon dioxide molecule may absorb infrared light as soon as its atoms are firmly bound together, and the molecule begins to vibrate. The radiation will eventually be emitted by the vibrating molecule again, and it will most likely be absorbed by yet another greenhouse gas molecule. This absorption-emission-absorption cycle keeps the heat close to the surface, effectively shielding it from space cold.

Greenhouse gases include carbon dioxide, water vapor (H₂O), methane (CH₄), nitrous oxide (N₂O), and a few additional gases. They're all molecules made up of more than two component atoms that are loosely linked together enough to vibrate in response to heat absorption. The most important processes in the atmosphere (N₂ and O₂) are two-atom molecules that are too tightly bonded together to vibrate, and therefore do not absorb heat and contribute to the greenhouse effect.

1.3 Reduction of Greenhouse Gases:

The main goal of WWTPs is to comply with effluent regulations. To ensure the safety of the receiving water body. However, reducing GHG emissions from WWTPs requires a broader approach. The US Environmental Protection Agency estimates the amount of N₂O released by WWTPs. It accounts for around 3% of N₂O emissions from all national sources, making it the sixth biggest contributor to GHG emissions. To better understand how to successfully decrease GHG emissions from WWTPs and enhance the accuracy of GHG emission reporting procedures, proper GHG measurement is required.

Because of the rapidly rising pace of GHG emissions, climate change concerns have piqued people's attention. This has highlighted the need for new ideas and methods to better design, manage, and optimize WWTPs at the plant level.

1.4 Some Current Existing Challenges to Reducing Greenhouse Gases (GHG):

Controlling GHG emissions for various WWTPs is proving challenging at the moment. Uncertainty in measurement and a lack of transposable data continue to obstruct a proper and necessary GHG emission quantification procedure(15–18).

One suggestion for closing this gap is to utilize mathematical models, which provide helpful tools for measuring GHG emissions and evaluating various mitigation options before putting them into effect. GHG modeling may help with accurate measurement of GHG emissions and evaluating the impacts of various operating conditions for various WWTP designs. During the design, operation, and optimization of WWTPs, a wide portfolio of mathematical modeling studies has been created in recent years to incorporate GHG emissions.

1.5 The Solar Radiation:

The sun emits enormous amounts of energy into space over a broad range of wavelengths.

The visible and near-visible regions of the spectrum contain the majority of the sun's radiating energy. The visible light spectrum, which spans 400 to 700 nm, accounts for 43% of the total radiant energy released. Wavelengths shorter than visible account for just 7 to 8% of total energy, yet they are very significant due to their high energy per photon. The more energy is contained in a shorter wavelength of light. As a result, ultraviolet light is very energetic

(accomplished by breaking apart stable biological molecules and instigating sunburn and skin cancers). The remaining 49 to 50 percent of radiant energy is distributed across wavelengths longer than visible light wavelengths. These span from 700 to 1000 nm in the near infrared, 5 to 20 microns in the thermal infrared, and 20 microns in the far infrared. The atmosphere absorbs ultraviolet and infrared solar energy before it reaches the surface, yet it is transparent to visible light.

1.6 Greenhouse Effect:

In the late 1800s, atmospheric scientists coined the term "greenhouse effect." It was used at the time to describe the naturally occurring functions of trace gases in the environment and had no harmful consequences. The phrase "greenhouse effect" was not associated with concerns about climate change until the mid-1950s. In recent decades, we've heard a lot about the greenhouse effect in a bad light. The negative worries revolve on the potential consequences of a stronger greenhouse effect. It's essential to remember that life on Earth as we know it would be impossible without the greenhouse effect(19–22).

While the earth's temperature is affected by the greenhouse effect of the atmosphere, the amount of heating and cooling is influenced by a variety of variables, just as greenhouses are impacted by a variety of factors.

1.7 Greenhouse Gases and Global Warming:

Human activities generate greenhouse gas (GHG) emissions such as carbon dioxide, methane, nitrous oxide, and halogenated chemicals, and some do occur naturally. GHGs absorb infrared radiation and trap heat in the atmosphere, increasing the natural greenhouse effect, which is what causes global warming. This natural phenomenon warms the atmosphere and allows life on Earth to exist; otherwise, the low temperature would make life on Earth impossible.

"The climate system may be influenced by gas molecules that capture thermal infrared light in large quantities. Greenhouse gases are the name given to these types of gas molecules "Live Science spoke with Michael Daley, an assistant professor of Environmental Science at Lasell College. CO₂ and other greenhouse gases act like a blanket, capturing Infrared (IR) radiation and preventing it from escaping into space. The net result is a gradual warming of the Earth's atmosphere and surface, which is referred to as global warming.

Water vapor, CO₂, methane, nitrous oxide (N₂O), and other gases are examples of greenhouse gases. The burning of fossil fuels like coal, oil, and gasoline has significantly boosted the quantity of greenhouse gases in the atmosphere, particularly CO₂, since the beginning of the Industrial Revolution in the early 1800s, according to the National Oceanic and Atmospheric Administration (NOAA). "Deforestation is the second biggest human source of carbon dioxide in the atmosphere, ranging from 6% to 17%," Daley added.

1.8 The Greenhouse Effect be overturned:

Several experts agree that the devastation of the Earth's atmosphere and climate has long since passed the point of no return or is approaching the point of no return. "I agree that we have past the threshold where we can prevent climate change," says Josef Werne, an associate professor at the University of Pittsburgh's department of geology and planetary science. From this point onward, Werne believes there are three options:

- Do nothing and enjoy the present moment.
- Become used to the shifting climate (which includes things like rising sea level and related flooding).
- Mitigate the effects of climate change by adopting aggressive measures that actually lower CO₂ levels in the atmosphere.

Keith Peterman, a chemistry professor at York College of Pennsylvania, and Gregory Foy, an assistant professor of chemistry at York College of Pennsylvania, think that the damage has not yet reached that stage and that international agreements and action may preserve the planet's atmosphere.

2. DISCUSSION

Greenhouse gas emissions have a wide range of environmental and health consequences. They contribute to respiratory illness caused by smog and air pollution, as well as contributing to climate change by trapping heat. Other consequences of climate change induced by greenhouse gases include extreme weather, food supply problems, and increasing wildfires. The 'greenhouse effect,' or global warming, occurs when the atmosphere traps heat emanating from the Earth toward space. Certain gases in the atmosphere act like greenhouse glass, allowing sunlight to flow through while preventing Earth's heat from escaping into space. Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and the so-called F-gases (hydrofluorocarbons and perfluorocarbons) as well as sulphur hexafluoride are included in the Kyoto basket (SF₆).

3. CONCLUSION

Water vapour, carbon dioxide, methane, nitrous oxide, ozone, and certain man-made compounds like chlorofluorocarbons are examples of greenhouse gases (CFCs). The absorbed energy heats the Earth's atmosphere and surface. Greenhouse gas emissions may be minimized by generating electricity on-site using renewable and other environmentally friendly energy sources. Rooftop solar panels, solar water heating, small-scale wind production, natural gas or renewable hydrogen fuel cells, and geothermal energy are all examples. One of the finest quiet processes in the atmospheric sciences is the ability of some suggested gases to be reasonably transparent to incoming visible light from the sun but opaque to energy radiated from the earth. This phenomenon, known as the greenhouse effect, is what makes the planet a pleasant place to live. Future greenhouse gas research should be prioritized, in my opinion.

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A LOOK AT THE SAFETY AND EFFICACY OF SUNSCREENS

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ABSTRACT

Many health care professionals advise the use of sunscreen products to prevent skin damage caused by ultraviolet radiation (UVR) from sunshine. Given the continuing effort to promote sunscreen usage, there is a need to learn more about the effectiveness and safety of these products. The sun protection factor (SPF), which is used to determine sunscreen effectiveness, is a good way to evaluate UVB (290-320 nm) filters. The SPF test, on the other hand, does not properly evaluate sunscreens' entire photoprotective profile, particularly against long wavelength UVAI (340-400 nm). Furthermore, despite the immediate and apparent consumer demand for sunscreen products that offer broad-spectrum UVB and UVA photoprotection, there is no one, agreed-upon technique for assessing UVA effectiveness. The following list of widely used organic and inorganic sunscreens has good toxicological profiles based on acute, sub chronic, and chronic animal or human research. Furthermore, sunscreens have been proven to protect against the harmful effects of UVR exposure in the majority of investigations. As a result of this analysis of presently available evidence, it has been determined that sunscreen components or products do not pose a risk to human health. Furthermore, as part of a larger plan to decrease UVR exposure, frequent use of suitable broad-spectrum sunscreen products may have a substantial and positive effect on public health.

KEYWORDS: *Efficacy, Safety, Sunscreens, Sun Protection, Short Wavelength, UVR.*

1. INTRODUCTION

For decades, the incidence of non-melanoma and melanoma skin cancers has been rising in most areas of the globe. UV radiation (UVR) from the sun is a factor in both acute and chronic skin damage, as well as skin malignancies. As a result, the medical profession and other health care providers have pushed for a photo avoidance approach that includes minimizing sunlight exposure between 1100 and 1500 hours, wearing protective clothes, and using sunscreens. Because sunscreens protect against sunburn and their usage is promoted, it has been proposed that sun exposure may be increased because users think they are protected and therefore spend more time in the sun. This possible outcome raises a number of additional issues(1-4). Because most sunscreens are mainly UVB (290-320 nm) and, in some instances, short wavelength UVAB (320-340 nm) filters, the UVR spectrum to which the skin is exposed alters as a result of their usage. As a consequence, if sunscreen usage alters behavior, resulting in longer durations of sun exposure, the dosage of long-wavelength UVR, 340 nm and higher, will rise(5,6).

Furthermore, although sunscreens protect against sunburn, nothing is known about the threshold or dose-response for UVR-induced effects on other endpoints including immunosuppression or DNA damage. Finally, as sunscreens become more widely used and accessible, concerns about their long-term safety, especially in the presence of UVR, have arisen. The goal of this study is to address these issues with concrete evidence wherever feasible and to explore strategies to enhance sunscreen products(7–9). To that aim, it seems that certain fundamental ideas about the complexity of UVR and its effects on skin are required. Following an examination of the effects of UVR on exposed skin, the implications of incorporating sunscreens into this complex interplay will be examined. UV (100-400 nm), visible (400-780 nm), and infrared (780-5000 nm) are all types of non-ionizing electromagnetic radiation (EMR) emitted by the sun. UVR is the most important and worrying type of EMR in terms of human health (4-6). UVC (100-290 nm), UVB (290-320 nm), and UVA (300-400 nm) are the wavelengths of ultraviolet light, which are further split into UVC (100-290 nm), UVB (290-320 nm), and UVA (300-400 nm) (320-400 nm). UVC from sunlight is of little practical significance since wavelengths below 290 nm are absorbed by atmospheric ozone and do not reach the earth's surface(10).

As previously mentioned, the sun is the main source of UVB and UVA radiation, and exposure to it is generally inevitable. Seasonally, regionally, and diurnally, the quantity of UVR reaching a particular place on Earth fluctuates. UVR intensity, for example, is greatest near the equator and at high altitudes, and diminishes as latitude increases. UVB intensity is greatest during the summer months and between 1100 and 1500 hours on a daily basis(11). UVA intensity, on the other hand, is more constant throughout the day and from season to season than UVB. Cloud cover, pollution, humidity, and temperature, as well as meteorological and atmospheric variables, alter the spectrum and intensity of terrestrial sunlight, especially the UV component(12). The majority of people in industrialized nations are exposed to solar UVR in brief, repeated episodes to the face, neck, and hands as a result of daily living. This unintentional exposure may account for up to 80% of an estimated annual UVR exposure, and it's no coincidence that over 60% of non-melanoma skin cancers (NMSC) develop at these locations. UVR exposure has immediate, long-term, and delayed impacts on the skin. UVR-induced skin impacts include acute reactions such as sunburn, pigmentation, hyperplasia, immunosuppression, and vitamin D production, as well as long-term consequences such as photo carcinogenesis and photo aging(13–15).

The spectrum and cumulative dosage of UVR determine these acute and chronic effects; however, the full action spectrum for the majority of UVR-induced effects in human skin has yet to be identified. Furthermore, and perhaps most significantly, these responses have distinct thresholds, such that preventing UVR-induced alterations for one endpoint does not ensure the same degree of protection for another. Regardless, it's important to remember that UVR exposure causes greater skin damage in unprotected skin than in sunscreen-protected skin since UVR's acute and chronic effects are dosage, duration, and wavelength dependent, and sunscreens, in the most empirical terms, decrease UVR exposure(16). The following research suggests that exposure to UVR from sunshine induces NMSC. In contrast to NMSC, the evidence supporting sunlight exposure as a risk factor for the development of malignant melanoma is more complicated. Nonetheless, epidemiological data supports the significance of UV exposure as a risk factor for melanoma, especially severe sunburn in infancy. Sun sensitivity, which includes pigmentation characteristics like eye, hair, and skin color, as well as skin response to sun exposure, such as failure to tan and intermittent exposure to strong sunlight, are significant predictors of melanoma risk. UVB-mediated mutations are almost absent in melanomas, in

contrast to NMSC, suggesting different processes are responsible for the formation of these skin malignancies(17). Chronic exposure to solar UVR is believed to hasten the aging of human skin, similar to skin cancer. Dryness, roughness, uneven pigmentation such as freckling lent genes, actinic keratosis, wrinkling, elastosis, inelasticity, and sebaceous hyperplasia are all signs of skin photo aging(18).

2. DISCUSSION

According to human and animal research, the incidence and severity of skin photo aging is a function of cumulative UVR exposure. Caucasian women with a history of high UVR exposure, for example, have a greater incidence of photo aging than women with a history of low UVR exposure. Furthermore, indications of photo damage on the face are absent in unexposed skin, such as the inside part of the arm, of the same person. Importantly, photo aging is distinct from chronological or intrinsic skin aging, and it may be delayed or reversed by lowering UVR exposure, as with sunscreens, or by alternative therapies like all-trans-retinoic acid. The decrease of UVR exposure, particularly UVB and UVA, mainly from the sun, is the focus of sunscreen-mediated photo protection. Organic and inorganic sunscreen agents are divided into two groups. Soluble or chemical sunscreens are the names given to organic sunscreens. Physical, mineral, insoluble, natural, and nonchemical are all terms used to describe inorganic sunscreens. Despite the fact that the word "nonchemical" is a clear misnomer, it has acquired some consumer acceptance. Although the difference between these two types of sunscreens is rather arbitrary and dependent on mechanism, we will adopt it for the purposes of this review and examine each individually.

Organic sunscreens have been the standard for decades, and although inorganic sunscreens are becoming more popular, organic sunscreens are still used in larger quantities. Anthranilates, benzophenones, camphor's, cinemetic, dibenzoylmethanes, p-aminobenzoates, and salicylates are all common ingredients in organic sunscreens. These aromatic compounds absorb a particular section of the UVR spectrum, which is then re-emitted at a less energy, longer wavelength, such as heat or light, or utilized in a photochemical process like cis-trans or ketone photochemical isomerization. Five of the nine sunscreens are used worldwide, and five of them account for the bulk of sunscreen products. Because no single organic sunscreen ingredient can offer a high UV protection factor at the levels presently permitted by the US Food and Drug Administration, organic sunscreens are nearly always used in combination (SPF).

Furthermore, individual organic sunscreens have a limited absorption range, which may be widened by combining them. Depending on the intended product use, recreational or everyday photo protection, and desirable characteristics such as waterproof or sweat-proof, certain mixtures of organic sunscreens are commonly employed. In recent years, sunscreen solutions that combine organic and inorganic sunscreens have grown more popular. Inorganic sunscreens have been more popular in beach and everyday UV protection products during the last decade. This is due in part to their safety and efficacy, especially in blocking UVA, as well as concerns about organic sunscreens' possible side effects. Organic sunscreens may be influenced by light energy, while inorganic sunscreens are usually regarded as innocuous pigments that cannot penetrate the skin and are mostly unaffected by it. Titanium dioxide (TiO₂) and zinc oxide are the two most frequently used inorganic sunscreens (ZnO). Although the appearance and attenuation spectra of these two metal oxides are quite different, they have certain common characteristics that are briefly described. Zinc oxide and titanium dioxide are odorless white powders with a

Gaussian or normal particle size distribution. Micro fine powders, which are employed in sunscreens, have an average particle size of 0.20 μm (micron) or less and a narrow, well-controlled distribution. Micro fine powders, in contrast to conventional pigment grades of these metal oxides that have been used in beauty goods for years, do not include smaller particles; instead, the lower end of the usual particle size distribution is enhanced via specific production methods.

In other words, micro fine powders have always existed in ZnO or TiO₂-containing products, but they were visually obliterated by bigger particles. As a result, micro fine particles are just a refinement of the current particle size distribution, rather than a completely new particle size. Each particle has a maximum scattering size for visible light. This is the perfect size for white or colorful pigments. Any color imparted to the product by an ingredient, on the other hand, is undesired in a sunscreen. As a result, the average particle size of a metal oxide is decreased below the optimum light scattering size, enabling visible light to pass through and making it almost undetectable on the skin. This feature has been exploited to produce the micro fine metal oxides that are now extensively used in sunscreen and everyday skin care formulations. To assist in dispersion, zinc oxide or TiO₂ is often coated with other compounds such as silicones, fatty acids, or oxides of aluminum, silicon, or zirconium. Paint manufacturers created the coatings to minimize particle agglomeration, which optimizes particle dispersion when applied as a thin layer on a surface.

The appropriate coating increases particle compatibility with the dispersion medium, resulting in improved aesthetics and lower processing costs. Furthermore, covering the metal oxides may minimize any possible light reactivity. Sunscreens are one-of-a-kind products in that their effectiveness is guaranteed if correctly applied. This guarantee is based on their capacity to prevent sunburn, which has previously been the criteria used to assess these goods. However, as described in this article, this single criterion does not seem to be adequate for future sunscreen product assessment. The requirement for broad spectrum UVB and UVA photo protection products supports this viewpoint. Nonetheless, unlike any other OTC medication, the finished sunscreen product is effectiveness evaluated before being distributed to consumers. The techniques for evaluating the effectiveness of sunscreens will be discussed briefly.

The effectiveness of the product is undeniable: sunscreens prevent sunburn. For this aim, the selection of a sunscreen or combination of sunscreens, as well as the resulting formulation, is developed and assessed. The ratio of sun exposure that skin can take before blistering or mild erythema is seen with and without sunscreen protection is defined as the SPF for a sunscreen. As a result, SPF is the true sunburn protection factor. Because the action spectrum for UVR-induced sunburn is comparable to that for a particular measure of DNA damage, it's been assumed that sunburn protection is the same as DNA damage protection and a variety of other endpoints(19). As previously stated, each biological reaction has its own action spectrum, and even when various responses have similar action spectra, the threshold, dose-response, or both to UVR may vary significantly. As a result, although SPF is useful for sunburn prevention, its use for other endpoints is limited, and it may be deceptive(20). When the SPF system was created, it was widely assumed that the UVR-related skin alterations or damaging action spectrum was comparable to that of erythema in human skin. The action spectrum of NMSC in rats, for example, is comparable to that of erythema in human skin. Of course, we now know that other

endpoints, such as photo aging and perhaps melanoma, have different action spectra than erythema.

Because SPF measures erythema and UVA is only slightly erythrogenic, it's clear that SPF alone is insufficient to characterize a sunscreen's protective profile. In practical words, an SPF 15 sunscreen that blocks just a small amount of UVAII (320-340 nm) and practically no UVAI is feasible (34MOO nm). Surprisingly, the majority of sunscreen products on the market in the United States currently fit this description. The ideal UVA photo protection test would include a biological event that is known to be mediated by these wavelengths as an outcome. Unfortunately, no endpoint has been agreed upon as a suitable surrogate for UVA occurrences to yet. Several in vivo tests have been suggested, however they have not been generally accepted. For instance, instantaneous pigment darkening. In vitro experiments have also been reported, the majority of which are based on spectrophotometric data that have been manipulated. Based on the techniques described, one of them, the critical wavelength (CW), has been suggested to assess sunscreens for their UVA absorption. Using a light source with a constant output throughout the terrestrial UVR spectrum, the transmission through a substrate, both with and without the sunscreen, is measured on a wavelength-by-wavelength basis.

The sunscreen's attenuation spectrum is then calculated. Importantly, prior to attenuation testing, the sunscreen may be exposed to a preirradiation phase, which will evaluate the product's photo instability. The CW is the wavelength that yields 90% of the entire area under the attenuation spectrum between 290 and 400 nm. This technique offers a qualitative method for determining a sunscreen product's UVA attenuation.

Given the present need for broad-spectrum UVB/UVA sunscreens and the lack of a meaningful and clinically viable biologic marker, it would seem prudent to demonstrate, at the very least, that the sunscreen attenuates the appropriate range of radiation. To that aim, proponents of the CW technique emphasize its ease of use, repeatability, and ability to account for product photo instability. However, opponents argue that the test's human relevance is questionable since it is an in vitro test with no biological goal. Sunscreens are rapidly being incorporated in a variety of consumer goods, in addition to conventional recreational and everyday photo protection solutions. As a result, concerns have been expressed about their long-term safety, especially in the context of UVR exposure. As a result, the purpose of this section is to address some contemporary concerns about sunscreen safety. This is not a complete assessment of all published research on sunscreen safety; rather, it is an effort to compare and contrast in vitro and in vivo findings. It's critical to understand the difference between long-term safety issues and short-term unfavorable responses. Organic sunscreen sensitivities, both photo- and non-photo induced, are extensively reported and seem to be uncommon occurrences, but there is few published research, making it impossible to determine the true frequency.

3. CONCLUSION

UVR exposure is related to NMSC and may play a role in the development of melanoma. Sunscreens consistently and unambiguously reduce the quantity of UVR that the skin is exposed to. UVB protection is good in the past and most contemporary sunscreens, but UVA, particularly UVAI, attenuating chemicals are lacking. By integrating newly accessible long UVA blocking chemicals, newer sunscreens are being developed that cover nearly the full UV spectrum. Although more research is needed, current in vivo animal and human studies are surprisingly

similar in their conclusions that sunscreens are both safe and effective. Sunscreens, once again, have been criticized for blocking just a part of the UVR spectrum. This should no longer be a problem now that genuine broad-spectrum protection is available. Sunscreens, on the other hand, may be dangerous because of their potential to alter our behavior and transform us into "mad dogs and Englishmen" who walk out in the midday heat. As a result, sunscreens are just one component of a comprehensive sun protection plan that includes appropriate clothes, hats, sunglasses, avoiding the sun during peak hours, and, most importantly, education. We think the present skin cancer pandemic will continue until the concept of a good tan is eradicated from the western mind.

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A STUDY OF THE SAFETY AND EFFECTIVENESS OF BOTANICAL MEDICINE IN THE TREATMENT OF CANCER

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ABSTRACT

It is believed that more than half of all cancer patients seek out complementary and alternative treatment, particularly herbal medicine. We performed a thorough review to determine the safety and effectiveness of herbal medications widely taken by patients in the hopes of preventing cancer, treating cancer, and treating side effects associated with conventional cancer therapies. Current evidence suggests that eating Asian ginseng, garlic, green tea, tomatoes, and soy as part of a healthy diet may help prevent cancer; more research is needed to determine the efficacy of essiac, evening primrose oil, mistletoe, reishi, shiitake, and turmeric as cancer treatments; and ginger may help with chemo-therapy-induced nausea and vomiting.

KEYWORDS: *Alternative Medicine, Botanical Medicine, Cancer, Herbal Medicine, Natural Health Products.*

1. INTRODUCTION

According to many studies, cancer patients and those trying to avoid the illness are looking towards complementary and alternative therapy (CAM). Due to ease consumer availability, consumers' desire in playing active self-care roles, and claims of potential chemo preventive benefits indicated in certain in vitro and in vivo research, herbal medicines seem to be a popular CAM modality. Although some clinically-based evidence on the safety and effectiveness of herbs in cancer management exists, it is frequently difficult to locate and summarize this information in a way that is helpful for patient and clinician decision-making(1–4). This review summarizes the evidence for the safety and efficacy of commonly used herbal products that claim to prevent cancer, treat cancer, or mitigate the side effects of conventional cancer treatments, and it serves as a useful tool for clinicians and patients making decisions about the use of herbal medicines in cancer management. The most frequently utilized herbal medicines to prevent or treat cancer or to reduce the harmful effects of conventional cancer therapies were identified by reviewing surveys reporting CAM usage by cancer patients. Ginseng, essiac, evening primrose oil, garlic, ginger, green tea, mistletoe, reishi, shiitake, soy, tomatoes (lycopene), and turmeric were discovered to be among them(5–8).

Separate searches were performed for each plant, restricting results to those accessible in English and using the mesh headings 'cancer' or 'neoplasm', as well as the herb's common name and/or Latin binomial when appropriate. Only trials that used entire herbs or herbal extracts (not isolated chemicals) to prevent cancer, cure cancer, or alleviate the side effects of conventional cancer therapy were chosen. Additional studies were hand-searched in all reference lists(9). Our

criteria were fulfilled by 148 research in total. Unpublished reports and uncontrolled, open-label, non-peer-reviewed research provide inconsistent outcomes. Some say that patients who took essiac were completely or partially cured, however it's unclear how these results were assessed or how the cancer diagnosis was verified(10). Others claim that orally given essiac had no clinical effect for cancer patients in terms of survival or tumor shrinkage, but that there were subjective improvements in symptom management and well-being(11). The Canadian Department of National Health and Welfare examined data from doctors overseeing the treatment of essiac patients between 1978 and 1982 in the early 1980s. Although 150 doctors got supplies of essiac for individual patients, only 86 case histories from 74 physicians were provided, and the findings were not officially published. As a result, this review is not a genuine case study. Essiac was shown to be ineffective in 47 individuals(12–14). 17 patients died, 8 patients were un-evaluable based on the information given, one patient showed subjective improvement, 5 patients needed less analgesics, 4 patients exhibited objective responses, and 4 patients were stable in terms of disease progression(15). Follow-up in 1982 showed that two of the eight who seemed to react (based on physician perceptions) or stayed stable had died, three had advanced, and three had remained stable, which was ascribed to various kinds of therapy. Finally, between June 1998 and August 1999, a Canadian manufacturer of essiac performed a customer study. There were a total of 3749 cancer patients identified, with 1588 completing the cancer-specific survey. Overall, 50.3 percent (584 of 1162) of those who used the tonic reported symptom-specific improvements, such as reduced tiredness, improved appetite, alleviation of nausea, pain, vomiting, and other effects(16). The tonic was taken by the majority of patients (84.9%) because they thought it would benefit them, thus there is a chance of a placebo effect.

Although Essiac is usually well tolerated and safe (except when injected), allergic responses to its constituents are possible. Specific components of essiac may raise the risk of colon cancer and induce hypokalemia, hypertension, and kidney impairment in theory, but it's unclear if these are clinically relevant issues. According to a post-marketing study, 103 of 1560 patients (6.6 percent) experienced side effects, the most of which were gastrointestinal (GI). Increased bowel motions, frequent urination, swollen glands, skin blemishes, flu-like symptoms, or mild headaches, according to Flor-Essence manufacturers, as well as nausea, vomiting, and diarrhea. (Evening primrose seed oil, as a source of GLA 60 mg) was given at a dosage of 36 500 mg capsules per day to patients (n = 62) with primary liver cancer in the first double-blind, placebo-controlled study. In terms of subjective improvement or survival time, there were no significant differences between the two groups(17–19).

The second case-control study looked at 50 patients with various cancer diagnoses who were given up to 3000 mg of GLA (in its natural form of evening primrose oil, at a dose of 33 ml of 10% GLA-containing evening primrose oil delivering 1004 kJ) or a 1000 kJ/day food supplement lacking GLA while receiving palliative radiotherapy/chemotherapy. The generated survival curves revealed a clear survival advantage for the GLA group, with a statistically significant difference in survival between the two groups. In none of the trials mentioned above, there were no documented side effects. Evening primrose oil, on the other hand, has been linked to gastrointestinal issues and headaches. Anti-inflammatory medications, corticosteroids, -blockers, antipsychotics, and anticoagulants may theoretically interact with it. Concurrent usage with epileptogenic drugs like phenothiazine's may further enhance the risk of seizures. Evening primrose oil's safety during pregnancy and breastfeeding has yet to be determined(8).

Six investigations, including five case-control studies and one prospective cohort research, found that garlic consumption was linked to substantial, dose-dependent decreases in the risk of malignancies such as colorectal cancer, prostate cancer, and stomach cancer. With consumption frequencies ranging from once a month to two or more times per week, significant findings (ORs) were obtained, with ORs ranging from 0.10 (95 percent CI = 0.05 – 0.20) to 0.65 (95 percent CI = 0.44 – 0.97). Eight case-control and cohort studies, on the other hand, found no substantial reduction in the incidence of malignancies of the gastrointestinal tract, lung, or breast. In a single open-label, uncontrolled trial, nine patients were given 1 ml/kg weight of aqueous garlic extract for one month as a therapy for prostate cancer. A plant or plant component utilized for its fragrance, taste, or medicinal qualities is known as herb. One kind of dietary supplement is herbal medicine. Tablets, capsules, powders, teas, extracts, and fresh or dried plants are all available. Herbal medications are used by people to attempt to maintain or enhance their health. Many individuals think that "natural" goods are always safe and beneficial to them. This isn't always the case. Herbal medications are not subjected to the same rigorous testing as pharmaceuticals. Some plants, including comfrey and ephedra, may be dangerous. Some plants have the potential to interact with prescription and over-the-counter drugs. If you're considering taking herbal medication, make sure you obtain the facts from reputable sources first. Make sure to inform your doctor about any herbal medications you're using(2,20,21).

2. DISCUSSION

The total and free PSA levels tested after extract intake were substantially lower, according to the scientists. The prostate bulk, on the other hand, remained unchanged. Garlic has been linked to a variety of symptoms, including breath and body odor, allergic responses, nausea, heartburn, flatulence, dizziness, and migraines, as well as heartburn and stomach pains. It has the potential to improve the hypoglycemic effects of antidiabetic medicines by increasing the impact of anticoagulants/antiplatelet therapies or NSAIDs. Garlic also has antioxidant qualities, raising concerns regarding its safety when used in conjunction with certain traditional chemotherapy and radiation regimens. In this area, further study is required. Two clinical studies were found in our literature search that demonstrated the antiemetic benefits of ginger (*Zingiber officinale* Roscoe) in alleviating the side effects of conventional chemotherapy drugs. Individuals with leukemia were given encapsulated ginger (dosage not specified) (n = 20) or placebo (n = 21) with Compazine injection during a 2-day period in the first double-blind, randomized pair, placebo-controlled trial. The ginger group stated that their nausea was less severe and lasted longer. However, there were no significant differences between the two groups in terms of vomiting intensity, frequency, or length, or comfort level.

There were no statistical analysis or particular values provided. Patients taking cyclophosphamide in conjunction with other chemotherapeutic drugs and who had at least two bouts of vomiting in the preceding cycle were included in the second randomized, crossover, double-blind trial. Participants were assigned to one of three antiemetic medications in the first cycle: ginger, metoclopramide, or ondansetron, and then switched to the other antiemetic therapies in the second and third rounds of chemotherapy. Complete nausea control was achieved in 62 percent of patients on ginger (compared to 58 and 86 percent on metoclopramide and ondansetron, respectively), and complete vomiting control was achieved in 68 percent of patients on ginger (compared to 58 and 86 percent on metoclopramide and ondansetron, respectively) (compared to 64 and 86 percent on metoclopramide and ondansetron, respectively). The

researchers discovered that powdered ginger root was helpful in decreasing nausea and vomiting, and that its antiemetic effectiveness was comparable to that of metoclopramide, but that ondasetron was superior to both. Both trials found no substantial negative effects associated with ginger; nevertheless, ginger has been linked to heartburn and dyspepsia.

Ginger has the potential to enhance the effects of barbiturates and anticoagulants, as well as interact with cardiac and anti-diabetic medication. Although a clinical study revealed no scientific or medical evidence for ginger's contraindication during breastfeeding, its safety has not been proven. Our search of the literature turned up three epidemiological studies on the effects of dietary ginseng P (annex ginseng CA Meyer) consumption on cancer prevention, all of which found a 50% reduction in cancer risk (of various types) among ginseng consumers compared to non-consumers, as well as a significant dose-dependent relationship between increased ginseng consumption and increased cancer risk. Fresh ginseng extract, red ginseng, white ginseng extract or powder, and various combinations of these ginseng preparations were all linked to a lower risk of cancer. Colorectal cancer, GI tract cancer, lung cancer, ovary cancer, and pancreatic cancer all had significant decreases in risk, with ORs ranging from 0.20 to 0.55 (95 percent CI = 0.09 – 0.38 and 0.38 – 0.79, respectively). Breast, thyroid, urinary bladder, and uterine cervix cancers were not shown to have any link. Insomnia, diarrhoea, vaginal bleeding, mastalgia, increased libido, manic episodes, and perhaps aggravate Stevens–Johnson syndrome have all been linked to ginseng. It also seems to interact with MAO inhibitors, may enhance the effects of hypoglycemic, and may reduce the effects of warfarin. Ginseng's safety during pregnancy and breastfeeding has yet to be determined. In a retrospective cohort study, breast cancer patients who received Eurixor while undergoing tumor-destructive treatments had substantially lower symptom ratings and a longer mean time to relapse than the control group. The administration of mistletoe did not seem to be linked to improved survival or metastasis-free interval.

Patients with breast cancer, ovarian cancer, and non-small cell lung cancer were given Helix or at increasing dosages, ranging from 1 to 200 mg, in combination with traditional cancer therapies in another open-label, randomized, controlled study. Adverse events were observed to be less common in the mistletoe group than in the control group, and patients receiving mistletoe had substantially better quality of life. There have also been reports of bradycardia, dehydration, delirium, diarrhoea, gastroenteritis, hallucinations, hepatitis, hypo- and hypertension, leukocytosis, mydriasis, mycosis, nausea, seizures, vomiting, and many deaths. Mistletoe may enhance the effects of antihypertensive medications, cardiac depressants, and CNS depressants, according to theory. It is unknown if mistletoe is safe to use during pregnancy and breastfeeding. Reishi has the potential to induce respiratory allergic responses, as well as dry mouth, throat, and nasal passages, bloody diarrhea, nose bleeding, upset stomach, epistaxis, and itchy skin, according to anecdotal/historical data. Antibiotics, anticoagulants, anti-hypertensive, antioxidants, cholesterol-lowering medicine, hypoglycemic treatment, immune suppressive, sedatives, and stimulants are all possible interactions. Rishi's safety during pregnancy and breast-feeding has yet to be determined. Clinical studies investigating the use of soy in the prevention and treatment of different malignancies were found in our literature search.

Overall, soy seems to protect against a range of malignancies; however, the data for any particular dosage or cancer type is not conclusive. There were no significant differences between baseline and post-treatment serum values of free testosterone or total PSA levels in either group

after 12 weeks of therapy. However, 61 and 69 percent of subjects in the treatment group had a reduction or no change in serum-free testosterone and serum total PSA, respectively, compared to 33 and 55 percent in the placebo group, and 19 percent of the participants had a total PSA reduction of two points or more during the intervention period(19). Turmeric is usually considered safe, but it has been known to cause minor GI discomfort and mild dermatological responses in some people who have used it for a long time. There are no known medication interactions, but additional antiplatelet activity is a potential. It should not be used by those who have gallstones or a blockage in the common bile duct. Although safety in pregnancy and breastfeeding has not been proven, turmeric may function as a menstruation stimulant, therefore care is recommended. The data examined indicates that consuming garlic, ginseng (Panax), green tea, soy, and tomatoes may reduce cancer risk overall, although research is inconclusive, and the lowest dosage linked with reduced cancer risk for any of the herbs mentioned has not been precisely established.

In future research, efforts should be made to standardize methods for measuring the dietary consumption of these herbs. Although there is no evidence to use these herbs regularly, considering the absence of severe side effects, there is no need to advise patients against using them for cancer prevention in most instances. Patients should be informed, however, that taking any or all of these herbs does not ensure that they will not get cancer. For this evaluation, there were fewer research that looked into the effectiveness of herbs as possible cancer therapies.

The majority of the therapy trials were small, open-label, uncontrolled, and not randomized. There has been no replication of any of the research identified. Although there is insufficient evidence to endorse any of the herbs discussed here as a cancer therapy, current data indicate that further study is needed. It seems that further research is needed, especially on mistletoe extracts and tomato (lycopene) products as supplementary therapies. It's doubtful that any of these herbal medicines will be proven to be successful therapies on their own, therefore patients should be advised to keep taking their regular medications. The herbs we've looked at haven't shown any major side effects and don't seem to interact adversely with current treatments (although more research is needed in this area). However, until more conclusive proof of safety is available, physicians should continue to advise against the use of any herbs during chemotherapy and radiation therapies. Although there is evidence that ginger may help with chemotherapy-induced nausea, it is unclear what dosage schedule is most effective. It's also unclear what advantages ginger products offer over traditional ant nausea medications (fewer adverse effects are claimed). For certain people, ginger may be worth a shot.

