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VISION

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BRINJAL: EXPLORING THE MULTIFACETED HISTORY, BIOLOGY, AND CULINARY DELIGHTS OF THE BRINJAL

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ABSTRACT

Brinjal, also known as aubergine, is a delicious and versatile member of the nightshade family, similar to potatoes and tomatoes. With a long history that dates back to India and Southeast Asia, it goes by a range of names and colours, from classic purple to brilliant green and white. Brinjal thrives in warm regions and requires well-drained soil to grow and contribute to your culinary adventures. This wonderful fruit (sometimes referred to as a vegetable) takes you on a fascinating journey through history, flavour, and farming. Archaeological evidence reveals that brinjal was domesticated in India about 1,500 years ago. Today, it is a staple in many cuisines, including moussaka (Mediterranean), baingan bharta (India), and ratatouille (France). Its soft, absorbent flesh rapidly absorbs the flavours it is cooked with, making it ideal for stews, roasts, curries, and even desserts in some cultures.

KEYWORDS: *Brinjal, Colourful, Fruit, Heirloom, Hybrid, Nightshade, Vegetable.*

INTRODUCTION

History

Etymology and Linguistic Journey:

- The brinjal has a rich and well-traveled history. Its roots metaphorically extend from India to Southeast Asia.
- In India, it goes by various names: **baingan**, **vangun**, **kathirikai**, **begoon**, and more.
- The Munda tribe still calls it **Vartaku** in Mundari, an Austroasiatic language.
- In Sanskrit, it is referred to as **Vātiṅgaṇa**, among other names based on size and color.
- The journey continues: from the Fertile Crescent to Persia, it became **Bādingān**.
- It reached Arabia and transformed into **al Badinjan**, then **Beringela** in Portugal via the Moors from North Africa.

- The Galician language (related to Portuguese) named it **Berinxela**.
- Portugal's neighbor, Spain, pronounced it as **Berenjena**.
- Thus, the term **brinjal** emerged as we know it today.
- Interestingly, the word **eggplant** likely originated from a small white variety resembling eggs hanging from bushes, leading to its outlandish name in American English.
- The British adopted the term **aubergine**, which came via French from the Arabic **al Badinjan**.

Antiquity and Culinary Use

Ancient Origins:

- The brinjal has a storied past that spans millennia. Its roots can be traced back to the Indian subcontinent.
- Philological studies reveal that it migrated from India to West Asia and Europe, carried by traders, explorers, and cultural exchanges.
- Different regions within India offer diverse narratives about its history, reflecting its widespread cultivation and culinary significance.

Indus Valley Civilization (IVC):

- Archaeological evidence from the Indus Valley Civilization (2600-1900 BCE) provides a glimpse into early brinjal consumption.
- In the ancient city of Farmana, near Rakhigarhi, Haryana, remnants of cooked aubergine were discovered.
- These findings suggest that aubergine was part of the culinary repertoire in the Southeast Asian region of India and Pakistan as early as **4000 BCE**.
- The IVC people appreciated its taste, texture, and versatility, incorporating it into their daily meals.

Culinary Significance:

- Brinjal's culinary journey transcended geographical boundaries.
- It became an integral part of cuisines across West Asia, Europe, and beyond.
- Its adaptability allowed it to blend seamlessly into diverse culinary traditions.
- From Mediterranean moussaka to Indian baingan bharta, brinjal's versatility shines through.

Paleobotanical Evolution

1. Spread Across Continents:

- The brinjal's journey began in the Indian subcontinent, where it was cultivated and cherished.
- Through trade routes, cultural interactions, and explorations, it gradually spread across continents.

- Arab traders introduced it to Persia, where it gained popularity as al Badinjan.
- From there, it reached Europe, where it underwent further culinary transformations.

2. Culinary Exploration:

- Brinjal's vibrant colors and unique flavors made it a staple in various cuisines.
- In Mediterranean cuisine, it starred in dishes like moussaka and baba ghanoush.
- In Indian cooking, it found its place in curries, pickles, and stuffed preparations.
- Its adaptability allowed it to blend seamlessly into diverse culinary traditions.

3. Global Impact:

- The brinjal's global impact is evident in its presence in dishes from ratatouille in France to baingan bharta in India.
- Its role extends beyond taste—it symbolizes cultural exchange, resilience, and adaptation.

Taxonomy and Geographic Origin

Taxonomic Classification

Brinjal belongs to the Plantae, or plant kingdom Fig 1. Within this kingdom, it belongs to the phylum Magnoliophyta, which includes all flowering plants. Brinjal belongs to the Magnoliopsida class, usually known as dicots, and is distinguished by its two seed leaves. The order for brinjal is Solanales, which includes many common vegetables and nightshades such as potatoes, tomatoes, and peppers. Finally, brinjal belongs to the genus Solanum and the species Solanum melongena L. This scientific nomenclature indicates that brinjal belongs to the nightshade genus (*Solanum*) and was first formally categorized by Carl Linnaeus (denoted by "L.").

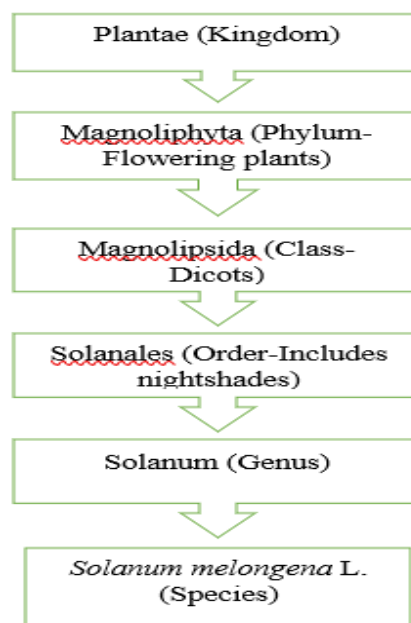


Fig 1 Taxonomic Classification

Geographic Origin

The exact origin of brinjal is still debated, with numerous areas contending for the claim. However, the most widely recognised idea suggests that the Indo-Burma region (which includes parts of modern-day India, Myanmar, and Bangladesh) was the centre of origin. Here's why.

Archaeological Evidence: While there is no definite archaeological evidence linking brinjal to this location, the existence of wild brinjal cousins, particularly *Solanum incanum*, supports this notion.

Diversity of Varieties: The Indo-Burma region has a remarkable diversity of brinjal varieties, indicating a lengthy history of domestication and agriculture in this area.

Historical Records: Brinjal farming is mentioned in ancient Indian literature and scriptures, which strengthens the relationship.

While the Indo-Burma region is regarded as the primary source of origin, other regions such as Southeast Asia and Africa may have played a part in independent domestication events. Regardless of the discussion, one thing is certain: brinjal has taken a long and fascinating journey to become a global culinary gem. It originated in Southeast Asia and spread across continents, eventually finding a place in cuisines all over the world. Today, brinjal is an important crop in many countries, particularly in Asia and the Mediterranean. This brief inquiry delves into the interesting realm of brinjal taxonomy and geographical origin. Brinjal, with its rich history and numerous uses, is a fascinating subject for botanists, culinary fans, and everyone interested in the wonderful journey of our favorite vegetables.

Biology and floral Anatomy

Brinjal, the versatile eggplant, not only displays culinary significance but also possesses a fascinating floral biology. Beyond the large, gorgeous violet blooms lies a complex and intricate reproductive system crucial for Brinjal's continued existence. Let's delve deeper into the floral anatomy of brinjal, investigating its unique structures and the mechanisms that ensure successful reproduction. Brinjal's flowers are typically perfect, indicating they possess both male and female reproductive organs within the same structure. This characteristic flower variety is known as a hermaphrodite. Here's a breakdown of the main floral parts Fig 2:

Calyx: The outermost whorl is composed of 4-5 green sepals. These leaf-like structures enclose and safeguard the developing flower bud.

Corolla: The colorful and showy element of the flower, typically consisting of five fused petals forming a trumpet or star-shaped structure. The vibrant violet or lavender color attracts pollinators like bees and bumblebees.

Stamens (multiple): The male reproductive organs located inside the corolla. Each stamen has two major parts:

Filament: A slender filament that supports the anther.

Anther: A sac-like structure at the apex of the filament that produces pollen grains containing the male gametes (sex cells).

Pistil (single): The female reproductive organ positioned in the center of the flower. It consists of three essential parts:

Stigma: The uppermost adhesive surface that receives pollen grains for fertilization.

Style: A slender stalk connecting the stigma to the ovary below.

Ovary: The enlarged base of the pistil containing ovules (female gametes) that will develop into seeds if fertilized.

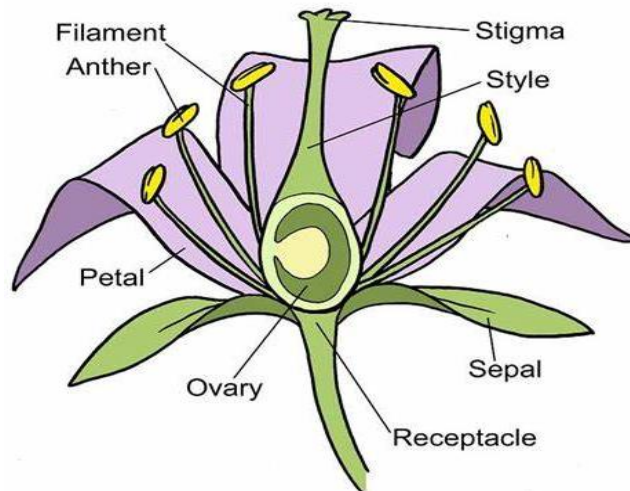


Fig 2 Brinjal Floral parts

Types of brinjal flower:

1. Based on color, size, and shape:

Purple colour: The most prevalent variety of brinjal bloom is purple. Usually, the petals have a golden center and are purple in colour.

White blooms: Brindasol produces white blooms in certain kinds. The centers of these blooms could be cream or yellow in colour.

Lavender Flowers: Some brinjal cultivars yield flowers with a lavender hue. The hues of these blossoms can range from light lavender to deep purple.

Flowers with Stripes: Some types of flowers have petals with stripes or streaks of various colours, such as purple and pink or purple and white.

Big Flowers: Brindaals typically have medium-sized blooms, but certain cultivars provide bigger flowers with wider petals.

Tiny blooms: On the other hand, some cultivars yield blooms that are smaller and have fewer petals.

Double flowers: Brindawal plants sporadically yield double flowers, which have additional layers of petals that give them a fuller appearance.

2. Based on the length of the style

Long-styled flower: The largest ovary and longest style are seen in this flower. With a success rate ranging from 70% to 85%, they are essential to fruit setting.

Medium-styled flower: Flowers with a medium-length style and a medium-sized ovary are referred to as medium-styled flowers. They are engaged in fruit development, just like their long-styled counterparts, but with a reduced success rate of 12% to 55%.

Pseudo short-styled flower: This flower has a primitive ovary and a short, underdeveloped style. Unfortunately, their contribution to fruit formation is negligible.

True short-styled flower: The flower with the shortest style and the least developed ovary is referred to as a true short-styled flower. They don't take part in the procedures that set fruit.



The Intricate Process of Pollination: Understanding Brinjal Reproduction

Brinjal relies on pollination, the transfer of pollen granules from the anther to the stigma, for successful fertilization. Here's how it unfolds:

Pollinator Attraction: The vibrant violet color and mild fragrance of brinjal blossoms attract pollinators like bees and bumblebees.

Pollen Transfer: As pollinators forage for nectar within the flower, their bodies brush against the anthers, gathering up pollen grains.

Fertilization: When the pollinator encounters another brinjal flower, the pollen grains on its body are deposited on the stigma. If compatible, the pollen granules germinate, sending a pollen tube down the style towards the ovary.

Seed Development: Within the ovary, the pollen tube reaches the ovules, and fertilization occurs. This fusion of male and female gametes initiates the development of seeds within the brinjal fruit.

Self-pollination (pollen from the same flower fertilizing the ovules) can also occur in brinjal, although to a diminished extent. The positioning of the stigma above the anthers within the flower helps to minimize self-pollination and promote cross-pollination by insects, leading to increased genetic diversity.

Genomic Evolution:

Origins and Domestication: From Wild Ancestor to Cultivated Delight

The precise origins of brinjal remain a topic of debate, with Southeast Asia and the Indo-Burma region (encompassing parts of modern-day India, Myanmar, and Bangladesh) being the most likely candidates (Miller & Waliyar, 2019). Genetic evidence points towards *Solanum insanum*, a feral relative native to these regions, as the potential ancestor of the domesticated brinjal, *Solanum melongena* L. (Miller & Waliyar, 2019).

During domestication, humans presumably selected plants with desirable traits, such as:

Reduced Bitterness: Wild ancestors of brinjal contain large levels of solanine, a bitter glycoalkaloid compound. Through selection, humans favored plants with lower solanine content, resulting in the sweeter and more palatable brinjal we know today (Tanksley&McCouch, 1997).

Fruit Size and Shape: Selection pressure favored larger fruits with desirable morphologies, leading to the diverse range of brinjal varieties we see today (round, elongated, pear-shaped, etc.) (Daunay&Janick, 2017).

Reduced seediness: Brinjal with fewer seeds became preferable, leading to the development of less seedy varieties (Mhaskaret *et al.*, 2013).

Comparative Genomics:

Modern genomic tools enable scientists to compare the brinjal genome with those of its close relatives. This comparative analysis reveals several important evolutionary events:

Ancient Polyploidy Events: Brinjal, like many other Solanaceous crops (tomato, potato, pepper), has endured polyploidy events in its evolutionary past. This means the plant's genome has duplicated itself one or more times, leading to an increase in chromosome number and potentially creating genetic diversity (Spooner *et al.*, 2003).

Rapid Gene Family Evolution: Studies suggest that specific gene families involved in traits like disease resistance and fruit maturation have undergone rapid evolution in the Solanaceae family, including brinjal. This rapid evolution might be linked to the adaptation of these plants to various environmental pressures (Sella *et al.*, 2008).

Loss of Genes: Comparative studies also reveal the loss of certain genes in brinjal compared to its progenitors. This gene loss could be associated with the selection for specific traits during domestication, such as the reduction of bitterness (Tanksley&McCouch, 1997).

Modern Genomics and Future Prospects

The field of genomics is continuously evolving, offering new tools to explore the brinjal genome. Here are some prospective areas of exploration:

Identifying Genes for Desirable Traits: Scientists can use genomic tools to pinpoint genes responsible for essential traits like disease resistance, production quality, and stress tolerance. This information can be used in breeding programs to develop improved brinjal varieties (Bai &Lindhout, 2020).

Understanding Gene Regulation: Genomic research can cast light on how genes are regulated and expressed in brinjal. This knowledge can help manipulate gene expression to enhance desired traits or engineer resistance to specific diseases (Liu *et al.*, 2017).

Conservation Efforts: By understanding the genetic diversity of wild brinjal relatives, scientists can devise strategies for their conservation, potentially providing a valuable source of genetic material for future breeding programs (Razifet *et al.*, 2019).

Heirloom Brinjals and their Enchanting Legacy

Heirloom brinjals, also known as heritage brinjals, are not just vegetables; they're living testaments to culinary history. Unlike their commercially produced counterparts, these brinjals flaunt a vibrant tapestry of colors, shapes, and flavors, passed down through generations (Simon,

2004). Let's delve into the captivating world of heirloom brinjals, investigating their unique characteristics and the reasons to celebrate them:

A Feast for the Eyes:

Heirloom brinjals are a visual spectacle in the garden and on the kitchen counter. Gone are the days of uniform, purple globes. Here's a glimpse into the kaleidoscope of shapes and colors:

Shape Extravaganza: Imagine brinjals that resemble elongated teardrops (French Kiss), diminutive white eggplants (Fairy Tale), and even knobby, elongated gourds (Thai Long)! The spectrum of shapes lends a playful touch to any dish (Seed Savers Exchange, n.d.).

A Rainbow on Your Plate: Forget the standard purple. Heirloom varieties appear in a stunning array of colors, from vibrant greens (Green Zebra) and fiery oranges (Rosa Bianca) to creamy yellows (Lemon Drop) and even striped beauties (Turkish Purple)! (The Seed Collection, n.d.)

Flavor Profiles Beyond Compare:

The diversity extends far beyond visual appeal. Heirloom brinjals offer a symphony of flavors, each lending a unique dimension to your culinary creations:

Subtle Nuances: Some heirlooms, like the Japanese Black Beauty, claim a rich, almost meaty flavor ideal for stews and robust dishes (The Seed Collection, n.d.).

A Touch of Sweetness: Varieties like the Rosa Bianca offer a hint of sweetness, ideal for roasting or grilling (Baker Creek Heirloom Seeds, n.d.).

A Bittersweet Symphony: Brinjals like the Black Pearl have a delectable balance of sweet and slightly bitter notes, adding complexity to stir-fries or curries (Baker Creek Heirloom Seeds, n.d.).

Why Celebrate Heirloom Brinjals?

Beyond their captivating aesthetics and delectable flavors, heirloom brinjals offer several advantages:

Preserving Culinary Heritage: These varieties represent a living connection to our culinary past, offering a glimpse into the diverse ways brinjals were cultivated and relished throughout history (Simon, 2004).

Enhanced Flavor and Texture: Heirloom brinjals are often open-pollinated, meaning they retain their unique genetic composition, leading to more nuanced flavors and textures compared to commercially produced, hybridized varieties (Weaver, 2020).

Adaptability and Resilience: Heirloom varieties have often adapted to local climates and growing conditions, making them potentially more resilient to pests and diseases (Weaver, 2020).

Supporting Biodiversity: Planting heirloom seeds helps maintain a wider range of brinjal varieties, contributing to the overall biodiversity of our food system (Seed Savers Exchange, n.d.).

Growing Your Own Heirloom Brinjal Legacy

The best way to experience the magic of heirloom brinjals is to cultivate your own. Here are some tips:

Source Heirloom Seeds: Look for reputable seed companies specializing in heirloom vegetables (Seed Savers Exchange, n.d.).

Choose Varieties for Your Climate: Select heirloom varieties known to flourish in your region's conditions (The Seed Collection, n.d.).

Start Early Indoors: Many heirloom brinjal varieties benefit from commencing indoors a few weeks before transplanting outdoors (Baker Creek Heirloom Seeds, n.d.).

Enjoy the Journey: Heirloom brinjals may take a bit longer to mature, but the reward of distinctive, flavorful fruits is well worth the wait (Baker Creek Heirloom Seeds, n.d.).

Hybrid Varieties:

The Science Behind Hybrid Brinjal Excellence (Frey, 1969)

Hybrid brinjal varieties are the result of meticulous crossbreeding between parent plants chosen for specific desirable characteristics. Unlike heirloom varieties, which are open-pollinated and passed down through generations, hybrids are intentionally created using the principles of Mendelian genetics. Pioneered by Gregor Mendel in the 19th century, these principles explain how characteristics are inherited. Breeders leverage this knowledge to select progenitor plants with complementary characteristics. For example, a high-yielding, disease-susceptible brinjal plant might be crossed with a disease-resistant, lower-yielding variety. The resulting offspring, the F1 (first filial) generation, often exhibits a phenomenon termed hybrid vigor (heterosis). This translates to superior qualities like increased yield, enhanced disease resistance, or improved produce size and uniformity (Fehr, 1987).

Unveiling the Advantages of Hybrid Brinjal Varieties

Hybrid brinjals offer a multitude of advantages for both producers and consumers:

Enhanced Disease Resistance: One of the most significant advantages of hybrid brinjals is their increased resistance to diseases like Fusarium wilt and Verticillium wilt, which commonly plague brinjal crops (Cuartero & Dumas de Vaulx, 1998). This translates to reduced reliance on chemical pesticides, fostering sustainable agricultural practices and potentially lowering production costs for growers (McFadden & Arias, 2005).

Increased Yield: Hybrid brinjals are often bred for high yields, generating more fruits per plant compared to their heirloom counterparts (Chee, 2018). This translates to greater efficiency and profitability for commercial agribusiness, ultimately contributing to a more abundant food supply.

Improved Fruit Quality: Hybrid breeding can target specific visual characteristics like uniform size, desirable shapes (elongated, round, etc.), and vibrant colors (purple, white, even patterned!), making the brinjals more aesthetically appealing to consumers (Chee, 2018). Additionally, hybrids can be bred for enhanced flavor profiles, with options ranging from mild and sweet to slightly bitter, depending on the variety.

Adaptability to Specific Conditions: Certain hybrid brinjal varieties can be developed to flourish in particular climates or soil types (Ceccarelli, 2015). This makes them ideal for areas with challenging growing conditions, expanding the regions where brinjals can be successfully cultivated.

A Few Considerations When Choosing Hybrid Brinjals

While hybrid brinjals offer undeniable advantages, there are a few considerations to bear in mind:

Limited Seed Saving: Unlike heirloom seeds that can be saved and replanted the following season, hybrid seeds often lack genetic uniformity. The progeny of F1 hybrids may not exhibit the same desirable traits as the parent plants (Fehr, 1987). This necessitates purchasing new seeds each year, potentially increasing costs for producers.

Potential for Reduced Flavor Diversity: The focus on specific traits during hybrid breeding can sometimes contribute to a homogenization of flavor profiles within brinjals (Chee, 2018). Heirloom varieties, with their wider genetic diversity, often offer a broader spectrum of flavors for adventurous palates.

Hybrid vs. Heirloom Brinjals: Finding the Perfect Fit

Ultimately, the choice between hybrid and heirloom brinjals depends on your priorities:

- For those pursuing high yields, disease resistance, and reliable results, hybrid varieties are an excellent choice. They are optimal for commercial agriculture and home gardeners who prioritize consistent performance.
- For those interested in preserving culinary heritage, supporting biodiversity, and exploring unique flavors, heirloom varieties offer a fascinating voyage. Be prepared to potentially devote more time in care and accept lower yields compared to hybrids.

Colour spectrum of Brinjal

The world of brinjals (eggplants) is much more colourful than many people realize. While the classic deep purple type dominates store shelves, the keen explorer will find a fascinating array of colours. Let's take a tour around the rainbow of brinjal hues, discovering the distinct appeal of each colour and the reasons for its interesting variation.

The Enduring Legacy of Purple:

The rich purple hue, sometimes known as eggplant or aubergine, is unquestionably the most well-known brinjal colour. Anthocyanins, a type of flavonoid pigment, are primarily responsible for their rich colour (Wang *et al.*, 2018). These pigments not only enhance the visual appeal, but also provide potential health benefits as antioxidants (Kringset *et al.*, 2010). Purple brinjals, which come in a variety of forms and sizes, are popular in culinary applications because they absorb flavours easily and provide an elegant touch to recipes.

A Spectrum of Surprises:

Beyond the traditional purple lies a startling number of brinjal hues:

Green brinjals can range from a light, almost lime green to a darker, forest green. These types are frequently harvested young and tender, with a mildly bitter flavour profile ideal for stir-fries or curries.

Elusive white brinjals provide a neutral canvas for culinary creativity. Their mild, somewhat sweet flavour makes them suitable for roasting or grilling, allowing other ingredients to take the spotlight.

Striped brinjals provide a visually appealing blend of colours. Varieties may include stripes of purple and white, green and white, or even a three-color mélange, bringing fun to the vegetable garden.

The Science Behind Colours:

The pigment mix in brinjals defines the final colour. Anthocyanins, which are responsible for purples, can combine with other pigments such as chlorophylls (greens) and carotenoids (yellows and oranges) to produce a broader range of colours (Wang *et al.* 2018). Genetic differences also play a role, with certain genes regulating pigment production (Razdan and Mattoo, 2007).

More than just aesthetics.

The colour of brinjal is more than just aesthetically pleasing. Different colours might indicate differences in flavour profile, texture, or even maturity. For example, green brinjals may taste slightly bitter, whereas white brinjals are typically sweeter.

Explore the Culinary Rainbow:

Enjoy the colour variety of brinjals in your kitchen! Here are a few suggestions to get you started:

Purple: Classic dishes such as roasted aubergine parmesan and baba ghanoush.

Green: Stir-fry in a mild sauce or stuff with a delicious filling.

White: Roasted with olive oil and herbs for a simple but attractive side dish.

Striped: A lovely addition to salads or sliced as crudité.

Climatic and Soil Requirements for Successful Brinjal Cultivation

Brinjal (*Solanum melongena* L.), sometimes known as aubergine, is a warm-season vegetable from tropical Asia. Cultivating brinjal successfully necessitates a thorough understanding of its ideal climate and soil conditions. This knowledge enables producers to design an environment that promotes plant growth, productivity, and fruit quality.

Climate:

Temperature: Brinjal prefers warm temperatures. The recommended temperature range for optimal growth and fruit development is 20-30°C (68-86°F) during the day and 15-20°C (59-68°F) at night (Jatet *et al.*, 2018). Temperatures above 35°C (95°F) might impair flower and fruit sets, resulting in poorer yields (Singh *et al.*, 2014). In contrast, extended spells below 15°C (59°F) can decrease plant growth and fruit development (Ahmed *et al.*, 2011).

Light: Brinjal is a light-loving crop that requires at least 6-8 hours of direct sunlight every day to thrive and produce fruit (Dela Cruz *et al.*, 2002). Shaded environments can cause leggy plants with limited flower and fruit production (Ahmed *et al.*, 2011).

Rainfall: While brinjal can endure dry spells, it thrives in areas with consistent moisture availability. The optimal rainfall range is 500-750 mm (20-30 inches) uniformly spread during the growth season (Dela Cruz *et al.*, 2002). Excessive rainfall, especially during the flowering and fruiting seasons, can raise disease incidence (Elamineenet *et al.*, 2014).

Soil:

Soil type: Brinjal may grow in a variety of soil types, although it likes well-drained, fertile loams with a high organic matter content (2-3%) (Singh *et al.*, 2008). Sandy soils dry out rapidly, but heavy clay soils cause poor drainage and root rot (Jatet *et al.*, 2018).