3. CONCLUSION

Although there is evidence that many cancer patients, or those who are worried about being diagnosed with the disease, use a variety of complementary and alternative medicine (CAM), including herbal remedies, there is a general lack of evidence for the efficacy of most herbs in the treatment or prevention of cancer. The majority of the trials mentioned here are small, uncontrolled, and not randomized. Some of these are promising early findings that should be followed up with more detailed research. Overall, early data indicates that certain herbs may have a role in cancer prevention or therapy as adjuvant treatments, but herbal medicine does not seem to be a miraculous cure for cancer.

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AN OVERVIEW OF DEMONETIZATION

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ABSTRACT

Demonetization is a tool used to combat inflation, black money, corruption, and crime, as well as to depress a cash-based economy and aid commerce. When a country's currency is changed, demonetization is the most important and necessary step. The old currency component must be removed and replaced with a new currency component. The currency was demonetized for the first and second times in 1946 and 1978, respectively. Banks are the most common benefactors of demonetization. Demonetization was declared by India's Honorable Prime Minister on November 8, 2016; the Indian government has taken a brave move by demonetizing the 500 and 1000 rupee notes (fully ban). These two largest currency notes account for 80 percent of the total cash supply. These currency notes have influenced almost every aspect of the economy. The real image of India will alter dramatically, and the Indian economy will emerge as one of the world's strongest in the medium to long term, as predicted by our country's Prime Minister.

KEYWORDS: Banknotes, Currency, Cash Supply, Demonetization, Transaction.

1. INTRODUCTION

Demonetization is defined as the conversion (removal of all or part of) of a country's existing currency notes to a different format. Demonetization, in other terms, is the process of replacing part or all of the old currencies with new ones, or introducing new notes/coins of the same currency. On November 8, 2016, the Indian government issued an astounding and unexpected announcement: the specified banknotes (SBN) would no longer be legal currency with immediate effect. According to the decision, the public was given fifty days to deposit their 1000 and 500 rupee notes at banks in order to remove them from circulation. Instead, a new 2000 rupee note and a revised 500 rupee note were issued(1)(2). The Indian Ministry of Finance (MoF) required the plan, which emphasized three main objectives in its language: combating corruption, deterring counterfeiters, and penalizing hoarders of undeclared wealth, often known as "black money". While discussions on the policy's basis were restricted to pointing out that the amount of cash in circulation is directly proportional to the degree of corruption, and that decreasing cash in circulation will decrease corruption. By value of currency in circulation, the removed notes accounted for up to 86 percent. The fact that a substantial proportion of new notes required to be produced at the time of announcement created a severe scarcity of cash, resulting in government-mandated limits on cash withdrawals from banks(3)(4).

As a large nation, India is heavily reliant on agriculture, with farmers, particularly those in rural areas, mostly unaware of virtual money such as credit cards or internet transfers, with about 90%

of transactions conducted in cash. Demonetization has a long history in India, dating back to the pre-independence era in 1946. In 1978, the notes of 1000, 5000, and 10,000 were demonetized to combat counterfeiting and illicit money(5)(6). The goal of this policy assessment study is to assess the Indian government's demonetization program, which was implemented in 2016. Such economic decisions should be examined and analyzed in light of theoretical ideas and prior arguments, since they are a mostly unexplained phenomenon(7)(8). The article will hopefully add to the theory and practice of monetary policymaking and economic decision-making in order to discover a better cash alternative. The paper's last parts briefly discuss demonetization initiatives in other nations, their impact, the reasons for such initiatives in India, and the good and negative consequences on the Indian economy.

1.1 History of Demonetization:

The current demonetization experience in India is not the unique one. The Reserve Bank of India (RBI) issued the largest denomination notes of 10000 rupees in 1938, while India was still under British control(7). In 1946, the British Indian Government ruled out 1000 and 10,000 rupee banknotes after a few years. Higher denomination banknotes of 1000, 5000, and 10,000 rupees were reissued in 1954 before being demonetized in 1978 to keep unaccounted money out of circulation [8]. Demonetization has not just been implemented in India. This strategy was implemented by several nations across the globe at various periods in the previous century and early in the current century. All of the nations that adopted such policies had certain similar goals, such as reducing corruption and black money, as well as combating inflation. The following is a list of nations that have implemented demonetization policies. The majority of nations using this strategy have failed to achieve the desired outcomes. After demonetization, a number of nations, including Nigeria, Zaire, and the former Soviet Union, suffered negative growth rates and economic declines(9)(10).

Countries like the United States and the United Kingdom, on the other hand, had a temporary downturn in their economies when demonetization was in place, but they quickly recovered, while only Australia's GDP remained stationary throughout the pre- and post-demonetization eras. Finally, demonetization has been used to modernise a cash-based emerging economy as well as fight corruption and crime (counterfeiting, tax evasion). The Indian government chose to demonetize the 500 and 1000 rupee notes, the country's two largest denominations, in 2016(11). These notes accounted for 86 percent of the country's circulating cash at the time. On Nov. 8, 2016, India's Prime Minister Narendra Modi declared to the public that such notes were useless, effective immediately, and that they had until the end of the year to deposit or exchange them for freshly issued 2000 and 500 rupee banknotes. Long, serpentine queues developed outside ATMs and banks, forcing them to close for a day in the cash-dependent economy (cash accounts for 78 percent of all consumer transactions in India). Because the new rupee notes have different characteristics, such as size and shape, ATMs must be re-calibrated: just 60% of the country's 200,000 ATMs were functioning(12)(13).

Even those who dispensed smaller denomination notes experienced shortages. The government's limit on daily withdrawal amounts made things worse, but a reprieve on transaction fees helped a little. Even in 2018, severe financial shortages were common. 4 Small companies and families struggled to obtain cash, and there were instances of daily wage employees not being paid. The rupee plummeted against the US dollar. The government's goal (and justification for the abrupt announcement) was to combat India's thriving underground economy on several fronts, including

eradicating counterfeit currency, combating tax evasion (only 1% of the population pays taxes), eliminating black money gained from money - laundering, and promoting a cashless economy. Individuals and organizations having significant amounts of black money obtained via parallel currency systems were obliged by law to take their big-denomination notes to a bank, which was obligated by law to get tax information on them. A penalty of 200 percent of the due amount was applied if the owner could not show evidence of making any tax payments on the cash(5).

1.2 Challenges and Responses:

It would not be foolish to state that the demonetization issue has engulfed India, and that debates about its consequences are in the air and in people's lips. There were several apparent difficulties and reactions to this strategy from many sectors. Based on newspapers, publications, and academics, we have attempted to highlight some of the noteworthy ones in this area(14).

- *Rural Banking System Distress:* The decision by the Reserve Bank of India (RBI) to prohibit District Cooperative Central Bank (DCCB) and Primary Agricultural Credit Society (PACS) from accepting or exchanging previous notes was perhaps the most divisive, as these two institutions serve the vast majority of India's rural population, including small farmers and low-income groups. While farmers rely heavily on DCCB and PACS to buy seeds and fertilizers, a significant percentage of the rural populace was forced to relocate to bigger villages or towns in order to exchange or deposit their old notes. Although the RBI did not provide any official explanations for the limitations, it was believed that the government was concerned by what seemed to be abnormally large cash deposits at DCCB and PACS immediately after the announcement. DCCBs in 17 Indian states received approximately 90 billion rupees in deposits between November 8 and 14. The RBI questioned the source of wealth of depositors mainly from the marginal agricultural sector, ostensibly due to fears that DCCBs were being used to store illicit money and launder undeclared income. According to the RBI circular, activities at 372 DCCBs and nearly 93000 PACS have effectively come to a halt. Many of these institutions temporarily ceased operations due to their inability to carry out banking activities critical to the rural sector, such as loan payment collections, cash disbursement, interest and dividend payments, fertilizer distribution, and running public distribution shops for the poor [23]. Regrettably, this decision was made during the peak agricultural season of harvesting summer crops and sowing winter crops, disrupting cultivation and severely affecting the sale and marketing of agro products as traders were unable to pay in cash, particularly for perishable products such as vegetables and fish. Furthermore, many farmers were unable to purchase seeds and other inputs, as well as pay agricultural laborers for their work(15).
- *Disturbance in Small and Medium-Sized Enterprises:* Demonetization not only dealt a severe damage to the agricultural sector, but it also had a major impact on the unofficial business enterprises, which now employ more than 80% of the workforce via micro, small, and medium businesses (MSME). Tiny turnovers, limited reserve, and insufficient access to financial sectors characterize such businesses, which are typically run by individual (usually one or two) owners, have a high cash dependency, and have small turnovers, limited reserve, and insufficient access to financial sectors. The strategy wreaked havoc on such businesses, which were already struggling owing to a continuous decrease in credit flows and an increase in non-performing assets in the rural banking system. The overall result was a reported significant reduction in production capacity, as well as losses in profits, wages, and, most

importantly, unemployment. Despite the fact that the long-term effects of demonetization on the MSME sector have yet to be fully revealed, a number of sovereign research and industry surveys have identified and recorded certain impending economic problems. According to an outlook poll conducted by the Indian Development Foundation, a private, non-profit research organization, more than 74% of temporary employment in urban small scale businesses across nine northern states were absent, with apparent reverse migration to rural. During the first 34 days after demonetization, the All India Manufacturers' Organization reported a loss of 53 percent of temporary employment in MSMEs throughout the nation, as well as a 50 percent drop in income(16)(17).

- *The Politics of Favoritism:* Nepotism, clientelism, and corrupt electoral politics are all too prevalent in India's political economy. As a consequence, it didn't take long after the demonetization announcement was made public for it to become a heated topic of political discussion and electoral advantage. Several opposition parties, both national and regional, complained that the strategy was primarily intended at weakening opposition financing and, as a result, benefiting the governing party in forthcoming state elections. They also claimed that knowledge about the upcoming policies had been leaked selectively to important members of the leadership and their business allies(18).

1.3 Advantages of Demonetization:

- *Putting an end to corrupt behaviors completely:* One of the most significant benefits of demonetization is that it effectively eliminates illicit money market malpractices. People will now be hesitant to participate in currency hoarding because they are afraid of being punished by the relevant authorities. Cash in black money would no longer be exchanged with banks. Many terrorist nations used hot money, such as counterfeit notes, to purchase weapons and ammunition. With the current demonetization initiative, this is unlikely to happen for at least a decade. To put it another way, weapons smuggling and trading with terrorists will no longer be viable since all of the money will be recorded in a proper and methodical manner.
- *Take a look at a complex financial system:* The financial system will significantly improve if the current demonetization step is effectively implemented. The economy will gradually move away from cash and toward a cashless society(19). Moving to a cashless economy also entails improved credit availability and a reorganization of financial processes. People will increasingly use internet shopping platforms to make purchases. As a result, the government will keep the current white money. Banks and financial organizations may use the newly authorized money to make loans to needy borrowers, and the banks can earn interest on the loans. In terms of base money, the financial or banking sector would get an extra boost of 7-8 Lac Crore. This is when the new notes are distributed, but it is also important to keep an eye on how much currency remains in the financial system once the withdrawal restrictions are reduced(20)(21).
- *The government's responsibility is reduced:* You may see demonetization as a good step since it provides you with a slew of fantastic advantages. The change may lower the risk and liability associated with dealing in liquid money. Soft money is usually simpler to work with than hard money. Because every note represents a responsibility for the government, this liability may be significantly minimized(22). For those who choose not to declare their income, the old money is once again worthless. The old bills are now worthless scraps of

paper. More than 5 Lac Crore is expected to flow to the government as a result of the current demonetization process in the form of extinguished notes, taxes, and fines. The money the government saves this manner is sufficient to fund the country's administration for the full fiscal year(23)(24).

- *Tax evasion is less prevalent:* One of the most significant benefits of demonetization is this. The extreme measure has the potential to significantly decrease tax evasion. The income tax authorities will keep track of any money that is deposited or exchanged. As a result, a growing number of individuals will be reluctant to engage in tax evasion schemes. Dealing with real estate and the jewelry industry will always be on the radar. Loan transactions will also be scrutinized on a regular basis. The IT department would be particularly cautious in preventing such misdeeds. Tax evasion may provide a significant boost to the Indian economy. Increased tax revenue allows the government to implement public-benefit initiatives(25).
- *Increased levels of GDP:* Reduced tax evasion may result in more clean money flowing into the economy. Tax and interest rates are anticipated to fall in the long term, since greater income tax revenues provide more room for lower loan interest rates. Housing loans may be available at a lower interest rate. As a result, the economy's disposable income will increase. When a growing number of individuals have disposable money, the economy's GDP (gross domestic product) may rise dramatically. In the long term, increased buying power among individuals may have a beneficial effect on consumer demand(26). As a result, the section includes a discussion of the main pros or benefits of demonetization!

2. DISCUSSION

Demonetization has been used to maintain a currency's worth or fight inflation. In order to avoid disruptive inflation when significant new silver resources were found in the American West, the Coinage Act of 1873 demonetized silver as legal currency in favor of completely embracing the gold standard. Several coins were phased out, including the two-cent piece, three-cent piece, and half-dime. The removal of silver from the economy caused the money supply to shrink, contributing to a recession throughout the nation. In 1878, the Bland-Allison Act remonetized silver as legal currency in reaction to the recession and political pressure from farmers, silver miners, and refiners. In a more recent example, in 2015, the Zimbabwean government demonetized its currency to fight the country's hyperinflation, which reached annualized rates of up to 231,000,000 percent. In order to prop up the economy, the Zim dollar was removed from the country's financial system and the US dollar, Botswana pula, and South African rand were established as the country's legal currency.

3. CONCLUSION

Demonetization is a tool employed by the federal government to combat corruption and undeclared funds. Similarly, it impacted and brought about changes in every sector of the economy. The demonetization process is like a two-faced currency because on one hand, it will benefit the entire nation while on the other, it will cause some short- and long-term problems. The vast majority of business in India is conducted in cash, with less than 2% of transactions taking place electronically. The main entities that are impacted by demonetization are banks. Banned currencies were reintroduced, allowing people to transact with banks. It became agitated for a brief time while swapping and shifted its normal activities. Though it had a negative impact

on large bank operations, it aided the economy in determining the country's growth and development via financial institutions such as banks. As a result of the arguments in favor of demonetization, it is critical to assess the short- and medium-term effects that such a shock is anticipated to have on the economy. This study examines the effects of such a shift on credit availability, expenditure, activity levels, and government finances. The Indian government has declared that the Rs 500 and Rs 1000 currency notes would no longer be legal tender. The goal of the move was to combat black money, corruption, and terrorism. The declaration of 86 percent of currency notes as unlawful money in a matter of seconds on the eve of November 8, 2016, forced an instant disruption in people's lives. Every level of society, whether high, medium, or lower, was thrown into turmoil. The purpose of this study was to examine the overall effects of demonetization on Indian citizens.

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BLOCKCHAIN'S CONSENSUS ALGORITHM: A REVIEW

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ABSTRACT

A consensus algorithm is a computer science technique that allows dispersed processes or systems to agree on a single data value. Consensus algorithms are intended to ensure dependability in a network containing many faulty nodes. Bitcoin's foundational technology is blockchain. With bitcoin's rising value and consistent functioning, blockchain is gaining traction in a variety of fields. Decentralization, stability, security, and non-modifiability are all features of blockchain. It has the capability of altering network architecture. The consensus algorithm is critical for preserving blockchain's security and efficiency. The use of the correct algorithm may significantly improve the performance of a blockchain application. We examined the fundamental concepts and features of consensus algorithms in this paper, as well as the performance and application scenarios of several consensus mechanisms. We also provided technical advice on choosing an appropriate consensus algorithm, as well as a summary of blockchain technology's limits and future developments.

KEYWORDS: *Bitcoin, Blockchain, Consensus, Digital Currency, Distributed System.*

10. INTRODUCTION

Satoshi Nakamoto originally mentioned the blockchain in his book "Bitcoin: A peer-to-peer electronic currency system" in 2008(1). It is bitcoin's fundamental technology. Traditional transactions need the use of a centralized, trustworthy organization. The trust institution is solely responsible for the validation and recording of transactions, which may lead to a slew of issues with transaction cost, efficiency, and security. Blockchain's fundamental characteristic is decentralization, which may be utilized to address these issues(2). The blockchain's nodes all share the same status. These nodes establish consensus by adopting the majority dominance principle and agreeing on the rules in advance. In the event that the other nodes are not completely trusted, they implement data dispersed storage and transaction information recognition. As a result, we will be able to properly address the transaction issues(3).

Bitcoin is the first blockchain-based financial application. The government, financial institutions, and technical companies have all shown interest in blockchain technology as it has developed. In January 2016, the British government, for example, released a study on blockchain to encourage its use in centralized digital money and government affairs (4). All of the world's top banks are actively investigating the use of blockchain technology. UBS, Deutsche Bank, Bank of Santander, and Bank of New York Mellon collaborated on a digital currency system based on blockchain technology in August 2016 to assist financial markets increase payment speed. The biggest bank in Spain, Bank of Santander, thinks that if all banks in the world used blockchain,

they could save \$20 billion each year. By 2027, the World Economic Forum estimates that 10% of global GDP would be held on the blockchain network (5).

Blockchain technology is also gaining popularity among academics. Blockchain research may be split into three areas. To begin, research digital currencies based on blockchain technology, including both decentralized and centralized digital currencies(6). Second, research into the use of blockchain technology in non-digital currency situations, such as smart city applications and medical information security management(7). Finally, research the blockchain technology that underpins it. Researchers are increasingly recognizing that the blockchain may be separated from the digital money to build a new technological architecture in other fields. Some academics have started to look at the underlying technologies, such as mining difficulty management, consensus algorithm scalability, and smart contracts.

10.1. The Consensus Algorithms:

We must address two issues in blockchain applications: double spending and the Byzantine Generals Problem (8). The term "double spending" refers to the practice of using the same money in two different transactions at the same time. Because conventional money is an entity, we will not have to worry about double spending when we use it. With centralized trustworthy institutions, we can also address the issue of double spending in Internet transactions(9). The technique of validating transactions by multiple distributed nodes together in blockchain overcomes this issue. The Byzantine Generals Issue is a distributed system problem. Peer-to-peer connections may be used to transmit data between various nodes. However, certain nodes may be deliberately targeted, resulting in communication content alterations(10). Normal nodes must be able to identify manipulated information and provide consistent results with other normal nodes. This necessitates the development of a consensus algorithm. In distributed systems, the consensus algorithm has been researched for many years. In blockchain, several transplantable consensus algorithms are used. In this part, we go through the fundamentals of these consensus methods in depth(11).

10.1.1. PoW (Proof of Work):

Bitcoin's consensus algorithm is known as PoW. Its fundamental concept is to distribute accounting rights and rewards across nodes based on hashing power competition. The various nodes compute the particular answer to a mathematical problem based on the input from the preceding block. The arithmetic issue is tough to solve(12). The first node to answer this math problem will be able to produce the next block and will be rewarded with a specific amount of bitcoin. This bitcoinmaths challenge was designed by Satoshi Nakamoto using HashCash. The following are the exact stages in the calculation:

i. Get the difficulty:

Following the generation of every 2016 blocks, the bitcoin mining algorithm will dynamically change the difficulty value based on the network's hash rate.

ii. Collect transactions:

After the final block is produced, collect all outstanding transactions on the network. Then put in the block version number, the preceding block's 256-bit hash value, the current target hash value,

the Nonce random number, and other information to calculate the Merkle Root of these transactions(13).

iii. Calculating:

In step 2, traverse the Nonce from 0 to 232 and compute the double SHA256 hash value. The block may be published if the hash value is less than or equal to the desired value. After the other nodes have been verified, the node completes its accounting(14).

iv. Restarting:

If the node is unable to calculate the hash value at a particular point in time, it returns to step two. If any other node completes the computation, it returns to step 1 and repeats the process(15)(16).

The workload is used as a precaution in PoW. The blocks in front of it are connected to the newly formed block. The quantity of effort is proportional to the length of the chain. The longest chain is trusted by all nodes. If someone wishes to tamper with the blockchain, he has to have more than half of the world's hashing power in order to be the first to create the most recent block and dominate the longest chain. The benefits of tampering may far outweigh the costs. As a result, the PoW can efficiently ensure the blockchain's security(17).

10.1.2. PoS(Proof of Stake):

PoS was discussed in the original bitcoin project, but it was not utilized for a variety of reasons, including robustness. PPCoin is the first PoS implementation(18). The notion of coin age exists in PoS digital money. A coin's age is calculated by multiplying its value by the time since it was minted. The longer a node keeps the money, the more network privileges it may get. Coin owners will also get a monetary incentive based on the coin's age. Mining is also required in the architecture of PPCoin in order to get accounting rights. Proofhash * coin age * goal is the formula. The proofhash is a hash value that combines the weight factor, the unspent output value, and the current time's fuzzy sum. Each node's hashing power is limited by PoS. The difficulty of mining is related to the age of the currency.

PoS encourages coin holders to keep their coins for longer periods of time. The blockchain is no longer completely reliant on proof of work thanks to the idea of coin age. In PoW, this successfully addresses the resource waste issue. With growing value on the blockchain, the security of the blockchain utilizing PoS increases. To assault the blockchain, the attackers must amass a significant amount of currencies and keep them for a long time. The attack difficulty is also significantly increased as a result of this.

Many other currencies, like as Nxt and BlackCion, use PoS in addition to the PPCoin. They do, however, take into consideration the rights of the nodes and assign accounting rights using a random method.

10.1.3. DPos (Delegated Proof of Stake):

Satoshi Nakamoto believed that everyone who wanted to mine bitcoin could do so using their computer's CPU. As a result, the hashing power of the nodes may be matched, and each node can participate in the blockchain's decision-making process(19). Machines specifically intended for mining have been developed as technology has progressed and the value of bitcoin has increased.

Participants with a high number of mining rigs are grouped together in terms of hashing power. Ordinary miners are seldom given the chance to generate a block.

DPoS is exemplified by BitShares. Each node on the DPoSblockchain may choose the witnesses depending on its stake. The top N witnesses who participated in the campaign and received the most votes have the accounting right throughout the whole network. The number N of witnesses is chosen such that at least 50% of voting stakeholders feel decentralization is enough. The chosen witnesses are rewarded for creating new blocks one by one as directed. Witnesses must set up enough time to be online. If a witness is unable to produce the block for which they were allocated, the activity for that block will be shifted to the next block, and stakeholders will vote for a new witness to take its place. DPoS is a more efficient and power-saving blockchain than PoW and PoS.

10.1.4. PBFT(Practical Byzantine Fault Tolerance):

Byzantine Fault Tolerance may be a useful way to address transmission problems in distributed systems. Early Byzantine systems, on the other hand, require exponential processes. The PBFT (Practical Byzantine Fault Tolerance) system was proposed till 1999, and the algorithm complexity was lowered to a polynomial level, significantly increasing efficiency. The PBFT procedure is divided into five states:

i. Request:

The client makes a request to the master server node, which assigns a timestamp to the request.

ii. Pre-prepare:

The request message is recorded and assigned an order number by the master server node. The master node then broadcasts a pre-prepare message to the other server nodes in the chain. The other server nodes must first decide whether or not to accept the request.

iii. Prepare:

If a server node accepts the request, it sends out a prepare message to all other server nodes and gets prepare messages from the others. If a majority of nodes opt to accept the request after collecting $2f+1$ messages, it will reach the commit state.

iv. Commit:

Each node in the commit state sends a commit message to the rest of the server's nodes. At the same time, if a server node gets $2f+1$ commit messages, it may think that the request has been accepted by the majority of nodes. The node then follows the instructions in the request message and executes them.

v. Reply:

The client receives a response from the server nodes. The request is reissued to the server nodes if the client does not get a response due to a network latency. If the request has been fulfilled, the server nodes need simply transmit the reply message over and over again.

10.1.5. Raft:

In 1990, Lamport developed the Paxos algorithm to address the consistency issue under specific circumstances after the Byzantine Generals Problem was stated. However, the paper was not approved since the material was difficult to comprehend. The Paxos was temporarily revived in 2001 when Lamport reprinted the paper in 1998(20). Paxos, on the other hand, has a commanding lead in the area of consistency algorithms. It's the basis for a slew of additional algorithms. Paxos' algorithm, on the other hand, is much too theoretical. People have a hard time comprehending it and engineering its execution. In 2013, Ongaro and colleagues from Stanford University released a paper that introduced the Raft algorithm(21). Raft has the same impact as Paxos but is easier to build and comprehend in terms of engineering. In most cases, a Raft cluster consists of 5 server nodes. It is possible for up to two nodes to crash at the same time. There are three states for the server node: leader, follower, and candidate. In each term, there is only one leader who is in charge of addressing all customer demands.

11. LITERATURE REVIEW

Nguyen et al. provide an overview of Blockchain consensus algorithms that have been studied and are now being used in a number of well-known applications(22). According to them, Blockchain has addressed the issue of converting a low-trust centralized ledger maintained by a single third-party to a high-trust decentralized ledger owned by many organizations, or verifying nodes(23). The consensus method, which determines how all nodes in the validating network agree to add a new block, is a significant contribution to Blockchain's work. Blockchain algorithms are divided into two categories. The first is proof-based consensus, which requires nodes entering the verifying network to demonstrate that they are more equipped to perform the adding job than the others. The second kind of consensus is voting-based consensus, which requires network nodes to share their results of validating a new block or transaction before reaching a final decision(24).

L. M. Bach et al. compare and contrast traditional consensus algorithms with some of its contemporaries presently in use in contemporary blockchains(25). Their investigation focuses on the algorithmic processes performed by each consensus algorithm, the system's scalability, the manner by which validators are compensated for their time spent confirming blocks, and the algorithm's security concerns. Finally, they discuss their findings as well as some potential future trends in blockchain consensus algorithms.

12. DISCUSSION

12.1. Analysis of the Consensus Algorithms:

Each consensus algorithm has its own set of features. In this chapter, we examine the consensus algorithms' safety, verification speed, throughput (transactions per second, TPS), fault tolerance, scalability, and limitations, as well as their use in various situations.

12.1.1. Limitation:

PoW has other flaws, such as resource waste, transaction verification speed, and hashing power concentration:

i. Waste of Resources:

Nodes with a lot of hashing power may receive bitcoins as a reward. This is the primary method of obtaining bitcoin, which requires users to update their gear. Participants must pay a significant amount of money to purchase the specialized mining equipment, and the devices must use a significant quantity of power throughout the computation process. These features also impose certain restrictions on the use of PoW.

ii. The Slow Speed of Transactions:

The calculation time of each block must not be too short in order to minimize the creation of a single block or branch of the chain. The block's average calculation time is 10 minutes. The time gap between the two blocks, however, is unknown. The longest gap in history is almost an hour, while the shortest is less than a second. The use of immediate payment has a significant time restriction at this moment.

12.1.2. Application Scenarios:

Public blockchains, private blockchains, and permissioned blockchains are the three types of blockchains. According to the preceding section, under certain situations, it is preferable to apply the appropriate consensus method.

A public blockchain is one that is available to everyone in a public space. Anyone may join the nodes and contribute in order to get the benefits if they follow the rules. There are no node-to-node trust connections. The public blockchain is fully decentralized and accessible. On the public blockchain, no transaction can be altered or canceled. Public blockchains often use the PoW, PoS, and DPoS consensus algorithms.

13. CONCLUSION

Decentralization, stability, security, and non-modifiability are all features of blockchain. With the advancement of technology, the blockchain is gaining traction in a variety of fields. This paper does a thorough examination of the most common blockchain consensus algorithms. Although the consensus algorithm is at the heart of blockchain, current research on the process is still in its early stages. It's still uncommon to find a consensus method that's tailored to certain situations. What can be done to improve the performance of the blockchain in a certain scenario? More research is still required. The consensus algorithm has been studied in distributed systems for many years. Several transplantable consensus methods are utilized in blockchain. These consensus algorithms' principles are well explained in this paper.

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A REVIEW STUDY ON TRADITIONAL AND ADVANCED PROTECTION SCHEMES OF POWER TRANSFORMER

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ABSTRACT

Power transformers play a critical function in providing a stable power supply to energy users in a power system network. This article provides the idea of many kinds of transformer protection, which will be more useful in analyzing the transformer's protective system. The goal of this paper is to bring together recent advances in transformer protection. To that aim, efforts have been made to cover all of the methods and ideas utilized. The article discusses both the most current and classic transformer methods. Many essential components are placed in the transformer, and they are extremely expensive, therefore they must be safe in an abnormal state. Transformers play a vital role in the power system, changing voltage and current levels, thus adequate transformer protection is critical for system dependability. In most cases, a well-designed transformer protection system will last a long time even if the power supply is stopped. Reduces stress on the transformer is the only way to improve life, efficiency, and overall performance, therefore this protective system helps in correctly observing those things.

KEYWORDS: Fault statistics, Fuzzy, Over current protection, Power Transformer, Relay.

1. INTRODUCTION

Protective relaying's purpose is to start the early removal of a defective part from service in order to limit system damage. The role of digital computers for the first time. With the introduction of the microprocessor in the early 1970s, its use in digital protective relays became a highly appealing alternative. Among the many components of the power system, the power transformer is an essential component. Because of its significance, it requires quick and dependable security. As a result, a lot of work has been done in this area(1–3).

Because the transformer is a component of the electricity system, it requires appropriate protection. In general, backup protection should be needed for protected transformers since if the relay or circuit breaker fails, the whole transformer may be destroyed, which is not cost effective. The following are the several types of transformer operations: Normal operation, magnetizing inrush, over-excitation, and a fault state are all examples of normal operation. The relay should not function under the first three operational circumstances, but it must operate in the event of a fault. Because the transformer's cost and weight are considerable, and we can't transfer it to the maintenance department for fault clearing, the protective system plays a critical role in avoiding this situation(4–6).

1.1. Fault Statistics:

IEEE guidance in Protective relay system for Power Transformer provides failure data for six types of failures. Winding and tap changer failures account for almost 70% of transformer problems, and other faults are rare, thus winding and tap changer are the most common causes of transformer defects(7,8). As a result, transformer protection under unusual circumstances is a difficult component to design. As well as insulation failures, loose connections are implicated as the starting event. CT failure, external defects, overloads, and shipping damage are among the many categories. Advanced online monitoring equipment (such as a gas-in-oil analyzer) may detect these problems before a major event occurs. Because of high failure rates, appropriate transformer protection gear is required to keep the power supply running. As a result, the different kinds of transformer protection systems are represented in this article(9–11).

1.2. Classification of Transformer Protection Relay:

In most cases, the failures in the transformer were caused by insulation failure or deterioration. As a result of the insulation breakdown, the temperature of the transformer oil rises, resulting in poor transformer performance. As a result, a temperature monitoring system for transformer oil is supplied. Overvoltage and over current may arise as a result of a transitory condition, therefore an over current relay and differential protection mechanism are employed. Many faults have occurred, although certain atypical defects, such as magnetic inrush current, excessive fluxing, and low oil level, do not pose a serious threat to the transformer (Figure 1).

These aberrant circumstances are not caused by a transformer failure. As a result, no protective gear is used to address these flaws. But one thing to remember is that if the abnormal fault persists for a long period, it will cause a major issue in the transformer. Below is a diagram of the most essential protective systems. This protective gear must always be operational; otherwise, when a fault occurs, it will cause a major issue in the transformer(12–14).

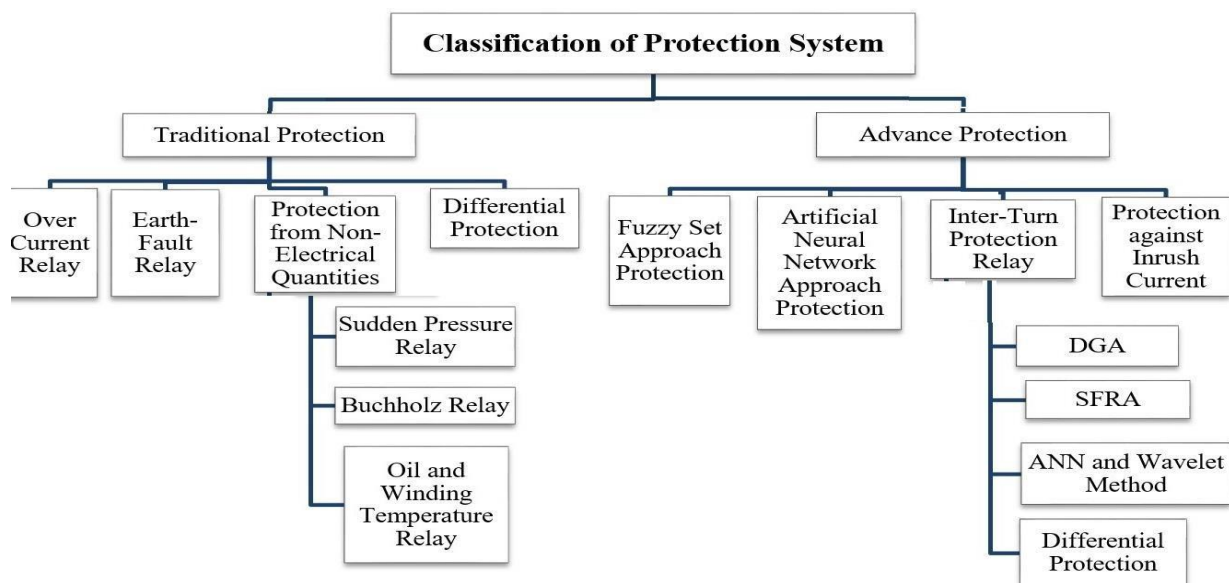


Figure 1: The Above Figure Shows the Fuzzy Set Approach for Transformer Protection.

The idea of fuzzy set theory was originally proposed by Zadeh in 1965 to deal with unclear and ambiguous characteristics of occurrences. The fuzzy set idea was originally utilized in 1979 for power system safety. As a result, fuzzy set theory may be considered a broadening of conventional set theory. In fuzzy set theory, the element's association may be modified at any time. Fuzzy logic is a highly useful mathematical medium for solving decision-making problems because it combines heuristic knowledge, expert knowledge, and experience. As a result, it is a highly effective tool for expressing quantitatively ambiguous values and their relationships.

The transformer is an important component of any electrical power supply. Fuzzy logic methods are utilized to improve the fault detection sensitivity of the conventional percentage differential current relaying methodology. Fuzzy inference is a decision-making technique that works in parallel. Because of this feature, no data is destroyed throughout the process, resulting in much more accurate final fault detection than conventional relaying methods. Rather of using numerical variables, fuzzy logic employs language variables. Fuzzification is the process of turning a numerical variable (crisp variables or real numbers) into a linguistic variable (fuzzy number). Fuzzification is a powerful tool for dealing with ambiguous data, whether objective or subjective.

1.2.1. The following advantages shows the fuzzy logic based approach:

- In the case of a magnetizing inrush with a low second harmonic component and internal faults with a high second harmonic component, the fuzzy based relaying algorithm is not permitted to run the relay needlessly. As a consequence, our findings improve accuracy and resilience in the face of changing power system conditions.
- This fuzzy algorithm allows the relay to identify faults with great sensitivity and function with an average tripping time of approximately 3/4 cycles. As a result, the technique is both dependable and quick.

1.3. Artificial Neural Network Approach Protection:

The artificial neural network (ANN) is the second most popular mathematical technique in recent years, attracting researchers to solve the transformer protection problem. The ANN's distinguishing feature is that it takes into account the accumulated information obtained during training and reacts to new occurrences in the best appropriate way possible based on the experiences gathered during training. The network design, transfer function, and learning rule are all used to create the ANN model. Weights and a connecting system are used to complete the design. The goal of the training procedure is to modify all ANN weights such that the target and computed ANN outputs are as close as possible to the mean value of all input samples.

According to the conventional gradient method, the criteria function for the sum square error is minimizing. The quality of the training process determines the efficacy of ANN. The waveform analysis technique is used to train neural networks in ANN. The following three challenges arise when implementing the neural network: defining a set of training examples, ensuring that the multilayer perceptron is small enough to allow weight convergence, and ensuring that the input is defined and coded with the core so that it is representative of the events to be identified.

1.4. Protection against Inrush current:

The transformer is an important component of any electrical power supply. Differential protection transformers are often used to safeguard transformers. However, when a transformer is turned on, inrush current may cause the differential protection to fail. To degrade the defect, various methods are employed. Per-phase method, cross blocking method, percent average blocking method, and harmonic sharing method are examples of these methods. The internal fault was then separated from the magnetizing inrush current using a fuzzy logic method. Following that, differential protection based on the wavelet packet transform was implemented. The inrush blocking method was then based on mathematical morphology. The per-phase approach, cross-blocking method, % average blocking method, harmonic sharing method, fuzzy logic, wavelet packet transform based methodology, and finally Mathematical morphology based inrush blocking scheme are all compared in this article. The following techniques demonstrate several magnetic inrush current prevention schemes.

1.4.1. Per-Phase Method:

The per-phase method is a simple and conventional way to keep harmonics under check. The restraint algorithm is simultaneous and independent in each step. This criteria applies to each step individually in the Per – Phase Method. The residual flux is variable in each phase. As a result, the amplitude of the second harmonic will vary depending on the phase. The threshold value is used in this technique. The differential protection may trip if the 2nd harmonic content in a phase is low when energizing. As a result, although this method is highly dependable, it is not particularly secure.

1.4.2. Cross-Blocking Method:

The only difference between this method and the Per-Phase Method is that the signal that restrains differential operation for one phase also restrains differential operation for all other phases. Differential protection will also trigger if the second harmonic value exceeds the pre-set value for other phases. This method works well in the case of symmetrical faults. The differential protection, on the other hand, will trigger if there is a single unsymmetrical fault.