Soil pH: Brinjal flourishes in slightly acidic to slightly alkaline soils with a pH between 6.0 and 7.5 (Dela Cruz *et al.*, 2002). Soil testing is recommended to identify the initial pH level and make any necessary modifications using additions such as lime (for acidic soils) or sulphur (for alkaline soils) (Singh *et al.*, 2008).

Nutrients: Brinjal requires a balanced supply of vital nutrients for proper growth and fruit development. Adequate quantities of nitrogen, phosphorus, and potassium are critical. Organic amendments, such as composted manure or green manure, can improve soil fertility and provide a slow-release source of nutrients (Jatet *et al.*, 2018).

Field Preparation and Planting Techniques for Successful Brinjal Cultivation

Field Preparation

Land Selection: Select a well-drained, sunny spot with fertile soil. Brinjal flourishes in regions with at least 6-8 hours of direct sunlight per day (Jatet *et al.*, 2018). Avoid waterlogged locations or those with a history of solanaceous crop diseases.

Soil Testing and Amendments: Perform a soil test to assess the initial pH and nutrient levels. Aim for a soil pH ranging from slightly acidic to slightly alkaline (Dela Cruz *et al.*, 2002). Based on the test results, make any necessary soil amendments. Apply lime to acidic soils to raise their pH. In contrast, for alkaline soils, employ sulphur to lower the pH. To improve soil fertility and drainage, incorporate 20-30 tonnes of organic matter per hectare, such as composted manure or green manure.

Tilling and Land Preparation: Till the soil deeply (20-25 cm or 8-10 inches) to loosen any compaction and create a well-aerated seedbed. This promotes proper root development and drainage (Singh *et al.*, 2008).

Bed Formation (Optional): Depending on your planting strategy and irrigation system, you may want to build raised beds. Raised beds provide various benefits, including better drainage, simpler weed control, and warmer soil temperatures for earlier planting (Jatet *et al.*, 2018).

Planting Techniques

Seed Selection: Choose high-quality brinjal seeds from a reliable source. When selecting a cultivar, consider the desired maturation period, fruit size and colour, and disease resistance.

Brinjal can be grown from seeds put directly in the field, or from seedlings started indoors and transplanted later.

Direct Seeding: This method is appropriate for warmer climates with longer growth seasons. Sow seeds directly in the prepared field after the risk of frost has gone and soil temperatures

have reached at least 18°C (64°F) (Elamineen *et al.*, 2014). Seeds should be spread according to the suggested spacing for your variety, which is usually 60-90 cm (24-36 inches) between plants in rows 75-100 cm (30-40 inches) apart (Jatet *et al.*, 2018). Thin seedlings to the prescribed spacing once they have established a few genuine leaves.

Transplanting: This procedure allows for early harvests and is commonly used in cooler climates. Plant seeds indoors 6-8 weeks before the last frost date. Give seedlings warm temperatures (21-27°C or 70-80°F) and bright light. Transplant seedlings to the prepared field once they have produced 4-6 true leaves and the threat of frost has passed. Harden seedlings before transplanting by gradually exposing them to external environments over a few days (Jatet *et al.*, 2018).

Plant Depth and Spacing: Plant seeds or seedlings at the depth indicated for your variety, which is normally 1-2 cm (0.4-0.8 inches). Maintain the recommended distance between plants and rows as previously stated.

Watering: Thoroughly water the newly planted seeds or seedlings to achieve proper soil contact and root development.

Staking or Caging (Optional): For taller brinjal kinds or those prone to wind damage, consider using stakes or cages to offer support and prevent plants from falling (Jatet *et al.*, 2018).

Pest and Disease Management Strategies

Brinjal (eggplant), while a lucrative crop, is prone to a variety of pests and diseases. Implementing a proactive and integrated pest management (IPM) strategy is critical to preserving your plants and guaranteeing a healthy, plentiful yield. Here's an overview of common brinjal risks and effective management strategies:

Shoot and fruit borer: These caterpillars drill holes in shoots, stems, and fruits, causing severe damage and production loss. The management options include:

Biological Control: Encourage natural predators, such as ladybirds and Trichogramma wasps.

Cultural Practices: Crop rotation, weed removal, and the collection and destruction of contaminated fruits are all examples of cultural practices.

Insecticides: Insecticides should only be used as a last resort, and choose selective choices that target specific pests while causing minimal harm to beneficial insects.

Fruitfly: Adult flies lay eggs within maturing fruits, rendering them blemished and inedible. Management tactics include:

Exclusion netting: Use fine mesh netting to prevent adult flies from laying eggs on fruits.

Bait traps: It used to attract and trap adult flies. They contain lures and pesticides.

Sanitation: Remove and destroy any fallen or infested fruits to avoid further population growth.

Aphids: These tiny sap-sucking insects harm plants and can spread viral illnesses. Management techniques include:

Insecticidal soap sprays: Apply insecticidal soap sprays directly to aphids.

Encourage natural predators: Ladybirds and lacewings are beneficial insects that feed on aphids.

Common Brinjal Diseases

Fungal Infections: Fungal infections, such as Fusarium wilt and damping-off, can cause wilting, yellowing, and stunting in plants.

Management methods involve:

Crop rotation: Rotating crops disrupts disease cycles and reduces pathogen populations in soil.

Resistant variations: Choose brinjal kinds that are resistant to various diseases.

Proper sanitation: It includes removing and destroying contaminated plant material to avoid future spread.

Fungicides: Use fungicides only as a last option, and carefully follow the label directions.

Bacterial wilt: It is a bacterial disease that causes wilting, yellowing, and eventual plant death. Management tactics include:

Resistant varieties: Plant brinjal varieties that have been known to resist bacterial wilt.

Sanitation: Use proper sanitation to prevent the spread of bacteria.

Copper-based sprays: Use copper-based bactericides as a preventive strategy.

Integrated Pest Management (IPM) for Brinjal

IPM is an ecological technique that focuses on prevention, monitoring, and a variety of management methods. Here are some important IPM principles for brinjal cultivation.

Prevention: Set up good growing conditions for your brinjal plants. This involves good soil drainage, sufficient spacing, and balanced fertilisation.

Monitoring: Inspect your plants on a regular basis for symptoms of pests or disease. Early diagnosis enables timely management and minimises damage.

Cultural Practices: Crop rotation, weed control, and good sanitation are examples of cultural practices that can help create a less hospitable environment for pests and diseases.

Biological control: It involves encouraging and attracting beneficial insects that prey on pests.

Minimal reliance on pesticides: Pesticide use should be limited to a last resort, with selective options that target specific pests while causing the least amount of harm to beneficial insects and the environment.

Breeding Strategies and Biotechnological Approaches

For millennia, farmers and breeders have used traditional breeding methods to improve brinjal productivity, disease resistance, fruit size, and colour. While advances in biotechnology have provided newer tools, these traditional strategies remain the foundation for brinjal enhancement and play an important role in guaranteeing food security.

The Foundation: Selection for Desired Traits.

Traditional brinjal breeding is based on selection. Breeders are attentive observers, examining plant populations and identifying individuals who exhibit the desired traits. These "chosen ones" may have traits such as:

Fruit Yield: High fruit production is a main priority since it directly correlates with higher productivity and economic advantage for farmers (Jatet *et al.*, 2018).

Disease Resistance: Brinjal is sensitive to several diseases, including bacterial wilt caused by *Ralstonia solanacearum* and fungal infections such as Fusarium wilt caused by *Fusarium oxysporum* (Sharma *et al.*, 2017). Selecting plants with inherent resistance to these diseases contributes to the development of hardier types that require fewer pesticides.

Preferred fruit size and colour: Consumer preferences vary by geography and culinary application. Selection enables the creation of brinjal varieties with certain fruit sizes (e.g., small for pickling, large for slicing) and colours (e.g., traditional purple, white, or even striped variations) (Acquaah, 2012).

The seeds from these chosen plants are then stored and used to plant in the following generation. Over time, recurrent selection eventually concentrates and amplifies the desired qualities in the population. This strategy, while appearing simple, necessitates acute observation skills and a thorough understanding of the inherent genetic variety found in brinjal (Ceccarelliet *et al.*, 1996).

Combining Genomes for Enhanced Traits: Hybridization.

Hybridization adds a new dimension to brinjal breeding. This method entails crossing two genetically diverse brinjal kinds to produce offspring with a combination of beneficial traits from both parents (Janick, 2009). There are two main approaches:

Natural Hybridization: This method uses natural factors, like as wind or insect pollination, to transfer pollen grains from one type to the stigma (female reproductive organ) of another that grows nearby. While easy, natural hybridization provides little control over the specific combinations produced (Molina-Cano *et al.*, 2011).

Artificial Hybridization: This technology provides breeders with better precision. Pollen is painstakingly moved from one variety's stamen (male reproductive organ) to another variety's stigma, allowing for the development of precise hybrid combinations with desired features (Acquaah, 2012).

Hybridization has transformed brinjal cultivation. It has resulted in the creation of high-yielding and disease-resistant brinjal varieties, which have greatly increased agricultural production and enlarged the range of accessible fruit features (Molina-Cano *et al.*, 2011).

Refine the Lineage: Pedigree Selection for Uniformity

Pedigree selection is especially useful for self-pollinated crops like brinjal since it painstakingly tracks each generation's genealogy. Breeders choose plants with the desired qualities from each generation and use their seeds for future replication. This strategy enables the creation of pure-bred lines, whose progeny consistently display the desired features due to their homogenous genetic composition (Allard, 1960). Over numerous generations, pedigree selection can result in the formation of highly predictable and uniform lines with consistent desired features, allowing for steady and reliable brinjal output.

Introducing Specific Traits: backcrossing for Targeted Improvement.

Backcrossing tackles the difficulty of introducing a desired trait, like as disease resistance, from one variety (donor parent) into an existing variety (receiver parent) that already has other desirable qualities (Allard, 1960). The initial cross (F1 generation) produces kids with a

combination of genes from both parents. These offspring are then backcrossed with the recipient parent. With each backcross generation, the kids inherit a larger amount of the recipient parent's genome while gradually incorporating the desired trait from the donor parent. This strategy is especially useful for delivering disease resistance genes or other specific qualities into the recipient variety without dramatically changing its overall characteristics.

Harnessing the Power of Mutation: Mutation Breeding for New Variants

Mutation breeding adds a new twist to typical breeding procedures. This procedure exposes seeds or plant tissue to mutagenic agents such as radiation or chemicals. These chemicals can cause random changes in plant DNA, some of which may be beneficial (Molina-Cano *et al.*, 2011). Breeders then methodically screen the mutant plants to find those with the desired features, such as increased disease resistance or a new fruit colour. Lines carrying these favourable mutations are then propagated for future growth. While mutant breeding can be a powerful method for developing unique genetic variations, it requires considerable screening to detect and isolate favourable mutations.

Heterosis Breeding: Highlight the importance of hybrid vigor.

Hybrid Vigour: Boosting Brinjal Cultivation

The amazing phenomenon known as hybrid vigour occurs when offspring (F1 hybrids) outperform their parents in qualities such as yield, growth rate, disease resistance, and fruit quality (Jones, 1917). This improved performance can be rather significant, resulting in greater brinjal yield, improved fruit size and quality, and increased resistance to diseases and pests (Molina-Cano *et al.*, 2011). The precise mechanisms underlying heterosis are still being investigated, however various possibilities have been offered. One hypothesis proposes that hybrid vigour results from the complementary interplay of genes inherited from genetically distinct parents (dominance complementation) (Falconer & Mackay, 1998). Another theory suggests that overdominance, or the beneficial heterozygous condition of particular genes, can contribute to improved hybrid performance (Crow, 1998).

Exploring Heterosis in Brinjal Breeding

Exploiting heterosis in brinjal breeding is a multi-step process.

Inbred Line Development: The formation of highly inbred lines serves as the foundation for heterosis breeding. Self-pollination over generations has resulted in genetic uniformity in these lines. This method enables breeders to find lines with specific desirable characteristics such as disease resistance or high fruit quality (Acquaah, 2012).

Selection of Parental Lines: Breeders carefully pick inbred lineages that demonstrate complementing features. For example, one line may have high disease resistance, whilst another may have exceptionally large fruit. Breeders want to increase the potential for heterosis in the ensuing hybrid progeny by merging these different yet complementing lines (Molina-Cano *et al.*, 2011).

Hybridization and Evaluation: The selected inbred lines are then crossed, usually using controlled pollination procedures, to produce the F1 hybrid generation. These F1 hybrids are thoroughly tested for the manifestation of hybrid vigour. Yield, fruit quality, disease resistance, and general plant vigour are carefully evaluated (Acquaah, 2012).

The Effect of Heterosis Breeding on Brinjal Production.

Heterosis breeding has transformed brinjal cultivation. The development of high-yielding F1 hybrid cultivars has greatly increased agricultural output. Brinjal producers have profited from increased fruit output, resulting in higher economic returns (Molina-Cano *et al.*, 2011). Furthermore, heterosis breeding has resulted in the development of brinjal varieties with improved disease resistance, lowering pesticide use and helping to more sustainable farming practices (Singh & Singh, 2019).

Challenges and Considerations

While heterosis breeding has numerous benefits, it also has some drawbacks. Maintaining inbred lines and guaranteeing reliable hybrid seed production take significant work and knowledge. Furthermore, F1 hybrids frequently show a reduction in performance (inbreeding depression) in later generations, necessitating the ongoing creation of new hybrid combinations (Acquaah, 2012).

Biotechnological Interventions:

While traditional breeding methods have had a considerable impact on brinjal improvement, genetic modification (GM) has emerged as a contentious but potentially powerful approach. This method enables precise editing of a plant's genome to add specific desired features. Let's look at the potential advantages and disadvantages of genetically modified brinjal.

Potential benefits of GM brinjal

Enhanced Pest and Disease Resistance: Brinjal is vulnerable to a variety of pests and diseases, resulting in severe crop losses. GM technology may incorporate genes from other organisms, such as *Bacillus thuringiensis* (Bt), which produces natural pesticides, rendering brinjal plants immune to specific insect pests (Huang *et al.*, 2011). This could lessen the need for chemical pesticides, enabling a more sustainable agricultural strategy (Sharma *et al.*, 2014).

Improved Yield and Fruit Quality: GM techniques have the potential to increase brinjal yield by introducing genes that boost plant growth, stress tolerance, and fruit size. Furthermore, altering genes associated in fruit ripening and colour development could result in brinjal cultivars with longer shelf lives and more consumer-friendly traits (James, 2009).

Enhanced Nutritional Value: Genetic manipulation may be used to boost the levels of key vitamins and minerals in brinjal fruits. For example, research is looking into the possibilities of biofortifying brinjal with more vitamin A content, which could help address deficiencies in particular populations (Valviet *al.* 2005).

Challenges and Concerns.

Unforeseen Effects: Introducing alien genes may have unforeseen repercussions for the plant's overall health or the fruit's nutritional content. There are also worries concerning potential allergenicity and gene transmission to wild cousins (McHuguen, 2000).

Environmental Impact: Widespread production of GM brinjal may result in pest tolerance to Bt toxins and inadvertent harm to beneficial insects. Long-term environmental effects on soil health and biodiversity necessitate close monitoring (Popp, 2000).

Socioeconomic Issues: The reliance on major firms for GM seeds raises questions regarding farmer dependence and seed affordability. Furthermore, the ethical implications of patenting genetically engineered organisms are also being debated (Shiva 2001).

The Case of BT Brinjal in India

The development of Bt brinjal in India, which is resistant to the aubergine fruit and shoot borer (EFSB), demonstrates the challenges of GM technology. While proponents emphasized potential yield improvements and reduced pesticide use, opponents expressed worries about seed safety, environmental impact, and corporate control. Following major debate, the commercialization of Bt brinjal was put on hold indefinitely in 2010 (Gupta).

The Future of GM Brinjal.

The argument over GM Brinjal continues. Ongoing research strives to resolve safety problems and create GM cultivars with clear benefits. Open communication and public participation are essential for negotiating the ethical and regulatory issues of this technology.

Conclusion

Genetic modification is a strong technique for brinjal enhancement, but it comes with some drawbacks. Careful research, rigorous safety assessments, and open communication are required to maximize the potential benefits of GM brinjal while minimizing dangers. Finally, the decision to use GM technology in brinjal farming should involve a thorough examination of scientific evidence, societal considerations, and public concerns.

Organic Brinjal Production: Enhancing Flavour and Sustainability.

Organic brinjal farming is gaining traction as people seek healthier foods farmed with low environmental impact. This technique prioritizes natural approaches, resulting in a thriving ecosystem that benefits both brinjal plants and the environment. Let's look at the important strategies for growing delicious and nutritious organic brinjal:

Sustainable Practices: Encourage Eco-Friendly Approaches

Crop Rotation: Combining brinjal with crops from other botanical groups alters pest life cycles and decreases the demand for pesticides. Legumes such as beans or peas can be used to fix nitrogen in the soil, increasing fertility for the subsequent brinjal harvest (Organic Consumers Association, 2023).

Cover Cropping: Planting low-growing plants between brinjal rows has various advantages. Cover crops reduce weed growth, conserve soil moisture, and attract beneficial insects that prey on pests (National Sustainable Agriculture Information Service, 2016).

Composting: Kitchen scraps, yard trash and animal manure are composted to generate a nutrient-rich organic soil supplement. Composting decreases waste while also providing brinjal plants with natural nutrients (Oregon State University, n.d.).

Soil Health and Nutrient Management: Nurturing Brinjals Naturally

Building Soil Fertility: Organic brinjal production requires healthy soil that is rich in helpful bacteria. Compost, aged manure, and organic fertilisers such as neem cake or fish emulsion can nourish plants while also improving soil structure (Patel, 2018).

Mulching: Layering organic material like as straw or wood chips around brinjal plants helps to retain moisture, reduce weeds, and regulate soil temperature (Michigan State University Extension, 2021).

Microbial Inoculants: Introducing beneficial soil microorganisms such as mycorrhizae can improve nutrient uptake and plant growth (Stahl *et al.*, 2010).

Integrated Pest Management: Balancing Pest Control with Environmental Conservation.

Natural Pest Deterrents: Companion planting tactics, such as intercropping marigolds and brinjal, can prevent certain insect pests (Organic Gardening, 2023). Additionally, spraying neem oil solution or utilising natural insecticidal soap might aid in pest control.

Beneficial insects: Encouraging ladybirds, lacewings, and other beneficial predators can help naturally control pest numbers (The Xerces Society, 2023). Providing habitat for these useful insects, such as hedgerows or blooming plants, can attract them to your brinjal area.

Monitoring and Early Intervention: Brinjal plants must be inspected on a regular basis for symptoms of pest damage or illness. Early discovery allows for timely intervention with organic controls such as insecticidal soap or neem oil sprays, which reduces pest outbreaks.

CONCLUSION

For a general audience: Highlight Brinjal's journey from Southeast Asian beginnings to global prominence, emphasizing its adaptability and cultural relevance.

For Gardeners: Briefly describe the important elements for effective brinjal agriculture, such as climate, soil needs, planting practices, and pest management tactics.

For food lovers: Discussed the variety of brinjal colours and flavours, as well as the benefits and drawbacks of heirloom versus hybrid kinds.

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**IMPACT OF COVID-19 ON SECONDARY SCHOOL EDUCATION:
LESSONS LEARNED FROM KARAVEDDY EDUCATION DIVISION,
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ABSTRACT

Sri Lanka's school education system shifted from classroom-based education to distance learning education during the COVID-19 pandemic lockdown period. The current study scrutinized the impact of COVID-19 on senior secondary school education in Karaveddy Education Division (KED), Jaffna in Sri Lanka. Data were obtained through a questionnaire survey from 16 schools in KED, with teachers (105) and senior secondary students (171) selected as the survey sample. Positive and negative impacts were analyzed using SWOT metrics (Strengths, Weaknesses, Opportunities, and Threats). The findings revealed that students' average household income varied across a broader range. Respondents continued their distance education with their existing resources was considered a strength. Among weaknesses, a lack of devices (63.7%), financial issues accessing the internet (59.2%), and poor network connectivity (40%) were highly agreed upon by students. Similarly, lack of student engagement (65.7%), lack of teacher training to conduct online classes (51.9%), and students' irregular attendance in online classes (75.5%) were reported by teachers. A large number of the students stated that online learning provided opportunities to connect with teachers and peers from distant places on one platform (86.2%) and offered a good experience in facing future calamities (80.8%). However, digital device addiction and health issues were mentioned as major threats. In conclusion, while online learning can produce effective results to a certain extent, the vast majority of KED students were unable to obtain benefits from online education. It is suggested that hybrid learning can be adopted in the future to overcome the weaknesses and threats of distance learning.

KEYWORDS: *Challenges, Covid-19, Education, Opportunities, School, Swot*

1. INTRODUCTION

The situation in general education in the country changed in 2020 when COVID-19 reached a serious level in Sri Lanka. This global pandemic has caused large-scale disruption to the continuation of structured in-school education in Sri Lanka for approximately 4.2 million

students and 235,000 teachers (UNESCO, 2021). In response to the first wave of the COVID-19 pandemic, all educational institutions in Sri Lanka, including schools and universities, were closed on March 13 (Gangahagedara et al., 2021).

The COVID-19 pandemic has disrupted our long-standing educational practices and has precipitated an urgent need for many institutions to rapidly implement alternative educational and assessment strategies (Longhurst, 2020). Sri Lanka, along with the rest of the world, rapidly adapted to the “new normal” of distance learning during the school closure due to COVID-19 without any prior training or preparation (UNESCO, 2021). Distance learning offers individuals educational environments independent from time and space with the support of advancing web-based platforms and technologies (Bilgiç & Tüzün, 2015). It has helped provide continuity of education while minimizing students’ exposure to the virus (Policy Brief, 2021).

Based on a non-representative survey with teachers in Sri Lanka, Gamage & Zaber (2021) reported that while only fourpercent (04%) of students could be reached using online real-time classes via Zoom/Teams, and 41% could be taught via messaging platforms such as WhatsApp/ Viber to send notes and assignment as images or PDF files. This means that less than half of all households in Sri Lanka can benefit from e-learning opportunities. This is because children have varying access levels to laptops, mobile phones, tablets, TV, radio, and the broader infrastructure that supports these systems. This has, however, also created inequalities in access to education (Policy Brief, 2021).

Sri Lanka has made efforts to mitigate the impact of countrywide school closure as prevention action against COVID-19. Jekhan (2020) stated that the COVID-19 chaos has created a ladder for those who would climb it. Many education-related centers offered their tools and solutions for free to help support teachers and students (Christopher, 2020). It provides the opportunity to practice online learning and teaching. Even though distance learning brings out an innovation the school education, there are lots of difficulties to overcome. Are these opportunities available for all students in Sri Lanka, is an important question. The most vulnerable children including those in the most remote areas, with limited or no access to online learning and other platforms, infrastructure can increase educational inequality within the country. The poor learning environment, students themselves are faced with isolation, anxiety, and stress related to a deadly virus, uncertainty about the future, less effectiveness of teacher-student interaction, and lack of skill and technological knowledge in online education are major negative impacts of distance learning (Jim et al., 2020). Therefore, it is necessary to study the positive and negative sides of school education during COVID-19.

This study focused on the Karaveddy Education Division (KED) as a case study to examine how different stakeholders used distance learning and highlight the lessons learned from such a rapid shift from classroom-based free education to online-based distance learning. KED is one of the Education Divisions in the Vadamardchy education zone located in Jaffna district in Sri Lanka. This study was conducted in the KED which comprises 30 government schools. The impact of this epidemic was strongly felt by General Certificate of Education (G.C.E) A/L, and O/L candidates whose examinations are usually written in August and December of each year respectively. So, the senior secondary group was more vulnerable to COVID-19 school closure and this study mainly focused on the impact of senior secondary school education.

2. Literature Review

The COVID-19 pandemic is the major catastrophe of the century and is a global threat to the entire humankind (Coalition for Educational Development, 2021). The COVID-19 pandemic in Sri Lanka is part of the worldwide pandemic. Education Forum Sri Lanka (EFSL) is responsible for initiating a series of conversations on “Distance Education in the time of Calamities and Beyond”. The sudden closure of schools to tackle the spread of COVID-19 saw the education system responding swiftly with a slew of interim measures to seek to continue education through online and other methods of distance education. Distance learning is an educational experience where instructors and learners are separated in time and space (Keegan, 1998). Online learning is defined as “learning experiences in synchronous¹ or asynchronous² environments using different devices (e.g., mobile phones, laptops, etc.) with internet access (Shivangi, 2020). These learning approaches exhibit both positive and negative impacts.

SWOT which stands for strengths, weaknesses, opportunities, and threats. According to Hightower et al. (2011), a SWOT analysis relates to an in-depth and concurrent study of both the internal as strengths, and weaknesses and the external as opportunities and threats that may affect the success of a system positively or negatively. A SWOT analysis was originally developed as a business tool to aid decision-making but has since been used to analyze strategies in education (Sharma, 2005; Gupta et al., 2020). This method can be used to identify favorable and unfavorable factors and conditions, solve current problems in a targeted manner, recognize the challenges and obstacles faced, and formulate strategic plans to guide scientific decisions. (Jia and Zhifeng, 2020)

	<i>Positive</i>	<i>Negative</i>
<i>Internal Factors</i>	S Strengths	W Weaknesses
<i>External Factors</i>	O Opportunities	T Threats

Figure 1: Diagram of SWOT Analysis – Strengths, Weaknesses, Opportunities, and Threats

Positive Impacts

COVID-19 has become a catalyst for educational institutions to search for innovative solutions in a relatively short period (Gloria and Diana, 2020). In response to the first wave of the COVID-19 pandemic in Sri Lanka, classes were primarily conducted via online and television broadcasts initiated by the Ministry of Education in collaboration with the National Institute of Education (Ashani, 2021) in Sri Lanka. The ‘Guru Gedara’ distance learning program of the Ministry of

Education broadcast by Channel Eye/Nethra TV, ART TV, and Ada Derana, for students from Grade three (03) to GCE (A/L) are both in Sinhala and Tamil (Wimal,2020). It provided opportunities for students to learn from home (Tadesse and Muluye, 2020).