This approach improves security by allowing a phase with a low harmonic ratio to be cross-blocked by a phase with a greater ratio, preventing the risk of erroneous tripping. At the moment of energization, the insulation is subjected to a significant deal of mechanical stress, and the inrush current is typically several times higher than the rated current. This cross-blocking method is secure, although it isn't entirely reliable. A cross-blocking technique is comparable to the two-out-of-three restraint method. To identify the appropriate amount of harmonics, blocking differential operation requires at least two phases in this technique. However, this approach suffers from the same fundamental flaw as the simple cross-blocking technique.

1.4.3. SFRA Scheme:

Sweep Frequency Response Analysis (SFRA) is a reliable and sensitive technique for determining the mechanical integrity of a power transformer's core, windings, and clamping structures by calibrating their electrical transfer functions across a wide frequency range. For frequency measurements, SFRA is an approved technique. SFRA is one of the most reliable and precise techniques available. In this technique, we apply a pulse wave on one side of the winding

and examine the frequency response for the provided input on the other side of the winding. There are three ways for analyzing the results.

1.5. Buchholz Relay:

With the assistance of thermal monitoring, a Buchholz relay is utilized to identify a transformer failure. Low-energy arcs, insulation breakdown, and overheating are used to identify tiny generated gas in oil. This relay may also detect heating from greater power transmission, higher ambient temperature, and high eddy current between laminations, arcing, and overloading. Between the conservator and the transformer tank is a Buchholz relay.

When a problem occurs in the transformer, the temperature of the oil rises, and the Buchholz relay operates on this premise. The relay is positioned such that the arrow points towards the conservator and is at a 5-degree angle. There are many methods for analyzing a transformer problem. However, among the various methods, the technique of monitoring oil temperature is one of the most reliable.

1.6. Sudden Pressure Relay:

When used in combination with a basic differential relay, the gas pressure relay may safeguard a transformer. The main benefit of this relay is that it will operate in a steady manner even when there is an inrush current. This relay may be utilized as a backup to the Buchholz relay's protected relay. When there is a significant amount of gas in the transformer tank, this relay activates instantly. The rate of increase of the gas in the transformer is the operating concept for this kind of relay.

Heat is produced whenever a strong current passes through a winding. Introduce arcing in the oil such that winding heat is responsible for raising the temperature. As a consequence, the pressure in the transformer oil would rise. A sudden pressure relay may detect a rapid rise in gas pressure. This kind of relay is mounted on the oil-filled transformer's top. It has two functions: one is to detect the gradual buildup of gases and the other is to sound an alert when a certain quantity of gas has been gathered.

A standard transformer gas relay is made up of two chambers, each of which serves a unique purpose. It responds to a rapid pressure shift that occurs when gas output is high. Figure 4 depicts a simple sudden pressure relay(15,16). A gas accumulation chamber is placed immediately above a pressure chamber in the relay configuration. Slowly generated gases are accumulated in the accumulation chamber. As the gas volume rises, a float in this partly oil-filled cylinder slides. When the quantity of gas collected reaches a certain threshold, it activates an alert switch. The only disadvantage of a pressure relay is that it can function when there is a lot of current flowing through the winding. As a result of this flaw, some users only set it up for alarm purposes.

1.7. Over current Protection:

For lower rated transformers, an over current relay is the best option for protection. This over current relay is suited for transformers ranging from 100 to 500 KVA. This relay may also be used as a backup safeguard for high rating transformers. In general, this relay is configured to an above-normal rated current so that it can handle a short time rating(17,18). When the pick-up over current value is not exceeded during a low-level fault, the instantaneous over current relay

will allow the fault to continue forever. In typically, this relay is set at 2-3 times the transformer's rated voltage. One thing to note is that this relay's pickup value is always greater than the magnetic inrush current. An instantaneous over current relay is used to provide main protection against severe internal faults.

When a transformer is overloaded, the rating size of the transformer increases, and mechanical force is produced. These mechanical forces will attempt to raise the transformer's winding hot spot temperature and movement. This movement causes mechanical damage to the insulation, resulting in a temperature hotspot. As a result, the transformer should not be operated in an overloaded condition for an extended period of time(18,19).

1.8. Earth-fault Protection:

The current taken from the source terminates its course without adding to the load in an earth fault. The primary goal of this protection is to keep ground fault current to a minimum. Short-circuit currents travel through the system when the fault occurs, and this current is returned via the earth or any electrical equipment. This fault current causes damage to the power system's equipment and disrupts the supply's continuity. Using the limited earth fault (REF) protection design, the earth fault may be distributed.

When a star side external fault occurs, current flows in the afflicted phase's line current transformer while a balancing current flows in the neutral current transformer, resulting in a zero resultant current in the relay. As a result, this REF relay will not function in the event of an external earth fault. During an internal fault, however, the neutral current transformer only provides unbalanced fault current, requiring the use of a Restricted Earth Fault Relay. The internal earth fault of the electrical power transformer is very sensitive to this system of limited earth fault prevention. The protection plan is less expensive than the differential protection plan. Only one residual current is accessible at the output since three CTs are linked together. The secondary side of CTs balances the residual current.

2. DISCUSSION

Medium and large-scale power transformers are important and essential components of power systems. Its protection must be properly handled due to its importance and expense. Transformer protection has to be quick and dependable(8,20). Appropriate monitoring of the power transformer should be chosen to give early warning of electrical faults and avoid catastrophic losses. The primary purpose of the protective system is to rapidly identify and isolate any failed or faulty components, minimizing the impact on the rest of the electric system. As a result, the protective system must be reliable (act only when needed), secure (not operate needlessly), selective (just the bare minimum of devices should function), and quick. Without this fundamental need, the protective system would be useless and even dangerous.

3. CONCLUSION

The most essential thing to remember is that the effects of thermal stress and electrodynamic forces must be minimized, which can only be done with properly chosen transformer protection that reduces the time it takes to disconnect in the case of a failure. This article offers an overview of the many types and methods of transformer protection, as well as basic and higher level information. This article contributes to the development of sophisticated and conventional transformer protection relays. Many problems may arise in the transformer, therefore appropriate

protective gear must be in place to safeguard the transformer. The protective systems that have been devised so far are capable of effectively protecting the transformer and reducing the danger of massive damage. The advantage of this technique is that it is an automated protection solution that does not need any human effort. In reality, this notion is very easy to manipulate.

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A CRITICAL EVALUATION OF LEADERSHIP STYLES

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ABSTRACT

To minimize attrition in today's global competitive climate, good leadership style is required. Only via the use of effective leadership styles is it feasible to accomplish corporate goals in a productive manner. Employee performance and productivity are affected by leadership styles. A human connection in which one person leads, organizes, and oversees the execution of a shared job is known as leadership. The leadership social contract is seen as a myth that serves to reinforce existing societal beliefs and structures about the importance of hierarchy and leaders in organizations. Leadership seems to be about bringing people together around shared objectives and enabling them to take the steps necessary to achieve them. The capacity to persuade a person or a group to work toward a shared objective. This article reviews and examines the research on leadership styles and their impact on several aspects of work life quality.

KEYWORDS: *Critical Evaluation, Employee, Leadership Style, Leader Skills, Organizations.*

14. INTRODUCTION

Socrates stated over 2500 years ago that leadership is always situational: a leader's skills, particularly professional or technical expertise, are unique to the context and therefore not transferrable(1–4). But he also emphasized the flip side of the argument: a successful business leader would also make a good military commander since both have some general leadership qualities such as being excellent at selecting the best people to work with and being able to find and work with the appropriate allies.

Certain leadership qualities that are helpful in one area or culture are likely to be useful in another, according to knowledge collected over decades of study into leadership problems(5). If this is the case, then, despite substantial geographical variations, we should be able to create courses and programs that are successful in any area of the globe, particularly with customized modifications. As "the practice of influencing an organized group toward achieving its objectives," leadership is defined as "the process of influencing an organized group toward achieving its goals." The goal is to learn about various kinds of leadership styles and then use the most suitable approach to better influence subordinates or followers.

14.1. *Styles of Leadership:*

The leader's conduct is basically similar to the terminology style. It's the method a leader has an effect on his or her following. There are many different methods to lead, and each leader has his or her unique style. Autocratic, bureaucratic, leadership, and laissez-faire are some of the most

prevalent types(6). Management professionals have experienced a revolution in how they define leadership and how they see it over the last few decades. They've transitioned from a traditional authoritarian approach to a more creative, participatory one. It was decided somewhere along the way that not everything old was evil and not everything new was good. Instead, various styles were required for different circumstances, and each leader had to know when to use which one. The theoretical framework of leadership styles is shown in Figure 1.

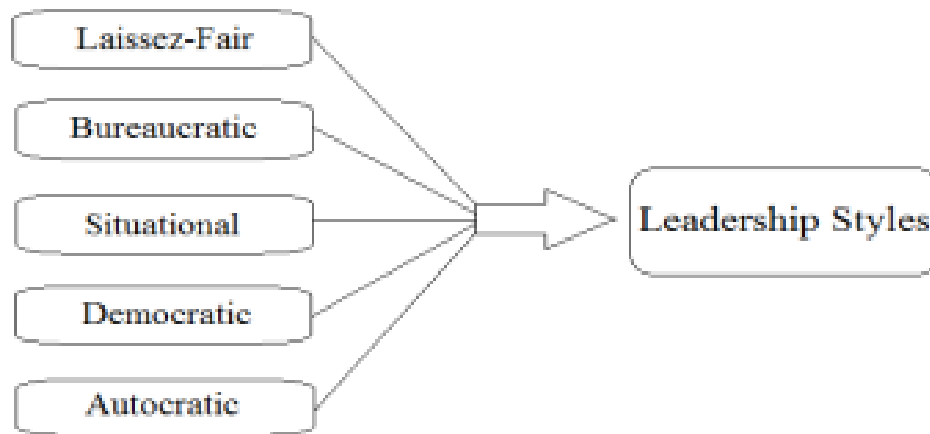


Fig. 1: Leadership Styles Theoretical Framework(7)

14.1.1. Autocratic Style:

This is often referred to as the traditional method. It's one in which the manager wields as much control as possible and makes all of the decisions(8–10). Employees are not permitted to offer feedback or discuss with the management. Employees are required to follow instructions without question. An organized set of incentives and punishments is used to create a motivational atmosphere.

Over the last 30 years, this leadership style has been heavily criticized. According to several research, companies with a large number of authoritarian CEOs have greater turnover and absenteeism than others. Employees from Generation X have shown to be very resistive to this managerial approach. According to these studies:

- i. An employee challenges a manager's authority.
- ii. Autocratic rule isn't all terrible. It is sometimes the most effective approach to use.
- iii. No employee input is permitted.
- iv. Employees should not be trusted.
- v. Only precise commands and instructions may offer effective monitoring.
- vi. No other leadership style elicits a positive response from employees.
- vii. New, inexperienced workers who are unsure of which duties to do or processes to follow.
- viii. Use threats and punishment as a means of persuading workers.
- ix. There was a lack of management in the region.

- x. High-volume manufacturing is required on a daily basis.
- xi. You only have a limited amount of time to make a choice.
- xii. Work with another department or organization must be coordinated.

The authoritarian leadership style should be avoided in the following situations:

- i. Employees feel nervous, frightened, or resentful as a result of the situation.
- ii. Employees learn to rely on their boss for all of their choices.
- iii. Employees expect their voices to be heard.

• *Advantages:*

- i. Discipline
- ii. Good control, overview
- iii. Group members know what they must do
- iv. Laws: Youth protection laws
- v. No long discussions
- vi. Rules give security
- vii. Unimpaired programme

• *Disadvantages:*

- i. Ability to criticize is suppressed.
- ii. Defiance
- iii. Fear turns into aggression, therefore violence.
- iv. Group interests are suppressed.
- v. Groups are not relaxed.
- vi. Hierarchy is promoted.
- vii. Less or no self-confidence.
- viii. Less own initiative (Fears, hatred toward other members).
- ix. Listlessness
- x. No development of freedom of choice.
- xi. No trust.
- xii. Rivalry amongst the group members.
- xiii. Talents are not recognized and therefore not promoted.
- xiv. The independence of the group is weakened by the authority of the leader.

14.1.2. Authoritarian Style:

Authoritarian leaders, also known as autocratic leaders, set clear expectations for what must be accomplished, when it must be accomplished, and how it must be accomplished(11–13). A significant distinction exists between the leader and the following. Leaders that are authoritarian make choices on their own, with little or no involvement from the rest of the group. Under authoritarian leadership, researchers discovered that decision-making was less innovative. Lewin also discovered that transitioning from an authoritarian to a democratic style is more difficult than the other way around. Controlling, domineering, and dictatorial behavior are often associated with this type.

When there is limited time for collective decision-making or the leader is the most informed member of the group, authoritarian leadership is most effective. Participative leadership, also known as democratic leadership, was shown to be the most successful leadership style in Lewin's research. Democratic leaders provide direction to group members while also participating in the group and allowing feedback from others. Children in this group were less prolific than those in the authoritarian group in Lewin's research, but their contributions were of better quality. Leaders that promote group participation while maintaining control over the decision-making process are known as participatory leaders. Members of the group are more driven and innovative since they are more involved in the process.

14.1.3. Democratic Style:

Because it encourages workers to participate in decision-making, democratic leadership is also known as participatory leadership. The democratic manager keeps his or her workers up to date on everything that impacts their jobs and distributes decision-making and problem-solving duties(14–16). This leadership style necessitates the presence of a coach who has the ultimate word but seeks input from the team before making a decision.

Democratic leadership has the ability to deliver high-quality, high-quantity work over an extended period of time. Many workers appreciate the confidence they are given and react with collaboration, teamwork, and a positive attitude. In most cases, the democratic leader is:

- Enables workers to set objectives.
- Creates strategies to assist workers in assessing their own performance.
- Encourages workers to advance in their careers.
- When utilized with highly trained or experienced workers, or when making operational changes or resolving individual or group issues, it is most effective.
- The democratic approach, like the others, is not always suitable.
- Acknowledges and promotes success.

14.1.4. Laissez-Faire style of Leadership:

The laissez-faire leadership style, also known as the "hands-off" style, is one in which the manager offers little or no direction and gives staff as much independence as possible(17). All authority or power is given to the employees, and they are responsible for setting goals, making decisions, and resolving problems on their own.

- Employees are highly trained, experienced, and educated; they are also reliable and experienced.
- Employees take pleasure in their job and are motivated to complete it on their own.
- Outside experts are being utilized, such as staff specialists or consultants.

This style should not be used when:

- It makes workers feel uncomfortable because a boss is unavailable.
- Managers are unable to express gratitude to workers for their hard work.
- The manager is unable to give frequent feedback to workers about their performance.
- The manager is unsure of his or her duties and is relying on his or her workers to fill in for him or her.

14.1.5. Bureaucratic Style:

When a manager governs "by the book," it is referred to as bureaucratic leadership(18). Everything must be carried out in accordance with policy or procedure. The manager refers to the next level above him or her if something isn't addressed in the book. This manager resembles a police officer rather than a leader. He or she is in charge of enforcing the regulations.

When this approach is used in the following situations, it may be quite effective:

- Employees repeat the same duties again and over.
- Employees are doing work that requires them to handle money.
- Employees are dealing with potentially hazardous or sensitive equipment that must be operated according to a strict set of rules.
- Employees must be aware of specific policies and processes.
- There is safety or security training going on.

This style is ineffective when:

- Work habits develop that are difficult to change, particularly if they are no longer beneficial.
- Employees lose interest in their employment, as well as in their coworkers.
- Employees do just the tasks that are required of them.

15. LITERATURE REVIEW

Nanjundeswaras et al. review and evaluate the research on leadership styles and their impact on several aspects of work life quality(19). To minimize attrition in today's global competitive climate, good leadership style is required. Only via the use of effective leadership styles is it feasible to accomplish corporate goals in a productive manner. Employee performance and productivity are affected by leadership styles.

To better comprehend the significance of ethics and morality in various leadership conceptions, Ahmad et al. examined ethics-related leadership, including ethical leadership and other ethic-related leadership theories(5). This research also included a thorough examination of ethical

leadership and its parallels and distinctions from other leadership styles. Another goal of this research was to provide the definitions and scales of each leadership style, as well as to show how ethical leadership differs from each style. The paper's conclusion and future directions are given in the end.

Kesting et al. examine the study findings on the effect of various leadership styles on innovation(6). To accomplish so, they create a framework that divides research findings into four categories: people, means, impacts, and innovation goals/outcomes. They evaluate articles in the following areas: directive and participatory leadership, interactive leadership, charismatic leadership, transformational leadership, transactional & instrumental leadership, strategic & CEO leadership, and shared & distributed leadership, using this methodology. They find compelling evidence that various phases and kinds of innovation place varying expectations on leadership.

16. DISCUSSION

There are many leadership styles, each with its own set of benefits and drawbacks. Situational leadership is constantly present. Democratic leadership is favored by highly qualified and ethically evolved individuals, whereas authoritarian leadership is excellent for underdeveloped people. Similarly, for most competent individuals, a laissez-faire leadership style is preferable. In certain circumstances, all of the styles are essential. Adopting a single style in all circumstances would be a mistake. People are becoming more informed and socially evolved these days, therefore a democratic approach should be used. However, the effectiveness of a leadership style is also determined by the quality of the leaders' impact. Leaders should be well-educated. When utilizing any kind of leadership style, a well-qualified and influential personality may better manage the followers. All leadership styles have one thing in common: honesty. All leadership styles are successful because of honesty(20–22).

Another frequent approach is to observe or even debate some of the beliefs. “Obviously, different countries give birth to diverse beliefs, resulting in a unique atmosphere for people belonging to various beliefs areas owing to certain affected beliefs.” Some leaders occupy positions as a result of the traits they have developed as a result of the nation environment in which they have lived. Linking the viewpoint to the topic at hand may be a good approach to explain it. In various areas, some jobs need distinct qualities. “In certain organizations, the immediate boss has ultimate power, giving rise to a new kind of leadership style.” Another approach to talk about it is to look at the leader's communication abilities and capacity to deal with stress. Some cultures offer their workers greater freedom at work because they believe it would improve production; therefore, the desire of the leader to give their employees more freedom may be regarded as a contributing element to the discussion of the study subject at hand. The final but not least essential field of study is experience. The leader's experience, which he acquires through time or from various situations, also acts as a stoning brick in molding or modifying a particular leadership style.

17. CONCLUSION

Researchers that have recently examined the importance of project managers' leadership style as a critical project success element are certain that project managers' leadership style will have an effect on the project team's results. The present evaluation aimed to achieve three main goals. To begin, the managers' important leadership styles, such as transformational, transactional, and laissez-faire, were investigated. Second, to obtain a more in-depth look at the variance that may

be specified in the criteria variable in relation to the predicting variables (transformational, transactional and laissez-faire styles of leadership). According to the findings of this research, leadership was identified as the most impactful leadership style among managers, combining both transformational and transactional characteristics. The most impactful style of leadership among these managers was transactional leadership, which came in second.

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AN OVERVIEW ON WATER POLLUTION

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ABSTRACT

In the twenty-first century, water quality problems are a significant challenge for mankind. Here, we look at the many types of aquatic pollutants, their impact on human health, and how to protect freshwater resources from contamination. Chemical pollution is emphasized, especially inorganic and organic micro pollutants such as hazardous metals and metalloids, as well as a wide range of synthetic organic compounds. Some elements of waterborne illnesses are also addressed, as well as the urgent need for better sanitation in poor nations. The study looks at recent scientific advancements in dealing with a wide range of contaminants. It's divided into sections based on the many temporal and geographical dimensions of global water pollution. Organic contaminants that are persistent. For more than five decades, gelogenic pollutants, mining operations, and hazardous waste sites have been the most significant sources of long-term regional and local water pollution; during that time, the most relevant sources of long-term regional and local water pollution have been gelogenic pollutants, mining operations, and hazardous waste sites. On a regional to local scale, agricultural chemicals and waste-water sources have a shorter-term impact.

KEYWORDS: Agriculture, Gelogenic, Micro Pollutants, Mining, Pathogens, Wastes.

1. INTRODUCTION

Water quantity and/or quality concerns are at the root of many of humanity's main challenges in the twenty-first century. Climate change will exacerbate these issues in the future, resulting in greater water temperatures, glacier melting, and an intensification of the hydrological cycle, possibly leading to more floods and droughts. In terms of human health, the absence of has the most immediate and severe effect. It's also linked to the shortage of clean drinking water, which affects more than a third of the world's population. Exposure to viruses or chemical toxicants via the food chain or during leisure are examples of additional risks. The contamination of freshwater resources, such as lakes, rivers, and groundwater, is the subject of this review. Chemical contamination is getting greater attention these days, thanks to a slew of new studies that examine all elements of waterborne illnesses in depth. More than a third of the world's available renewable freshwater is utilized for agriculture, industry, and household uses. Given that the majority of these operations result in the contamination of natural water with a variety of synthetic and gelogenic natural chemicals, it's no wonder that chemical pollution of natural water has become a significant public issue in virtually every country. Indeed, according to a recent Gallup survey, drinking water contamination is the most serious environmental issue in the United States(1,2).

1.1 Aquatic Micro pollutants:

The availability of analytical techniques for quantifying the temporal and geographical variability in chemical concentrations, as well as information of the nature and origin of the pollutants, are all required for a thorough evaluation of any chemical contamination of natural water. Present, a thorough knowledge of the mechanisms that determine the chemical's transit and destiny. Mathematical transport and fate models of appropriate complexity for designing optimal sampling strategies and predicting future developments of a given pollution case in the system under consideration, as well as methods for quantifying the adverse effects of chemicals on aquatic life and human health. The same analytical techniques and process expertise are crucial for the design and operation of treatment technologies and in situ remediation methods. The next sections go over some of the most important features of these five parts of a micro pollutant exposure evaluation. Finally, there are many instances when chemical water contamination is suspected, but the kinds and sources of the contaminants are unknown or cannot be thoroughly investigated. There is a "battery" of impact in such situations. Investigators would benefit from regular procedures that enable them to evaluate whether or not action is required. Although there have been several promising instances of effect-oriented approaches described. There is still plenty of potential for future growth(3–5).

1.2 Selected Topics of Chemical Water Pollution:

Some well-known classical pop artists. Two international conventions have identified and dealt with them. With the aim of assessing the Pops' worldwide presence and lowering their environmental emissions. They mostly consist of highly chlorinated substances. As well as polycyclic aromatic hydrocarbons (PAHs). These standards, however, allow for the inclusion of additional compounds to the list, since many other high-volume manufacturing chemicals may fall into the POP category. Polybrominated diphenyl ethers are a recent example of such "emerging POPs" that are being considered for inclusion. Flame retardants are widely utilized. As well as a number of perfluoroalkyl compounds. Because of their unique characteristics, they are utilized in a wide range of industrial applications. It's worth noting that many "emerging contaminants," such as certain POPs, may have been present in the environment for decades but went undetected due to analytical constraints. POPs may endanger human and animal health due to a variety of negative consequences, including disruption of the endocrine, reproductive, and immunological systems, as well as the potential to cause behavioral issues, cancer, diabetes, and thyroid disorders. In the case of developing POPs, such as PBDEs, there has been an exponential rise in concentration in human tissues by a factor of approximately 100 with a doubling time of about, which has been seen in different areas of the globe. This is, of course, the consequence of a variety of exposure routes, the majority of which are terrestrial. Marine animals in North America and northern Europe, on the other hand, are showing quite similar patterns(6–8).

1.3 Agriculture and Water Quality:

Agricultural production uses several million tons of pesticides each year to maintain and enhance crop yields by controlling fungus, weeds, insects, and other pests. Pesticides and associated agrochemicals are sold in tens of thousands of distinct commercial products, each of which contains hundreds of different active chemical components. Because of these chemicals' toxicity to biota and people, as well as their deliberate discharge into the environment, the use of new and existing agrochemical products is strictly regulated: Country-specific registration and risk

assessment processes seek to safeguard farmers and consumers as well as soil and water resources/ecosystems(9,10). Pesticide applications in nonagricultural/urban regions cause increased runoff of pesticide-containing rainfall over sealed surfaces, such as roofs and roadways, contaminating drainage and sewage systems. Reduced soil and water pollution from pesticide emissions is a crucial factor in agricultural management techniques to limit ecological changes and preserve biodiversity, according to the total environmental effects of widespread agriculture. Finally, agricultural workers have a significant risk of acute poisoning from chemical exposure. Although, in North America and Europe, the effect of this exposure route is debatable. Accidental pesticide exposure and intentional agrochemical abuse seem to be more common in developing nations. As a result, an estimated 3 million individuals have been poisoned, with as many as unintentional fatalities each year(4,7,11).

1.4 Gelogenic Contamination Sources:

The primary source of hazardous materials leaking into drinking water supplies in certain parts of the globe is the geological makeup of aquifers. Arsenic, fluoride, selenium, and a few other elements, such as chromium and uranium, are the major sources of concern. Arsenic has produced the most severe health consequences and worldwide concern among all of these gelogenic pollutants. As a result, arsenic is used as a representative example. Arsenic-contaminated groundwater affects between and million people in Bangladesh alone. In India's West Bengal, around a million people are at danger. Other areas of concern include Cambodia's and Vietnam's densely populated river deltas. Arsenic poisoning has been a problem in many areas during the last decade as a consequence of attempts to provide clean drinking water. Until then, take care. The majority of people in these rural regions drank untreated water from rivers and ponds, which is often contaminated with dangerous illnesses. The high mortality rate, which may reach up to. In Bangladesh alone, the number of children per year prompted large-scale initiatives to construct groundwater wells to supply clean drinking water. High weathering rates of arsenic-rich source rocks in mountain ranges, deposition of organic-rich deposits in river floodplains, and a flat and humid terrain with long water residence times in the aquifer, leading to anoxic conditions where adsorbed arsenic is released into the water, are all factors that contribute to arsenic contamination. In dry regions like the Midwest of the United States, eastern Australia, and central Asia, a second route of arsenic mobilization exists. Where high-pH conditions mobilize arsenic in oxygen-rich groundwater, the danger of arsenic contamination in groundwater has been predicted at a global scale since the chemical variables controlling arsenic mobilization are well known(12–15).

1.5 Surface Water Contamination Form Mining Operations:

Globally, mining operations mobilize more than. Metric tons of geological material each year, comparable to the flow of particles carried by rivers from continents to sea. Most mining activities cause major environmental and social issues because they produce huge waste deposits that are exposed to oxidation by air and weathering by precipitation, resulting in water contamination. Coal, lignite, construction materials, and iron mining need the greatest mass movements and produce substantial end products. Rare metal extraction, such as copper, nickel, or gold, however, generates up to a tons of trash every kilogram of pure metal. Problematic geochemical weathering processes and particular pollutant loads, which are introduced as mining chemicals, accompany these enormous waste streams. Large percentages of sulfide material are found in ores such as coal, iron, and copper; when this material comes into contact with air and

water, it oxidizes and produces sulfuric acid in the form of "acid mine drainage." Because sulfur concentrations may reach dangerously high levels. A conservative global estimate puts it at about. Acidic mining runoff has severely harmed the river kilometers bandha of the lake and reservoir region. Mitigation solutions for existing tailings, as well as better processes and safety procedures for continuing operations, are required for more sustainable mining methods. Hazardous compounds like cyanide and mercury should be substituted by less toxic extraction agents like halogens, theorem, or a zero. It is necessary to enforce the emission policy. Clear international rules should be complemented by such technological measures. In the mining sector, there is also corporate social responsibility, which is founded on open information principles. Although international accords and practice standards cannot replace developing nations' better enforcement of environmental laws, they may serve as useful benchmarks for water quality protection(10,14,16,17).

1.6 Pharmaceuticals in Wastewater and Drinking Water:

Municipal wastewater makes a major contribution to the. Fill the container with water and place it in the aquatic habitat. Pharmaceutical chemicals and personal care items are the major sources of concern. Approximately. Painkillers, antibiotics, beta blockers, contraceptives, lipid regulators, antidepressants, and other pharmaceuticals are currently utilized in Europe and the United States. In Germany, to be precise. Every year, new medicines are introduced to the market. In terms of global research and development. Expenditure. On the basis of a global R&D investment of about billion dollars, it may be estimated that on average more than. Every year, new pharmaceutical substances are introduced. The global pharmaceutical market was worth. Billion, with the United States having the greatest per capita sales of. Per capita sales in most European nations range from around (18).

1.7 Global Health Problems Related to Sanitation and Drinking Water:

The issues of sanitation, hygiene, and drinking water in developed and poor nations are fundamentally different. Maintenance and replacement of existing sanitation and water supply infrastructure are the most important jobs in high-income nations in the coming years. Improvements in sanitation and access to clean drinking water are critical in poor nations, where the majority of sewage is discharged without treatment. However, current projections indicate that the majority of the population growth will occur in emerging country cities. In, a large portion of the world's population will still be without access to public sewage systems(15,19,20).

2. DISCUSSION

Despite the fact that they are often unintentional, they are a significant source of water contamination. Oil drilling activities in the water or ships transporting oil are often the source of leaks and accidents. Toxic chemicals enter water bodies such as lakes, rivers, and seas, where they are dissolved, suspended in the water, or deposit on the bed, resulting in water pollution. The discharge of chemicals into bodies of water that render water unfit for human consumption and disturb aquatic ecosystems lowers the quality of water. Water contamination may be caused by a variety of pollutants, including hazardous waste, pesticides, and fertilizers(21–23).

3. CONCLUSION

Fighting global water pollution requires a diverse mix of policies, technology, and scientific breakthroughs. The legacy of persistent priority pollutants such as PCBs necessitates a

worldwide phase-out and regulation effort. Volatile chemicals, such as halogenated compounds or mercury, are not biodegradable and accumulate in the food chain, therefore their usage should be limited to applications in closed systems. Water, as a major commodity for agriculture, requires the same level of protection against chemicals with the potential for bioaccumulation as human food production systems. Furthermore, the precautionary principle must be used in the development of possible replacements for such priority pollutants to ensure that today's solution does not become tomorrow's issue. Global agriculture confronts the problem of increasing crop yields while also protecting the environment and the food supply chain from pollution. Improved water quality in agricultural regions necessitates better integrated farming practices. Precision agriculture is based on local factors such as soil type, terrain, irrigation, and drainage systems, and ensures that the best crop management techniques are used in the right location at the right time, lowering the danger of nutrients and pesticides being released into surface water

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BLOCKCHAIN SOLUTIONS FOR BIG DATA AND IOT CHALLENGES

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ABSTRACT

The widespread use of Blockchain technology, as well as the breadth of its applications, has prompted extensive study in a variety of practical and scientific fields. Although still in its early stages of development, the Blockchain is being hailed as a game-changing solution for contemporary technological issues such as decentralization, trust, identification, data ownership, and data-driven choices. Simultaneously, the world is seeing an increase in the amount and variety of digital data produced by both humans and robots. While trying to figure out the best method to store, organize, and analyze large amounts of data, Blockchain technology comes in handy. Its suggested solutions for decentralized private data management, digital property resolution, IoT connectivity, and public sector reforms are all having a big influence on how Big Data will develop. The innovative solutions related with some of the Big Data domains that may be aided by Blockchain technology are presented in this article.

KEYWORDS: *Big Data, Blockchain, Digital Property, Internet of Things, Privacy, Smart Contracts.*

18. INTRODUCTION

Bitcoin's underlying technology, Blockchain, quickly emerged as Satoshi Nakamoto's true discovery, making Bitcoin merely the first of many future Blockchain implementations. Blockchain is a distributed public ledger that records all of the transactions that have ever taken place in the system. It operates on a peer-to-peer (P2P) network, with each complete node storing a copy of the Blockchain ledger. The Blockchain database is not managed by a central authority. This idea of acquiring a database solely amongst the system's real and equal users lays the groundwork for establishing "decentralized trust." A consensus of nodes that agree on the problem is needed for the transactions to be verified and approved. The notion of decentralized trust is diametrically opposed to virtually every system we've developed using a client-server architecture. There is no longer a mediator processing the actions and data since the central authority has been removed from the system. As a consequence, transaction costs are reduced, transactions are non-reversible, and there is no need for confidence in governments or private businesses. Users of the Blockchain don't even have to trust the other party in the transaction with this approach. Only the system and the code should be trusted(1–3).

A blockchain is a database that organizes transactions into blocks. Blockchain ecosystem is illustrated in Fig. 1 below. When a new transaction is generated, the sender broadcasts it to all other nodes in the P2P network. The deal is still in the works and has yet to be confirmed. The nodes verify the transaction and store it in their transactional pools as soon as they get it.

Validating transactions entails performing specified tests on the transaction's structure and activities. Miners are specialized nodes that generate new blocks that include all or part of the available transactions from their transaction pool. The block is then mined, which is a method of determining the proof of work based on variable data from the new block's header. The continuous computation of a cryptographic hash that meets the specified difficulty goal is used to find the proof of work. Mining requires a significant amount of computing power, and miners use specialized mining gear. The miner who discovers a solution to his or her block first wins. His candidate block gets added to the chain as a new block. We can argue that the newest block in the Blockchain includes the most recent transactions since transactions are added to the mining block as they arrive(4–7).

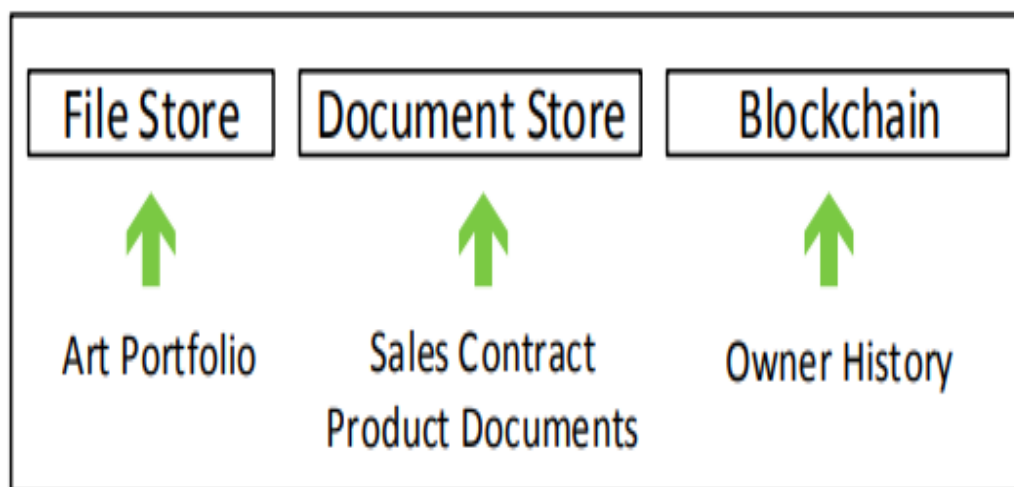


Fig. 1: Blockchain Ecosystem(8)

18.1. Internet of Things (IoT):

The Internet of Things (IoT) is an exciting new idea in development, but there are significant challenges in creating a safe ecosystem that encompasses all components of the IoT architecture. Using current technologies to create IoT systems resulted in a plethora of complicated protocols with contradictory settings. The centralized server-client model is used in today's IoT networks. Through cloud servers, all devices are recognized, authenticated, and linked. The Internet is used to establish a link between devices(7,9–11). Even if this approach works well for the time being, it may not be able to meet the requirements of future IoT ecosystems. Continuing IoT growth in a more decentralized manner was regarded as the right path, but much of the technology, such as privacy and security in large IoT P2P networks, remained lacking. Blockchain technology has the potential to become the perfect component and foundation for monitoring billions of linked devices, processing transactions, and coordinating the devices. Without the need of a centralized cloud, blockchain will enable peer-to-peer communications, file sharing, and autonomous device coordination. According to one IBM study, Blockchain provides the foundation that facilitates device transactions and coordination (12). In the future Internet of Decentralized and Autonomous Things, each item will be in charge of its own function and behavior.

The current state of IoT devices is that they are controlled by the user from a central location. The user's mobile device may serve as the focal point. The user controls all of the activities,

instructions, and rules. While this is beneficial in terms of personal control, it is not fully automated in many respects. If all gadgets are managed by the Blockchain rather than by direct human control, a true revolution may occur. Smart contracts make this feasible. A smart contract is a collection of criteria and business rules that must be fulfilled before a transaction can be recorded on the Blockchain. The transaction recorded on the Blockchain may be more complicated than just transferring ownership. Smart contracts provide a built-in mechanism for carrying out various contract kinds amongst nodes. The smart contract is also self-contained, and theoretically, it is a computer code that can be maintained and performed by itself. When it comes to controlling force, no human element is required. Ethereum, a framework for building Blockchain systems, allows smart contracts to be executed. Ethereum, like Bitcoin, has its own network, nodes, and miners. However, Ethereum nodes are capable of executing any contract that is sent to them.

19. LITERATURE REVIEW

Data is the lifeblood of every company, according to Rabah et al(13). Big data is now used in almost every sector, including retail, healthcare, financial services, government, agriculture, and customer service. Big data may help any company that can use data to solve nagging questions about its operations. Overall, big data is in high demand across all industries and businesses. Those that strive to understand their customers' businesses and issues will be able to discover big data solutions that are suitable for their requirements before their rivals, giving them a competitive edge.