Many education-related companies offered their tools and solutions for free to help support teachers and students. It provided the opportunity to practice online learning and teaching. Private internet service providers, like STL, Lanka Bell, Hutch, Mobitel, Dialog, and others, provided special e-learning student data packages allowing children to study at home (UNICEF and UNESCO, 2021).

Teachers also improved and developed their teaching skills and upgraded themselves by attending webinars on ICT (Yaseen and Joshi, 2021). Mobile applications like WhatsApp, Messenger, and Viber were also used by teachers to keep in constant communication with their students. Many teachers volunteer to teach students online for free (Panchami, 2020). There is a new opportunity where collaborative teaching and learning can take on new forms. Most studies have revealed that online education is interactive and innovative, enhancing traditional teaching and homeschooling.

Negative Impacts

Sri Lanka wasn't fully equipped to ensure education reached all corners of the state via digital platforms. Owing to the disparities between the urban, rural, and estate sectors in Sri Lanka, there is a wide difference between the availability of devices, connectivity, and digital literacy leading to a digital divide in Sri Lanka (Liyanagunawardena and Williams, 2021). In the survey of the annual Computer Literacy³ Statistics of Sri Lanka, 30.8% of Sri Lankans were computer literate: 43.6% urban, 29% rural, and 12.6% in estates (Department of Census and Statistics, 2019). Students at Plantations' schools experience several problems in the online learning system. Specifically, they lacked the necessary devices, technological expertise, and resources to follow the course online (Sirikanth, 2021).

Monica and Priya (2020) also noted that for the children in plantation communities, access to e-learning during the COVID-19 school closures has simply not been viable. Because, parents have had to either mortgage or acquire small loans to first buy mobile phones, and then subsequently top these with data packages to support their children's connection to the internet.

The COVID-19 crisis hit at a time when most education systems were not ready for digital learning opportunities. According to LIRNEasia (Learning Initiatives on Reforms for Network Economies Asia), in Sri Lanka, only about 40% of students aged 5-18 have access to the Internet of this group, about 37% use this via mobile phones, and it's only 4% or less use wireless Internet. Only about 20% of students in this age group have access to laptops/desktops and less than three percent (03%) have access to tabs (Tara, 2020). The inequality gap between students in different financial situations, which has been present in education systems for a long time, is being further exacerbated by the COVID-19 pandemic.

The lockdown in the COVID-19 catastrophe has interrupted conventional learning in the education system in Sri Lanka. A large proportion of teachers especially in rural areas had little use and knowledge of online resources before the outbreak. Many teachers had no previous experience in online teaching. Teachers have been forced into teaching in a system that is not prepared.

Teachers and students experienced high levels of stress when engaging in online teaching and learning with no former and proper experience in using the platforms (Coalition for Educational Development, 2021). As the mode of learning shifts to online delivery, the risk of poor children falling further behind in their studies has increased (Ashani, 2021). At home, a scarcity of basic facilities, external distractions, and family interruption during teaching were major issues. In Sri Lanka, 69% of parents of primary school children said their children were learning less or a lot less (UNICEF and UNESCO, 2021). Students’ writing and reading skills and habits are also declining these days (Panchami, 2020).

Another issue related to this pandemic is the postponement of examinations. Sri Lanka decided to postpone some of their high-stakes examinations at a later stage, depending on the evolution of COVID-19. Two key school-level 2021 examinations (The grade five (05) scholarship and the G.C.E Advanced Level examinations) in Sri Lanka that had previously been rescheduled in 2021 have been postponed once again to 2022. Passing A/L is a general requirement to enter Sri Lankan State Universities.

3. Materials and Methods

Primary data for the research were obtained from KED school students and teachers. This study employed a questionnaire survey to collect data regarding the research problem on the positive and negative impact of distance learning during the COVID-19 pandemic lockdown. Figure 2 shows the KED, which contains 30 schools with circular dots (16) representing the schools selected for the survey and triangular dots representing the rest. The target population for the study consisted of all school students and teachers in KED public schools. From the population, 276 respondents were selected for this research. This consists of 105 senior secondary class teachers and 171 students from grades 10-13.

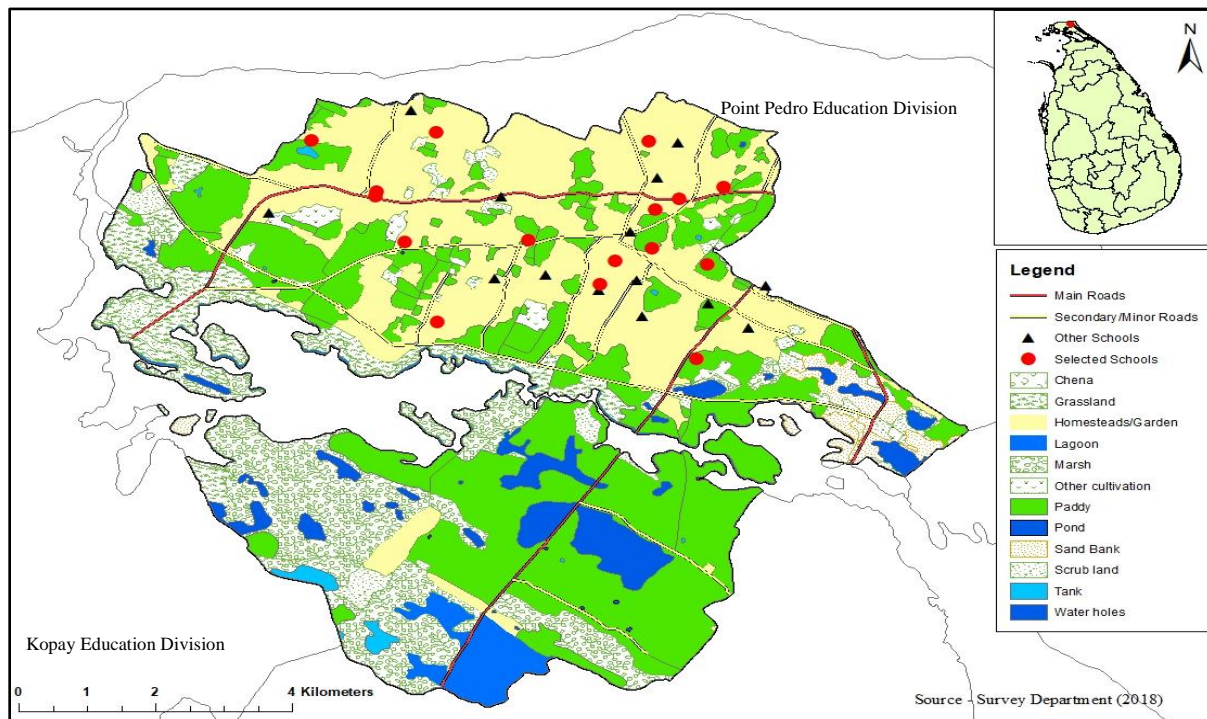


Figure 2: Distribution of the sample schools in KED, Jaffna

Sri Lankan public schools are classified based on the number and type of functioning classes. They are coded as 1AB, 1C, T2, and T3 schools. Classification 1AB offers education from Grades 1 to 13 or 6 to 13 in all subjects. Classification 1C offers education from Grades 1 to 13 or 6 to 13, and GCE Advanced Levels in Arts, Technology, and Commerce subjects. T2 offers education from Grades 1 to 11 or 6 to 11, and GCE Ordinary Levels, and T3 offers education from Grades one (01) to five (05) or Grades 1 to 8 (Annual School Census of Sri Lanka Final Report, Ministry of Education, 2018).

Secondary data were collected from various sources. Details of senior secondary students and teachers were gathered from the records of the Zonal Education Office Vadamardchy in Jaffna. In addition to that, books, magazines, reports, experts' newspaper articles, research papers, journals, and several websites were used to collect data and information for this research.

Both positive and negative impacts were analyzed using SWOT analysis metrics (Strengths, Weaknesses, Opportunities, and Threats). This method has been used to identify favorable and unfavorable factors and conditions. This research tool is used for analyzing the data gathered from different sources for this study and the research method is descriptive research analysis. The survey results are interpreted in the form of graphical and tabular presentations.

4. Results

Considering the sample characteristics, Table 01 shows, out of the 276 respondents, the majority (64.49%) were female while 35.51% were male. This is because the female population is high in Sri Lanka; 51.8 percent of Sri Lanka's population is female, while 48.2 percent of the population is male (Digital 2023: Sri Lanka). The average age of teachers was between 40 and 50 years. The teachers' household income did not show any variation, but students' average household income varied in a broader range. It is worth noting that the average household income of 1AB school students was higher than that of 1C and T2 school students. The average household income of 1AB and T2 students was significantly different.

TABLE1: DEMOGRAPHIC OVERVIEW OF SURVEY PARTICIPANTS

	Students			Teachers		
	1AB	1C	T2	1AB	1C	T2
Age	N/A	N/A	N/A	41.42	44.45	47.6
Female %	66.97	46.15	69.4	61.02	70	69.23
Male %	33.03	53.85	30.6	38.98	30	30.76
Income *	31,995.4	19,423.1	16,985.3	65,466.1	67,500.0	67,361.1
N	109	26	36	59	20	26

Note: * represents respondents' average household income (in Sri Lankan rupee). N- Number of respondents, N/A- Not applicable

Strengths

Results of the questionnaire survey with students and teachers indicate that teaching-learning methods such as Television broadcasts, YouTube videos, and distributing learning materials

played a major role during school closure. As per the data presented in Figure 3, learning materials for their children were collected from the school by the parents of over 70% of students. It was a strength because students who could not access the internet could benefit from this method. It was a flexible and effective method where students could get feedback from teachers once they got their papers corrected. The second most popular learning method among the students was YouTube. They watched teaching videos that were uploaded by the Computer Resource Centre, Vadammaradchy Zonal Education Office on their website. Not only that, but other education-related YouTube videos also supported self-study during the COVID-19 pandemic. Students reported the benefits of being able to view YouTube resources multiple times.

On a positive note, making more commonly available technology such as television could reduce inequalities created in the longer-term pandemic. More than 40% of students watched educational TV programs during the school closure in this zone. Although the overall percentage reached by TV is low, the fact that students in less well-endowed schools were better reached by TV than by Internet. This shows that TV has the potential to reach out to children who lack access to the Internet.

Respondents continued distance education with their existing learning resources was considered a Strength. Based on the survey, 36.3% of students accessed their own digital devices, 59% of students used their family devices and 4.7% borrowed smartphones from others to continue their distance learning during COVID-19.

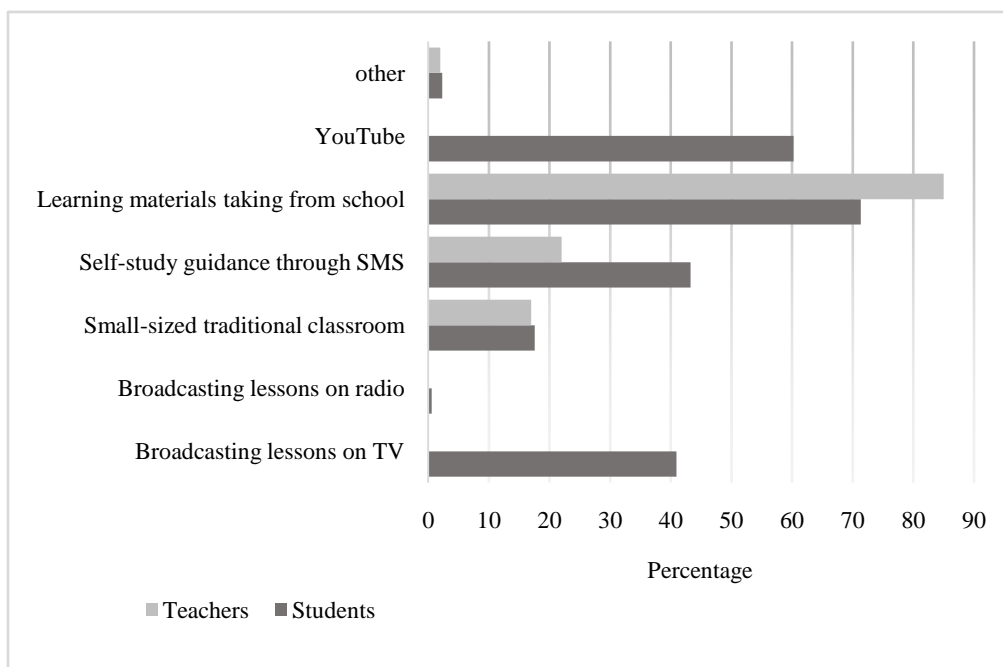


Figure 3: Distance learning methods during the pandemic in KED, Jaffna

Weaknesses

Common problems associated with online education in general include the limited availability of the internet, the slow speed and high cost of the internet bills, and the lack of interaction between students and teachers.

TABLE 2: ISSUES ENCOUNTERED BY STUDENTS DURING DISTANCE AND ONLINE CLASSES

	Strongly agree %	Agree %	Neutral %	Disagree %	Strongly disagree %
Financial problems	12.3	26.4	20.5	26.3	14.6
Looking at a phone or computer screen for a long time was stressful	22.3	36.7	16.3	21.1	3.6
Looking at a phone or computer screen for a long time was boring	19.9	35.7	23.4	18.7	2.3
Too many students online at once were making noisy or disturbing	9.9	30.2	29.1	22.7	8.0
Students were not under the direct supervision of the teacher	23.8	40.2	20.1	9.8	6.1
Miss out on social relationships and peer-to-peer interactions	21.9	31.4	20.7	19.5	6.5
Inadequate studying environment or distractions at home	8.8	44.1	17.1	14.1	15.9
Not feel the classroom atmosphere	27.2	42.0	11.2	16.6	3.0

Source: Author, Field survey, 2022

As shown in Table 02, 59.2% of students reported that internet services were too expensive for regular online connectivity. This might be attributed to financial difficulties on the part of students and their parents. Moreover, teachers sometimes continued classes for hours. Looking at a phone or computer screen for a long time was stressful and boring and more than 50% of learners faced this problem. 69.2% of students addressed too many students online at once was noisy and distracting. Network coverage is not equal across Sri Lanka. Many students faced disturbances due to poor connectivity.

TABLE 3: CHALLENGES IDENTIFIED BY TEACHERS DURING ENGAGEMENT IN DISTANCE AND ONLINE TEACHING.

	Strongly agree %	Agree %	Neutral %	Disagree %	Strongly disagree %
Lack of training	8.8	43.1	36.3	10.8	1.0
Less engagement of student	25.5	40.2	29.4	4.9	0.0
The poor condition of computer device accessories/ Smartphone	12.7	42.2	26.5	14.7	3.9
Students' irregular attendance in the online classes	36.3	39.2	19.6	4.9	0.0
Less reliability of online exams	29.4	49.0	16.7	4.9	0.0
Lack of parental assistance	14.7	40.2	36.3	7.8	1.0
Inadequate teaching environment or distractions at home	9.8	50.0	33.3	5.9	1.0

Source: Author, Field survey, 2022

Some other key problems that teachers identified while they were engaging in distance and online teaching (Table 03). When asked if teachers received any training on distance learning modalities, it was widely agreed that due to the sudden nature of school closures, most schools did not have time to train teachers and ensure they had adequate capabilities. 88.2% of the teachers in the sample have no sufficient training to conduct online classes. Teachers who were close to retirement had struggled due to the lack of digital skills in IT. Even after months of Zoom lessons, some teachers were not able to schedule their meetings on time or not at all. Furthermore, more than 95% of teachers agreed that students' attendance in online classes was irregular. This may be due to the lack of devices, network problems, or a decrease in students' interest in the classes due to various difficulties. 78.4% of teachers noted that they were not reliable for online classroom examinations. Also, some of them faced difficulties due to a lack of parental support (55%) due to various issues faced by them.

Opportunities

On a positive note, distance learning is a good opportunity for teachers, students, and families. Table 04 points toward the opportunities provided by the COVID-19 pandemic as perceived by secondary school students. Most of the students (86.2%) agreed that it enables students and teachers from faraway places to join on one platform. It could be because, during the lockdown, students were at their homes in different places, yet they were able to join their classmates and teachers for online classes. Therefore, they realized that this was a great opportunity to meet people. If online learning had not been there, the students might have lost their whole school days for a year. A large majority of the students (75.1%) also opined that online learning was the best option during the lockdown. They acknowledged that due to the exclusive use of online learning, they were able to continue their classes. Students felt that online learning allowed better accessibility to teachers, with 80.5% expressing that frequent meetings were possible. Further, 80.8% believed that it provided a good experience to face future calamity, enabling schools to continue education without interruption during this kind of school closure and 80.7% of teachers identified that it helped them upskill in new technology.

TABLE 4: THE OPPORTUNITIES FOR SECONDARY SCHOOL STUDENTS CREATED BY THE COVID-19 PANDEMIC.

	Strongly agree %	Agree %	Neutral %	Disagree %	Strongly disagree %
Online education allows students to learn about new technology	29.7	55.8	9.7	4.2	0.6
Online learning was the best-suited option during lockdown situations	21.8	53.3	16.4	7.9	0.6
Allowed students to contact teachers when the need arises	22.5	58.0	15.4	3.6	0.6
Provided one platform to connect students and teachers from faraway places	31.7	54.5	7.8	6.0	0.0
Provided a good experience to face future calamities	26.3	54.5	15.0	3.6	0.6
Cultivate students' independent learning abilities.	27.5	46.7	16.2	6.0	3.6

Source: Author, Field survey, 2022

The overwhelming majority of students stated that online education allowed students to learn about new technology: the increased use and familiarity with online communication tools such as Zoom. Furthermore, students learned to study independently. About three-quarters of students agreed that with the help of teachers' guidelines, they engaged in self-study during the lockdown. In addition to that, it also allowed the use of audio/visual content like animation, pictures, and video from the internet, which helped teachers teach with proper examples and explanations.

Figure 04 shows the teaching aids used by KED teachers during the COVID-19 pandemic lockdown for distance teaching. The utilization of PowerPoint presentation slides and voice recordings by teachers was minimal compared to other teaching-learning process. The typeset documents method was more dominant than the handwritten method because it was more convenient. As described in Figure 04, about 69% of the total sample of students received these typeset handouts. Almost a similar number of students studied with the help of video clips which were shown by teachers. Teachers were very likely to upload handwritten documents on online platforms. Not only this, some students mentioned that they downloaded past papers for their studies and online exam links. E-Thaksalawa and E-Kalvi websites were very supportive pages for accessing exam papers. This is specially designed according to the syllabuses of the students from grades 01 to 13.

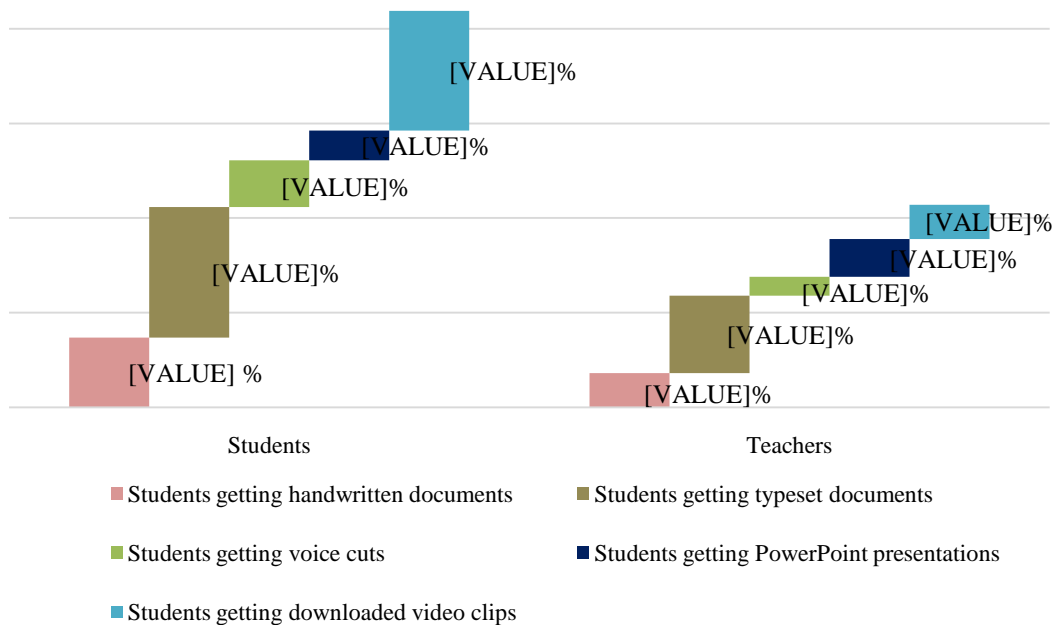


Figure 4: Teaching aids used by stakeholders during the COVID-19 pandemic lockdown for distance and online learning

Threats

This study highlights some key points concerning the threats of online learning. One of the major threats was health-related issues. Both teachers and students mentioned attending continuous classes without breaks, led to eyesight issues, headaches, and back pain. Moreover, learners with less determination and self-motivation were highly prone to distraction.

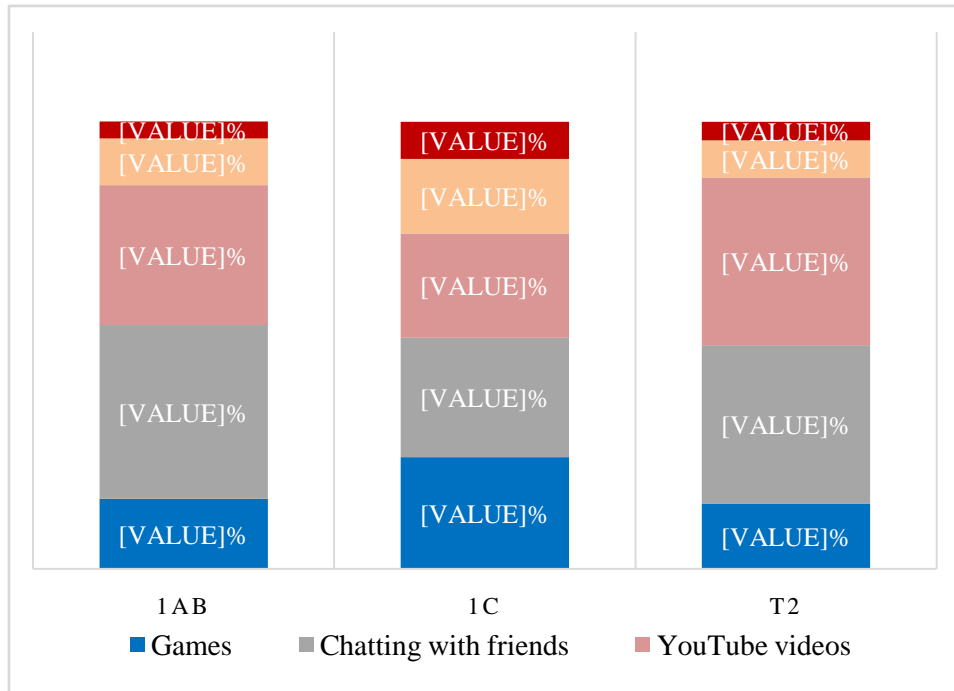


Figure 5: Purpose of using smartphones/computers during COVID-19 school closure,apart from learning.

According to Figure 05, students engaged in activities such as playing games, using Facebook, chatting with friends, watching YouTube videos, and creating TikTok videos during the online teaching hours. Some parents were not very techno-friendly. Thus, they were unaware of this novel learning system.

5. Discussion

The present study aimed to investigate the positive and negative impacts of distance and online education during the COVID-19 pandemic in Karaveddy Education Division, Jaffna. The COVID-19 pandemic hit us without a warning, posing a huge challenge to the education system. A 2018 survey conducted by the Department of Census and Statistics of Sri Lanka revealed that only 52% of Sri Lankan households with school-aged children owned a smartphone or computer, essential for online learning. This statistic reflects the reality of the digital device availability in Sri Lanka. According to this survey, 36.3% of students accessed their own digital devices, 59% of students used their family devices and 4.7% borrowed smartphones from others to continue their distance learning during COVID-19. The availability of digital devices hindered smooth study from home.

On a positive note, the sudden shift from traditional classrooms to distance learning has resulted in a completely different learning and teaching experience for students and teachers. However, online learning may seem viable or desirable in certain areas or circumstances, but there are large parts of Sri Lanka that are not set up for this form of educational delivery (Liyaganawardena and Williams, 2021). However, students continued their education with the existing resources which is identified as a major strength. This is in line with the assertion by Gamage and Zaber

(2021) that TV broadcasts of lessons by the Government of Sri Lanka first introduced in March 2020 reached 28% of students in Sri Lanka.

The common problems associated with online education in general include the availability of the Internet, the speed and cost of the Internet, IT knowledge, and the lack of interaction between students and teachers. Network coverage is not equal across Sri Lanka. Many students faced disturbances due to poor connectivity, especially in remote rural areas. Financial problems were also the major challenge faced by secondary school students. Due to their poor economic background, 59.2% of students reported that internet services were too expensive for regular online connectivity. A recent needs assessment by Save the Children (2022) showed that children from two (02) out of five (05) households in Sri Lanka were unable to continue their online learning with families unable to afford internet data. Moreover, the students in an online class did not have direct contact with the teacher. As a result, they found it difficult to ask their questions due to the impersonal nature of the interaction. For this reason, students especially those from 1C and T2 schools, were not very serious about this learning method in this study area. Further, teachers noted that students often chose to keep their cameras off to avoid being visible as they were not in presentable forms. This practice contributed to a lack of discipline and ritual in online education.