According to Yue et al., the emergence of the big data era on the Internet has resulted in a massive increase in data size(14). However, the most serious problem with big data is a lack of confidence, which makes data safe circulation and industrial growth impossible. By combining non-tampering, traceable characteristics with smart contracts that automatically follow default instructions, blockchain technology offers a novel solution to this issue. They propose a credible large data sharing model based on blockchain technology and smart contracts in their paper, which ensures that data resources are circulated safely.

Internet of Things (IoT) technology, according to Sun et al., has lately grown in popularity(15). However, owing to the limited resources of IoT devices and the centralized system design, several serious problems, such as centralized server overload, single point of failure, and the potential of malicious use of personal information, remain difficult to resolve. In bitcoin trading, blockchain technology has been a huge success. They propose a battery replenishment system for electric vehicles that uses a battery switching method. They also use tests to demonstrate the logic of their approach and compare it to other blockchain-based IoT solutions.

20. DISCUSSION

20.1. *Decentralized Protection of Personal Data:*

When social media networks gather users' personal data, activities, and habits on a regular basis, they lose control over their privacy. While data-driven services have advantages in terms of customized preferences, consumers still don't have a clear picture of what data is gathered and for what purpose. Users lose all control over what happens to their data after then, and they are unable to revoke authorization. Most social networking platforms include a privacy settings area where users may restrict what other people can view about them. What the social media

company sees is something they can't control or modify. People are used to privacy agreements that are presented in a non-user-friendly manner, outlining just the most basic elements of data collection. However, the collection of personal information does not end when you leave the site. Users' online surfing interests and interactions with other web or mobile apps are tracked by social media platforms. Users' installed mobile applications gather even more personal data, such as contact lists and location. When installing a mobile application, users are forced to simply allow third-party access with no additional information or opportunity for partial approval. Fig. 2 depicts decentralized permissions system.

As we confront the repercussions of what others have seen or learned about us, our concerns about data privacy are growing. In a recent study on the state of privacy conducted in the wake of numerous high-profile data breaches, 74 percent of respondents said it is "very important" to them to have control over who can obtain information about them, and 65 percent said it is "very important" to them to have control over the information collected about them (16). In the same survey, 91 percent of respondents agreed that customers had lost control over how businesses acquire and utilize personal information.

Zyskind et al. offer a method that addresses typical privacy concerns such as data ownership, data openness, auditability, and fine-grained access control(17). This is an access-control management system that focuses mostly on mobile platforms and the user's inability to withdraw authorized access to her personal information. Permissions are given forever when a mobile app is installed, and if the user wishes to withdraw access, she must remove the program and cease using the services. The new solution's aim is to allow users to manage and audit which data is kept and how it is utilized. Access, as previously said, should be revocable. So, the technological concept is to store personal data access rules on the Blockchain and then allow Blockchain nodes to regulate access to a DHT (Distributed Hash Table).

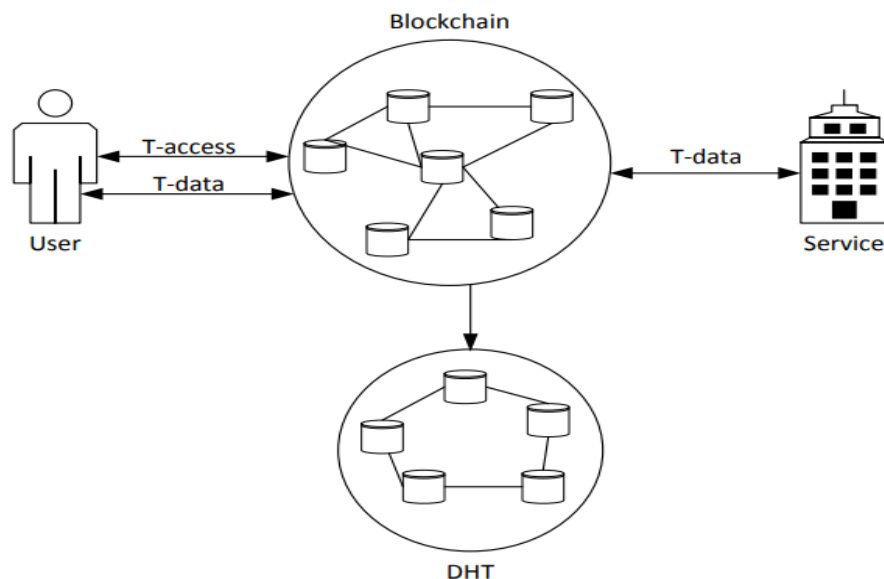


Fig. 2: Overview of Decentralized Permissions System(18)

The user, the business that offers the service, and the Blockchain are the three components of the solution. When a user wishes to provide or take away access to her personal data, Blockchain acts as a middleman. In this case, Blockchain allows for two kinds of transactions: access

transactions and data transactions. Access control management, data storage, and data retrieval are all possible with these transaction types. When a user downloads a new app, a shared identity is generated and transmitted to the Blockchain, together with the rights specified by the user. The so-called Policy contains a list of all the permissions that have been given. An access transaction in the Blockchain sends the shared keys (the user's public key and the service's public key) and the policy.

20.2. *Digital Property:*

The intellectual property of digital art is linked to a particularly specific application of Blockchain in the field of Big Data. Artists, designers, and creative professionals may readily share their work on the Internet, but maintaining the right to do so with appropriate credit and being properly paid has proved challenging in our digital age. There is no visible way to possess something that can be readily duplicated and completely reproduced without leaving any trace of the original. According to the Ascribe project, the Internet was created with a critical defect in terms of ownership(19). The creator loses ownership of his or her work once it is posted online, or even sold online. That is why Ascribe's mission is to create the Internet's ownership layer for digital material. They're working on a tool for writers that will provide them visibility into how their work circulates throughout the arts(20).

On the Internet, the writers, channels, and customers are all in a tangle. Consumers confront material that isn't accessible for purchase, and creators don't have a consistent method of being properly compensated. Even for distribution networks, the process of licensing and lawfully selling material is arduous. There is still no common method for sharing films, movies, music, pictures and photographs, as well as 2D and 3D digital graphics.

So, what's going on here? The World Wide Web began with basic hyperlinks, laying the groundwork for no discernible difference between what is original and what is copied. People then came up with a method to acknowledge the creator by noting it in the references and attributing the images they copied and utilized. However, this method is far from perfect. People can always find a method to duplicate anything without giving credit, and the creator will never know or be informed. Alternatively, individuals may credit the author, but it will only be a one-way link, thus the author will be unaware that her work has been cited. Worse, individuals may credit someone else's work to someone who isn't the actual creator. As a result, it seems that the primary instrument for creating and distributing digital information (the internet) neglected the requirement for digital property. However, history contradicts this. Ted Nelson created Project Xanadu, the first hypertext project, in 1960(21). The solution to this issue was to include a royalty-based publishing scheme into a system that would offer storage and publication services. This system includes author attribution. When someone utilized another user's data, bi-directional connections were supposed to be created automatically. The project was shut down when it was discovered that this was a complex, non-feasible technology.

Ascribe is now using Blockchain technology to attempt to accomplish the Xanadu objectives by developing a solution for the digital property registration and copy visibility. In terms of visibility, they are attempting to locate all copies of the protected material that are available on the Internet. This may be accomplished by crawling the whole internet and comparing it to the material of the author. This is a similarity search issue for machine learning. When the copies are

discovered, the system creates bi-directional connections automatically. The author must next determine whether she will seek license payments or a takedown request.

When it comes to selling digital art intellectual property, it's not only about selling a copy; it's about selling ownership as well as the right to use, alter, and resell the material. This kind of ownership sale (as opposed to a license sale) requires the execution of a formal contract, as well as the engagement of a lawyer. The concept of utilizing Blockchain to store and sell digital data ownership will be as easy as sending an e-mail with a signature stating that the user has transferred ownership of her material. Ascribe's terms of service are developed in collaboration with experienced attorneys. Accepting the terms of service takes care of the intricacy of the legal licensing and ownership procedures. Blockchain is a public, trustworthy ledger that will protect all users' copyrights. In the event of a disagreement over ownership, the time stamping of the transactions may be used as evidence in court.

21. CONCLUSION

Blockchain has a lot of potential for Big Data's future. The first is that consumers may be able to manage all of their data and transactions in various areas. They may be certain that transactions will be carried out precisely as the protocol directs, obviating the requirement for a trusted third party. This idea may inspire Big Data to develop a solution for storing and managing data on a P2P network in a dispersed way. Blockchain technology has the potential to become a new component of the Big Data ecosystem of tools. In fact, it may play a critical role in data security by allowing users to authenticate themselves, limiting access depending on their needs, documenting data access histories, and properly encrypting data.

Consensus models, the computational expenses of mining blocks, and verifying transactions are all problems that persist. Furthermore, Blockchain applications provide solutions that do not need substantial modifications to current systems or their full replacement. As a result, the transfer will not be simple or quick. However, we are still in the early phases of Blockchain development, and these roadblocks will be removed soon, paving the way for a plethora of fascinating possibilities.

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ACQUAINTANCE RAPE: A REVIEW

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ABSTRACT

The sex role socialization theory of rape suggests that the situational setting in which a rape is shown, as well as individual variations in sex role stereotypes, may influence rape responses. Even though the majority of rapes are acquaintance rapes, previous research on women's fear of rape has concentrated on women's concerns related to stranger rape. In this research, 139 college women filled out a questionnaire on their anxieties, protective practices, and attitudes about stranger and acquaintance rape. Women reported being more afraid of stranger rape than of rape by acquaintances, and they reported participating in more cautious actions as a result of their dread of stranger rape. They created more scenarios in which they feared stranger rape than acquaintance rape when asked to self-generate situations in which they feared rape. Surprisingly, they believe acquaintance rape is more frequent. Fear level was the greatest predictor of precautionary conduct. Women's reactions were unaffected by a history of acquaintance rape. There includes a discussion of the theoretical and pedagogical consequences.

KEYWORDS: *Acquaintance Rapes, Precautionary, Self-Generated Fear, Pedagogical Impacts, Women.*

1. INTRODUCTION

I have never been free of the fear of rape. From a very early age I, like most women, have thought of rape as part of my natural environment—something to be feared and prayed against like fire or lightning. I never asked why men raped; I simply thought it one of the many mysteries of human nature.

-Susall Griffin

Women limit their conduct in a variety of situations due to their fear of being abused. In a 1977 study of women in urban neighborhoods, 41% said they frequently used isolation tactics to avoid risk, such as not going out on the street at night, and 74% said they frequently used street-say tactics to reduce risk when they were exposed to danger, such as wearing shoes that allow them to run. The degree of fear among women was the greatest predictor of isolation and street-say tactics. In a 1981 postal poll of Seattle residents, 42 percent of women said they avoided going out alone, 67 percent said they avoided specific parts of town, and 27 percent said they refused to answer the door(1). Women who said they were afraid of being raped were more inclined to take such measures. Similarly, a survey of Greek women showed that 71 percent avoided going out late at night and 78 percent avoided specific parts of the city because they were afraid of being a

victim of crime. They said they were more afraid of being raped than they were of becoming the victim of any other crime, even murder.

1.1 Fear of Acquaintance Rape:

For the sake of this article, acquaintance forced penetration as when a woman is raped by someone she knows, which may be anybody from a stranger to a close friend or lover. Stranger rape, on the other hand, happens when a woman is raped by someone she has never met before (Bechhofer & Parrot, 1991). About 80% to 90% of all rapes are committed against someone you know(2,3).

Currently, cited research on women's rape concerns makes no difference between fears of rape by a friend and fears of rape by a stranger. Despite evidence indicating the overwhelming majority of rapes are acquaintance rapes, when researchers inquire about rape without explicitly mentioning friend or stranger rape, two-thirds of women who give information about being raped say they were raped by a stranger, not an acquaintance(4). Furthermore, research on women's fear of rape has concentrated on circumstances when the rapist is likely to be a stranger, such as going out late at night. As a result, the number of publications on rape fear is focused on stranger rape. However, there are distinctions between rape by a friend and rape by a stranger. Obviously, there is a difference in the rapist's and victim's relationships. A connection of some kind (e.g., a romantic relationship, friendship, or professional relationship) has already been formed in acquaintance rape, and the woman has often joined the relationship willingly. Stranger rape, on the other hand, is less likely to call into question the woman's conduct, judgment, or social skills since there is no previous contact with the rapist. Rapes by strangers and acquaintances occur in a variety of situations. "Date and acquaintance rape take place in a social setting where consensual sex is possible; stranger rape takes place in an environment where sex is usually out of context."

1.2 The Present Study:

The current research looks at college women's worries of rape by acquaintances and strangers. We wanted to see how the following four factors were influenced by two variables: degree of familiarity (acquaintance rape or stranger rape, a within-subject variable) and history of acquaintance rape (if women had ever suffered acquaintance rape, a between-subjects variable):

1. The degree to which women are concerned about rape by strangers and acquaintances in different circumstances.
2. The degree to which women take preventive measures in the face of rape by acquaintances and strangers.
3. When women are asked to describe circumstances in which they are afraid of being raped, the majority of these instances are linked to rape by acquaintances and strangers.
4. Women's perceptions of acquaintance and stranger rape, including their perceptions of the likelihood that they will experience each type of rape in the future, the likelihood that the average college woman will experience each type of rape in the future, the percentages of all rapes that are acquaintance and stranger rapes, how much control they have over each type of rape, and the degree of trauma(5,6).

5. Fear of rape, beliefs about the likelihood of being raped, feelings of control regarding rape, beliefs about the trauma associated with rape, or a history of acquaintance rape are the best predictors of women engaging in precautionary behaviors to protect themselves from acquaintance rape and stranger rape?

Because we conducted five sets of 'analyses, we used a Bonferroni procedure to set alpha to $.05/5 = .01$.

1.3 Sex Roles and Acquaintance Rape:

Sex role socialization processes are more likely to affect behavior in the "date-" or acquaintance-rape scenario, as opposed to the stranger-rape situation, according to the sex role socialization study of rape. Many of our societal ideas about dating (e.g., a woman does not mean it when she says no) have been claimed to be a result of sex role stereotypes, which may lead to misunderstandings in the dating scenario or even rape(7).

Stereotyping of Male and Female Roles Despite the theoretical importance of sex role stereotypes in understanding the causes of rape, little empirical study has been done on the subject. Burt (1980) found some empirical evidence in one research. Burt found that both men's and women's sex role generalization beliefs were positively correlated with sentiments symptomatic of rape-myth acceptance, acknowledgement of violence (mainly against women), and the belief that sex relations are corrosive in nature, using a large representative group of Minnesota residents(8). Although these findings support the idea that sex role stereotyping and rape-supportive attitudes are linked, additional research is needed to confirm the sex role socialization hypothesis using measures that are more directly connected to rape than attitudes. As a result, a secondary goal of this study was to look at the relationship between sex role stereotyping and a variety of variables previously linked to rape.(9,10)

1.4 The Measurement of Rape:

Although the ideal criterion variable in rape research would involve actual observations of rapes, such research is not feasible. Consequently, rape researchers must rely on indirect measures. Three such measures that have received attention in the literature are sexual arousal to rape depictions, perceptions of rape victims, and men's self-reported likelihood of raping. Evidence for the validity of each measure is briefly reviewed.

1.5 Questions About Precautionary Behaviors:

These questions were about women's rape fear-related preventative actions(11). There were two sets of questions, one for behaviors related to acquaintance rape and the other for stranger rape. The participants were asked these two sets of questions in reverse order. The stem for the set of questions on acquaintance rape was "Because I am frightened of acquaintance rape." This stem was followed by a list of 29 actions. "I avoid flirting with men I know," and "I say something if a man I know comes on too strong," were among the responses(12). The stranger rape questions were similar to the acquaintance rape questions; for example, the items above were reworded to read, "I avoid flirting with men I don't know," and "I say something if a man I don't know comes on too hard." On a 5-point Likert scale ranging from 1 = not at all to 5 = a lot/always, respondents were asked to rate how often they participated in these activities for both sets of questions. Each set of questions contained a validity check directing women to respond with a

particular number to verify that they were reading the items attentively and not replying arbitrarily(12). Those that gave erroneous answers were removed from the research.(13,14)

1.6 Questions About Worry in Various Situations:

There were two sets of questions, one for acquaintance rape and the other for stranger rape, regarding circumstances in which women may be concerned about rape. The sequence of these sets was randomized among the participants. In each group, women were given 24 questions on their fears of being raped by a stranger or acquaintance in various scenarios(15). If they had never been in that scenario before, they were instructed to picture themselves in it and respond accordingly. "When you are being followed by a man you know; how much do you fear about being raped by him?" they were asked in the acquaintance rape question set(16). They used a 5-point Likert scale, with 1 equaling not at all and 5 equaling a lot. A validity check was included in each set of questions, with the ladies being told to respond with a particular number.

1.7 Rape-History Questions:

"Have you ever had consensual sex (oral, anal, or vaginal) with a man when you didn't want to because you were incapable of maintaining permission or refusing due to drink, drugs, or other factors?" women were asked. and "Have you ever had sexual intercourse (oral, anal, or vaginal) when you didn't want to because a man threatened or forced you to (twisting your arm, holding you down, etc.)?" These two questions, which are variations of questions from the Sexual Experiences Survey, were used to assess whether or not women had been raped. We did not provide a temporal range for these events, as Russell (1984) did(17). Women who said "no" to these questions were told to go on to the next part. Women who said yes to one or both of the questions were asked how many "boys" were engaged in the incident (s). Those who answered "one" were asked if he was a friend or a stranger. how well they knew him and whether or not they had a connection with him If there were several "men" engaged, they were asked comparable questions about all of them.(18,19)

2. DISCUSSION

The current results showed the significance of incorporating both situational context and individual difference factors in analyzing people's responses to rape, which are consistent with assumptions obtained from the sex role socialization analysis of rape. Each of the three dependent variables, sexual arousal, perceptions, and perceived probability of raping, will be addressed individually(20).

2.1 Arousal in the Bedroom:

There were two results in terms of sexual arousal. The most significant result was that sex role stereotyping influenced arousal to rape (particularly acquaintance rape), but not to the consenting-intercourse portrayal, as anticipated. Individuals with strong sex role stereotyping exhibited high degrees of attraction to rape (particularly acquaintance rape), and their sexual arousal patterns were indistinguishable from perpetrators' (i.e., equal levels of arousal to both rape and consenting depictions). Low sex role stereotyping people, on the other hand, exhibited lower levels of attraction to rape, with arousal patterns more similar to those seen in non-rapist's group(21). Thus, it seems that sex role theorists' claim that there are many "normal" people in society who have response characteristics comparable to those of recognized rapists has some truth, at least in terms of sexual desire.

We also discovered that respondents' attraction to stranger rape was lower on average than excitement to a sexually explicit consenting-intercourse portrayal. In contrast, both the acquaintance-rape and consenting-sex representations elicited the same degree of excitement in the participants. Males exhibit greater penile tumescence after acquaintance rape than stranger rape, according to a recent laboratory experiment by Malamuth, Check, and Briere (Note 6), bolstering the current results(22). The Rape Victim's Reactions as Perceived Despite the fact that there was no evidence of a positive response from the victim in any of these two rape representations, both high and low sex role stereotyping people viewed the acquaintance-rape victim as responding more favorably to the attack than the stranger-rape victim. Furthermore, individuals with more stereotypical sex role views thought the rape victim responded positively to a larger extent, particularly in the acquaintance-rape scenario. This result adds to the sex role interpretation of rape, indicating that the acquaintance-rape scenario is more common.

2.2 Fears and Precautionary Behaviors:

The dread of being raped is common, and it limits women's choices. AU of the women in this research stated they are afraid of stranger and acquaintance rape in certain circumstances, and that they take at least some measures to protect oneself from both kinds of rape. Even if they had a history of acquaintance rape but not stranger rape, women were more afraid of being raped by a stranger than by an acquaintance. Women also said they would take more measures to avoid being raped by a stranger than by a friend, and they were more inclined to create circumstances in which they dreaded stranger rape. This is particularly remarkable given the fact that acquaintance rapes account for the overwhelming majority of rapes, with women estimating that over 65 percent of all rapes occur between acquaintances. Their understanding of rape did not match their fears or cautious actions in the face of rape.

2.3 Relationship Between Fears and Precautionary Behaviors:

Women engage in cautious actions because they are afraid of being raped, according to many studies. Surprisingly, they did not ask women about the measures they took because of their fear of rape. Women were questioned about their cautious behaviors and their dread of different crimes, including rape, by Riger and Gordon (1981) and Warr (1985), but they were not asked what precautionary actions they participated in because of their fear of rape. We asked women how frequently they participate in different precautionary actions "Because I am frightened of acquaintance rape" or "Because I am terrified of stranger rape" in this research. This connection was also supported by statistical evidence: Women's fear of rape predicted their degree of cautious conduct better than their acquaintance rape history, evaluations of rape trauma, emotions of control over rape, or perceptions about the probability of being raped in a multiple regression study. However, it's likely that the connection between concerns and precautions is complicated; it may be bidirectional and vary across women. Fear may lead some women to take more cautious measures, while fear may lead others to avoid thinking about rape and therefore take less preventative measures. As a result, taking preventive measures may raise or reduce fear levels. Furthermore, feelings of control over rape may influence the connection between dread and cautious action. In this area, further study is required.

2.4 Educational Implications:

The problem with developing instructional programming for women in this area is that there is no "optimal" degree of fear to suggest to them. We don't want to pass any judgements on how

fearful women should be, nor do we want to advise that they take any specific measures to protect themselves. Fear, like precautions, is limiting. However, advocating that women have no fear of rape or that they take no measures to avoid rape may put women in danger. Clearly, women are in a lose-lose scenario. We can only infer that the answer rests in concentrating educational efforts on the individuals who have the ability to prevent rape: males. They must be educated from an early age that acquaintance rape is both unacceptable and illegal. Although women should be taught about rape and preventive strategies so that they can identify and respond to such circumstances if they occur, rape educators must also include males in their efforts to stop rape. Furthermore, we must fight concepts and attitudes that promote rape at every level, from individual views to the media and the law.

2.5 Directions for Future Study:

We adopted a wide definition of "acquaintance" because of the exploratory character of this research, ranging from someone a woman recently met to a close friend or lover. We have no idea who the respondents were thinking of when they responded to our questions concerning acquaintance rape. Women are likely to respond differently to the questions if they are thinking about their partner than if they are thinking of someone they have recently met. More research is required to see whether women fear acquaintances differently than males and how this fear impacts their cautious actions. A between-subjects design might be helpful for assessing women's concerns of acquaintance rape without making the implied connection to stranger rape and vice versa. It's also uncertain if women's stated cautious activity matches their real preventative behavior. To answer these issues, further research is required.

3. CONCLUSION

Although the women in this research expressed more concern about stranger rape and took more measures as a result of their fear of sexual assault and rape, it is essential to note that they also expressed concern about acquaintance rape and took safeguards against acquaintance rape. Rape, whether committed by a stranger or a friend, is oppressive. We must strive for a world in which rape is no longer a threat to women. Only then should women feel secure among friends and strangers, and have complete freedom to live their lives as they want.

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INFORMATION TECHNOLOGY OUTSOURCING CHAIN: LITERATURE REVIEW AND IMPLICATIONS FOR DEVELOPMENT OF DISTRIBUTED COORDINATION

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ABSTRACT

The paper aims to analyse how the management science literature explains sustainable coordination and management of Information Technology (IT) outsourcing chains. The IT outsourcing theories, that is, transaction cost theory, theory of agency, resource based view, activity based theory, contractual theory, partnership and alliance theory and stakeholder theory—are applied as a background to the analysis. A systematic literature review reveals that IT outsourcing is developed in collaborative networks and chains. There are some mechanisms identified in the literature for outsourcing chains' management, interchain sustainability, coordination and interchain activities' cohesion. The complexity of outsourcing relationships presented among outsourcers and outsourcees stimulate looking for new business models. Furthermore, outsourcing chains research would benefit from considering strategy-based theoretical discussions, relationship modelling and project management. The literature survey aims to present outsourcing chains in different aspects, that is, dynamics and agility, communication in chains, compensation and compliance, contracting, stakeholders, decision making models, governance problems, integration, performance measurement, project management and strategy development. This paper intends to emphasize that interchain coordination can be improved by enterprise architecture modelling as well as by the application of blockchain economy.

KEYWORDS: *Information Technology Outsourcing; Transaction Cost Theory; Resource Based View; Collaborative Networks; Vertical Software Development; Supply Chain; Relationship Management; Blockchain Economy*

1. INTRODUCTION

Mostly, literature reviews are presented at the beginning of empirical research and to support a practical development of any solution. In conference or journals papers, the main purpose is to build a context for the further research problem definition. As such, the literature review is to ensure in-depth and comprehensive description of the earlier research works(1,2). Therefore, in this paper, it would be necessary to start with the presentation of practical problems as well as the theoretical background of the discussed concepts, for example, multisourcing, outsourcing chain, vertical outsourcing or collaborative networks. In this paper, management science systematic literature review is to focus on evidence-based practices to develop competencies for

support of management of relations among outsourcers and outsourcees in supply chains, assuming that sometimes outsourcer can be an outsourcee, as they have a net of subcontractors, who also have their own subcontractors(3)(4)(5)(6).

The objectives of the paper include:

- reviewing and clarifying the terminology describing different forms of outsourcing, off shoring and production fragmentation;
- identification of literature sources on relationship management and coordination in outsourcing chain;
- showing theories and models of cooperative IT sourcing at the business shown in Figure 1.

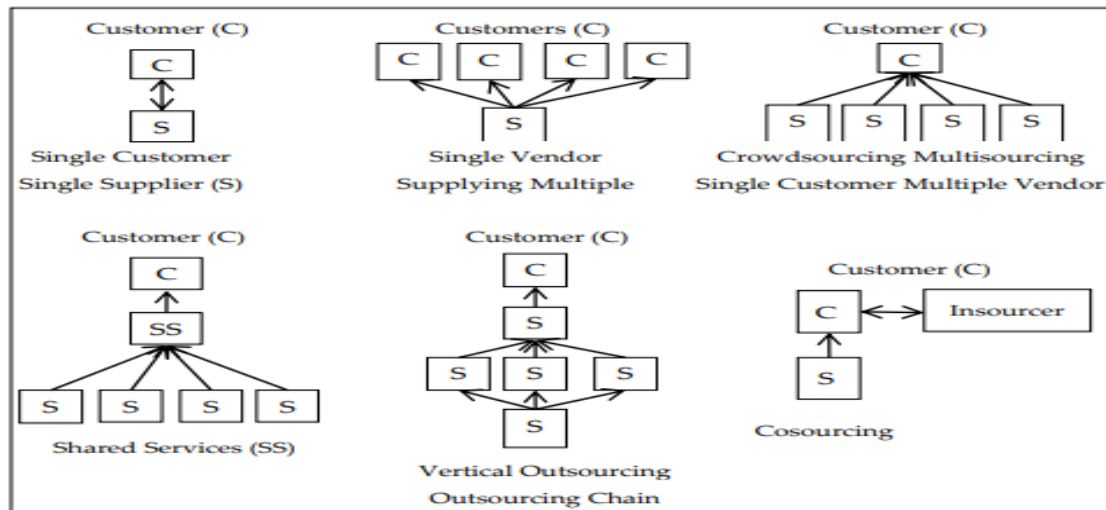


Figure 1: Cooperative Sourcing Models.

The first announcement about outsourcing concerned Eastman Kodak in 1988, when they outsourced information systems to IBM, DEC and Business land and IBM was announced as the IT service outsourcer(7). Probably, the idea of hollow corporation was developed earlier but rapid development of distributed information systems and personal computers in 1980s encouraged companies to IT outsourcing. Since that time, IT outsourcing has developed in each business organization in its idiosyncratic way(8). The hollow corporation is defined as business organization that designs and distributes but it does not produce anything . It is a firm wherein production of all goods and services is outsourced to suppliers with the only remaining corporate functions of planning, coordination and administration. In this paper, outsourcing is defined as the practice of subcontracting service and manufacturing works to external business units. It is identified as the procurement of services and products from an outside supplier or producer in order to reduce costs, to delegate noncore operations to another business unit, to another country, either by hiring local subcontractors or building a facility in a region, where labour cost is lower(9)(10)(11)(12).

Outsourcing as contracting with a third service provider for management and completion of a certain amount of work, for a specified length of time, cost and level of service(13)(14)(15). The third service provider activities are realized in different ways. For example, the centralized shared services are determined by cost reduction that may be achieved when individually

provided services are consolidated and when multiple business units within a firm provide similar types of services. In this case synergies may be realized by means of standardization and consolidation. The cost decrease can be achieved by high economies of scale. Plugge et al. argue that, in this situation, the internal business demands to customize services are often neglected and if internal business departments feel less served, this might affect their perception of the provided performance of the services. Outsourced shared services are realized by an external service provider who will be responsible for the service delivery. Companies make such decisions, because of the absence of firm specific capabilities that are required to provide services. This service delivery way is seen as an alternative for the centralized service delivery mode and in this case an external service provider may provide the centralized outsourced services. The advantage of this approach is that external service results are expected to be more quality-oriented than in-house delivery(16). The next service delivery mode, that is, the collaborative shared service means that organization provides services to both internal departments and other firms.

According to the proponents of this approach, some capabilities can only be developed over periods of time. So, for example standardization of business processes and quality improvement can be achieved in the long term. This option will not focus on the ultimate form of cost reduction. Cost may be increased as a result of the increase of diversification drive by heterogeneous clients' needs. As multiple business organizations are involved in this type of agreements, it is important to understand the dependencies in collaborative shared services as boundaries of individual firms may shift(17). The decentralized shared services delivery approach is perceived as an opposite strategy to the centralized shared services. When a company is characterized as a heterogeneous organization, business units may have different preferences. Firms choose this form of service delivery to meet the idiosyncratic business needs of internal departments and to have a significant degree of flexibility(18)(19).

We propose an economic learning model that helps to formalize the complicated connections between knowledge levels, production costs, and coordination costs in an offshore company. We simulate a domestic firm's adoption of a selective offshore approach (i.e., outsourcing just a part of its information technology operations) to leverage the foreign vendor's vast, scale-driven library of production expertise via IT investments or contractual stipulations. We show how knowledge transfers during offshore may lower a domestic firm's in-house production costs, resulting in overall cost reductions in the short and long run(20). When knowledge transfers are insufficient, certain short-term offshore initiatives may result in significant cost savings for the domestic company; but, long-term offshoring projects may disrupt the knowledge supply chain, resulting in significant losses in the project's latter phases. A company that fails to recognize the consequences of such a disruption early enough in the project's life cycle may find itself trapped in an unfavorable offshore arrangement with no way out. However, a domestic company may be able to overcome a disruption in its knowledge supply chain by using the foreign vendor's economies of scale to create learning-by-doing manufacturing knowledge. Our learning model's managerial implications may aid companies in evaluating the effects of offshore contracts and knowledge management investments on company knowledge, production costs, and coordination costs(21)(22).

As outsourced is risen in importance, outsourcing strategies have become an increasingly essential part of business success. While the stated aim of supply chain outsource is to gain a

competitive edge, it is unclear if companies' outsourcing choices are always strategically linked with their overall competitive strategy. Using empirical collected data from manufacturing business units operating in the United States, we evaluate the degree of congruence (fit or alignment) between a firm's outsourcing drivers and its competitive priorities, and assess the impact of congruence on both supply chain and business performance. Outsourcing alignment across all five competitive objectives is positively and substantially linked to supply chain performance, according to our research. We also discovered that a firm's supply chain performance is favorably and substantially related to its business performance(23)(24).

Outsourcing has become a major concern for many businesses. Outsourcing has progressed from ancillary operations like cleaning and catering to essential activities like design and production. However, research suggests that businesses are not reaping the expected advantages from outsourcing. Many companies have a short-term view and are driven mainly by the quest for short-term cost savings, thus outsourcing choices are seldom made with a fully strategic perspective in mind. By providing an outsourcing framework, the goal is to demonstrate that outsourcing should be done from a strategic viewpoint and incorporated into the organization's overall plan. The framework aims to address some of the issues with outsourcing by including a number of important strands into the decision-making process, including a value chain view, core competence thinking, and supplier base impacts(25).

2. DISCUSSION

In this section, we discuss what might be called research 'dead ends' and how these can be made productive. In using our findings with 'mixed results' to suggest future research, we do not necessarily think that every finding that resulted in mixed results requires more research. Sometimes researchers do not find patterns because there are simply no patterns to find. (Unlike Asset Specificity which is a key construct to a major theory, other variables are not critical constructs of appropriated theories.) Therefore, we suggest that researchers may experience marginal returns if they further study the effects of some 'mixed results.' In particular, we think this may be the case with the effects of Client Size, IS Department Size, and Industry on ITO decisions, and the effect of Contract Duration on ITO outcomes. In Appendix C, two client size characteristics that were examined at least five times produced mixed results: Client Size and IS Department Size. We therefore do not have a clear profile of the size of clients that tend to outsource IT. We may draw one of two conclusions from this data. First, no client size profile exists. Second, a client size profile exists but we have not yet carried out enough research to develop a clear understanding of it. We believe the first conclusion is more likely. Some studies find larger clients outsource more, some studies find smaller clients outsource more, and some find no significance of size whatsoever. Across both these size variables, studied 22 times, no pattern is found, perhaps because there is simply no pattern to uncover. In the case of ITO, perhaps, size does not matter.

3. CONCLUSIONS

Taking into account the literature survey, an evolution of considerations on IT outsourcing development and management should be noticed. Although the basic theoretical background, that is, transaction cost theory, agency theory, game theory, incomplete contracts theory, stakeholder theory, resource dependency views, activity based theory, has dominated for years almost without change, the new viewpoint are arriving, particularly because of IT

innovativeness. For years, the basic issues were formulation and management of bilateral agreements and alliances. Currently however, chain management and vertical outsourcing problems arrived. These problems appeared simultaneously with the beginning of multi-sourcing and offshoring and particularly with virtual organizations, cloud computing and Internet economics development. Probably in the future, a lot of research works will be done because of the necessity to develop new business models for outsourcing chain management. Literature survey allowed to notice that outsourcing chains' management is combined with many other issues, that is, dynamics and agility, communication, compensation and compliance, contracting, stakeholders, decision making models, governance, integration, performance measurement, project management and business strategy development. In the literature survey, 146 papers were reviewed, which were published in 2009–2019 years. 50% of that papers were accepted as significant for IT outsourcing chain studying and the research findings are presented in tables. Papers on stakeholders' relationships and behaviours, on governance of chains and on performance measurement are considered as the most valuable for outsourcing chain management. Only one paper concerns strictly vertical outsourcing management. Therefore, there is an opportunity and need to fill the gap and in future work focus on vertical outsourcing management modelling. Since 2015, the blockchain technology has been developed to support financial transaction controlling as well as supply chain management. IT outsourcing chain is slightly different, however, also here for operation and process outsourcing that technology is very promising to support internal balance and sustainability of outsourcing chains.

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MANUFACTURING'S ROADMAP FOR THE INTERNET OF THINGS AND EDGE CLOUD COMPUTING

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ABSTRACT

The industrial Internet, often known as the Internet of Things (IoT), is a new Internet development for industry. It entails integrating potentially billions of sensors, cameras, industrial machines, displays, smartphones, and other smart communicating devices (collectively referred to as "things") into cloud datacenters and processing their data in real time on elastic and virtualized cloud resources in order to automate the end-to-end manufacturing lifecycle. Industry consortiums all around the globe are working hard to create and promote an open, standards-based smart manufacturing facility based on the Industry 4.0 vision (the fourth industrial revolution). Industry 4.0, according to Wikipedia, "includes a variety of modern automation, data sharing, and manufacturing technologies. Increased availability of omnipresent, ever-shrinking, low-cost devices such as sensors, smartphones, and wearables; ubiquitous Internet connection and cloud computing services; and pressure on industry to develop quicker to retain competitive edge are driving the IoT's rapid growth.

KEYWORDS: *Automation, Cloud Computing, Internet of Things, Manufacturing, Optimization.*

1. INTRODUCTION

Gartner predicted that 6.4 billion IoT devices will be in operation globally in 2016 (up 30% from 2015), and that their number would reach 20.8 billion by 2020 in other words, 5.5 million new IoT devices would be linked every day in 2016 (1). Furthermore, in 2016, the IoT industry would support service expenditure of US\$235 billion (up 22 percent from 2015). Consumer applications will account for \$546 billion in hardware expenditure in 2016, while smart services and other corporate applications utilizing connected objects will account for \$868 billion(2). Gartner predicts that by 2020, these figures will have risen to US\$1.534 billion and US\$1.477 billion, respectively. Other sources' estimates are more optimistic(3).Transportation, healthcare, disaster management, and power grids have all been affected by IoT advances. As shown by many recent studies showing IoT-based productivity improvements in manufacturing facilities, IoT and cloud computing are especially essential for the manufacturing industry(4). Cisco, for example, has claimed increased productivity in power tool manufacturing facilities using IoT-based cloud solutions. For data collection and supervisory control, many industrial facilities now use machines, sensors, and portable devices(5). However, because of the diversity and incompatibility of their interfaces and communication protocols, direct, real-time, and bidirectional communication between these machines and devices is difficult(6).

Although some proprietary systems exist, they are costly, seldom open, and do not allow for real-time plant data analysis and transmission of high-value information for immediate decision support(7). The Internet of Things, on the other hand, offers Internet-based and open standards and solutions that bridge the gap in gathering data from any plant equipment or device. More significantly, it allows for bidirectional machine-to-machine communication inside the facility or over the Internet(8). When coupled with cloud services, the Internet of Things enables for real-time processing and transmission of high-value data everywhere. It may, for example, provide real-time key performance indicator (KPI) monitoring and prediction to a plant manager's or CEO's smartphone(9). These benefits are allowing industrial facilities all around the globe to achieve remarkable operational efficiency, boost revenues, and save expenses. Consider a recent Cisco study that identified major production areas where the use of IoT and cloud technologies improves manufacturing plant efficiency(10). The effect of the Internet of Things in each of these major industrial sectors. Manufacturing benefits significantly from IoT and cloud services. Machines, sensors, and handhelds linked to the Internet of Things, for example, are capturing more precise plant data. The use of cloud services to analyze this data in real time yields productivity, quality, and safety insights that drive business and operational change, lowering labor and productivity costs while boosting profitability. These results may aid in the development of manufacturing processes and the timely transmission of task-related information to employees and plant equipment. This section discusses various options for increasing industrial productivity, quality, and safety. A second possibility, smart inventory management, involves electronically marking goods so that they can be tracked and identified both in the factory and as they travel from plant to customer(11). Optimizing product inventory processes to minimize labor costs and time is another part of smart inventory management.

This entails either automation of manual inventory tasks via smartphones or other IoT tracking devices that monitor and direct manual picking and storing activities (which is more expensive and more appropriate for large plants) or optimization of manual inventory tasks via smartphones or other IoT tracking devices that monitor and direct manual picking and storing activities (which is less expensive and more appropriate for smaller plants)(12). A third option is to use specialized camera systems or wearable technology to automate complicated tasks such as evaluating product quality. Workers may be electronically monitored and mentored while working in production lines or doing specialized industrial jobs, which can assist make worker training more efficient. Finally, real-time monitoring (for example, using RFID or proximity sensors) of how employees wear protective equipment, operate machines, and obtain access to restricted work zones may enhance plant safety(13). Because the Internet of Things is built on the Internet, its fundamental infrastructure (such as the National Broadband Network, Wi-Fi, 3G/4G, and so on) is already in place across the globe. IoT devices and data are becoming more widespread, affordable, and accessible(14). RFID tags, for example, are presently available for about \$0.01 apiece, making them cost-effective for monitoring low- to medium-value assets. Low-cost sensors, such as the Sensor Tag and iBeacon, are mass-produced in large quantities and contain a variety of on-board sensors as well as the ability to interact through low-energy Bluetooth or Zigbee(15).

They cost about US\$20–\$30 per device on Amazon, and buying large numbers may reduce the price down to US\$10 per device. Epson glasses are available off the market for less than US\$700 in the wearable IoT technology sector. Every month, new wearable IoT gadgets arrive on the market that are both cheaper and more capable; in a few months, such devices will likely be half

the price they are now(16). These IoT devices have simple plug-and-play functionality and do not need trained personnel to install or maintain, making them easy to incorporate into current manufacturing facilities. Furthermore, their batteries enable for long-term operation up to two years in certain instances. Battery life is also gradually improving(17). Any action or resource engaged in a manufacturing plant's production processes may be captured, bidirectional communicated through the Internet and cloud services, and analyzed using IoT devices. IoT-based systems may analyze data in real time to monitor and forecast KPIs in real time, as well as identify possibilities to reduce the use of plant resources like labor, electricity, and water(18).

2. DISCUSSION

Wearable IoT devices, such as Epson glasses, provide a new way to give production line employees with task-related information, KPIs, and training or mentorship. Plant managers may monitor employees' usage of safety equipment and produce real-time warnings if they identify a significant safety risk using sensors, such as Sensor Tags, connected to their clothes and protective equipment(19). The core of smart manufacturing in the digital era is collecting and analyzing data in real time while minimizing unnecessary data transmission and data processing delays. Cloud services are now housed and provided by huge datacenters run by businesses like Amazon, Apple, Google, Microsoft, and Facebook. Hardware and software services in datacenters are virtualized using different service provisioning paradigms, such as platform as a service and infrastructure as a service, and these virtualized resources are then leased out on a pay-as-you-go basis. Cloud datacenters have long been utilized to analyze IoT data because they provide low-cost, practically limitless processing capacity(20).

With the difficulties presented by the rapidly expanding IoT ecosystem, existing assumptions that the intellect and resource capacity required for IoT data processing are primarily housed in cloud datacenters are being called into question. The onus of uploading data to distant cloud datacenters falls on resource-constrained IoT devices, resulting in wasteful bandwidth and energy use(21). A store-and-process-later strategy may help you save money. This, on the other hand, undercuts the IoT's credo of real-time decision-making. In manufacturing and other industries, very time-sensitive IoT applications require rapid data analysis and reaction(22). They could, for example, alert workers in underground mines and indoor manufacturing plants about roof collapse, air quality, temperature, and humidity; identify workers who don't have the proper equipment or training for a particular machine; or prevent unauthorized workers from entering restricted areas.

As a result, conventional cloud-centric IoT methods (such as Amazon IoT and Google Cloud Dataflow) must move to a distributed architecture in order to benefit from smart and programmable cloud services at the network edge, such as smart gateways and network function virtualization solutions(23). These network-edge cloud services may provide compute and storage capabilities on a smaller scale (commonly referred to as an edge datacenter) to help conventional cloud datacenters address real-time data processing problems. There are two distinct advantages to moving IoT data processing activities closer to IoT data sources or data sinks. The deployment of one or more IoT-based solutions that meet the urgent possibilities mentioned earlier is expected to be the first step on the path to an SMP. However, we envision the creation of an SMP forum initiative (described later) that will enable the industry to share IoT experiences and solutions, allow third-party vendors to contribute IoT solutions for the industry

to try, and encourage the industry to jointly develop or adopt IoT solutions, industry-specific interfaces, and standards, as well as identify and use free and open source software(24).

We provide our suggestions for realizing these possibilities, as well as the advantages that an IoT-based solution may provide in terms of better business results. Cloud and edge services offer the networking, storage, real-time data analytics, and information distribution capabilities required for the solutions mentioned below. Cost and quality are the main drivers for manufacturing companies, according to our discussions with industry professionals(25). Major clients provide cost and quality KPIs, which are linked to manufacturing plant operations, inventory management, and supply chain activities. As a result, processing KPIs may be generically classified. The development of IoT solutions for real-time KPI monitoring and evaluation of the plant's production process from the viewpoints of productivity, product quality, and safety is one of the most significant directions for the manufacturing sector. Automatic real-time calculation, visualization, and prediction of plant KPIs, as well as real-time distribution of customized KPIs to management and supervisors through any IoT device, should all be part of such an IoT-based system. Furthermore, an IoT-based system may offer customized KPI dashboards in real time that are tailored to each employee's specific duties. For example, IoT may visually show performance KPIs customized to an employee's job and responsibilities by combining real-time production data from IoT devices with current plant information. This IoT solution may assist employees and management in assessing and responding to consumer and operational KPIs in real time, for example, by dynamically making informed choices regarding productivity, product quality, and safety. Instead of collecting just the data required for current KPIs, manufacturers might utilize IoT devices to capture higher-fidelity production process data that is, more comprehensive data about each action and sub activityto enhance efficiency, product quality, and safety.

Plant equipment may also be monitored using IoT devices to evaluate their operation vs idle time, component quality, and dependability.The Internet of Things is changing the way businesses in a variety of sectors, including manufacturing, operate. Until recently, technology has mainly been utilized to operate businesses and manage industrial operations, as well as to automate procedures and gather data connected to assembly tasks. IoT, on the other hand, takes data gathering to a whole new level. IoT facilitates the gathering of data from various 'Things' - such as operations, production, quality, usage, and consumption - and then utilizes that data to simplify and improve business processes. The manufacturing sector has always been driven by innovation, and it is now experiencing the fourth industrial revolution, often known as 'Industry 4.0.' Modern sensors, motors, actuators, and robots have allowed a revolution in sectors including supply chain, transportation, communication, housing, energy, and production, thanks to advances in manufacturing technology.

Let's take a look at a few examples of how IoT technologies may assist improve industrial processes. The most frequent assessment of a plant's efficiency is overall equipment effectiveness (OEE), which is included in every plant manager's KPI. Failure and planned or breakdown maintenance have an effect on equipment availability (a crucial component). As a result, plant maintenance is now seen as a key component in maintaining maximum availability and near-zero downtime in manufacturing facilities. Maintenance needs may now be anticipated without the need for preventative or planned maintenance by immediately collecting data from the equipment, previous maintenance data, and inputs from OEMs. As a consequence, predictive

maintenance may reduce the cost of manufacturing equipment maintenance by almost 30% to 35%, while also increasing the availability of that equipment.

Breaking down plant processes to finer activities, for example, by considering not only how many people and machines are on the job and how many products they produce, but also how much time they spend on less productive activities that could be eliminated, reduced, or replaced, is one direction manufacturers could take to achieve these improvements. Another approach is to utilize technology to identify and monitor activities and sub activities in the manufacturing process, as well as their input/output and resource use. (The Internet of Things is perfect for this since it can take data from current RFIDs, new low-cost sensors, and “bring your own” cellphones and put it on the Internet for KPI calculation and warnings.) Monitoring such activities and resources may also allow manufacturers to calculate higher-fidelity productivity, quality, and safety KPIs (in real time). Other options include refining the manufacturing process to incorporate more productive and less unproductive operations, as well as performing IoT-based production process optimization processes on a regular basis. Manufacturers may gather data from manual inventory management processes using smartphones or IoT wearable devices, then utilize that data to improve and automatically direct employees' picking and packaging activities depending on product weight, age, and quality. IoT-based systems that constantly monitor, optimize, and assist picking and packing operations, in example, may boost plant efficiency by lowering labor costs and decreasing the time spent moving and locating the right goods in warehouses. This approach will also enable facilities to reduce product inventory, storage, and/or heating and chilling capacity to the bare minimum required to meet client demands. IoT-based solutions may also help manufacturers monitor, locate, and store goods depending on their quality and weight, as well as increase manufacturing line agility to handle numerous client orders at once. Consumers can follow the goods they buy from the factory that makes them, and manufacturers can identify the origins of product components using SMP-to-consumer traceability solutions. Such solutions can also aid in the identification of product-related issues throughout the plant-to-consumer supply chain, provide security against counterfeiters in export markets, and enable the creation of a more productive and incentivized market for example, high-quality suppliers can earn more money per product. The Internet of Things is excellent for tracking products from the factory to the customer. Using a combination of RFID and sensor technologies, an IoT system may monitor goods from their producers to their end users.

Manufacturers will be able to identify quality parts suppliers using the Internet of Things' ability to easily integrate IoT devices, transfer information collected at various steps of the supply chain via the Internet, and store and process such information in a cloud datacenter-based infrastructure that supports information sharing. With this knowledge, they can guarantee that their goods fulfill consumer expectations while reducing risk and expense. By generating alarms and offering methods to examine product-related risks and counterfeiting, an IoT-based solution may help enhance product security. This will enable the sector to retain its product reputation.

3. CONCLUSION

When confronted with comparable game-changing technological possibilities, several other sectors have developed and executed roadmaps. For example, via ambitious ideas and efforts like Cable Labs (www.cablelabs.com) and the Tele management Forum, the telecommunications sector has achieved an incredible degree of automation and interoperability. These efforts have

enabled the industry to collaborate and share risks while saving billions in solution development costs. Although the manufacturing sector is unique, lessons gained from other successful industries in the adoption of new technology complement our SMP goal.

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A REVIEW OF THE RESEARCH ON HOUSEHOLD TRASH PREVENTION

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ABSTRACT

Based on a UK portfolio of primary research and a wide international assessment, this article presents a synthesis of policy-relevant data on home trash prevention. Waste prevention was defined as rigorous avoidance, source reduction (e.g., at home composting), and reuse (for the product's intended purpose) - recycling was not included. Consumers were a primary emphasis. The review revealed a general hierarchy in their popularity, ranging from donating goods to charity at the top to small reuse behaviors around the home to activities involving changes in consumption habits at the bottom; one estimate is that 60% of the public engages in at least one of these activities, at least some of the time. Modern consumer culture, as well as a real misunderstanding that waste reduction is the same as recycling, are both barriers to homeowner engagement. With a broad variety of interventions and communications methods available, the public may be involved via local or nationwide campaigns. Increased reuse was highlighted as the main potential within the scope of the assessment on the product and service side. Operational challenges (financing, capacity, logistics) and customer attitudes regarding used products were among the roadblocks. The major possibilities are for local governments to do more strategic planning for reuse, as well as for greater coordination and collaboration with the third sector.

KEYWORDS: Behaviour, Evidence, Household Waste, Reduction, Waste Prevention.

1. INTRODUCTION

Late in 2003, the UK Department for Environment, Food and Rural Affairs (Defra) launched the Waste and Resources Evidence Programme (WREP). The goal of WREP is to create a solid waste and resource evidence base, make it easier to utilize for policymaking, and guarantee efficient communication with all stakeholders(1). WREP operates within the context of Defra's model for evidence flow in the policymaking process. The word "evidence" is defined further down. For the first time, the new initiative aimed to provide a strategic perspective of the UK's total waste and resource research requirements(2). A multi-stakeholder Waste and Resources Research Advisory Group (WRRAG) was formed to look forward ten years and create an initial three-year R&D plan via a consultation process, which was started in September(3). A review of progress over the first three years of the evidence strategy is available, as is a review of progress over the second three years of the evidence strategy. WREP was selective in focusing their efforts on those research areas that were seen as a particular gap, and which were either current

or would likely become policy priorities for Defra at the time of the first strategy in 2004, when there were perhaps 30 UK organizations that were active players in waste and resources research in the UK(4).

WREP chose home waste prevention as one of its priority areas(5). An early scoping study was commissioned to compile current evidence on elements of behavior modification secondary research, equivalent to the bottom ellipse. In 2005 or 2006, a total of 18 more studies were commissioned, ranging from consumer behavior in connection to home waste reduction to examining how various programs function in practice to evaluating possible legislative options(6).

There was a combination of secondary and primary research matching to the top ellipse, with durations ranging from a few months to three years. Waste avoidance was identified as a priority in Defra's Waste Strategy for England, as expected(7). The new Waste Framework Directive, which compels all EU member states to implement their own national waste avoidance programs by December 2013, reinforces this focus. In addition to the research conducted by Defra's WREP, the UK Waste and Resources Action Programme (WRAP) has progressively extended its focus beyond establishing recycling markets to include relevant evidence work on domestic waste avoidance(8). When WREP's portfolio of home waste reduction initiatives neared completion in late 2008, it was decided that the moment had come to bring everything together(9). In order to provide an accurate and up-to-date picture of current policy-relevant research regarding home waste reduction and related pro environmental behavior, Defra's WREP commissioned a large synthesis review effort(10). The study followed the bottom: scoping the research topics of interest, gathering existing and developing data, and interpreting the findings with policymakers and other stakeholders, both to guide policy choices and to identify remaining gaps in the evidence(11). The findings are presented in this article(12). The evaluation concentrated on WREP, WRAP, and other UK government evidence projects, but it was decided to expand the scope to include additional 'grey literature' (including those supplied by stakeholders) as well as a systematic search for other globally accessible, policy-relevant information(13).

The review is thus worldwide in scope in terms of published and peer-reviewed work, but it is unavoidably more UK (and indeed English) oriented in terms of more specific examples drawn from government and other grey literature sources(14). Table 1 offers some data on home waste management in England to assist the reader in connecting the examples, particularly the estimates of the effect on waste amounts of various waste avoidance methods, to their own circumstances. The evidence assessment used definition of waste prevention, which included rigorous avoidance (not producing trash in the first place), source reduction, product reuse (in its original form), and waste hazardousness reduction. All types of recycling, including food collecting and commercial composting, as well as remanufacturing, are excluded from this definition. The latter is often included in a wider definition of "waste reduction," and it's worth noting that stakeholders participating in the study didn't always distinguish between recycling and prevention. Article 3 Clause 12 and 13 of the Waste Framework Directive which came into effect midway during the review) defines 'prevention' as actions done to minimize trash before a substance, material, or product becomes waste.

Evidence may be defined as whatever data that Defra can utilize to translate its policy objectives into something tangible, attainable, and controllable(15). It may take a variety of forms,

including research, stakeholder analysis, economic and statistical modeling, public views and beliefs, anecdotal evidence, and cost-benefit assessments, as well as a judgment on the quality of the techniques used to collect and synthesize the data. There are three types of evidence for policymaking. The first is hard data facts, trends, and survey results, while the second is analytical reasoning, which puts the hard data into perspective(16). Finally, an evidence base is made up of stakeholder opinions on a particular problem or group of concerns. The rationale for this three-part method is that if the hard data on which you're based a policy choice has any flaws, you'll have to rely on the analysis that supports the data. If the analysis has any flaws, or if there's a chance that others may provide a different interpretation, you'll need to revisit your stakeholder base to understand the many interpretations that might lead to different assessments of the same piece of data. Many different stages in a product's life cycle may be used to reduce waste(17).

2. DISCUSSION

The study concentrated on the middle portion of the life cycle - the main 'touch points' with the customer (i.e. supply/purchase, consume, and dispose) since the review's emphasis was on household waste prevention. Not all of the subjects covered in these three stages of the life cycle are directly related to household waste avoidance, but some of the issues covered in the previous step of "produce" and the following step of "collect" are. The review focused on the areas highlighted as 'above the line'; those areas 'below the line' were either ignored shown in dark type because they were outside the scope of the review, or were briefly mentioned shown in light type and italics, such as voluntary agreements (VA), minimum standards, and eco-labelling, because the project steering group thought they had some merit. Commercial and industrial waste avoidance, producer responsibility, product lifetime and eco-design, all of which the steering group considered to be significant issues in their own right; and obligatory deposit systems, which the steering group considered to be major topics in their own right. Consumer behavior change is a major topic in this evidence assessment. depicts Defra's Behaviour Change Framework, often known as the "4Es," which was originally presented in the United Kingdom's Sustainable Development Strategy(18). According to the 4Es evidence-based approach, there are numerous variables that must be addressed concurrently in order to promote change for each behavior. The complexity of behavior change treatments must be reflected in a "package" of measurements. The framework emphasizes the importance of the following activities. Around 1000 possible sources were identified throughout this scoping study. These were categorized based on how well they covered certain 'domain areas' of home waste prevention. They were also evaluated for the presence of quantitative or qualitative 'evidence' as opposed to generic descriptions of what individuals did), as well as the perceived robustness of the available evidence.

Other sources including self-reported and qualitative information passed the first screening and were recognized as giving important input to the evaluation, although they tended to be examined at a less comprehensive level. The short-listed papers were scrutinized to verify that they covered all of the domain areas mentioned. A number of writers have utilized behavior change theories to explain or predict waste prevention behavior. One of the most frequently studied theories is the idea of planned behavior, which claims that a person's intention to act is influenced by three factors: their attitude, their ability to act known as "perceived behavioural control", and broader societal standards. Intention is anticipated to transfer into action under the

appropriate external circumstances e.g., no restricting obstacles. The theory of planned behavior is one of several social psychology theories being investigated and used in pro-environmental behavior modification research [such as Defra's sustainable consumption. The following are essential concerns at a practical level, according to this corpus of applied theory. Studies that attempted to explain waste avoidance behavior using statistical models or behavioural theory testing have shown that their models had little explanatory ability. Two major studies discovered that 70 to 85 percent of behavioral variance could not be explained. The difficulty in describing waste avoidance behavior may be due to the fact that it is really a collection of behaviors. Furthermore, it's conceivable that the models are missing inputs that are behavior drivers but have nothing to do with waste, environmental values, or world views for example, the strength of purchase and food management drivers in WRAP's food waste study.

The challenges that such modeling activities confront stem in part from the fact that there is no theoretical agreement on behavior modification. Nonetheless, the research identifies a variety of reasons. Because the literature does not offer a clear ranking, the following are the most often cited in the research examined (just provided in the same order as theoretical drivers listed above). Recycling motivations are often characterized as more functional and affected by external circumstances than waste avoidance motivations. Several writers connect waste avoidance behavior to underlying human values, particularly so-called "universal", which are "usually when an individual places communal advantages ahead of their own personal gain." Moral and philanthropic motives have also been identified as drives for reuse particularly donation, as well as a 'ethic of care' – a broad feeling of responsibility for the intrinsic worth or on-going usage of 'things.' Accepting personal responsibility is often mentioned as a prerequisite for preventive behavior. It may take the form of a feeling of responsibility or obligation, pleasure, shame or lack thereof in the case of secondhand items, guilt, and active concern, for example. Avoiding food waste paying less on food, home composting via subsidy of bins, carrying bags charging, purchasing from charity stores, interest in refills, and moving from bottled to tap water have all been proven to be significant motivators. Money savings, on the other hand, is a complicated motivator that must be balanced against the danger that customers may view cheaper or alternative goods as poorer quality or sub-optimal choices see the refillables section below).

Knowing or observing that others are taking action may provide the impression that one's own efforts are worthwhile According to a nationwide study in the United Kingdom, 5– 10% of home composters began because of encouragement from friends. Social norm effects and peer support are often used in behavior change programs centered on small groups of people working together, and some have shown substantial reductions in the number of people who participate. At least in the United Kingdom, campaigns and interventions addressing a wide variety of waste avoidance behaviors are a relatively new field for local governments. 'Intervention' is a broad word that refers to any action or initiative aimed at bringing about change; 'campaigns' are communication procedures aimed at raising awareness, encouraging involvement, and promoting change, among other things. There's also a distinction to be made between interventions and campaigns that target large groups of volunteer homes where there's now more evidence and those that target small groups of volunteer households where there's currently more evidence. The first's results are averaged over all homes in a given region, regardless of whether or not individuals follow the advice; the second's results are based exclusively on the performance of

those who agreed to participate. There is some proof. The exact size and nature of the reuse industry in England are presently unclear (though it has been extensively studied in London).

Based on the data, it is estimated that about 500 000 tonnes of waste are repurposed in England each year. This estimate was compiled from a variety of sources and does not include recycling. It is expected to include 270 000 tons of bulky goods and 230 000 tonnes of clothing/textiles (there is no accurate data on textiles, and estimates differ - this number should not be regarded as final). WRAP has verified that our estimate of 500 000 tonnes reused (excluding recycling) is likely to be on the same scale as that being produced in their present study. This estimate excludes commercial outlets like as eBay and car boot sales, as well as Freecycle, which is rapidly growing in the United Kingdom. A vast number of local charities and a few major social businesses, as well as nationally coordinated charity stores, make up the third sector's participation in trash operations. The organization's primary motive is frequently (but not always) social aims, with waste operations serving as a method of accomplishing those goals. The skills and function of a waste operator/contractor are shaped by an organization's attitude, whether it views itself as a "waste company" or not. In Europe, there are examples of a more established secondhand retail industry and/or better integration of reuse groups with the bulky trash infrastructure of local governments. Flanders, a Belgian area, is a good example of the latter. The barriers that have been mentioned in the literature have been summarized. These companies' success characteristics are a reflection of the obstacles, and include the following specific instances.

The authors are generally upbeat about the possibilities and development of reuse initiatives in general, as well as those involving third-party organizations. The WEEE directive's revisions are intended to boost reuse activity: According to the Furniture Recycle Network (FRN), it is possible to boost appliance reuse from 500 000 to 1 million pieces per year (FRN, undated). Stakeholders engaged during the study also indicated that the new national indicators for local governments (NI, undated) (which include reuse) could motivate governments to seek reuse as a way of reducing landfill waste. The major obstacles to increased refill use are largely agreed upon by the authors. Consumers anticipate refills to be less expensive than original goods, however being less expensive may also imply that the product is of lesser quality. Retailers and manufacturers are also influenced by perceptions, particularly a belief that retail volumes would be too low to provide acceptable profitability. Consumers appreciate the idea that refills help the environment, however this is not considered to be a major reason for purchasing. The PSS (which may potentially include house cleaning, garden care, or home repair) would be provided through a regular subscription or an ad hoc call out in the ideas examined. The service would be managed by the home developer through a customer contact center and service agreements with vendors. In separate workshops, the ideas were evaluated with customers and development employees, and potential waste and other environmental benefits were quantified for various situations. Consumers were generally interested in the concept of PSS, but were hesitant to use it as a replacement for owning products; instead, they preferred PSS as a complement to 'self-service'— that is, being able to do the task themselves when they wanted to, implying that they would need to own the relevant appliance in addition to using the PSS. A typical economic trade-off between time and money was the primary factor determining whether or not customers appreciated the concept of PSS. PSS was more popular among individuals with greater earnings but limited time than among those with lower incomes or who were retired.

3. CONCLUSION

A number of important questions were formulated collaboratively with the Defra policy teams at the start of this evidence assessment. The conclusions are written in the form of answers to those questions. With a few noteworthy exceptions, the evidence showed numerous limits in the data available to address this issue. The fact that no two studies question families about the identical array of waste reduction behaviors is a major source of evidence weakness. Unlike recycling, waste avoidance entails a variety of behaviors. There is no clear definition in the literature of which particular behaviors constitute "waste avoidance," apart from top-level definitions like the Waste Framework Directive.

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A REVIEW ON DIFFERENT TYPES OF CRYPTOGRAPHY TECHNIQUES

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ABSTRACT

Today, data communication is mostly based on digital data transmission, with data security as a top priority in order for data to reach the intended user. Cryptography is a technique of using codes to secure information and communications so that only those who are supposed to read and process it may do so. The prefix "crypt-" stands for "secret" or "vault," while the suffix "-graphy" signifies "writing." Cryptography and cryptology, as well as cryptanalysis, are closely linked sciences. Techniques such as microdots, combining words with pictures, and other methods of concealing information in storage or transit are included. However, in today's computer-centric world, cryptography is most often linked with scrambling plaintext (regular text, also known as cleartext) into ciphertext (a process known as encryption), then back again (known as decryption). Cryptographers are professionals who work in this area. As a result, various cryptography methods, such as symmetric and asymmetric algorithms, are used to provide data security. RSA (Rivest Shamir and Adleman), Diffie-Hellman, DSA (Digital Signature Algorithm), and ECC (Elliptic curve cryptography) are among the asymmetric encryption methods examined in this review article.

KEYWORDS: *Cryptography, Diffie-Hellman, DSA (Digital Signature Algorithm), ECC (Elliptic curve cryptography), RSA (Rivest Shamir and Adleman).*

1. INTRODUCTION

Every user needs a safe network while connecting so that data transmission is secure and no intruder may access their information. Cryptography is used in wireless and wired networks to provide secure data transmission, where cryptography transforms plain text to cipher text and cipher text to plain text(1). Encryption is the process of converting plain text into cipher text on the sender's side, while decryption is the process of converting cipher text back to plain text on the receiver's side. There are two types of encryption techniques: symmetric cryptography and asymmetric cryptography(2). Both parties utilize the same key in symmetric-key cryptography(3). The sender encrypts data using this key and an encryption method; the receiver decrypts the data with the same key and the matching decryption algorithm. There are two keys used in asymmetric or public-key cryptography: a private key and a public key(4). The recipient keeps the private key, while the public key is made public. Different researchers have also presented several forms of asymmetric cryptography. RSA (Rivest Shamir and Adleman), Diffie-Hellman, DSA (Digital Signature Algorithm), and ECC are some of the most widely used

asymmetric cryptographic methods (Elliptic curve cryptography). This paper will go through each of these techniques in detail(5,6)(7,8).

1.1. Rivest Shamir and Adleman (RSA) algorithm:

RSA is a public-key encryption method that is based on the factoring problem, which is thought to be difficult to solve. A user using RSA generates and then publishes their public key, which is the product of two big prime integers plus an auxiliary value. The most important elements must be kept hidden. Anyone can encrypt a message using the public key, but if the public key is big enough, only someone who knows the prime factors can decode the message using presently disclosed techniques(9)(10). Because WSN is an unsecured network that is susceptible to numerous assaults due to the broadcast nature of the transmission channel, the RSA method may be employed. Wireless sensor networks have certain security needs(11):

1. Confidentiality
2. Integrity
3. Authentication

Algorithm of RSA is shown in Figure 1:

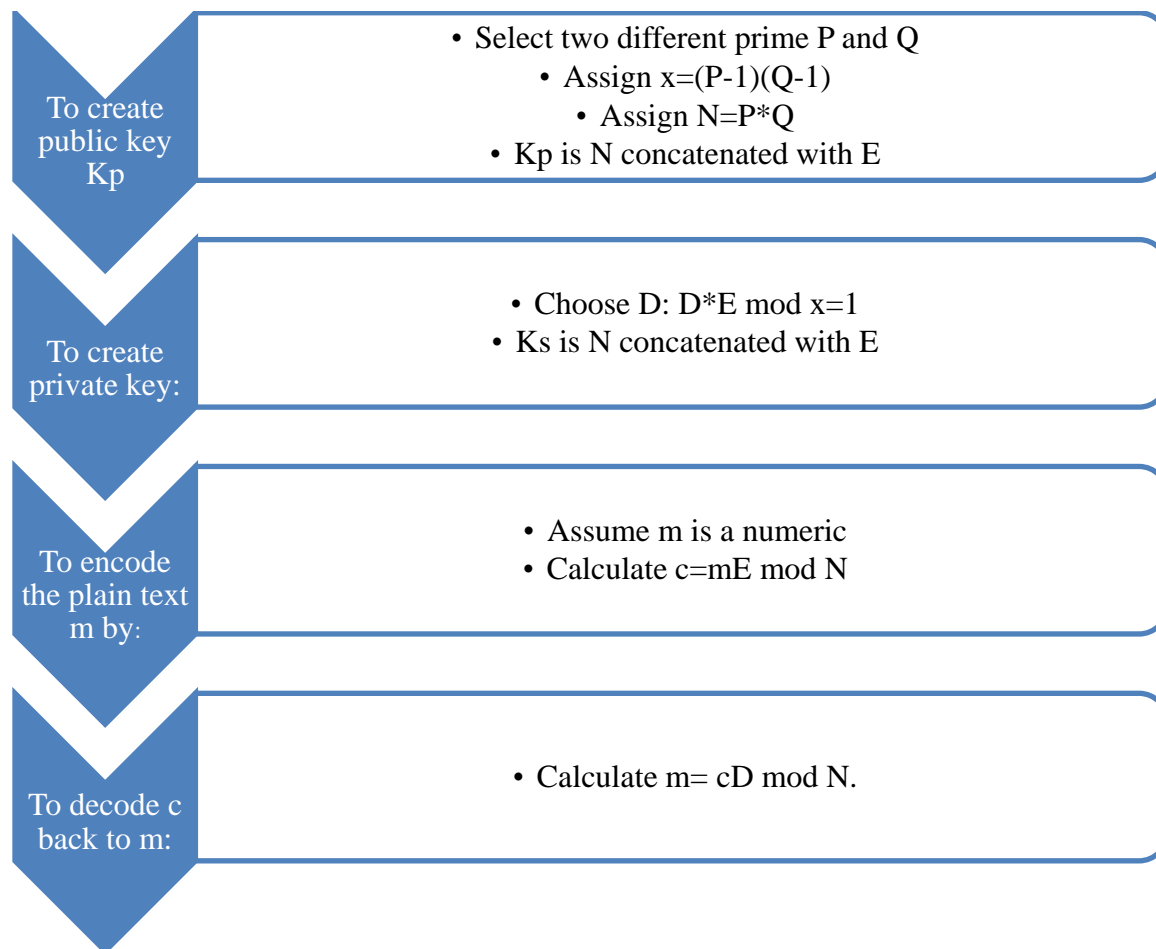


Figure 1: Illustrates the algorithm of Rivest Shamir and Adleman cryptography technique.

Because of its high time complexity and consumption requirement, RSA is not appropriate for WSN. In software, any encryption method, such as RSA, may be implemented. The speed, cost, and simplicity of customization are all drawbacks (or manipulation)(12). The benefits are in flexibility and mobility, as well as simplicity of use and upgradeability. The algorithms may be replicated and deployed on a large number of computers for a low cost(13).

1.2. Diffie-Hellman Algorithm:

This method is used when two users need to exchange cryptographic keys. Users have no knowledge of each other's keys, therefore they utilize a shared secret key via an unsecured communication channel, which is then used to encrypt future conversations using a symmetric key cipher(14,15).

In the asymmetric (public-key) situation, a new protocol is suggested for two goals: authenticated key agreement and authenticated key agreement with key confirmation(16). In this paper, they propose formal definitions of secure AK (Authenticated Key Agreement) and AKC (Authenticated Key Agreement with Key Confirmation) protocols within a formal model of distributed computing, as well as a unified model of key agreement, with several variants of this model demonstrating secure AK and AKC protocols in the random oracle model(17)(18). AK and AKC are rendered safe in this paper by first giving explicit, formal descriptions of the protocols' objectives, and then by offering practical, provably secure solutions in the random oracle model(19). In a nutshell, the process of providing security may be broken down into five steps:

- a. Model specification
- b. This model's objectives must be defined.
- c. Assumptions statement
- d. Protocol description
- e. Demonstration that the protocol achieves its objectives within the mode

1.2.1. Properties of Key agreement algorithm:

- a. Prior Session Key: This protocol has a previous session key saved.
- b. (Perfect) Forward Secrecy: If the long-term secrets of one or more entities are exposed, the secrecy of the preceding key is unaffected.
- c. Unknown Key Share: Assume there are two users, I and j. In this case, I cannot share the key with j without i's permission.
- d. Key-Compromise Impersonation: If the value of I is revealed and intruders may copy it. However, the nature of I should be such that none of its other characteristics can be duplicated or modified.
- f. Information Loss: The protocol's security is unaffected by the compromise of additional information that an adversary would not normally have access to.
- g. Message Independence: This protocol is used by two different users.

In comparison to the presently utilized protocol, this method may be implemented with more security(20).

Another method for implementing the DiffieHellman algorithm over the internet is shown. It can be used in almost every encryption technique now in use on the Internet, including SSL, SSH, IPsec, PKI, and anything else that uses these protocols. In today's communication method, clients and servers exchange unencrypted messages via SSL (Secure Sockets Layer)(21).

The asymmetric key is utilized in the exchange procedure, and they each accept and prefer the compression choice. Client and server start the SSH (Secure Shell) procedure by negotiating parameters (e.g., preferred encryption and compression algorithms, and certain random numbers). In IPsec (Internet Protocol Security), certain preparatory data exchange is required before the data stream may be encrypted(22). Public key cryptography has two complimentary applications in PKI (Public Key Infrastructure). If one encrypts a message using another person's public key, that message can only be decrypted by that person since only that person knows his private key.

1.3. Digital Signature Algorithm (DSA):

It is used by the recipient of a communication to ensure that the message has not been tampered with during transit and that the sender's identity has been confirmed. A digital signature is an electronic counterpart of a written signature that may be used to prove to the receiver or a third party that the communication was signed by the sender in reality. For stored data and programs, digital signatures may be created so that the data and programs' integrity can be confirmed at any time. The "Hash function," which is utilized in this technique and produces dynamic and lower sizes of bits based on each byte of data, is one way for transmitting low size and capacity data using DSA. Bitwise or and multiply functions are the most common hashing functions. If the hashed file is 4 percent the size of the original file in messages less than 1600 bytes. This method may be utilized in a variety of applications that need simple and quick procedures for creating digital signatures and have a small file size for transmitting(23,24).

Some characteristics of the hash function are listed below:

- a. In the underlying public key cryptosystem, the hash function should destroy all homomorphism structures (be unable to compute hash value of 2 messages combined given their individual hash values).
- b. The hash function should be applied to the whole message.
- c. The hash function should be a one-way function, so that signatures do not reveal messages.
- d. Given a message and its hash value, computing another message with the same hash value should be computationally infeasible.
- e. The hash function should be able to withstand birthday assaults (finding any 2 messages with the same hash value, perhaps by iterating through minor permutations of two messages).

This method works with ".doc, .pdf, .txt" and other file formats, and the hash function may be used to handle data of varying sizes. The word "dynamic" refers to the fact that the hash function's output varies depending on the amount of the input.

1.4. Elliptic Curve Cryptography (ECC):

Elliptic curve cryptography is a relatively recent family of public-key algorithms that may offer lower key lengths and better performance over systems based on integer factorization and discrete logarithms, depending on the environment and application. Its security, benefits, and performance are described here. ECC's security issues are based on certain tough mathematical difficulties. Elliptic curves are based on a mathematical framework that allows for the definition of certain operations(25). These procedures result in a one-way function that may be utilized to create efficient cryptographic systems. This one-way function is known as the Elliptic Curve Discrete Logarithm Problem in ECC (ECDLP). Because the ECDLP is based on the same one-way function as DSA and Diffie-Hellman, elliptic curve analogs of each of these algorithms have been developed.

The security and benefits of utilizing elliptic curve-based cryptographic systems instead of integer factorization and discrete logarithm-based techniques are that they offer comparable levels of security with shorter key lengths. Most people believe that the security of integer factorization and discrete logarithm issues is about comparable. ECC's performance compared to other methods is 5 to 15, 20 to 60, and occasionally 400 times quicker, depending on the ECC bit.

Because it is quicker and uses less memory than RSA, the Elliptic Curve Cryptography method is also suited for smart card applications.

2. DISCUSSION

Table 1 shows the analysis of different type's cryptography techniques reviewed in this paper Rivest Shamir and Adleman (RSA) algorithm, Diffie-Hellman Algorithm, Digital Signature Algorithm.