As online teaching was not yet a major form of education in Sri Lankan schools, many teachers in the study area lacked previous experience in this method. Although teachers received various types of training during the outbreak, the short-term effect of such training remains arguably minimal. Further, the urban-rural disparity, different levels of knowledge about information technology acquired by teachers, and teachers' differing attitudes towards and ability to learn, information technology, were all having an impact on the general effectiveness of online education in the study area.

Distance learning is a good opportunity for teachers, students, and families. Since March 2020, public schools in this area have resumed working through online-based learning with the aid of apps such as Zoom, Viber, WhatsApp, and Google Classroom. In addition, the pandemic enhanced the level of collaboration/ cooperation and team working more strategically. The pandemic resulted in thinking seriously about the vision of education, the importance of strategic planning and goals, and how to plan for getting out of the comfort zone and looking at the challenge as an opportunity for growth. Schools, teachers, parents, and other companies supported each other to overcome the struggles on the education side due to COVID-19.

Distance learning provides an unlimited source of learning material whereas in traditional the learning sources are limited. They are mainly handwritten documents, typeset documents, voice cuts, PowerPoint presentations, and downloaded video clips. Not only that some schools provided necessary accessories such as phones and SIM cards to the underprivileged students to continue their education during COVID-19. Further, flexibility in terms of time and location in online learning is beneficial in times of crisis-like situations. E-education allows students to work and learn in one classroom despite the dispersed geographical location. It also has provided an experience to face future calamities where schools can continue education without interruption.

This study also highlights some key points concerning the threats of online learning. One of the major threats was health-related issues. In-door activities (classes or sessions) can negatively influence the health of learners (Magomedov, 2020). Moreover, the learners with a lack of self-motivation were highly prone to distraction. The learners lose track of their studies and end up

doing something else. Children were not given much time on devices before the lockdown, the novelty of devices has excited them as well as distracted them from lessons. Liyanagunawardena et al. (2021) mentioned that parents struggled to motivate their children to stay in front of the computers. Once they were at the computers they got distracted by other applications.

The school's closure due to COVID-19 may not affect students equally. Students from less advantaged backgrounds suffered more during COVID-19 than advantaged students (Di Pietro et al., 2021). There is inequality among urban and rural students; students from low-income or high-income and literate or illiterate parents. Poor and digitally illiterate families, characterized by lower educational levels and children with poor learning motivation, suffered more during this situation, exacerbating inequality.

To synthesize, identify, and prioritize the main strengths, weaknesses, opportunities, and threats of distance and online education and to offer an answer to problem questions, this study offers a body of knowledge focusing on a strategic planning process. This analysis is extremely useful for understanding the current educational situation, and creating a structure with the most crucial points that influence the improvement of this new type of education.

Limitations of the Study

Similar to other research, this study also has some limitations. Based on the study's objectives, the results solely reflect the perspectives of students and teachers, the inclusion of parents' opinions in future studies might help in understanding the issues faced by households regarding online education. Furthermore, respondents may lack extensive experience with the pandemic situation, potentially influencing the variability in their responses.

6. Conclusions

The current study showed that the COVID-19 pandemic lockdown affected the educational performance of most senior secondary students with varying degrees in KED, Jaffna. This is because of the average household income levels and it caused a gap between the 1AB and T2 Schools categories. Distance and online learning have played a role as a bridge between teachers and students in the COVID-19 pandemic crisis in this selected study area. It has both positive and negative effects. KED students continued their distance education with their existing resources which was considered as a major strength. But most of them faced difficulties mainly due to lack of internet connection, lack of devices, financial issues, lack of digital skills, and lack of training. This online teaching method has worsened existing education inequities in KED, Jaffna. At the same time, online teaching was dissatisfactory, according to the participants' attitudes. And also, this pandemic exposed their disaster unpreparedness, education-wise including teaching, learning, and administration in Jaffna. However, the new urgency for distance learning caused by the COVID-19 pandemic has created an intellectually enriched opportunity for the participants to accelerate Hybrid learning and teaching. It also gave chance to the students and teachers in KED to up-skill new technology and provided a great experience to face future calamities. In this study area, students learned to use digital devices to search beyond their subject and adapted to self-study. They also received downloaded materials such as exam papers and handouts during this school closure. However, this innovative learning method caused threats such as health issues, addiction to digital devices, and lower achievements in understanding subjects and practical knowledge. Thus, it can be concluded that online learning can produce effective results to a certain extent but a vast majority of KED students were unable to obtain benefits in online

education due to their lack of technical skills and monetary issues. Not only Sri Lanka's education system but other under-developed countries' education systems were also severely affected by the COVID-19 outbreak. Sri Lanka made an effort to manage the situation with so much of difficulties. People in under-developed countries are living at high risk of disaster potential. Hence, it is always better to find solutions to cope with disaster than worry about its negative impacts.

7. Recommendations

This study recommends the following suggestions to be prepared for future crises. There is a possibility to happen this kind of pandemic situation, natural disasters, and lockdowns in the future. So, it is very important to be ready and have a strong online education system for facing those situations without interrupting education.

- I. Mainly 1C and T2 schools' students' parents (specifically daily workers) especially from Srinaratha, Yakkaru, and Thunnalai areas in KED were most vulnerable during the COVID-19 period. To ensure free education and to avoid the economic burden on those parents, the government should allocate the necessary capital to ensure sufficient resources to support their children's online education.
- II. School teachers and students should get the proper training to handle online classes without interruption to face similar situations in the future.
- III. Some illiterate parents in KED were unaware of online learning especially those who live in rural areas (Valvetty, Srinaratha, Yarkkaru, Thunnalai, and Thevariya). They should have proper training to support their children in homeschooling during the pandemic. They should maintain a proper communication system for teachers to know about the most important information regarding their children's distance learning. Moreover, this communication will support avoiding the students' smart device addiction.
- IV. All the teachers in this KED were using the free version of Zoom, in the middle of the classes the whole class had to re-join to continue the lesson. Schools should take necessary action to continue classes without interruption.
- V. An island-wise survey is needed to prioritize the most vulnerable students who gained the minimum learning experience during COVID-19. It will provide equal opportunities for every student in Sri Lanka to continue their learning even during the disaster situation. For instance, free internet connection and digital devices should be provided to economically marginalized students and teachers.

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**INFLUENCE OF EMOTIONAL INTELLIGENCE ON WORK-LIFE
BALANCE AMONG PROFESSIONALS ACROSS DIFFERENT WORK
DOMAINS POST COVID-19 PANDEMIC**

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ABSTRACT

Background: Work-life balance is about crafting and sustaining healthy work environment that enables individuals to maintain balance between work and personal responsibilities, thus strengthening loyalty, satisfaction and productivity.

Aims: This study aimed at identifying influence of emotional intelligence and work-life balance among professionals across different work domains and further explore the association between demographics and emotional intelligence, and work-life balance among professionals.

Methodology: In this quantitative cross-sectional survey, data was gathered using the adapted Emotional Intelligence Scale and Work-Life Balance Scale, from conveniently selected 234 professionals from different work domains such as nurses, doctors, police, teachers and engineers.

Results: Regression analysis showed a weak but significant influence of emotional intelligence on overall work-life balance among professionals ($r=0.267$; $p<0.001$). Significant relation was noted between emotional intelligence and dimensions of work-life balance namely; work-place-support ($r=0.249$; $p<0.001$), satisfaction with work-life balance ($r=0.419$; $p<0.001$) and improved effectiveness at work ($r=0.317$; $p<0.001$). Using ANOVA significant association was identified between level of income and emotional intelligence ($F=3.605$; $p=.014$); and between type of profession and work-life balance among professionals ($F=6.558$; $p<.001$).

Conclusion: This study provides an understanding about the influence of emotional intelligence on work-life balance among professionals across work domains post Covid-19 pandemic. The findings can be useful for stakeholders and policymakers in planning and implementing favorable strategies especially for those working from home and for those having to work beyond working hours sometimes even carry the workload home. Further exploration of determinants of work-life balance among professionals across individual work domains is recommended.

KEYWORDS: anova, domains of work, emotional intelligence, professionals, work-life balance.

INTRODUCTION

Human Beings are deeply connected with the concept of work; a significant factor to achieve happiness and satisfaction. It favors the fulfilment of the basic as well as the deeper, psychological humans needs and helps them identify themselves, become independent and self-confident (Vlachou, et al., 2020). However, with globalization and engagement with newer technologies, individuals are confounded to sustain a challenging balance between work and personal life (Praya, et al., 2019). Striking a sense of balance between work and personal life is a dilemma. Work-life balance (WLB) forces the issue that human beings are equitably committed with employment and private life with equal importance at both ends (Hafeez & Akbar, 2015). The struggle of maintaining the overall balance at times leads to several mental and emotional issues that can impact competency and job satisfaction among individuals (Chauhan, Maheshwari & Goswami, 2020).

Further, workplaces have become highly competitive and stressful pushing individuals to continuously strive towards innovation and reach optimum productivity (Nanda & Randhawa, 2020). The ever-dynamic scenario and the rapidly changing rules of workplace judge individuals not merely in terms of social network, financial support, academic qualification or expertise but rather by their ability to handle themselves and collaborate with others (Abebe & Singh, 2023). Intelligence Quotient (IQ) has an important role in determining the success. However, Emotional intelligence (EI) which consists of decent knowledge about and the ability to manage own and others' emotions can help a person gain success as well as lever the increasing demand of the modern world for enhanced inter-personal relationships, mutual understanding and optimal workplace productivity and satisfaction at work as well as in personal life (Abebe & Singh, 2023; Mehta & Maina, 2016).

THEORETICAL BACKGROUND OF KEY CONCEPTS

Emotional Intelligence (EI)

Emotional Intelligence is the ability, capacity, skill to identify, assesses, manage and control the emotions of one's self, of others, and of groups intelligently; a set of acquired skills and competencies that predict positive outcomes at home with one's family and at work (Mehta & Maina, 2016). It is a form of social intelligence that enables people to recognize their own and others' emotions and to make appropriate choices for thinking and action. Individuals who possess higher level of emotional intelligence are healthier, less depressed, more productive at work, and have better relationships (Moeller, Seehuus & Peisch, 2020). EI helps in understanding one's own conduct as well as relationship with others which play significant role in gratifying one's life and work environment (Abebe & Singh, 2023). Persons with high EI are known to better recognize potential stressors and cope up with stress using emotions (Joseph, 2015). EI has been linked with positive outcomes such as life and work satisfaction, interpersonal relationships, job performance, psychological well-being and physical health; and is considered to play a crucial role in the modern work life (Abebe & Singh, 2023; Mehta & Maina, 2016).

Work-Life Balance (WLB)

Work-life balance (WLB) is "the extent to which an individual is equally engaged in and equally satisfied with work and family roles". It is an individual's perception of a compatible, harmonious and holistic integration of work and nonwork routines that fosters growth and achievement of potential across domains and agreement with the individual's existing life

priorities (Gagnano, Simbula & Miglioretti, 2020). It is about having a measure of control over or balance between the organizational, societal and personal life; and a major aspect of the quality of work and life of individuals trying to manage multiple roles. WLB is important for the organizations, employee and collectively for the total workforce of an organization as it can have a colossal impact on the qualitative and quantitative organizational performance (Banu & Duraipandian, 2014). A challenging and central issue affecting individual's wellbeing, growth and productivity, that equally impacts the organization (Prithivi & Thilagaraj, 2020). Balanced work-life increases effectiveness as well as improves satisfaction, in both the professional and personal life. Whereas, an imbalance can have harmful influence on a health, work tasks and personal life activities (Hafeez & Akbar, 2015).

Work and family have become increasingly important due to the changing nature and composition of workforce and the challenges and complexity of the work environment (Shabir & Gani, 2020). Although, organizations are trying to enable work-life balance through initiatives such as flex times, part time work, remote working, tele-working, provision of child care facilities, work from home, the dynamic scenario has changed the balance between work-life and personal-life (Prithivi & Thilagaraj, 2020; Sánchez-Hernández, et al., 2019). Many employees work on weekends, while some others need to start in the evening and continue through the night. To meet the deadlines and targets and manage the increasing workload, at times they need to be present at their work place for longer periods and work beyond the normal eight hours. Although digital technology and devices help in the constant communication between the organizations and the employees, it reduces the individuals' time available at home and consequently leads to growing stress and work-life imbalance (Doble & Supriya, 2010; Khan & Fazili, 2016).

Work from home or teleworking has been a rising trend around the globe across professions. Working from home provides flexibility and the autonomy to manage time and as well as personal duties. It also averts distractions and supervision which might decrease employee stress. But there could be negative effects such as alienation, social isolation and detachment leading to poor motivation and performance. It eliminates the boundary between work and personal life which can create anxiety and stress due to work overload eventually affecting job satisfaction (Irawanto, Novianti & Roz, 2021). Work-life balance is about the creating and maintaining of supportive healthy work environments which can enable an employee to maintain the equilibrium between the work and personal responsibilities, thus strengthen loyalty and productivity of the employee (Prithivi & Thilagaraj, 2020). Further, COVID-19 has changed both professional and personal life of every individual, affected industries and organizations across the world (Irawanto, Novianti & Roz, 2021). Balancing the work and personal life has become overwhelming for every working-class professional (Prithivi & Thilagaraj, 2020).