TABLE 1: REPRESENT THE ANALYSIS ON DIFFERENT TYPES OF CRYPTOGRAPHY TECHNIQUES.

S. No.	Cryptography Technique	Analysis
1.	Rivest Shamir and Adleman (RSA) algorithm	Because mobile nodes are susceptible to numerous assaults owing to their broadcast nature, RSA may be employed in them. Because of its high time complexity and consumption requirement, RSA is not appropriate for WSN.
2.	Diffie-Hellman Algorithm	Keys are transferred between two users that are unaware of one other.

		In the asymmetric (public-key) situation, a suggested for two goals: authenticated key agreement and authenticated key agreement with key confirmation.
		It may be utilized on the Internet and in virtually every encryption technique now in use, such as SSL, SSH, IPSec, and PKI.
3.	Digital Signature Algorithm	Public-key algorithms that may offer lower key lengths and better performance over systems based on integer factorization and discrete logarithms, depending on the context and application in which they are employed.
		ECC's performance compared to other methods is 5 to 15, 20 to 60, and occasionally 400 times quicker, depending on the ECC bit.

3. CONCLUSION

Cryptosystems are generally believed to relate solely to mathematical processes and computer programs; nevertheless, they also involve human behavior control, such as selecting difficult-to-guess passwords, turning off unneeded systems, and not discussing sensitive operations with outsiders. Different kinds of encryption methods are discussed in this article, and after examining all of the above-mentioned cryptography techniques, it can be determined that ECC is quicker than RSA due to its short key. However, in comparison to RSA, its mathematical operation is more difficult. Secret keys are transferred between two users in the Diffie-Hellman cryptography method. In DSA, the receiver uses a digital signature to ensure that the signal received is unmodified.

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A DISCUSSION OF HOW TO IMPROVE THE PERFORMANCE OF SOLAR COLLECTORS

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ABSTRACT

Renewable energy sources are thought to represent the future, given the fast depletion of traditional energy sources and the environmental damage caused by their overexploitation. Renewable energy technologies vary significantly from one another, not only in terms of technical and economic factors, but also in terms of their dependability, maturity, and utility-scale operating experience. Solar energy technologies have emerged as the most promising and mature, owing to the fact that solar energy is plentiful, free, and has economic potential. This article provides an overview of recent developments in the field of solar thermal technology, with an emphasis on methods for improving its performance. It also includes a description of several kinds of solar collectors to aid in the systematic knowledge of solar thermal technology, as well as the new modifications made in each category of solar collectors to encourage the use of solar energy in everyday activities. Geometrical modifications to the absorber plate, the application of solar selective coatings, and Nanofluids have all been highlighted as performance improvement methods.

KEYWORDS: *Artificial Roughness, Coatings, Heat Transfer, Nano Fluids, Solar Energy*

1. INTRODUCTION

It is the era of machines, whether they are used for need or as a pleasure. Energy is required for machines to do tasks(1). The scientific community has long been concerned about meeting the ever-increasing need for energy without harming the environment(2). The usage of restricted traditional energy sources has resulted in such environmental degradation that the effects may be seen in the form of pollution, acid rain, global warming, and other issues. As a result, there is an urgent need to generate green, clean energy from renewable sources(3). Solar energy, among all renewable energy resources, has emerged as one of the most promising renewable energy resources since it is plentiful, freely accessible, and has economic potential(4). Nature demonstrates the conversion of solar energy into many forms. Photosynthesis is the process through which solar energy is transformed into chemical energy in green plants(5). Evaporation from water bodies and changes in wind behavior are examples of how solar energy is converted into mechanical energy(6). Furthermore, there are two broad ways to use solar energy for energy production: I solar–electric conversion (converting solar energy directly into electrical energy using photovoltaic solar cells) and (ii) solar–thermal conversion (converting solar energy directly into thermal energy using photovoltaic solar cells) (converting solar energy into thermal energy

using solar collector). Many studies on solar–thermal systems have been published in the literature(7).

A few key review papers detailing these research projects are listed below. An in-depth look at the many kinds of solar thermal collectors and their uses(8). The many kinds of collectors were studied and their optical, thermal, and thermodynamic analyses were given. The utilization of solar thermal systems in many sectors of technology was shown to highlight the need of using them wherever feasible. A survey of concentrators, such as parabolic trough collectors, heliostat field collectors, linear Fresnel reflectors, and parabolic dish collectors, among others(9). They proposed that concentrated solar power (CSP) technology be utilized not just for electricity production, but also for a wide variety of additional applications such as water desalination, industrial heating and cooling, water detoxification and disinfection, and so on(10). Other review articles, such as, have concentrated on a single kind of collector or its use, and have not addressed the many methods used to improve the performance of solar collectors(9). For example, techniques for improving the thermal performance of solar collectors such as artificial roughness, solar selective coating, and nanofluids have never been discussed together. This article provides an overview of solar–thermal technology, with a focus on techniques for improving its efficiency(11). It also includes a description of several kinds of solar collectors to aid in the systematic knowledge of solar thermal technology, as well as new modifications made to each category of solar collectors to encourage the use of solar energy in everyday activities(12).

A solar collector is a device that absorbs solar insolation's thermal energy and collects it. The thermal energy accumulated in this manner is taken away by a flowing fluid and used for a specific purpose. Solar collectors are categorized(13). Non-tracking and tracking collectors are the two types of solar collectors. Tracking collectors are intended to follow the movement of the sun so that incoming solar radiation always falls perpendicular to them, while non-tracking collectors are maintained at rest and are also known as fixed or stationary collectors(14). There are two types of tracking solar collectors: one axis tracking and two axes tracking collectors. Flat plate, evacuated tube, and compound parabolic collectors are non-tracking collectors(15). Single axis tracking systems include the parabolic trough collector, cylindrical trough collector, and linear Fresnel reflector, while multiple axes tracking systems include the central tower receiver, parabolic dish reflector, and circular Fresnel lens(16).

Solar water heater (SWH) is a kind of collector that uses water as its working fluid, while solar air heater (SAH) is a type of collector that utilizes air as its working fluid (SAH). The solar collector and storage tank are both part of a solar water heating (SWH) system. Solar water heating systems are further divided into passive SWH systems (which do not need external pumping and rely on thermo-symphonic action to circulate fluid) and active SWH systems (which do require external pumping and rely on pumping to circulate fluid)(17). The collector and storage tank are combined in an integrated collector storage system (ICS)(18). At clear nights, the effects of water temperature in the storage tank, structural and performance characteristics of a thermos syphon on household SWH(19). It was recommended that instead of using a horizontal cylindrical tank for freeze protection, a vertical cylindrical tank be utilized. An absorber with a solar selective layer was also discovered to avoid freezing on clear nights(20). The thermal performance of the flat plate, concentrating, and other collectors of solar water heaters with a mantle heat exchanger was summarized, as well as the thermal performance of the

circulating pipe(21). They developed an energy equation that includes a penalty element for heat exchangers. A look back at the recent advancements in SWH technology(22). The heat pump-based SWH may be a viable water heating technology in areas where solar energy is scarce, according to reports(23).

The kind of refrigerant used has been shown to affect the performance of such systems. A comprehensive study of the usage of phase change material (PCM) in solar water heating systems or heaters was conducted (SWHs). Only early designs of PCM-based SWHs were found to be accessible. A built-in thermal storage system may be a viable alternative to today's solar water heating technology(20). Solar water heating systems are available for both residential and industrial use. Active SWHs were found to be less popular than passive SWHs, despite their greater efficiency. SWH thermal efficiency may be improved using a variety of heat transfer improvement methods. They recommended that in order to improve the thermal performance of SWH, further study should be done on parallel flow solar collectors, the design of glass covers, and the movement of ambient air over their surfaces. A flat plate collector is made up of a clear glass cover, an absorber plate, and a rear plate that is parallel to the absorber plate(24).

2. DISCUSSION

The flow channel is constructed based on the kind of fluid, such as air or water. When using air as a working fluid, the space between the absorber plate and the rear plate is used as a fluid channel. The copper tubes brazed on the absorber plate become flow channels when water is employed as the working fluid. The rear plate is not needed in this instance. To reduce heat loss even further, the collector is insulated on both sides as well as the bottom. The top of the absorber plate has a glass cover that helps to reduce convective and radiative heat loss to the outside air. Dust accumulates on the collectors' glass covers after extended use, reducing their performance. A new generation of solar collectors has just been created, called as hybrid PV/T solar systems. Such systems may be used for (a) direct energy production utilizing photovoltaic cells, as well as (b) solar thermal conversion. PV cells encapsulated on one side of an absorber plate, with provision for the flow of fluid to be heated on the other side of the absorber plate, is one such system. The copper pipes are brazed on the opposite side if the fluid is water. In the case of air as the working fluid, however, a passage is provided between the absorber plate and the rear plate, as described in the description of solar air heaters.

It should be mentioned that at high temperatures, the efficiency of PV cells drops. As a consequence, keeping PV cells in a certain temperature range by removing heat from them via a working fluid would increase their efficiency, and the heat transported away by the fluid may also be used. These systems can provide both energy and low-temperature hot water for household use at the same time. PV/T systems have a significantly quicker economic payback time than PV systems because to the integrated cooling arrangement of solar panels. A thorough examination of hybrid PV/T collectors. Changing the type of working fluids or coolants (air or water), type of collectors (flat plate or concentrating), photovoltaic cell material (monocrystalline, polycrystalline, and amorphous silicon), number of glazing (single or double), and fluid flow (above absorber, below absorber, or counter flow) allowed for various PV/T configurations. It was also discovered that such collectors were still in their infancy, with extremely little commercial distribution. They came to the conclusion that a flat plate air heater generated low-temperature hot air that might be used to dry agricultural goods. They further claimed that hybrid photovoltaic thermal (PV/T) solar air heaters were found to be appropriate

for forced convective air heating while simultaneously generating energy. Furthermore, phase change materials (PCMs)-based thermal energy storage solar heaters were shown to be suitable for agricultural drying applications. In reality, single tube ETCs are seldom utilized. To reach high coolant temperatures, a number of evacuated tubes are combined and linked to a single header.

H-type and T-type collectors are the two most prevalent kinds of ETC setups. It should be noted that T-type collectors gather somewhat more radiation on a yearly basis than H-type collectors. For specified geometrical and structural characteristics of ETC, a mathematical model is used to calculate daily collected radiation. They suggested that for latitudes higher than 30°, the tilt angle for T-type collectors should be 10° less than the site latitude, and for H-type collectors, the tilt angle should be 20° less than the site latitude. A glass cover, an absorber tube, and two parabolic reflecting surfaces make up the compound parabolic collector (CPC). The focus points of the two parabolic reflecting surfaces 'A' and 'B' are on each other. Because the portion of parabolic surfaces below focal points does not contribute to the convergence of solar radiations, it is truncated. Between the two focus points, the absorber tube is positioned in the middle plane. Solar radiation will flow through the receiver aperture if the angle of incidence is less than half of the acceptance angle. Solar radiation will eventually be reflected back to the atmosphere via the top opening if the angle of incidence is higher than half of the acceptance angle (aperture). The parabolic reflectors should be oriented such that the sun's location or angle of incidence has no impact on the collector's performance. As a result, positioning the CPC's receiver or absorber tube along the east–west line removes the requirement for day-to-day tracking. Various techniques are used to orient collectors for maximum solar insolation collection. Mechanical alignment and optical alignment techniques are the two main types of these approaches. Mechanical techniques for aligning heliostats with many flat mirrors include the use of inclinometers, the gauge block approach, and the linear displacement transducer method.

Mechanical techniques, on the other hand, have been proposed as unsuitable for large-scale heliostats. For large-scale power production, the parabolic trough collector is often used. It may, however, be utilized to generate direct steam on a limited scale. Because there is an extra acceleration pressure drop when steam is generated directly utilizing a parabolic trough collector, the total pressure drop rises. A model for predicting the thermo-hydraulic performance of a parabolic trough collector that generates saturated steam directly. The computational findings revealed that the working fluid (water) intake pressure was the decisive element in the viability of such systems. The total pressure drop across the absorber was significantly decreased when the intake pressure was raised from 1 MPa to 2 MPa for a particular output pressure and temperature condition. Small parabolic trough collectors may be utilized for direct steam production with cheap pumping power, according to this concept. In theory, expanding the contact area (i.e. extended surfaces) and generating turbulence, which promotes mixing between the different fluid layers, increases heat transfers between a fluid and a solid surface.

The kind of geometrical modification to be performed in the absorber assembly is really dictated by the nature of working fluids. The expanded surfaces fins corrugations on the absorber plate are given if the working fluid is air or gas, which has a very low convective heat transfer coefficient. Twisted tapes perforated tapes/wire coils, inserts baffle plates, and internally finned tubes are supplied for water or liquid as the working fluid to create turbulence, which increases

the heat transfer coefficient. Surface modifications and turbulence promoters, on the other hand, result in a higher pressure drop, which increases pumping power consumption. Only if the increase in heat transfer rate is greater than the increase in pumping power is any heat transfer enhancement method appropriate. As a result, several geometrical modifications are used for air and water heaters. For the same plate width, ribs in a W-shaped configuration are shorter than ribs in a V-shaped configuration. Because the boundary layer along W-ribs is smaller than the boundary layer along V-shape ribs, W-ribs have superior thermo-hydraulic performance than V-ribs. At an angle of attack of 60° , the highest thermo-hydraulic performance is obtained, as well as the greatest increase in Nusselt number and friction factor.

Because reattachment of the free shear layer does not occur and the rate of heat transfer enhancement is not proportional to the rate of friction factor at higher values of relative roughness height, the rate of increase of Nusselt number with increasing Reynolds number is lower than the rate of increase of friction factor. A solar air heater's rectangular duct is roughened by circular protrusions arranged in an angular arc. Protrusion has the advantage of not adding additional weight to the solar heater. For an arc angle of 60° , the maximum increase of Nusselt number and friction factor is determined to be 2.89 and 2.93, respectively. Nusselt number and friction factor numerical correlations were determined to be within 3.81 percent and 4.91 percent of one another, respectively. Heat transfer enhancement tests were carried out in a circular duct solar air heater using a mix of integrated transverse ribs and centre-cleared twisted tape as artificial roughness. The most significant finding is that center-cleared twisted tapes combined with transverse ribs provide much better outcomes than the individual improvement method alone. The performance of a solar air heater after artificial roughness in the form of thin circular wire was studied using computational fluid dynamics.

For all combinations of relative roughness height and relative arc angle, the Nusselt number increases as Reynolds number increases, while the friction factor decreases. The performance of a solar air heater with a V-down discrete rectangular cross-section and repeated rib roughness was assessed. After evaluating the data, it was concluded that roughened duct solar air heaters provide much higher effective efficiency at low mass flow rates, while roughened duct is not recommended at high mass flow rates owing to a significant increase in pumping power. They utilized copper-based twisted tapes. The Reynolds number ranged from 3000 to 23,000 in this study. It was discovered that when the twist ratio was increased, the swirl production reduced, resulting in a reduction in both heat transfer rate and pressure. For a given efficiency, the use of twisted tapes decreased the collector area required by 8–24%. The advances in solar thermal technology have been thoroughly examined in this article, with a particular emphasis on performance enhancement methods.

To appeal to novices in the field of solar thermal conversion technology, several kinds of solar collectors have been described in a straightforward way. In each area, new methods have been emphasized to promote the usage of solar energy for everyday tasks. The use of extended surfaces/ribs/corrugations modifies the surface geometry of the absorber plate, resulting in improved performance. Based on the energy demand dictated by the working fluid outlet temperature, a certain kind of geometrical modification may be chosen. However, there are no established standards for determining the precise kinds of modifications that would improve performance for a given situation. The use of solar selective coatings significantly improves collector performance. A cost-effective technique for producing the coating on the absorber

surface is required. Due to their high cost, poor productivity, and complexity in procedures, these coatings could not be commercialized. The use of Nanofluids to improve heat transmission is still a new field. Particle size, volume fraction, and pH value all have a role, although there is a lot of disagreement in the findings of various organizations. In terms of performance reliance on the aforementioned factors, the experimental and analytical investigations differ. As a result, there is no universally recognized model for forecasting Nanofluid behavior.

3. CONCLUSION

The advances in solar thermal technology have been thoroughly examined in this article, with a particular emphasis on performance enhancement methods. To appeal to novices in the field of solar thermal conversion technology, several kinds of solar collectors have been described in a straightforward way. In each area, new methods have been emphasized to promote the usage of solar energy for everyday tasks. The use of extended surfaces/ribs/corrugations modifies the surface geometry of the absorber plate, resulting in improved performance. Based on the energy demand dictated by the working fluid outlet temperature, a certain kind of geometrical modification may be chosen. However, there are no established standards for determining the precise kinds of modifications that would improve performance for a given situation. The use of solar selective coatings significantly improves collector performance. A cost-effective technique for producing the coating on the absorber surface is required. Due to their high cost, poor productivity, and complexity in procedures, these coatings could not be commercialized. The use of Nano fluids to improve heat transmission is still a new field. Particle size, volume fraction, and pH value all have a role, although there is a lot of disagreement in the findings of various organizations. In terms of performance reliance on the aforementioned factors, the experimental and analytical investigations differ. As a result, there is no universally recognized model for forecasting Nano fluid behavior.

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A REVIEW OF THE LITERATURE ON FLOOD-RELATED SKIN DISEASES

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ABSTRACT

Flooding is one of the most frequent natural catastrophes, affecting people all over the globe. The catastrophes' consequences have become huge issues for the public health system as a whole. Skin disorders caused by flooding are one of these effects, with cutaneous symptoms and/or indicators of systemic illnesses. A comprehensive literature evaluation of research articles on floods and skin disorders was performed. The goal of this study was to offer dermatologists and general practitioners with a thorough overview of flood-related skin disorders and treatment options. Furthermore, we divided these flood-related illnesses into four categories: skin conditions illnesses, skin infections, traumatic skin conditions, and other odds and ends skin diseases, in order to implement early interventions as well as educate, prevent, but also effectively treat those skin diseases in just such a catastrophic situation, resulting in better therapeutic efficacy as well as the preventative measures of further complications.

KEYWORDS: Disease, Infection, flood-related, Skin ,

1. INTRODUCTION

Flooding is characterized as an overflow of moisture expansion caused by hydro meteorological as well as geophysical disasters including the floods in Bangladesh in 2004, Hurricane Katrina in the United States in 2005, the earthquake in Haiti (2010), the wonderful eastern Japan earth quake (2011), as well as floods in Thailand (2011). Flash floods also puts healthcare systems at risk, such as access to critical health services, local health service capacity, evacuation needs, as well as clinic settlement, necessitating an emergency disaster response to provide patients with immediate wound healing, antibiotics, pain control, tetanus toxoid, and effective management of flood-related skin diseases[1]. Flood-related skin disorders are one kind of problem, manifesting as cutaneous and/or systemic symptoms as a result of prolonged contact to polluted water and unsanitary circumstances during floods[2]. The authors divided these conditions into four categories: (I) inflammatory skin diseases (such as allergic contact dermatitis); (ii) skin infections (such as bacteria and fungi infections); (iii) traumatic skin illnesses; and (iv) other various and sundry skin diseases (such as insect bite reaction as well as psycho-emotion aggravated primary skin disease)[3].

Inflammatory Skin Disorders are conditions that cause the skin to become inflamed. Contact dermatitis that is irritant The entry of chemicals or irritants across the permeability barrier causes moderate damage to keratinocytes and the production of inflammatory mediators in the acute

phase of irritant contact dermatitis[4]. Prolonged submersion in flooded water has been one of the risk variables for keratinocyte destruction, which leads to inflammation as well as irritation without triggering the immune system. 9 Depending on the quantity of irritants and the length of exposure, symptoms may appear anywhere from minutes to days[5]. Flooding typically causes irritation on the hand and foot. Erythematous patches matching to the region of exposure are often seen in clinical presentations. Warming, stinging, and discomfort are all symptoms of irritating contact dermatitis[6]. These signs and symptoms are more common than pruritus. Irritant contact dermatitis is typically the first symptom, followed by developed secondary infection through bacteria or fungus, secondary skin diseases due to a skin barrier deficiency, persistent irritation, and trauma at times[7].

1.1. Infection

Specific illnesses in endemic regions (e.g.dengue leptospirosis, melioidosis, hemorrhagic fever in Southern Asia, or malaria in Africa, South America, and Asia), the organic course (e.g. flood from seawater as well as unclean water), and indeed the severity of the disaster are all associated factors in flood-related disasters and infection. In most cases, public health policy is responsible for the management and mitigation of these consequences[8]. Treatments and laboratory studies, such as infectious organism culture, are often restricted and unavailable in such a disaster. Soft tissue, ophthalmic, respiratory, gastrointestinal, and vector-borne infections from pathogen inoculations, overcrowding of the survivor relocation, removal of water sources, modification of vector breeding, as well as zoonotic reservoir diseases are among the illnesses caused by the flood. Skin infection caused by a fungus as a result, prolonged contact with flood water raises the risk of a common fungal skin infection[9]. The most frequent part of the body to be immersed in polluted water is the foot. The interdigital form of tinea pedis, which manifests as erythematous skin maceration with itching between the interdigital web gaps of the foot, is a frequent occurrence. Vesicles and pustules of the vesicular and moccasin types may appear as isolated dry scaly, erythematous hyperkeratotic papules on the plantar surface and lateral parts of the foot[10].

1.2. Infection with several microbes:

Maceration of an epidermis on the inter - digital web of a foot is a sign of both fungal infection and chronic irritating dermatitis of the foot with subsequent bacterial colonization. Despite the Gram-negative bacilli, *Corynebacterium* spp. but also *Staphylococcal* spp. were discovered in 87.5 percent, 25 percent, and 25 percent of the interdigital webs of 16 cases of foot maceration from flooding in Thailand, found only 12.5 percent positive spore germination *Trichopteranmucoides* and non-spore forming hyaline fungi)[11]. Because of the sluggish development of the fungus, the authors addressed how the growth of Gram-negative bacilli bacteria might possibly overwhelm the positive fungal culture impact, and how the length of specimen collection following the start of flooding could also influence the culture findings. Combinations of topical antiinflammation, antibacterial, and antifungal treatments are the best topical medicines for these mixed organisms.

1.3. Tinea pedis vs. tinea corporis are two different types of tinea:

Tinea pedis was the most prevalent superficial fungal skin disease in post-earthquake settings, according to a prior research. On the contrary, owing to submersion during the tsunami, high humidity weather, and unsanitary conditions, Lee et al. found that tinea corporis was more

frequent than tineapedis. Tineacorporis as a subsequent ailment, on the other hand, should be acknowledged[12].

1.4. Infection of the skin caused by bacteria:

The most frequent primary skin problem is traumatic wounds, which are often followed by subsequent bacterial infection. Increased redness, swelling that quickly develops to vesicles, as well as hemorrhagic bullae are the first signs of wound infections. Cellulitis, gangrene, necrotizing fasciitis, pyomyositis, or septicemia are all possible complications[13]. Streptococcal pyogenes and Staphylococcus aureus are the most common organisms that cause secondary bacterial infections[14]. Aeromonas spp. is one of the pathogens of concern in polluted water. Pseudomonas spp., rapid-growing mycobacteria, and Burkholderiapseudo mallei (melioidosis) are rare pathogens that may be detected in infected wounds from groundwater combinations[15].

One of the most treatment options for infected wounds is wound dressing. In instances of infected or filthy wounds with a high risk of infection, prophylactic antibiotics are often given. Antibiotic regimens that are tailored to specific hosts are intended to cover suspected pathogens. Antitoxin, toxoid, and/or immunoglobulin against tetanus are also essential, especially in instances of inadequate vaccination or poor immunization coverage rates. Wound care, as well as systemic signs and symptoms of disease, should be closely followed[16], [17].

1.5. Skin Diseases Caused by Trauma:

Traumatic skin illnesses are common during and after the restoration of working time after a catastrophe, which is unsurprising. The frequency of this syndrome varies depending on the severity of natural disasters and the start and length of investigations, ranging from 2.9 percent in floods⁷ to 29 percent in tsunami survivors⁸. Males were three times as likely than females to have a sex preference. Cuts, lacerations, punctures, and penetration wounds are the most common dermatological lesions. The hands and feet are the most often afflicted parts of the body[18], [19].

1.6. Miscellaneous:

1.6.1. Reaction to an insect bite:

The reproduction of mosquitoes and the quantity of insects fleeing from floodwater, such as ants, fire ants, and centipedes, rises when polluted water sits still. Insect bite responses are becoming more common, especially in areas where there has been a protracted flood.

1.6.2. Mosquitoes:

Mosquitoes are not only carriers of systemically transmitted illnesses like dengue hemorrhagic fever as well as malaria, but they also wreak havoc on flood victims' quality of life. Carbon dioxide generation, odor, and estrogen around human skin are all elements that attract mosquitos. The immune reaction to mosquito bites is caused by sensitized immunity to the saliva protein of the mosquito[20].

Vesicles, bullae, ecchymosis, and a cellulitis-like local inflammatory response are some of the other mosquito bite manifestations (Skeeter syndrome). In the case of a strong allergic response, hemorrhagic bullae, necrosis, as well as ulcer healing with persistent scarring may occur. Mosquito bite reactions were often more severe in those with underlying illnesses such as hematological malignancies. The clinical characteristics of mosquito allergy patients in Thailand

showed that erythematous papules (68.6%) and acute wheal were the most frequent cutaneous manifestations (67.1 percent). The leg is the most frequent site of involvement[21], [22].

Mosquito bites cause a variety of cutaneous responses and clinical manifestations. The immediate response is characterized by a 2–10 mm diameter wheal or flare that peaks within 20 minutes, while the delayed reaction is characterized by indurated erythematous papules that peak at 24–36 hours and progressively fade over days or weeks (Figure 1).



Figure 1: Illustrate the Mosquito bite reaction[23].

1.7 The black and red fire ants:

Solenopsis richteri or *Solenopsis invicta*, belong to the Order Hymenoptera. Thailand is home to the majority of these species. Their length varies between 2 and 6 mm. They dwell in mounds made of dirt and plants, as well as subterranean tunnels. They attack the victims in swarms, and that they are typically attacked several times. Bites, stings, and the release of venom into the surface epidermis are the first two stages in a fire ant assault. The poisonous alkaloid venoms enhance plasma membrane permeability first, then release histamine from mast cells. The immediate-type response manifests as wheals as well as flares ranging in size from 1–2 mm to 10 cm diameter within seconds, while the delayed-type reaction manifests as surface vesicles containing clear fluid and tissue edema over many hours. As a result, 8–10 hours later, the clear fluid becomes murky with pustules and umbilication. These sterile pustules typically form a rosette pattern when they are dispersed or clustered together. Vesiculopustular lesions are frequent and may last anywhere from a few days to a few weeks[24].

Primary Skin Diseases that are aggravated by psycho-emotion Stress may cause psychodermatological illnesses like atopic dermatitis, psoriasis, urticaria, alopecia areata, angioedema, or vitiligo by aggravating the underlying conditions like alopecia areata, atopic dermatitis, urticaria, angioedema, including vitiligo. Stewart as well as Goodman described a case of urticaria that began right after an earthquake. After a tsunami catastrophe, individuals have exacerbated psoriasis, atopic dermatitis, or urticaria. After the earthquake, stress exacerbated atopic dermatitis. In the water avoiding stress test, the mice developed atopic dermatitis-like skin lesions and then had increased blood immunoglobulin E levels. The

exacerbation was presumed to be caused by the inhibitory action of corticotropin-releasing factor.

The etiology of psoriasis exacerbated by psychological stress by altering immune system cellular components that target skin appendages as well as the peripheral corticotropin-releasing hormones proopiomelanocortin axis. The activation of overexpressed type 2 beta corticotropin-releasing hormone (CRH) receptors surrounding the hair follicles seems to be a factor in the development of alopecia areata. CRH or similar peptides may have pro-inflammatory actions, causing local hair root damage. In situ hybridization of CRH receptors using a skin biopsy. Stress has a major effect in worsening vitiligo in both children and adults. Stressful situations were encountered by 57 and 23.8 percent of vitiligo cases and controls, respectively, in youngsters. Furthermore, adult vitiligo patients were exposed to substantially greater stress than the control group (65% vs. 22%, $P = 0.002$, OR 6.81). Poor sanitary circumstances, insufficient systemic to topical treatment compliance, and uncontrolled environmental variables are all contributors in this syndrome[23], [25].

2. DISCUSSION

The clinical symptoms of flood-related skin diseases are diverse. These differences are related to environmental factors (endemic area, natural course, or disaster severity), as well as human traits (medical and dermatological underlying diseases). Skin conditions diseases and infections caused by bacteria and fungus, traumatic skin diseases, vector-borne diseases, including psycho-emotional disorders are all potential sources of serious public health problems. Floods and skin diseases were the subjects of a thorough review of the literature. The researchers wanted to provide dermatologists as well as family physicians a comprehensive review of flood-related skin diseases and treatment choices. In addition, we divided the above flood-related illnesses into 4 groups: skin conditions illnesses, skin infections, traumatic skin diseases, and other miscellaneous autoimmune conditions, in order to implement primary prevention as well as educate, prevent, and instead successfully address those skin problems in just such a disastrous situation, resulting in better efficacy of treatment as well as a better therapeutic outcome.

3. CONCLUSION

Flood-related skin disorders have a wide range of clinical manifestations. Environmental variables (endemic region, natural course, and catastrophe intensity) as well as human characteristics are all linked to these variations (medical and dermatological underlying diseases). Inflammatory skin illnesses and infections caused by bacteria and fungi, traumatic skin diseases, vector-borne diseases, and psycho-emotional disorders are all possible causes of major public health issues. Loss-related psychological health problems should be identified and treated. Most essential, dermatologists and general practitioners should improve their fundamental understanding of these diseases in order to achieve the most effective and best treatment results.

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A BRIEF STUDY ON CORRUPTION

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ABSTRACT

This article provides some remarks on a plethora of global corruption indicators in order to choose a set of definitions and describe the quantitative measurements of corruption. According to academic study, corruption variables may be classified into three levels: macro, meso, and micro. In the past, most studies of the connection between corruption, development, culture, and politics focused on macro issues. Internal system construction is the most significant factor on corruption at the meso-level. To examine the corruption of a nation or area, more and more academics are turning to actual raw data rather than perceptions of data. In the future, micro-factors study on corruption will become more common.

KEYWORDS: *Corruption, Factors, Macro, Meso, Micro.*

1. INTRODUCTION

The Chinese Communist Party's and governments growing anti-corruption measures have prompted Chinese academics to devote close attention to the issue(1). In 2015, more than 49 thousand individuals were fined for violating an eight-point rule; these offenders were determined to be engaged in 37 thousand instances throughout the campaign. Corruption has always been an issue in China, dating back to the establishment of the People's Republic. More broadly, the issue may be traced back to ancients leaving the nation(2). Scholars have achieved many accomplishments in the field of corruption study in the past, particularly in the definition and clinical variables linked to corruption(3).

In the area of theory, there are many different definitions of corruption. The most common definition is "corruption is defined as the use of public position for private gain," which highlights the nuclear meaning of corruption(4). The exact definition and measurement may differentiate between various problems depending on the varied studying objectives and aims. This article examines the macro, meso, and micro variables that influence the likelihood of corruption. Each element has an impact on the likelihood of corruption, and the effect does not always flow in one direction, thus the interplay of all variables was complicated. I believe that the literature review will serve as a valuable resource for future academicians(4–6).

1.1 Corruption:

The legitimacy of national public authority, according to Rousseau, derives from the people. The government is the sovereign's executor. Its strength stems from the people's faith in it. Corruption issues emerge when the use of public authority deviates from the intended path and is misused. It complies with the criteria of "abuse of public office for personal gain(7)." This is also

the most often used definition of corruption among international academics. In China, study into corruption as a distinct notion of government administration started in the 1980s and 1990s. Corruption, according to Wang Huning and Huang Bai Lian, is the non-public use of public authority (abuse and unfair exchange). Most academics think that corruption is the sole kind of power abuse perpetrated by government officials(8). He believes that corruption encompasses the topic of corruption, motive (goal), means, methods, and outcomes, and that negative corruption falls within the scope of corruption. He emphasizes that a lot of corruption goes unnoticed because it is disguised as actions of abuse of authority or violations of established rules of ethics(9–12).Figure 1 shows the poster of Corruption(5).



Figure 1: Illustrates the poster of Corruption(13)

1.2 Determination of Corruption:

The corruption index given by a worldwide database, such as Transparency International's CPI, the World Bank Institute's WBES, and the Intelligence Unit's Corruption Index, is typically used in transnational research on corruption. The majority of the data in the index originates from a poll of individuals, companies, or experts. Most of these composite indices, which represent different elements of corruption, depict the entire state of corruption and are very useful for corruption assessment and empirical study(6). However, perception data reflects the data source's views on corruption and cannot ensure that subjective indicators and real levels of corruption are linked. At the same time, since the same index exists in various years of composition and weight adjustment, part of the index's time longitudinal comparability is weak, resulting in certain time series analysis being deceptive(11).

There is currently no consensus on how to determine whether or not corruption has occurred. In recent literature, researchers have tended to utilize a variety of corrupt data bases given by authorities to better precisely assess corruption levels(14). At the same time, an increasing number of academics are beginning their research with an objective index, a genuine case; a particular country, and a case study of a region, since the horizontal comparison of variables of each country in international corruption research is suspect(15,16).

1.3 Progresses on the Related Factors of Corruption:

The most essential element of the corruption study is the investigation of associated corruption variables. From a macro perspective, a country's degree of corruption should be determined to some part by the country's economic, political, and cultural status(9). Corruption affects all three parties at the same time. From a medium-term perspective, system design and implementation of the degree of decentralization amongst national agencies, as well as recruiting, appointment, remuneration, and punishment, not only influence the bud of corruption, but also have a major effect on its proliferation(12). Even when a person is in the same or comparable exterior environment or operates under the same system, there may be substantial variations in the risk of corruption owing to the impact of gender, education, values, and other variables at the microscopic level. This section will begin with the three levels of macro, meso, and micro variables, and will review the current research findings on corruption-related issues(17).

1.4 Macro Factors Affecting the Risk of Corruption:

The increasing significance of corruption stems from a common understanding that effective governance is required for the country's growth. As a result, the connection between corruption and development is the first to enter the field of view in the research of corruption-related variables. Mauro examined corruption statistics from over 70 nations across the globe and found that corruption reduced investment and harmed economic development(18). Through the analysis of per capita GDP, Treisman discovered the causative connection between economic progress and reciprocal causation of corruption. The impoverished nations are more prevalent than the developed countries. While it cannot be disputed that corruption has a good connotation in certain sectors, Bardhan pointed out that it has a catastrophic impact on the economy. By using a time series model, it was shown that corruption is a barrier to economic development. The connection between inequality and corruption is also debatable(19).

Corruption is very strongly linked to culture and politics. The primary causes of severe corruption in colonial nations are colonial culture and political features. Pavarala and Malik try to show that colonialism is "unique, depending on circumstances, indirect, incomplete, and often contradictory" under its rule by summarizing the vague and frequently crossed boundaries between the position extra allowance officially recognized and economic benefits through positions in England during the majority of the eighteenth century. Special treatment or privileges were often used by colonial authorities for their personal gain. The ordinary person, on the other hand, pays them "modestly" homage(20).

1.5 Meso Factors Affecting the Risk of Corruption:

The impact of internal system design on corruption is emphasized by the various variables that affect the danger of corruption. Decentralization is favorable to reducing corruption, according to a significant number of academic study findings(21). Using provincial panel data from China between 1999 and 2008, the different effects of fiscal decentralization on regional corruption mechanisms were examined. They said that fiscal decentralization may help to reduce the degree of corruption in the area. The institutional disparities between China and India have also been examined(22). They believed China had transferred control to local governments, while decision-making power remains in the hands of all levels of government and state-owned businesses. As a result, the local government emerged. While the majority of India's private

businesses are controlled by a small group of nobles and their families. Political contributors who want to stay in power will utilize sponsorship to achieve so(23).

Different academics have differing opinions on whether the competition will help reduce corruption. According to Ades and Tella, competition lowers corporate earnings, thus there is no surplus profit to bribe. As a result, introducing competition is beneficial to reducing corruption. Tella, Bliss, Shleifer, Vishny, Soto De, and other academics' research was summarized by Svensson. He believed that the link between profit and corruption is complex and difficult to understand. Despite the fact that there is a strong link between corruption and deregulation, simplifying regulations, and the adoption of new laws, it is possible that they will open the door to corruption. Finding a balance between the two is very tough. Treisman said that increasing the degree of openness to the outside world is favorable to decreasing corruption, citing Ades and Tella as examples(24).

1.6 Micro Factors Influencing the Risk of Corruption:

Scholars are also attempting to deduce the origins and processes of corruption from the overall pattern of corrupt conduct. It is determined to investigate the effect of gender on corruption sooner rather than later. They investigated the connection between gender and corruption using the International Country Risk Guide's corruption index. The findings indicate that the higher the proportion of women among government officials, the lower the level of corruption. There has been speculation that there is a reverse causality. Lower levels of corruption in a region will restrict male-dominated social networks and increase employment opportunities for women. Other variables may have an impact on both of them(25).

Gong and Wu look into the matter of over 2800 reports. Bribery occurs in divisional and bureau-level cadres, which are the leaders of government offices, according to him. People in the dominant social status believe they are in a superior position, according to Rosenblatt's theory of social control. It is more difficult for them to recognize the corruption. This is due to their great knowledge of their rights and desire to maintain their dominant position. Even if this necessitates the assistance of others. Chen, a native Chinese academic, is also influenced by social interaction theory. He discovered that the degree of corruption among Chinese officials had a substantial impact on the expansion of provinces, using data from 31 provinces in China from 2003 to 2007. This kind of infection is mostly caused by the demonstrative impact of governmental corruption. The monitoring and control of high-level officials may be the focus of an anti-corruption effort.

2. DISCUSSION

Informally, corruption is defined as the act of unjustly or unlawfully influencing a decision-making process by providing or obtaining a benefit (gratification) for the decision-maker or a third party linked to the decision-maker. Low pay scales and wages, a lack of punitive measures, a lack of public unity, a lack of fundamental rights awareness among Indian citizens, a lack of transparency in business dealings and affairs, a lack of independent detective agencies, and a judicial system in India with insufficient powers are some of the causes of corruption. People may fight corruption by exposing corrupt actions and dangers that might otherwise go unnoticed, keeping the public sector honest, open, and responsible, assisting in the prevention of dishonest practices, and ensuring that public sector workers behave in the public interest.

3. CONCLUSION

It is clear from a review of the available literature that foreign academics conduct a more thorough investigation into the concept of corruption and associated variables from the perspectives of economics and sociology. The early findings of corruption study primarily concentrate on the national and institutional levels, analyzing the particular effect of different elements of the economic, political, and cultural systems on corruption. The research findings are diverse in scope. However, whether or not these variables have a practical effect on corruption remains a point of contention. The total sensitivity analysis based on Extreme-Bounds Analysis was conducted using 16 variables, including national inherent endowment, colonialism, religion, open level, and other aspects. Only five variables were determined to be very resistant to corruption. Scholars have continued to reflect on the earlier findings. The accuracy of the early corruption index assessment, as well as the worldwide comparability of macro data, are being researched and improved. When using the empirical analysis technique, researchers have begun to utilize actual raw data rather than perceptions of data to analyze the corruption of a certain nation or area, according to recent research.

The current findings are presented in the empirical research section of this article for an overview of domestic research accomplishments. Prior to 2011, there were fewer Chinese intellectuals involved in the study of corruption, as shown by empirical research findings. The logical analysis and qualitative research techniques are the research methods used. The concept of corruption, the reasons for it, the current state of affairs, the effectiveness of anti-corruption measures, and institutional anti-corruption measures are all thoroughly examined. A significant number of quantitative studies on the causes of corruption have appeared in recent years. The study's data sources are nearly entirely provincial. While the investigation into the connection between individual variables and the likelihood of corruption comes to a halt with basic descriptive data. There are many issues that need be investigated further. Future trends in corruption's factors study will place a greater emphasis on meso and micro factors in the future.

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A REVIEW ON USE OF NEURAL NETWORKS IN CRYPTOGRAPHY

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ABSTRACT

Data security has become a top worry for everyone linked to the internet, as it has merged with our lives and grown at a breakneck pace over the past few decades. Data security guarantees that only the intended recipients have access to our information and prohibits any data modification or change. Various techniques and approaches have been developed to attain this degree of security. Cryptography is a set of methods for encrypting data using particular algorithms that render the data unreadable to the naked eye until decoded using preset procedures by the sender. Secret information is rendered illegible for unauthorized users using cryptography. Many cryptographic methods exist, but they are more complicated approaches that need more computing capacity. This article examines how neural networks aid cryptography and how neural networks and cryptography may be used together to improve security.

KEYWORDS: *Cryptography, Cryptosystem, Data Security, Neural Network, Key Generation.*

1. INTRODUCTION

Cryptography is a method of ensuring message secrecy. In Greek, the word has a particular meaning: "hidden writing." Nowadays, however, people and organizations' privacy is protected by high-level encryption, which ensures that information transmitted is safe and only the authorized recipient has access to it. Cryptography is an ancient technology that is continuously being explored, with historical origins. Examples date back to 2000 B.C., when the ancient Egyptians employed "secret" hieroglyphics, as well as other evidence from ancient Greece and Rome, such as hidden inscriptions and the renowned Caesar cipher(1)(2). Hundreds of millions of individuals use cryptography on a regular basis to secure data and information, but the majority are unaware of it. Cryptographic systems, in addition to being very valuable, are also exceedingly fragile, since a single programming or specification mistake may undermine them(3)(4).

1.1 Cryptography and Cryptosystem:

Cryptography is the process of concealing and transferring non-readable information or data via a public or private network. The following are the fundamentals of security services:

1. Confidentiality: It guarantees that only the trusted user may view the communication.
2. Authentication: it establishes a person's identification.
3. Integrity: It guarantees that the message sent to the recipient is not tampered with.

4. Non-repudiation: It establishes that the sender transmitted the communication that the sender claims not to have sent.

Keys serve an essential part in cryptographic security (Figure 1). In cryptography, there are two kinds of data encryption: symmetrical and asymmetrical. In symmetric encryption, the same key is used for encryption and decryption; the key may be shared, secret, or private. In asymmetric encryption, different keys are utilized for encryption and decoding.

Cryptosystem is a term used in cryptography to describe a collection of algorithms used to provide security services, most often for secrecy (encryption). A cryptosystem usually consists of three algorithms: one for key creation, encryption, and decryption. Plaintext refers to the initial communication, which is encrypted into cipher text (CT), which is decoded on the receiver's side and referred to as plaintext (PT)(5)(6).

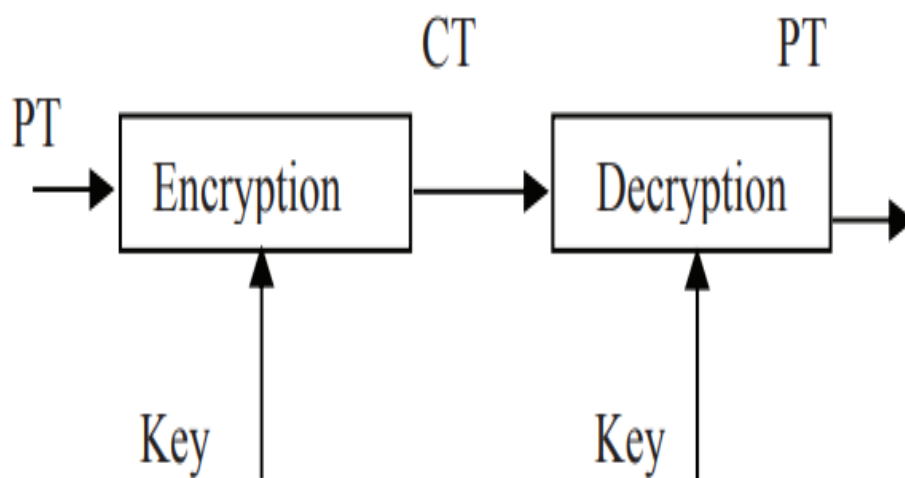


Figure 1: Illustrates the encryption and decryption technique using cryptography secret key.

1.2. Neural Networks:

Brain Networks are a class of statistical learning models that are based on biological neural networks and are used to estimate functions that are dependent on a large number of inputs and are often unknown. The interconnection between neurons in various layers of the system is referred to as a neural network. The first layer contains input neurons that provide data to the second layer, which then sends it to the third layer of output neurons through synapses. More layers of neurons will be present in a more complicated system. The synapses keep track of factors called "weights" that are used to modify data during calculations. Three kinds of parameters are often used to define a neural network(7)(8).

1. The pattern of interconnection between the various layers of neurons.
2. Learning process: for upgrading the interconnection's weights.
3. Activation function: this function transforms the weighted input of a neuron to its activation output.

The kinds of neural networks range from simple one- or two-layer single-direction logic to complex multi-input many-directional feedback loops and layers. In general, algorithms are used in the programming of these systems to define control and structure of their functions. To alter the parameters of the throughput and the changing connections to the neurons, most systems utilize "weights." Neural networks may be self-teaching or learn from a "teacher" outside of themselves.

2. LITERATURE REVIEW

A. Yayik et al. discussed in his paper, neural network based cryptology is performed. There are two phases to the system. In the first step, neural network-based pseudo-random numbers (NPRNGs) are produced, and the outputs are checked for randomness using randomness tests developed by the National Institute of Standards and Technology (NIST). In the second step, NPRNGs are used to create a neural network-based cryptosystem. Data that has been encrypted using non-linear methods is subjected to decryption efforts using two identical artificial neural networks in this cryptosystem (ANNs). Non-linear encryption is represented utilizing relation-building functionality in the first neural network. The second neural network uses decision-making functionality to decode the encrypted data(9).

S. Suryawanshi et al. discussed cryptography is the exchange of information among the users without leakage of information to others. Many public key cryptography systems are available that are based on number theory, but they have the disadvantage of requiring a lot of computing power, complexity, and time to generate the key. A neural network may be used to create a secret key to avoid these disadvantages. Many techniques use a chaotic neural network for cryptography; however, in this study, the network employs a 'triple key' to encrypt and decode data. Three distinct parameters set by the user are utilized to jumble the picture data, making it harder for hackers to access the data and therefore increasing security. MATLAB software is used for simulation. The results of the experiments indicate that the algorithm is capable of performing cryptography and is very sensitive to minor changes in key parameters(10).

2. WHY NEURAL NETWORK COMBINE WITH CRYPTOGRAPHY

There are many types of public key cryptography, each of which requires increasingly sophisticated methods and computing capacity. Various encryption methods are available to decrypt and encrypt data, and many assaults, such as brute force and man-in-the-middle attacks, may recover the key, which can be used to retrieve the original message, i.e. plaintext. The key for Advanced Encryption Standard (AES128) may be retrieved using a Biclique attack with a computational cost of 2126.1. The computational complexity of the Biclique attack on AES-192 and AES-256 are 2189.7 and 2254.4, respectively. AES-192 and AES-256 are vulnerable to related key attacks(11,12)(13).

A related key attack is any kind of cryptanalysis in which the attacker may witness the operation of a cipher using many distinct keys, the values of which are originally unknown but for which the attacker knows a mathematical connection. The RSA (129-digit) and RSA (193-digit) algorithms are likewise susceptible. Because cryptography methods are complex and there are conflicting tasks, a neural network-based technique is used. A good answer to this issue is Neural Cryptography. Strong network security may be achieved by combining neural networks with encryption. The key to encryption and decryption is the neural network. The secret lies in the form of neural network weights, which are tough to break(14)(13)(15).

3. DIFFERENT NEURAL NETWORK BASED APPROCHES IN CRYPTOGRAPHY

3.1 Steganalysis:

Steganalysis involves the concealment of communication. Previously, Steganalysis was employed to conceal or prevent information from being revealed inside a complex graphic. Currently, digital steganography focuses on concealing hidden information inside redundant picture bits that must be sent. The primary goal is to increase the usage of steganography so that the attacker cannot covertly enter the message or discover that it contains a secret message. Steganography has now been combined with neural networks. Various methods, such as discrete cosine transformation (DCT) and wavelet texture decomposition, were used to analyze the first data. Images are classified using neural networks to determine if they contain hidden information or not. If the neural networks are impacted by an image concealing procedure, various weight sequences are produced as a result. Non-linear classifiers are more efficient or effective than linear classifiers because neural networks have a great capacity to learn from training data to approximate compute non-linear issues(16,17)(18).

3.2 Pseudo random number generator:

The cryptosystem's security is enhanced by randomness. There are a variety of statistical techniques that may be used to determine the randomness of a bit sequence. Multi-layer perception (MLP) neural networks are used in the pseudo random number generator. Neural networks have strong generalization capabilities after being trained on many well-known input vectors, allowing them to provide logical output to complex numbers, provided the input pattern is recognized. When the network is over-fitted, it will be unable to anticipate the input pattern when it receives unknown input patterns, resulting in unexpected outputs. MLP neural networks may be used as a powerful independent random generator or as a means of enhancing existing generators by feeding pseudo random numbers generated by linear computational generators into neural networks(19).

3.3. Digital Watermarking:

Watermarking safeguards digital information (text, picture, audio, and video) from being seen by an unauthorized user or attacker. Watermarking systems are categorized according to their requirements: Incorporation of a domain watermark, Detection and extraction of watermarks Watermark's ability to withstand assaults, as well as its visibility. Neural networks have characteristics that help watermarking methods function better. The "watermarked image" is created by mixing the original picture with the randomly produced watermark(20). The wavelet decomposition technique is used to extract significant coefficients. This additional data is fed into a trained neural network, which effectively extracts data to get the watermark. With the assistance of this data, the attached picture was created. The algorithm's security improves as the number of training patterns for a particular network grows(21)(22).

3.4 Key Generation, Management, and Exchange:

A neural key exchange mechanism based on the synchronization of two tree parity machines is described. Tree parity machine is a particular kind of multi-layer feed forward neural network that consists of K input neurons, N hidden neurons, and L weight range. In each phase, the two neural networks get the same random inputs and learn their shared outputs. The idea of synchronization through reciprocal learning is born as a result of this. A time-dependent weight

vector is used to synchronize two devices. This idea was used to create a safe secret key for synchronization. The single secret key produced is used to encrypt and decode confidential information. Any algorithm, such as AES, may be used for encryption and decryption(23).

4. DISCUSSION

The fundamental idea of a cryptographic system is to encrypt information or data in such a manner that an unauthorized person cannot deduce its meaning. Cryptography is often used to transfer data across an unsecured channel, such as the internet, or to ensure that unauthorized individuals do not comprehend what they are looking at in a situation where they have obtained the information.

In cryptography, the obfuscated data is known as "plaintext," and the process of concealing it is known as "encryption." The encrypted plaintext is known as "ciphertext." This is accomplished via a set of principles known as "encryption algorithms." Typically, the encryption process uses a "encryption key," which is given to the encryption algorithm together with the data as input. The receiving side may recover the information using a "decryption algorithm" and the proper "decryption key."

A neural network is a computer that is used to simulate how the brain accomplishes a certain job. Electronic components are used to build the network, or it is emulated via software on a computer. A neural network is a massively parallel distributed processor composed of basic processing units that has a natural proclivity for accumulating and making accessible experimental information. In two ways, it mimics the brain:

1. Through a learning process, the network acquires knowledge from its surroundings.
2. Synaptic weights, or the strength of interneuron connections, are utilized to store learned information.

With its amazing capacity to extract meaning from complex or imprecise data, neural networks may be used to identify patterns and discover trends that are too complex for people or other computer methods to notice. Other benefits include:

1. *Adaptive Learning:* The capacity to learn how to do tasks using data provided during training or prior experience. 10
2. *Self-Organization:* During learning, an ANN may organize or represent the information it receives in its own way.
3. *Real-Time Processing:* ANN calculations may be performed in parallel, and specific hardware devices are being developed to take use of this capacity.

Artificial Neural Networks (ANNs) are a basic yet effective method for simulating extremely complex computing machines. We utilized this approach to create a basic combinational logic and sequential machine utilizing the back-propagation algorithm in this project. A comparison of two distinct neural network designs has been conducted, with their benefits and drawbacks discussed. ANNs may be used to build both combinational and sequential circuits that are quite complicated. In data communication systems, data security is a major issue. Two approaches are used to explore the application of ANN in the area of cryptography. Data encryption is developed using a sequential machine-based approach. Also examined is a chaotic neural network for digital signal cryptography. Better results may be obtained by improving the code or

using more effective training methods. As a result, Artificial Neural Networks may be used to encrypt and decrypt data in novel ways.

The following are some potential neural cryptography attacks:

1. Simple attack: the attacker has a neural network with the same structure as the neural networks of the two participants. The attacker begins with random starting weights and trains their neural network with the identical inputs as the two sides' neural networks.
2. Geometric attack: In this assault, both sides utilize the identical learning process, but the attacker uses the output of the attacker machine. It also makes advantage of the local fields of its neural network's hidden unit.
3. Majority attack: This is the chance of correctly predicting the internal representation of one of the two neural networks. This is accomplished via the use of multiple networks.
4. Genetic attack: In this case, the attacker only has one network to deal with. The attacker uses additional networks as the synchronization progresses.

5. CONCLUSION

Different Neural Network-based methods that may be used with cryptography are described in this article. Visual cryptography coupled with neural networks differs significantly from conventional encryption and may be used to deal with very complicated access schemes. The neural network-based Steganalysis method produces more accurate results than previous approaches. The key generated by neural networks is in the form of the weights of the neural network. The attacker finds it difficult to synchronize with the two parties since the key generation procedure between the two sides is extremely rapid.

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AGRICULTURE'S IMPACT ON WATER POLLUTION AND ITS REDUCING STRATEGIES

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ABSTRACT

Water is regarded as the world's most important resource for long-term development. It is necessary not only for agriculture, industry, and economic processes, but it is also the most vital component of the environment, having a significant impact on human health and environmental preservation. Agriculture's water contamination is well-known. globally. Non-point source (NPS) pollution, on the other hand, has been shown to be more harmful than pollution from point sources around the world. Due of its intrinsically diffuse character. it is difficult to handle successfully. The polluting of water is known as water pollution. When pollutants are released directly into bodies of water, pollution ensues. or inadvertently into bodies of water without proper treatment to remove hazardous substances. There are two types of water, surface water - rivers, lakes, and oceans (Uses: drinking, recreational (fishing, boating, etc.)) are polluted. Nitrates are the major pollutant of groundwater. Groundwater is a significant source of drinking water in any country. Groundwater in numerous regions has become so polluted that it can no longer be utilized as drinking water according to current regulations. The economic value of improvements in water quality is an important part of evaluating programs to prevent pollution caused by agricultural activity. Many farmers can adopt a variety of initiatives to reduce agricultural pollution loads on water resources. This study discovered that there are both structural and management approaches available for more efficiently managing water and chemical inputs, as well as regulating runoff to reduce irrigation water pollution.

KEYWORDS: Agriculture, Groundwater, Pollutant, Water Pollution.

1. INTRODUCTION

Agricultural pollution refers to the living and non-living bi-products of farming activities that pollute the environment and adjacent ecosystems, as well as harm humans and their economic interests. Pollution can occur from a variety of sources, ranging from direct pollution to more diffuse, landscape-level causes, often known as non-point source pollution(1)(2)(3).The amount and impact of these contaminants are influenced by management techniques. Animal management and housing, as well as the spread of pesticides and fertilizers in worldwide agricultural practices, are all examples of management approaches.Non-point sources have the following characteristics: they respond to hydrological circumstances, are difficult to monitor or regulate directly, and specialize in land and associated management techniques(4)(5)(6). Two or

more criteria that reflect the "healthiness" of water are asked in Water Quality Indices. In certain instances, indices represent ecosystem activities, while in others, they reveal aquatic environment conditions.

The effects of growing conventional crops as feedstock for first-generation biofuels on water quality are similar to those of other agricultural crops. Pollution from intensive agricultural production using fertilizers and various types of pesticides (herbicides, insecticides) has direct effects on water quality. Integrated pest management (IPM) is a pest-control approach that combines a number of complimentary tactics to decrease pests, expenses, and the need for chemical pesticides. Herbicides (weed killers), insecticides (insect killers), fungicides (fungi killers), nematocides (nematode killers), and rodenticides (vertebrate poisons) are all examples of this in agriculture(7)(8)(9). Irrigation in agriculture has consequences as well; for example, salt runoff causes salinization of surface waterways, while fertilizer and pesticide runoff causes ecological harm and bioaccumulation in edible fish species. Chemical oxygen demand (COD), biological oxygen demand (BOD), ammonia nitrogen (NH₃-N), total phosphorus (TP), total nitrogen (TN), and metals are the most common contaminants found in animal faces(10).

The polluting of water bodies is known as water pollution. Agricultural water pollution has an impact on the plants and creatures that live in these bodies of water, and in the majority of instances, this has a negative impact on both individual species and populations, as well as natural biological communities. Pollutants are dumped directly or indirectly into water bodies without sufficient treatment to remove hazardous chemicals, resulting in irrigation water contamination (11).

1. Sources of water pollution:

Pollution may originate from a number of sources, which are listed below: -

1.1. Pollution from a single source:

It is described as discharge into surface waters from a pipe, outfall, or ditch at a particular place. Furthermore, it is the flow of contaminants into a surface or subterranean water body that is visible, particular, and restricted. Surface water discharges from feedlots, food processing facilities, and agrochemical manufacturing industries, for example, as well as chemical spills polluting groundwater(11).

1.2. Pollution from non-point sources (NPSP):

Non-point source pollution, often known as "diffuse" source pollution, results from a diverse range of human activities with no apparent point of entry into receiving watercourses (FAO, 1996). Beginning pollution, on the other hand, refers to operations in which wastewater is discharged directly into receiving water bodies through, for example, discharge pipes, where it will be easily monitored and managed. Pollution from non-point sources is far more difficult to detect, quantify, and manage than pollution from point sources. The word "diffuse" source should be avoided since in the United States, it has a legal meaning that currently includes some kinds of point sources.

The effects of agricultural inputs on water quality, the effects of growing conventional crops as a feedstock for first-generation biofuels on water quality are the same as they are for other agricultural crops. Pollution from fertilizers and other kinds of pesticides (herbicides,

insecticides, fungicides) used in intensive agricultural production, as well as other agricultural malpractices such as ploughing of unsuitable soils, have direct effects on water quality, first and foremost Pesticides have a big impact on water quality and aquatic life. Pesticide residues may induce acute poisoning (e.g. fish deaths) and chronic poisoning in ponds, rivers, and lakes owing to surface runoff or spray drift. Reduced fish egg production and hatching, poorer disease resistance, decreased body size, and reduced predator avoidance are some of the negative impacts on fish that receive repeated sub-lethal pesticide dosages(12)(13)(14). Population abundance may suffer as a result of the overall effects(15)(16)(17). When predators eat pesticide-affected prey, there's a danger of secondary poisoning. This is especially true when it comes to persistent pollutants that build up and travel through food systems. When ecosystems or food chains are altered, such as when pesticides reduce insect populations that feed fish and other aquatic species, indirect impacts may occur. Pesticides stored in poor conditions are hazardous to both human health and the environment, especially when maintained near water bodies or in metropolitan areas. Farmers that lack pesticide management expertise are more likely to employ older, more hazardous, and more persistent pesticides. This may be a particular issue in certain underdeveloped nations. The issue is exacerbated by the lack of strict rules or the failure to enforce those that do exist(18)(19)(20). Fertilizers are a kind of fertilizer that is used to increase the growth of plants Fertilizers used to boost agricultural yields, particularly nitrogen (N) and phosphorous (P), may wind up in rivers and groundwater. They have the potential to degrade groundwater and river water quality, as well as eutrophicate wetlands and aquatic bodies(21)(22)(23). High nutrient concentrations encourage algal development, resulting in unbalanced aquatic ecosystems with phytoplankton blooms, excess organic matter production, and increased oxygen demand, resulting in oxygen deprivation and mortality of benthic species living on or near the bottom. Nine nations surround the Baltic Sea, while five additional countries are in the drainage basin but do not border the sea. Fertilizer runoff from nearby agricultural areas adds to a high nutrient load in the Baltic Sea, which has evolved from an oligotrophic clear-water sea to a eutrophic marine ecosystem with midsummer algal blooms, particularly of blue-green algae.

Most OECD countries have monitoring networks to measure the actual state of water pollution of water bodies, while some countries use risk indicators that provide estimates, usually based on models of contamination levels. However, monitoring of agricultural pollution of water bodies is more limited with just over one-third of OECD member countries monitoring nutrient pollution and even fewer countries tracking pesticide pollution. Certain farm pollutants are recorded in more detail and with greater frequency (e.g. nutrients, pesticides), whereas an indication of the overall OECD situation for water pollution from pathogens, salts and other agricultural pollutants is unclear. Moreover, pollution levels can vary greatly between countries and regions depending mainly on soil and crop types, agro-ecological conditions, climate, farm management practices, and policy.

The limitations to identifying trends in water pollution originating from agriculture are in attributing the share of agriculture in total contamination and identifying areas vulnerable to agricultural water pollution. In addition, differences in methods of data collection and national drinking and environmental water standards hinder comparative assessments, while monitoring agricultural water pollution is poorly developed, especially for pesticides, in a number of countries, such as Australia, Italy, Japan and New Zealand. The extent of agricultural groundwater pollution is generally less well documented than is the case for surface water,

largely due to the costs involved in sampling groundwater, and because most pollutants take a longer time to leach through soils into aquifers.

The remainder of this section examines agricultural pollution in terms of the main agricultural driving forces impacting on water pollution, especially the use of nutrient and pesticides inputs. In turn depending on farming practices and systems, the use of farm inputs will affect the state of the environment with regard to rates of soil erosion (which affects the leaching of pollutants), water quality and impacts on aquatic ecosystems (either in fresh or marine waters). The fourth section examines the policy responses across OECD countries to the state of water pollution, which in turn act as a driving force on the farm systems, practices and inputs used by agriculture.

2. DISCUSSION

For the management of marine ecosystems and the prevention of negative effects on them, diagnosis, prediction, and monitoring are essential. Managers, planners, and legislators must understand the state of aquatic ecosystems, the nature and dynamics of the drivers and pressures that lead to water-quality degradation, and the impacts of such degradation on human health and the environment in order to design cost-effective measures for preventing pollution and mitigating risks(24). The sections below provide an overview of the causes and consequences of water pollution in agriculture, as well as potential actions to avoid pollution and ameliorate its affects, using the logic of the Drivers-Pressures-State change-Impact-Response (DPSIR) framework. Figure 1 shows the DPSIR framework for agricultural water pollution analysis.

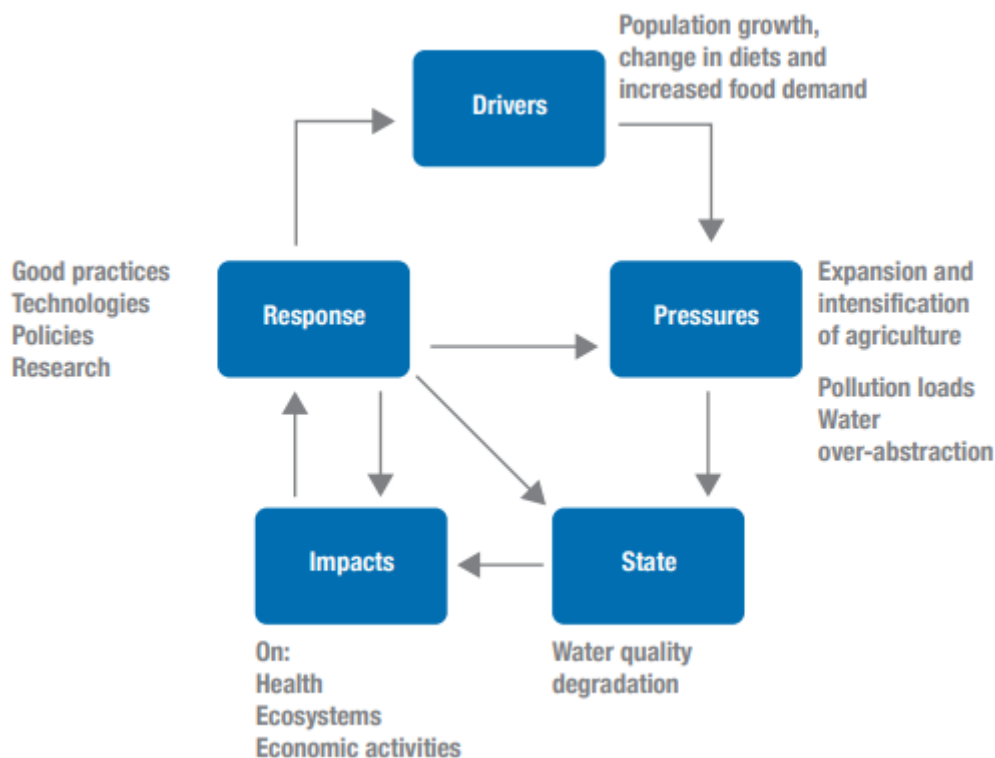


Figure 1: DPSIR Framework for Agricultural Water Pollution Analysis.

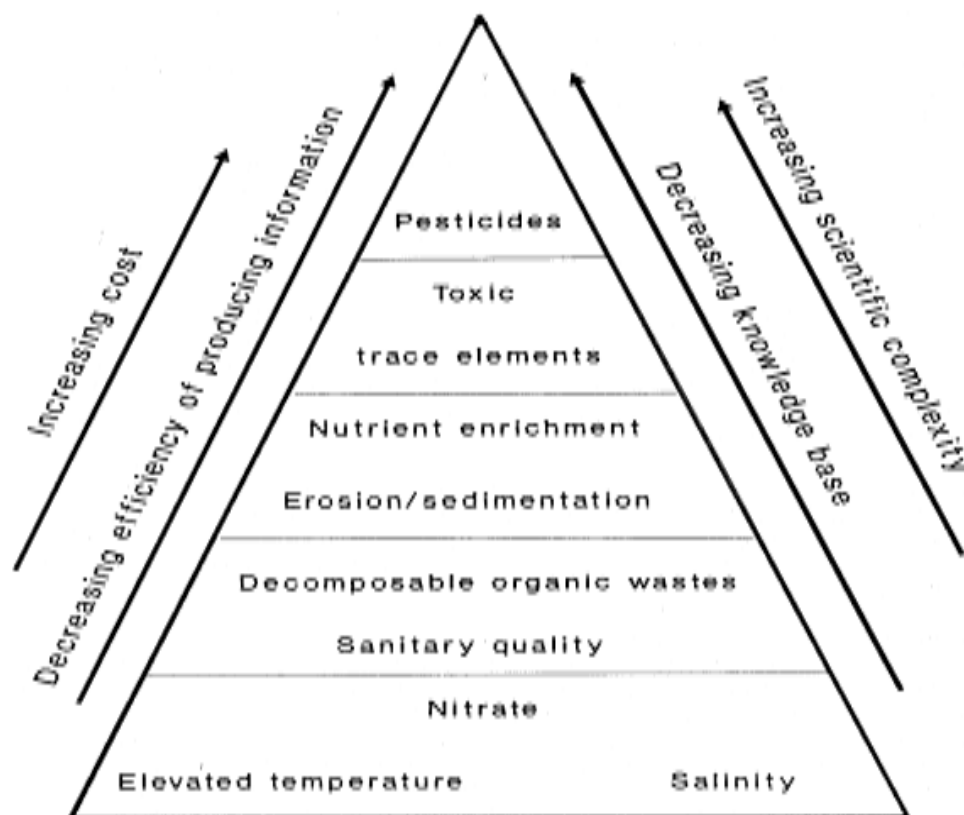


Figure 2: Illustrates the diverse steps of increasing cost.

Agricultural water quality has been identified as a major environmental issue in Organisation for Economic Co-operation and Development (OECD) countries, and as a topic for policy analysis is an issue of relevance across all OECD countries. The primary agricultural sector is mainly responsible for nitrate, phosphorus, pesticide, soil sediment, salt, and pathogen pollution of water from crop and livestock activities, but it can also play a role under certain farm practices in terms of improving water quality through a water purification function. Water pollution from agriculture has associated costs in terms of removing pollutants from drinking water supplies, as well as damage to ecosystems and commercial fishing, recreational, and cultural values associated with rivers, lakes, groundwater and marine waters. Agricultural water pollution is a focus of attention for policy-makers in most OECD countries due to the following (the importance of these issues varies within and across countries). Figure 2 illustrates the diverse steps of increasing cost.

- Reduction in pollution by non-agricultural polluters, which has been more rapid than for agriculture, especially nitrate, phosphorus and pesticide pollution.
- Increase in point pollution from agriculture linked to the intensification of livestock farming, especially in the pig, poultry and dairy sectors.
- Greater public awareness of the damage to aquatic ecosystems from certain agricultural practices.

- Growing concerns related to groundwater and coastal pollution, especially from the leaching of phosphorus and pesticides.
- Uncertainty over the extent and severity of those water pollutants derived from farming that are in general poorly monitored (e.g. pathogens, salts, heavy metals).

The European Union Nitrate Directive, for example, defines areas vulnerable to nitrates in its member states, and sets guidelines to establish the maximum permitted level of nitrates in water. Moreover, the action programmes developed to implement the Directive, establish the necessary measures to ensure that nitrogen of animal origin spread on the land (manure fertilization) does not exceed 170 kg/hectare. It also makes it mandatory for farmers to ensure that fertilizer use is well balanced to supply the needs of crops. European Union member states have designed and implemented some agri-environmental measures to further reduce nitrogen losses in water that go beyond the statutory obligations. Reduced use of fertilizers, converting arable land to extensive grassland (pasture), green cover and crop rotation are the main instruments implemented by member states to reduce nitrates in water. In addition, the European Union Water Framework Directive imposes the objective of achieving good water status by 2015(25).

3. CONCLUSION

In most developing nations, water is regarded as the most important resource for long-term development. It is not only necessary for agriculture, industry, and economic processes, but it is also the most vital component of the environment, having a significant effect on human health and environmental conservation. Surface water contamination poses a health concern since such streams are often exploited as clean water sources and therefore utilized for drinking water, or is linked to shallow wells used for drinking water. Waterways also serve as essential washing and cleaning facilities, as well as fishery and fish farming and leisure. Groundwater, which is filtered via subterranean layers of sand, clay, or rocks, is another important source of beverage. Groundwater has low pathogen concentrations on a regular basis. Toxic substances like arsenic and fluoride, on the other hand, are often absorbed into groundwater from soil or rock strata. Chemicals may enter rivers via both point and nonpoint sources. Pollution from a single source, such as an industrial site, is referred to as point-source pollution. NPS (non-point-source) pollution is made up of a lot of tiny sources that add up to a lot of pollution. Rain or irrigation water, for example, takes up pollutants such as fertilizers, herbicides, and insecticides and transports them to rivers, lakes, reservoirs, coastal waters, or groundwater.

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AN INTEGRATIVE REVIEW OF WORK-LIFE BALANCE

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ABSTRACT

Researchers propose an integrated model of work-life balance including two important dimensions: involvement in work and nonwork life, and minimum conflict between social roles in work and nonwork life, based on a comprehensive assessment of the literature. Humans examine most of the data on the effects of work-life equilibrium in terms of work-related, nonwork-related, as well as stress-related outcomes based on this paradigm. The next step is to define a collection of personal and organizational antecedents to work-life balance and explain how they affect it. Then we go through a series of theoretical processes that connect work-life balance to overall happiness. Finally, future research areas and policy consequences are discussed.

KEYWORDS: *Life satisfaction, Work-life balance, Work-family conflict, Work-life integration, Work family interface.*

1. INTRODUCTION

Work-life balance has been linked to higher performance of the organization, greater job satisfaction, as well as stronger organizational commitment, according to many studies. Work-life balance has also been shown to have a significant impact in individual well-being, such as health satisfaction, marital satisfaction, overall general life happiness, according to research. In organizational culture, management of human resources, and quality-of-life studies, this is an important field of study. What is the definition of work-life balance? Work-life balance seems to be defined in a variety of ways. These concepts (and conceptualizations) may be divided into two categories: (1) multiple role involvement in work and nonwork life, and (2) minimum conflict between work as well as nonwork roles. We found at least four distinct definitions (conceptualizations) of work-life balance within in the overall dimension of participation in various roles in work and nonwork life. The first definition entails multi-role attentive involvement(1)(2)(3).

The second component of work-life balance, as previously mentioned, is a minimum conflict between work and nonwork responsibilities. At least three definitions of minimum conflict between work as well as nonwork responsibilities have been established. The first definition entails reducing role conflict between work and home responsibilities. The following is a summary of this definition: Work-life balance is defined as happiness and effective performance in both work and family responsibilities with minimal role conflict. The second concept includes role enrichment without conflict between roles. Work-life balance is defined as a high level of role enrichment combined with a low level of role conflict in both work and nonwork life domains. The third term refers to resource management in order to reduce role conflict(4)(5)(6).

Our initial aim is to try to bring the study literature together by providing an integrative definition of work-life balance, which we describe as a high degree of involvement in both work and nonwork life with little conflict between work and nonwork social responsibilities(7). The second aim of this article is to demonstrate that the concept of work-life balance may serve as a unifying framework for better accounting for a variety of outcomes. The second aim is to look at the results of work-life balance, such as work, non-work, including stress-related outcomes. The final aim of this article is to try to better integrate the research on work-life balance by demonstrating how previous empirical research on personal and organizational variables may be used to predict our work-life balance construct(8)(9). To put it another way, we'll define a collection of personal and organizational predictors and explain their impacts on work-life balance in terms of our two main characteristics of work-life balance: role involvement in work and nonwork life and minimum friction between work and nonwork roles. The third aim focuses on the factors that influence work-life balance. The fourth aim is to present theoretical concepts that may be used to explain the link between work-life balance and overall happiness(10)(11)(12)(13).

1.1 Work-Life Balance as a Construct:

We think that an integrated definition of work-life balance includes two important aspects, namely role involvement in both work and nonwork life and minimum conflict between work and nonwork roles, as previously mentioned. Individuals must actively participate in social roles in both work and nonwork life to attain work-life balance. Engagement in many roles, as illustrated in (figure 1), enables excellent role performance, resulting in pleasure that spreads across life domains.

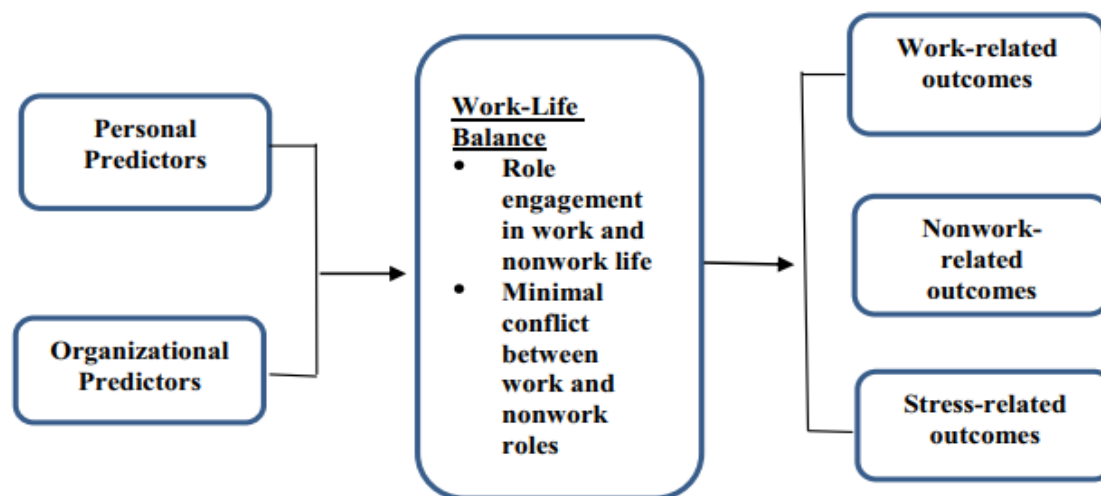


Figure 1: illustrate the Integrative Framework of Work-Life Balance Research.

That is, work-life balance entails a combination of high levels of role involvement in both the work and non work domains, as well as little conflict between work-related and non work-related social roles. Much of the research in this area is captured by this concept of work-life balance. We go through these two aspects in detail below.

1.2 Workplace and non-workplace role engagement:

A high degree of involvement in work-related tasks is a key need for work-life balance. If the individual's job-related objectives are significant to them and they are successful in achieving them, a high degree of involvement in work life is likely to generate good affect. Work-life balance is improved not just by achieving work-life goals, but also by beneficial spillover effects in other important life areas. Employees are highly engaged in both work and nonwork life, for example, can accomplish work-life balance when (1) positive impact from one life domain is transferred to those other life domains, (2) skills and perceptions in one life domain improve role performance in other life domains, and (3) two or more life domains are integrated to facilitate the transfer of positive experiences and affect(14)(15)(16).

That is, achieving a level of work balance necessitates first and foremost a high level of commitment in work-related roles that generate a lot of positive affect through the successful transfer of positive skills, values, privileges, status, as well as affect from work-related roles to nonwork-related roles. Role enrichment—the degree to which involvement in one life domain improves performance and quality of life in other life domains—contributes to good personal outcomes (e.g., life happiness) that arise from high levels of engagement in work life

1.3 Workplace and non-workplace social roles have little conflict:

The minimum conflict between societal norms in work and nonwork life domains is the second key need for work-life balance. Work-life balance is said to be accomplished when there is little to no role conflict across social roles, according to a lot of studies. The degree toward which role duties in one life domain and then another life domain were incompatible is referred to as role conflict. As a result, the responsibilities of one job make it more difficult to execute the other. Because the demands of the roles of work and family life are fundamentally contradictory, people suffer role conflict between the two spheres. Much research, driven by the conservation of resources paradigm, backs up this idea of role conflict(17)(18)(19).

1.4 Work-Related Results:

Employees' work-life balance improves job performance, job happiness, commitment to the organization, career growth, and success, according to research. Work-life balance has also been shown to decrease workplace dysfunction, burnout and alienation, absenteeism, and the desire to change jobs. In terms of work-related results, most of the research has shown a similar pattern: as work-life balance improves, so does productivity.

- Job efficiency improves.
- Employee satisfaction rises.
- The organization's devotion grows.
- There is a reduction in the number of people who want to quit the company.

1.5 Non-Work-Related Results:

Employees' life satisfaction, marriage contentment, family performance, family satisfaction, paternal satisfaction, including leisure satisfaction all improve when they have a work-life balance, according to research. Employees with a work-life balance have been shown to have better health, have less cognitive difficulties, and have fewer disputes with their family members,

according to research. Much study has demonstrated that when work-life balance improves, so does productivity(20).

- Your level of happiness rises.
- There is an increase in marital adjustment and marital happiness.
- The performance of the family improves.
- Family happiness improves.

1.6 Stress-Related Consequences:

Work-life conflict is linked to increased psychological distress (emotional exhaustion, feelings ill-being, anxiety, irritability as well as hostility, hypertension, depression) as well as family-related stress (affective parental and marital stress), as well as the manifestation of illness symptoms, according to research. There are also strong connections between work-life conflict and stress, according to research. Particularly when the work-life balance deteriorates.

Furthermore, many of the impacts of work-life balance on individual and organizational results are indirect rather than direct. Many variables seem to mitigate these effects. Work-life balance has been linked to higher quality of life. Job-life balance, in particular, adds to an individual's quality of life when they are highly engaged in both their work and family responsibilities, as well as fulfilled in both(21).

1.7 Work-Life Balance Antecedents or Predictors:

The final aim of this article, as mentioned before, is to try to better integrate the knowledge on work-life balance by demonstrating how prior empirical research on personal, situational, institutional, including cultural variables may be used to forecast our construct of work-life balance. Much of the discussion of antecedents in this section is organized around two main categories of antecedents, namely personal and organizational predictors of work-life balance.

1.8 Work-Life Balance as well as Overall Life Satisfaction Theoretical Principles:

The fourth aim of this literature review, as mentioned in the introduction, is to present theoretical ideas intended to explain the connection between work-life balance as well as overall life satisfaction. What are some of the theoretical work-life balance concepts that have gained traction in the literature? We'll go over some of the work-life balance theories (or psychological principles) that could explain the links between work-life balance but also overall life satisfaction, such as satisfaction limits, satisfaction of the full range of human specific interventions, role conflict, positive spillover, role economic gain, segmentation, or compensation(22).

1.9 The Role Conflict Principle:

When social responsibilities in the work as well as non-work life domains are compatible with no or little conflict, work-life balance may be established. Role conflict throughout life domains has a detrimental effect on life satisfaction, according to the principle of role conflict. Consider the tensions that exist between work and family duties. Work-family conflict is a kind of inter-role conflict in which work and family role demands become mutually incompatible. That is, involvement in work-related duties is hampered by involvement in family-related activities, and

vice versa. This inter-role conflict may go one of two ways. Work responsibilities may conflict with family duties, while work roles can conflict with family roles(23).

1.10 The Role Enrichment Principle:

Good experiences and results in one job may lead to positive experiences and outcomes in the other. Job enrichment is the idea that abilities and experiences gained in one role may be used to improve or increase performance and satisfaction in another. Work-to-family enrichment happens when job experiences lead to heightened work satisfaction, while family-to-work enhancement occurs when life experiences contribute to heightened work contentment. Learning that takes place in one life domain and is readily transferable to other life domains, resulting in increased role engagement and effectiveness across many domains. For example, a woman may believe that becoming a mother taught her patience, which she can use to her job as a manager.

1.11 The Compensation Principle:

Employees compensate for unsatisfactory living domains in order to preserve an appearance of work-life balance. Such a psychological approach helps to maintain a degree of overall life satisfaction that is adaptable. Employees who are dissatisfied at work are more inclined to compensate by participating in enjoyable nonwork activities. According to the concept of compensation, employing compensation to alleviate unhappiness in a certain life area leads to increased life satisfaction. Compensation works when a person who is dissatisfied in one area of his or her life raises his or her degree of involvement (or perceived significance) in another area to improve contentment in that area. Employees who are unhappy with their employment, their employer, or their work life, for example, may feel lower life satisfaction as a result of their discontent. Employees prefer to participate in activities in other life domains that may produce good affect to protect against reductions in life satisfaction owing to decreases in job satisfaction. Such a beneficial impact on other areas Makes up for the loss of positive impact at work(24,25).

2. DISCUSSION

Many studies have connected work-life balance to better organizational performance, work satisfaction, including stronger organizational commitment. According to studies, work-life balance has a substantial effect on individual well-being, including health satisfaction, family satisfaction, and overall life enjoyment. This is a significant area of research in organizational culture, management of human resources, as well as quality-of-life studies. Based on a thorough review of the literature, we offer an integrated model of work-life balance that includes two key dimensions: participation in work and nonwork life, and minimal conflict between social roles in work and nonwork life. Based on this paradigm, we analyze the majority of the evidence on the impacts of work-life balance in terms of work-related, nonwork-related, and stress-related outcomes. There is a lot of study on the impact of work-life balance on employment, nonwork, and stress-related outcomes. Following that, we looked at a lot of studies on the major influences on work-life balance.

3. CONCLUSION

Researchers examined the literature on work-life balance then proposed a more integrated work-life balance paradigm in this article. We began by reviewing different conceptualizations of work-life balance before proposing an integrated definition. We did so by defining work-life balance as a high degree of role involvement in both work and nonwork life, with little conflict

between work as well as nonwork social responsibilities. Then they looked at a lot of research on the effects of work-life balance on work, non-work, including stress-related outcomes. The data on key antecedents of work-life balance was then examined. We accomplished this by defining a set of individual and interpersonal determinants of work-life balance or explaining how they affect it. Finally, we provided a series of theoretical processes that connect work-life balance to happiness.

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A REVIEW ON DIFFERENT TYPES OF CRYPTOGRAPHY TECHNIQUES" SHOULD BE REPLACED BY "EXPLORING THE POTENTIAL OF STEGANOGRAPHY IN THE MODERN ERA

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ABSTRACT

The information world of today is a digital one. Nowadays, data transfer via an insecure channel is a significant source of worry. Simultaneously, intruders are expanding throughout the internet and becoming more active. As a result, certain security precautions must be implemented to safeguard the confidential data from theft. Various methods have been used to encrypt and decode the secret data in order to keep it hidden. The two most well-known methods are cryptography and steganography. These two methods, however, cannot perform as well on their own as they may when used jointly. Steganography is a Greek term that combines the terms stegano and graphy. Steganography is a combination of the words stegano and graphy, which meaning "hidden writing." Steganography is a technique for concealing the fact that data is being sent. While cryptography transforms a secret communication into a format that is not human readable, this method has the drawback of making the encrypted message accessible to everyone. Intruders may attempt to obtain the secret message by using heat and trial methods via the internet in this manner. By concealing the fact that any communication is going place, steganography overcomes cryptography's restriction. The secret message is concealed in steganography in medium other than the original, such as text, image, video, and audio. These two methods are distinct and have distinct meanings. As a result, we will explore different cryptography and steganographic methods used to keep the communication hidden in this article.

KEYWORDS: *Steganography, Cryptograph, LSB, Cipher Text, Steganalysis, Cryptanalysis.*

1. INTRODUCTION

Steganography has been around for quite some time. In the past, Greek historian Herodotus tattooed the secret message on the slave's scalp, and when the hairs grew back, the slave was dispatched to the destination. During WWII, the Germans develop a new technology known as Microdots. In this technique, Germans are instructed to reduce the size of a secret message or image until it is the same size as the typed period. Later, this method was used to engrave a secret message on a wooden piece, which was then covered in wax. In the same manner, invisible ink was created using a novel method(1)(2)(3)(4). The secret message is written with a special type of ink called invisible ink, and the message can only be retrieved when the paper is

heated in this method. This strategy was also employed by the British to gain control of India. They're supposed to use a vaccination drum to hide from Indians, then gather their army in India and begin ruling over Indians(5–8).

The prisoner's problem helps to clarify the concept of steganography. In this problem, two inmates devise a plan to elude capture. A warden was assigned to keep an eye on them. As a result, they should begin communicating in such a way that their communication remains undetectable. They utilized a variety of cover media to deliver their message(9,10)(11).

1.1. Application of Steganography:

1. To conceal data transmission via an insecure route.
2. To protect data from being tampered with.
3. It may be utilized in television broadcasting, as well as audio and visual synchronization.
4. To examine any user's network activity.
5. To regulate who has access to digital information.

1.2. Different picture steganography techniques:

1.2.1. Text steganography:

The secret data may be concealed behind any text file that can be transmitted over an insecure channel using this method. Example:

- Message to transmit - Since Evan can run, encrypting text in a natural setting is advantageous.
- Original Message- Since Evan Can Run, It Is Deliberately Effective To Encode Text In Natural Surrounding.
- Secret Message- SECRET INSIDE

1.2.2. Audio Steganography:

Secret data may be concealed behind any audio file using the audio steganography method illustrated in Figure 1. This method often employs two kinds of audio. One audio track serves as a cover for the hidden message, while another serves as a cover for the cover media(12)(13)(14)(15)(16).

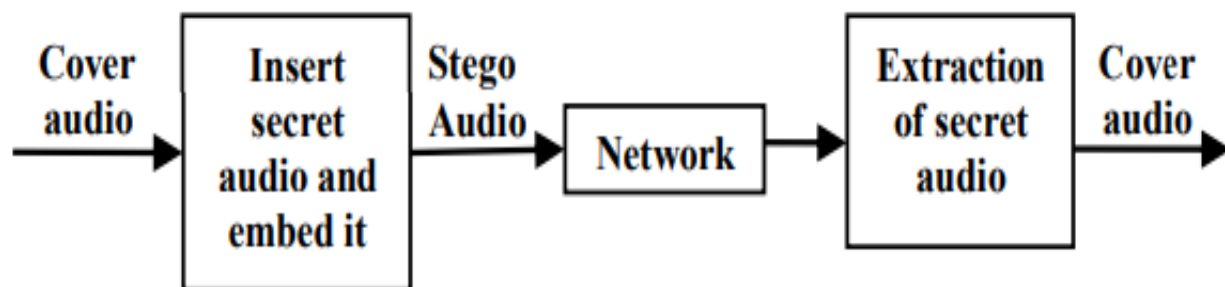


Figure 1: Illustrates the steganography technique of data hidden behind audio.

1.2.3. Video Steganography:

Figure 2 shows how secret data may be concealed behind a video file, allowing a huge quantity of data to be hidden behind it.

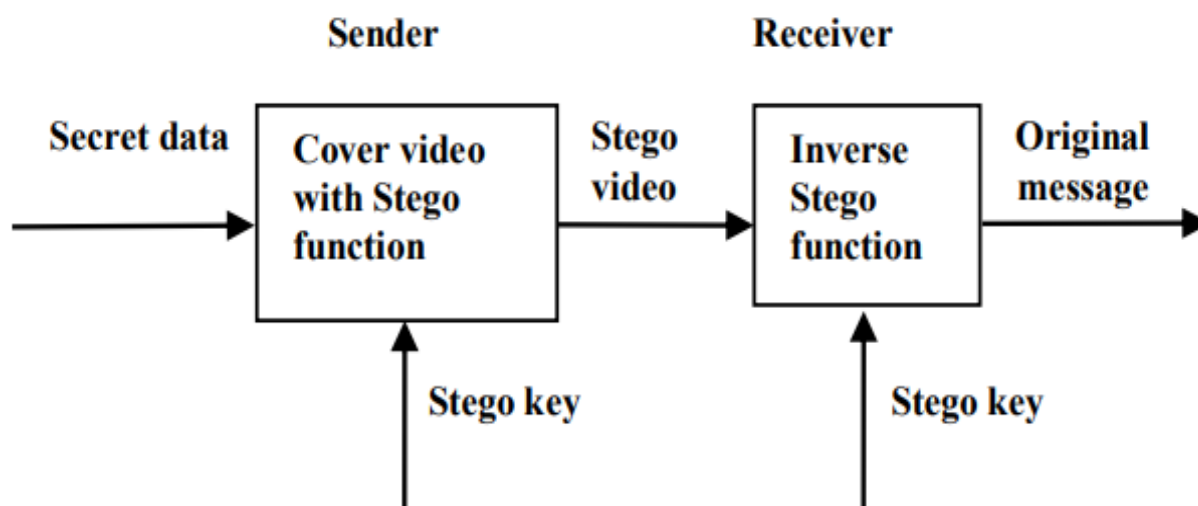


Figure 2: Illustrates the steganography technique of data hidden behind video.

1.2.4. Image Steganography:

The secret data may be concealed behind any cover picture using this method. Hidden data may be found in the form of text or images. The stego picture may then be transmitted via an insecure channel after embedding(17)(18)(19).

2. LITERATURE REVIEW

J. Mandal et al. proposed a method to embed the secret data across the three components of a color picture, namely Red, Green, and Blue, in their paper "Colour Image Steganography Based on Pixel Value Differencing in Spatial Domain." To do this, the three RGB components of a color image are first extracted from the picture pixels, and then three distinct $m \times n$ matrices are created for each color component. After that, each matrix is subjected to the pixel value differencing technique. The first bit of the secret message is embedded over the first pixel block of the red component, then the second bit is embedded over the first block of the green component, and finally the third bit is embedded over the first pixel block of the blue component. The processing of the suggested technique will proceed in this manner, and the secret message will be incorporated in the overall picture. This technique improves picture quality while ensuring image security(20).

N. Bourbakis et al. presented a method to guarantee safety and isolation during medical data storage and transmission in their paper "A Synthetic Stegano-Crypto Scheme for Securing Multimedia Medical Records and Their Associations." This method was developed because human errors in medical facilities and hospitals are strongly linked to one another. As a lossless synthetic approach, the suggested technology combines Steganography with Cryptography. Information security is managed using encryption, and secret data association is done using data concealing in this method. SCAN Encryption Compression-Concealing, LSB Hiding, and Regional Hiding with Segmentation are combined into a single information hiding and

encryption technique in the proposed synthetic methodology. The SCAN methods are based on a 2D spatial domain approach, which may result in a huge number of transformation scanning pathways. The LSB Hiding algorithm is an information concealment technique in which the secret data is placed on the n th least significant bits of a host picture. In Regional Hiding with Segmentation Information Hiding, pixels from one message picture are hidden in the most matching segments of the host image. The choice of such a complicated safe method was made in order to offer a very high degree of security to private data and in response to the increasing development of different unwanted attacks via an insecure channel (21).

Smita P. Bansod et al. in “Modified BPCS steganography using Hybrid Cryptography for Improving Data embedding Capacity,” proposed that cover image is considered as large capacity media. Hybrid cryptography, which combines symmetric and asymmetric key encryption, is used to encrypt the secret message in this method. The RSA Algorithm is used for symmetric key cryptography, which has the benefit of sending the secret message across the channel each time a new key may be used. The DES algorithm is used to create asymmetric key cryptography because it is simple to use and takes much less time to compute than the RSA method. Though both of these methods have disadvantages, the author of this suggested work used the advantages of both techniques to get the greatest outcomes(22).

Atallah M. Al-Shatnawi in “A New Method in Image Steganography with Improved Image Quality” proposed a new technique to overcome the disadvantage of LSB technique. The author used two bmp pictures with sizes of (24 x 502 x 333) and (24 x 646 x 165), respectively, in this suggested work. The first image is dark while the second image is bright. The secret message and the pixel value of the picture are then found to have identical bits, and the secret message is inserted there. This method is 83 percent more efficient than the LSB method. On a dual core 2.0 GHz computer, the suggested concealing techniques were implemented in the VB6 programming language. The author suggested a novel method for picture steganography improvement in “Enhancing Steganography in Digital Images,” in which hidden data may be placed at the frames of video files. The area of interest is selected to locate the pixel where data must be saved. In this manner, the movie is first split into frames, then data is saved in a particular area, and a stego video is created. Human face or skin tones are utilized for selecting an area of interest, and the RGB picture is converted into YCbCr to accomplish this. Cr protects data by concealing it and maintaining its secrecy, whereas Cb has a central point of skin tone. The secret data settings were carefully computed before embedding so that they would create very few distortions in the cover video(10).

3. DISCUSSION

Below Table 1 is demonstrating the difference between cryptography and steganography.

TABLE 1: ILLUSTRATES THE DIFFERENCE BETWEEN CRYPTOGRAPHY AND STEGANOGRAPHY.

S. No.	Cryptography	Steganography
1.	It is a technique to convert the secret message into other than human readable form.	It is a technique to hide the existence of the communication.
2.	It is a kind of known communication.	It is a kind of hidden communication.
3.	Cryptography alters the overall structure of the data.	Steganography does not alter the overall structure of the data.
4.	The final result obtained is known as cipher text.	The final result obtained is known as <u>stego media</u> .
5.	Once it has been discovered no one can easily get the secret data.	Once it has been discovered anyone can get the secret data.

2.1. Steganalysis:

Various Steganalysis methods and approaches are available to accomplish this. Here are a few that will be discussed:

2.1.1. Patterns that are unusual:

Suspicious are raised when unusual patterns appear in digital media. TCP/IP packet headers are sometimes used to send secret information across an insecure connection. Because a person does not pay attention to the TCP/IP header because it includes some reserved space, headers are utilized. However, such packets that are unreliable for it may be filtered by the firewall(23).

2.1.2. Visual Detection:

The secrecy of a concealed message is broken by examining repeating patterns. The stego picture is compared to the original cover image to accomplish this, and obvious changes are noted. If the cover picture isn't accessible, known signatures are utilized to determine if the hidden message exists(24)(25)(26). Padding or cropping in a picture is another way to detect the presence of the hidden information. Another consideration is the file size difference between the secret and cover images. A significant color variation or picture quality deterioration may often raise concerns.

Here are some examples of potential Steganographic attacks:

- Steganography-only assault: This attack is only effective if the steganography medium is accessible for analysis.
- Known carrier attack: When both the original cover and the steganography medium are accessible for analysis, this attack is used.

- Known Message assault: This attack is triggered when the Steganalyst is aware of the secret message.
- Chosen Steganography attack: When the message carrier and Steganographic tools are known to analysis, this attack may be successful.
- Chosen Message Attack: When the message and message concealing algorithm are known to the analyst, this attack is used.

2.2. Cryptanalysis:

Cryptanalysis is a method for decrypting the security of cryptographic systems. This method is used to get access to safe encrypted data without knowing the key that was used to encrypt the data. Here are some examples of potential cryptographic attacks:

- Ciphertext-only assault: This attack is used when the ciphertext can be analyzed.
- Known Plain Text Only: When a collection of ciphertext matching to plaintext is known, this attack is used.
- Chosen-plaintext (chosen-ciphertext): This attack is successful when the cryptanalyst can choose the ciphertext at random from a list of plaintext.
- Adaptive selected plaintext: This attack occurs when ciphertext corresponding to any plaintext is recovered using the preceding encryption algorithm's learning.

Though many picture steganography methods have been created, some of the most recent approaches will be covered.

4. CONCLUSION

The primary goal of this article was to provide an overview of different steganography and cryptography methods. As we've seen, encryption and steganography both offer different characteristics for protecting data across the network. However, if they are not combined, they do not provide an accurate outcome. However, the issue with these methods is that they need a lot of room to conceal the secret data. As a result, data compression methods should be used in conjunction with both approaches. Before embedding, compression may be applied to either the secret message or the cover picture. The LSB method, on the other hand, is the most commonly utilized technique, although it has a number of disadvantages, including a reduction in picture quality and the creation of suspicions. As a result, embedding in the edge region is a superior choice for data concealment. Because changes near the edge are difficult to detect, large amounts of data may be stored without being noticed.

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AN ASSESSMENT OF ALGINATE COMPOSITES FOR BONE TISSUE ENGINEERING

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ABSTRACT

Immune system is a complex and hierarchical structure made up mostly of nano hydroxyapatite and collagen. There have been many efforts to create artificial bone to replace auto graft and allograft therapy. Tissue engineering is a potential method for addressing a variety of problems, and it may also be used to create artificial bone using materials such as polymer, ceramics, metals, cells, and growth hormones. Polymer-ceramic composites are the best at mimicking bone's inherent activities. Because of its biocompatibility and gel-forming characteristics, alginate, an anionic polymer with many biomedical uses, is gaining popularity in bone tissue engineering. Too far, many composites have been explored, including alginate-polymer, alginate-protein alginate-ceramic, alginate-biogas, alginate-bio silica, alginate-bone morphogenetic protein-2, and RGD peptides composite. Pore size distribution, mechanical strength, cell adhesion, biocompatibility, proliferation and differentiation, alkaline phosphatase rise, good mineralization, and differentiation potential are all improved in these alginate composites. As a result, alginate-based composite biomaterials for bone tissue regeneration will prove promising. The purpose of this study is to provide a comprehensive overview of alginate manufacture and its uses in bone tissue engineering.

KEYWORDS: *Alginate, Bone Tissue, Chitosan, Hydroxyapatite, Immune System.*

1. INTRODUCTION

Bone is an involved in supply chain tissue with a hierarchical structure that is made up of about 70% nano hydroxyapatite and 30% collagen by composition. Furthermore, water is the third primary component, and the volume and weight fractions of hydroxyapatite, collagen, and water are not consistent. It is age-dependent as well as species-dependent. At a scale of several hundred nanometers, wet collagen and HA mineral crystal agglomerations interpenetrate each other, producing the mineralized fibril(1). Bone's primary function is to provide structural support, mechanical strength, blood pH control, and calcium and phosphate balance for metabolic activities. Trauma, neoplasia, congenital abnormalities, motor vehicle accidents, osteoporosis, and arthritis, among other things, may cause bone deformities or fractures. Auto graft, allograft, and xenograft are some of the therapeutic methods available to address bone abnormalities. The main drawbacks of auto graft and allograft methods are limited donor locations and the risk of transmissible illness, respectively(2–5).

As a result, researchers and orthopedicians have given tissue engineering materials a lot of thought in order to address the issues with the current treatment regime. Researchers are experimenting with polymers, ceramics, metals, cells, and growth hormones to create an artificial bone. Tissue engineering scaffolds are used to repair a function that has been lost or a bone that has been injured. A well prepared artificial scaffold should have the same structural, functional, and mechanical properties as healthy bone. For bone tissue regeneration, scaffolds should also promote cell adhesion, proliferation, and differentiation(6). In the future, regenerative composite biomaterials will be a viable alternative to traditional auto graft and allograft implants.

Chitin, chitosan, alginate, carrageenan, and chondroitin sulfate are examples of natural-derived polysaccharides that are extensively utilized in bone tissue engineering applications. Furthermore, chemical and physical changes to these polysaccharides may result in novel characteristics that can be used in biological applications. Natural polymers are better since they are biocompatible, biodegradable, nontoxic, and plentiful(7,8). Biopolymers have been proven to be structural materials, such as cellulose, which supports the structure of higher plants, chitin, which forms the exoskeleton of several mollusks, keratin, which provides thermo insulation to hair, collagen, which provides mechanical support in connective tissues, and silk, which provides strength to spider webs. As a result of their remarkable biological characteristics, we may speculate that polymers may play a critical role in the creation of artificial organs.

Alginate, like chitin and chitosan, is a popular biomaterial for bone tissue engineering among natural polysaccharides. Alginate is a well-known substance that has excellent scaffolding properties and may be used to treat organ loss or failure. Alginate is a biocompatible, non-toxic, non-immunogenic, and biodegradable substance made up of gluconic acid and mannuronic acid. It has been extensively utilized in the food business as a thickening, emulsifying agent, and tissue engineering material, in addition to its biocompatibility, availability of sources, and cheap costs. The use of alginate-based biomaterials in orthopedic applications has received a lot of attention.

1.1 Alginate formulation:

Brown algae such as *Laminaria hyperborea*, *Laminaria digitata*, *Laminaria japonica*, *Ascophyllum nodosum*, and *Macrocystis pyrifera* produce alginate, which is a biopolymer found in seaweeds. Treatment with aqueous alkali solutions, most often NaOH to precipitate alginate, the extract is filtered and calcium chloride is added to the filtrate. After that, dilute hydrochloric acid may be used to convert the alginate salt to alginic acid (HCl). Water-soluble sodium alginate is generated after purification. The chemistry behind the methods that produce sodium alginate from seaweed is straightforward.

The process for making sodium alginate from seaweed. Alginate may be made into hydrogels, microspheres, microcapsules, sponges, foams, and fibers with ease. This feature may expand the range of uses for alginate in areas like tissue engineering and medication delivery. Various techniques of preparation have been discussed. Alginate may be chemically and physically modified to tailor its characteristics and functions, such as biodegradability, mechanical strength, gelation property, and cell affinity, to specific applications. For bone tissue regeneration, additional substances such as growth factors and peptides may be combined to make physical and chemical modifications(9).

1.2 Alginate-polymer nanocomposites:

i. Chitosan composites

There are numerous study papers on the use of alginate polymer nanocomposites for bone tissue regeneration. One of the most researched materials is alginate-chitosan composite for bone tissue healing. The most common cationic polysaccharide is chitosan. Chitosan's cationic nature makes it easy to form polyelectrolyte complexes with a variety of anionic polysaccharides. Biomaterials such as chitosan and its composites have been widely researched for bone tissue engineering. The chitosan-alginate scaffold was produced using a simple mixing and freeze drying technique, and the scaffold exhibits mechanical characteristics and cell growth. Uniform The acetic acid and alginate concentrations in the composite scaffold are found to be directly related to the pore size of the alginate-chitosan scaffold. In comparison to greater viscosity samples, chitosan alginate polyelectrolyte with viscosities below 300Pas had good pore structure and improved cell proliferation.

ii. Composites of collagen or gelatin:

Preosteoblast spreading and proliferation, as well as osteogenic differentiation, were found to be supported by chemically modified methacrylate alginate coupled with collagen. Methacrylate is a chemical modification of alginate that allows it to be controlled in terms of physical characteristics including degradation rate, swelling, and tensile capabilities(10–12). In comparison to the pure methacrylate alginate hydrogel, collagen-added hydrogels showed greater mechanical moduli, fast cell proliferation, osteogenic differentiation, and reduced swelling ratios. Cell proliferation, mineral nodule development, and type 1 collagen expression have all been studied in vivo using sodium alginate/gelatin scaffolds for bone tissue creation. Gelatin is an irreversibly hydrolyzed form of collagen that is widely utilized as a gelling agent in the pharmaceutical, culinary, and cosmetic industries.

iii. Composites made of synthetic polymers:

The addition of synthetic polymer to alginate often improves the composite material's mechanical strength. Thermo sensitive copolymer was created by grafting poly-COOH with a single carboxyl end group onto active alginate through amide bond connections, and the composite was shown to be biocompatible with mesenchymal stem cells. The lyophilization technique was used to make alginate hydrogels from several synthetic polymers (poly (ethylene glycol) monomethacrylate (PEGmM), poly (propylene glycol) monomethacrylate (PPGmM), and methacrylic alginate (MA). Both nanopores and micropores were found in the hydrogels. Because of the rise in charge density, hydrophobicity, and pore size, increasing the mass fractions of MA and PPGmM in the microporous hydrogel encouraged the development of apatite layers.

1.3 Alginate was used as a delivery medium for stem cells, BMP-2, and RGD peptides:

Chemical alteration of the scaffold has led to the development of several bio composite materials, including the immobilization of functional cell-adhesive ligands and bioactive molecules like as enzymes, medicines, and cytokines. When a bone fracture occurs, the human body naturally generates numerous cytokines to heal the damage; these substances are known as growth factors. The big defect, on the other hand, is essential for the human body to heal and rejuvenate.

1.4 Interaction of stem cells with alginate scaffolds:

Mesenchymal stem cells can develop into a variety of cell types, including osteogenic, adipogenic, and chondrogenic cells, making this a potential and new method to creating artificial organs. Delivering mesenchymal stem cells to the defective region is a crucial step in regenerating bone tissue in a variety of situations. Alginate is a popular biomaterial for stem cell encapsulation because it distributes stem cells to particular tissues. The cellular survival and osteogenic differentiation of periodontal ligament and gingival mesenchymal stem cells encapsulated in oxidized alginate micro beads were extensively studied. In vitro, the produced system was nontoxic scaffolds with superior osteogenic and adipogenic stem cell differentiation than the control group(13).

1.5 Delivery of growth factors:

Several medicinal substances, including as antibiotics, enzymes, growth factors, and DNA, have been effectively integrated and delivered into the targeted region using alginate. Alginate hydrogels have been extensively researched as scaffolds and carriers for physiologically active chemicals or cells in cartilage and bone repair. Bone Morphogenetic Proteins (BMPs) are a kind of growth factor that has been widely utilized due to its beneficial effects on bone development. Recombinant human BMPs, in addition to natural BMPs, are frequently utilized for orthopedic therapy.

1.6 RGD delivery for bone tissue regeneration:

L-arginine, glycine, and L-aspartic acid try to compensate the tripeptide RGD. RGD-peptides have been linked to cellular attachment and may be utilized to coat synthetic scaffolds to improve cellular adhesion in tissue engineering. The physical and biological properties of alginate hydrogels with low and high molecular weights were investigated when they were combined with RGD peptide. RGD-modified alginate microspheres showed more intense mineralization staining and greater levels of ALP and osteocalcin secretion than unmodified alginate microspheres(14–17). The cellular survival of human mesenchymal stem cells immobilized in RGD linked alginate microspheres was increased by more than 90%, resulting in increased alkaline phosphatase activity and upregulation of collagen type I and Runx. Furthermore, osteogenic stimulation immobilized cell microspheres exhibit significant mineralization, and cell immobilized alginate microspheres promote endothelial cell tube formation. To enhance cell proliferation, osteoblast cells were co-transplanted on alginate hydrogels modified with an RGD-containing peptide.

1.7 Tissue Engineering:

One of the most severe and expensive problems in human health care is tissue and organ failure caused by abnormalities, traumas, or other kinds of damage. The transplanted tissue does not perform all of the activities of the original tissue and may lead to complications at the donor location. As a result, stem cells, tissue engineering (TE), and organogenesis have emerged as promising and important fields of study, with the potential to provide not only tissues and organs for transplantation but also new avenues for disease treatment; TE aims to develop functional substitutes for damaged tissues and organs(18–21). The aim of TE is to overcome the constraints of traditional organ transplantation and biomaterial implantation therapies. In tissue engineering,

a basic idea is to mix a scaffold or matrix with viable cells to create a cell–biomaterial construct that may be utilized to promote tissue repair and regeneration.

1.8 TE Bone:

Bone is a living tissue that is constantly regenerating its structure. Bone deficiencies may be caused by trauma or illness, and bone replacement materials are utilized to repair and rebuild them. Bone grafting, in which bone from another part of the patient's body is removed or bone from a human donor is utilized to replace the deficiency, is a common therapeutic method. Bone TE's ultimate aim is to create a construct that mimics the physical and biological characteristics of real bone tissue while avoiding the disadvantages of autologous or allogenic bone transplants(22). Applications for bone TE include bone regeneration following tissue loss due to degenerative, surgical, or traumatic events, as well as spinal arthrodesis. In addition, there is a need to hasten the healing from bone fractures and to treat nonunion fractures that have already occurred. Through the integration of scaffold structures with cells and bioactive chemicals, Bone TE provides novel treatment methods to assist musculoskeletal repair(23).

2. DISCUSSION

The objective of this review was to go over how alginate is used in bone TE. It aimed to provide an overview of the many kinds of materials available as well as their distinct characteristics, enabling the reader to choose the material that best suited the bone TE application. To summarize, alginates have quickly extended into the biomedical sector, adding substantially to the toolkit of biomaterial and TE scientists. They are no longer simply low-cost commodities for technical applications. Current alginate, on the other hand, is still unable to satisfy all of the design requirements at the same time. Alginate's Function in Bone Tissue Engineering Controlling these characteristics may be accomplished in future research by making chemical or physical changes to the polysaccharide or the gels made from alginate, allowing for the creation of more natural and functioning tissues. Despite all of the progress achieved in these areas, clinical usage is still restricted owing to certain unresolved issues. In many instances, it is a requirement that the scaffolds be biodegradable bone substitutes. Despite the fact that some of them have been used to clinical situations, no scaffolds that are clinically complete have been created. It is necessary to develop a more functioning scaffold so that it can be used more extensively. Close cooperation between biological and engineering disciplines is required to overcome these constraints.

3. CONCLUSION

Because of its biocompatibility, degradability, gel-forming ability, encapsulating characteristics, and ease of molding in different geometries, alginate has been demonstrated to be a potential biomaterial for bone tissue engineering. Alginate, on the other hand, falls short in terms of cell adhesive and mechanical characteristics. To address this problem, alginate-based scaffolds will be used more often with the inclusion of HA, calcium phosphate cements, biogas, and other natural and synthetic polymers. The inclusion of scaffold may not interfere with the development of bone, which happens in multiple stages in most cases. The use of Nano hydroxyapatite and other calcium phosphate cements in combination with alginate significantly aids in the creation of scaffolds for bone tissue regeneration. Hydroxyapatite and calcium phosphate cements are effective materials for bone tissue regeneration and transfer of growth factors and genetic materials to the bone. Outstanding biocompatibility, homogeneous dispersion of ceramic

particles, and rapid cell proliferation are only a few of the benefits of using the HA in situ technique. For improved bone tissue regeneration, many researchers have created alginate composites incorporating bone growth factors such as BMP-2 and RGD. Alginate encapsulation of stem cells with administration of BMP-2 and RGD peptides is a potential method for bone tissue repair and regeneration. Alginate is unquestionably beneficial to bone tissue engineering.

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