REVIEW OF LITERATURE

Significant relationship of work-life balance (WLB) has been identified with organizational commitment (OC) among women employees in the healthcare (Shabir & Gani, 2020), work from home employees during Covid-19 Pandemic (Prithivi & Thilagaraj, 2020), work related and personal factors among women in garment units (Khare & Kapoor, 2019), demographics of teachers across universities and colleges (Punia & Kamboj, 2013), gender differences among IT professionals (Doble & Supriya, 2010). Relationship has also been reported between work-life balance and emotional intelligence across individual domains. Malik, Haider & Hussain (2019)

identified that emotionally intelligent healthcare professionals manage their work-life balance better and are more satisfied. Naz, Ahmad & Batool (2021) reported significant relation between emotional intelligence and work-life balance of working women. Moh'd Abu Bakir (2018) found significant impact of Hospital managers' emotional skills on employees' work-life balance. Nanda & Randhawa (2020) proposed that emotional intelligence is a crucial construct impacting work-life balance and the work-related well-being dimensions such as work engagement, job satisfaction and job stress. Vasumathi, Sagaya & Poranki (2019) revealed that University faculty with high emotional intelligence planned their work appropriately avoiding long working hours and meetings beyond office hours.

Available literature indicates influence of and relationship between emotional intelligence and work-life balance among employees of individual work domains. The current study attempts to understand the influence of emotional intelligence on the work-life balance among professionals across different work domains post Covid-19 pandemic and further explore the association between the demographic variables and emotional intelligence as well as work-life balance among these professionals as depicted in the conceptual framework in figure 1.

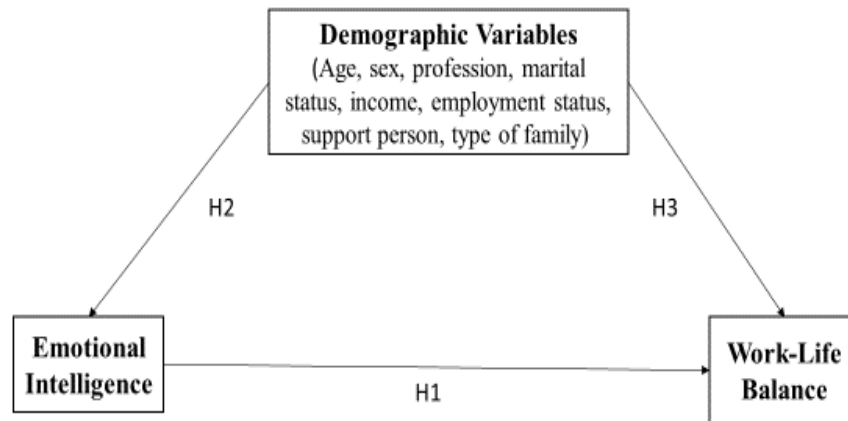


Figure 1. The Proposed Conceptual Model in the study

RESEARCH QUESTIONS IN THIS STUDY

- What is the influence of emotional intelligence on the work-life balance among the professionals across different workdomains post Covid-19 pandemic?
- What is the association between demographic variables and emotional intelligence among professionals across different workdomains post Covid-19 pandemic?
- What is the association between demographic variables and work-life balance among professionals across different workdomains post Covid-19 pandemic?

RESEARCH HYPOTHESIS

H1: There is a significant influence of between emotional intelligence on the work-life balance among the professionals across different workdomains post Covid-19 pandemic.

H2: There is a significant association between demographic variables and emotional intelligence among professionals across different work domains post Covid-19 pandemic.

H2: There is a significant association between demographic variables and work-life balance among professionals across different work domains post Covid-19 pandemic.

RESEARCH METHODOLOGY

This study used a quantitative cross-sectional survey design to identify the influence of emotional intelligence on work-life balance among professionals across different work domains post Covid-19 pandemic. A total of 250 professionals from varied fields, such as nurses, doctors, police, teachers and engineers were conveniently selected for data collection by the researcher. The tools adapted in this study are the Emotional Intelligence (EI) scale (Law, Wong & Song, 2004) with four dimensions and the Work-Life Balance (WLB) scale of five dimensions developed by Banu & Duraipandian (2014). Reliability of the adapted versions was tested among 30 professionals and the Cronbach's alpha of the 12-item Emotional Intelligence Scale (EIS) was found to be 0.817 and the 26-item Work-Life Balance Scale (WLB-S) was 0.859. Both scales were used as five-point scales (1=strongly disagree; 5=strongly agree). After obtaining written informed consent from the selected participants, the tools were personally administered, and the participants were asked to indicate their agreement or disagreement on each item. Higher score reflected greater work-life balance and higher emotional intelligence among the participants. The data was collected from March 2022 through October 2022. The responses were checked for completeness of data wherein 16 sheets were discarded and final 234 data sheets from 95 nurses, 28 doctors, 38 police personnel, 46 teachers and 27 engineers were entered in SPSS version 25 and used in the analysis of this study.

ETHICAL CONSIDERATIONS

Ethical Clearance was sought from the institutional ethics committee vide letter No. DHS/Sp. Cell/F.No.24-166(Ethics)/2021-22/1380 Dated 29/12/2021. The informed written consent was obtained from the volunteering participants after explaining the benefits, risks and the details of the study.

RESULTS AND DISCUSSION

The data are analyzed based on the objectives of the study using descriptive analysis for demographic variables. Multiple regression analysis is used to test the influence of emotional intelligence on work-life balance. Correlation test is used to test the relation between emotional intelligence and work-life balance and the dimensions of work-life balance among participants. To test the association; demographic variables such as age, type of profession, income and support person are analyzed using Analysis of Variance (ANOVA) and independent sample 't' test was used to analyze sex, marital status, employment status, family type. The acceptance level of significance is at $p < 0.05$.

Table 1. Description of participants by their demographic variables**n=234**

Demographic Variable	Group	Frequency	Percentage
Age in years	21-30	103	44
	31-40	85	36.3
	41-50	25	10.7
	51-60	21	9
Sex	Male	98	41.9
	Female	136	58.1
Marital status	Married	131	56
	Unmarried	103	44
Type of Profession	Nurses	95	40.6
	Doctors	28	12
	Police	38	16.2
	Teachers	46	19.7
	Engineers	27	11.5
Income	< 50000	133	56.8
	50000-1lakh	71	30.3
	1lakh-1.5lakh	22	9.4
	>1.5lakh	8	3.4
Employment status	Permanent	158	67.5
	Temporary	76	32.5
Type of family	Nuclear	144	61.5
	Joint	90	38.5
Support person	Spouse	87	37.2
	Parents	76	32.5
	Family/friends	71	30.3

Majority of the participants were in the age group of 21-30 years (44%), married (56%) females (58.1%). Most of them were nurses (40.6%), had monthly income of less than 50000 (56.8%) and were permanently employed (67.5%). Many were from nuclear family (61.5%) and spouse was the support person (37.2%) as shown in Table 1.

Table 2. Correlation between Emotional Intelligence and Work-Life Balance and dimensions of Work-Life Balance**n=234**

Emotional Intelligence (EI)	'r'	'P' Value
Work-Life Balance (WLB)	0.267	<0.001
Work Place Support (WPS)	0.249	<0.001
Work Interference with Personal Life (WIPL)	0.011	0.869
Personal Life Interference with Work (PLIW)	0.117	0.073
Satisfaction with Work-Life Balance (SWLB)	0.419	<0.001
Improved Effectiveness at Work (IEW)	0.317	<0.001

Table 2 show a significant positive correlation between Emotional Intelligence and Work-Life Balance ($r=0.267$; $p < 0.001$). There is significant positive correlation between emotional intelligence and dimensions of work-life balance; Work-Place Support ($r=0.246$; $p < 0.001$), Satisfaction with Work-Life Balance ($r=0.419$; $p < 0.001$) and Improved Effectiveness at Work ($r=0.317$; $p < 0.001$). However, the correlation between the dimension Work Interference with Personal Life ($r=0.011$; $p=0.869$) and Personal Life Interference with Work ($r=0.117$; $p=0.073$) was not significant.

Table 3a. Regression analysis showing influence of Emotional Intelligence on Work-Life Balance among Professionals. n=234

Source of Variation	DF	Sum of squares	Mean square	F	Sig.	R	R ²	Adjusted R ²	SE of the Estimate
Regression	1	2945.226	2945.226	17.803	<.001	.267	.071	.067	12.86
Residual	232	38379.92	165.431						
Total	233	41325.15							

a. Dependent Variable: WLB. b. Predictors: (Constant), EI

Table 3b. Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std Error	Beta		
1 Constant	67.175	6.559		10.242	<.001
Emotional Intelligence	0.605	0.143	0.267	4.219	<.001

a. Dependent Variable: WLB

Table 3a and table 3b present results of multiple regression analysis which show that Emotional Intelligence accounts for statistically significant weak variation in Work-Life Balance ($R^2=0.071$; $p < 0.001$). The Beta Coefficient shows that with one unit increase in emotional intelligence the work-life balance will increase by 0.605

Table 4. Association between Demographic Variables and Emotional Intelligence

n=234

Variable	Group	N	Mean	SD	Df	Test Value
Emotional Intelligence						
Age in years	21-30	103	45.0583	5.06008	Between groups=3 within groups=230 Total=233	F=.186; p=.906
	31-40	85	45.6824	6.27203		
	41-50	25	45.5600	6.53886		
	51-60	21	45.4762	7.37983		
Sex	Male	98	45.4694	6.01579	232	t=.206; p=.837
	Female	136	45.3088	5.79849		
Marital status	Married	131	45.5038	6.24053	232	t=.374; p=.709
	Unmarried	103	45.2136	5.40815		
Profession	Nurses	95	45.4316	6.35585	Between groups=4 within groups=229 Total=233	F=.619; p=.649
	Doctors	28	45.6786	4.83853		
	Police	38	44.7895	4.38768		
	Teachers	46	46.2391	6.42628		
	Engineers	27	44.2222	6.09119		
Income in Rs.	< 50000	133	45.1278	5.22003	Between groups=3 Within groups=230 Total=233	F=3.605; p=.014
	50000-1lakh	71	46.3521	6.06182		
	1lakh-1.5lakh	22	42.4545	7.87236		
	>1.5 lakh	8	48.8750	5.59177		
Employment	Permanent	158	45.4177	5.86821	232	t=.156; p=.876
	Temporary	76	45.2895	5.93704		
Type of family	Nuclear	144	45.7014	6.13836	232	t=1.071; p=.285
	Joint	90	44.8556	5.42893		
Support person	Spouse	87	46.0920	5.37356	Between groups=2 within groups=231 Total=233	F=2.056; p=.130
	Parent/s	76	45.6184	4.68748		
	Family/friends	71	44.2394	7.34743		

Data in table 4 presents that emotional intelligence is significantly associated with level of income ($F(3, 230) = 3.605; p = .014$). Professionals more than 1.5 lakhs per month (Mean=48.8750; SD=5.59177) showed higher level of emotional intelligence as compared to other income groups. Lowest emotional intelligence was noted among the group having monthly income of 1-1.5 lakhs (Mean=42.4545; SD=7.87236). There was no significant association between emotional intelligence and age ($F(3, 230) = 0.186; p = .906$), sex ($t(232) = .206; p = .837$), marital status ($t(232) = 0.374; p = .709$) of professionals. The association between emotional intelligence was also not significant with the type of profession ($F(4, 229) = .619; p = .649$), employment status ($t(232) = .156; p = .876$), type of family ($t(232) = 1.071; p = .285$) nor support person ($F(2, 231) = 2.056; p = .130$) of professionals.

Table 5. Association between Demographic Variables and Work-Life Balance. n=234

Variable	Group	N	Mean	SD	Df	Test Value
Work-Life Balance						
Age in years	21-30	103	94.4660	15.67990	Between groups=3 Within groups=230 Total=233	F=.534; p=.659
	31-40	85	93.8471	11.38870		
	41-50	25	95.1200	11.96286		
	51-60	21	97.9048	9.03274		
Sex	Male	98	94.3571	13.01011	232	t=-.255; p=.799
	Female	136	94.8088	13.57968		
Marital status	Married	131	93.9466	11.93077	232	t=-.871; p=.384
	Unmarried	103	95.4757	14.91337		
Profession	Nurses	95	95.8737	13.68665	Between groups=4 Within groups=229 Total=233	F=6.558; P<.001
	Doctors	28	93.6786	10.50239		
	Police	38	86.1053	8.64241		
	Teachers	46	99.9565	13.50548		
	Engineers	27	94.0741	14.57239		
Income in Rs.	< 50000	133	94.0376	13.32485	Between groups=3 Within groups=230 Total=233	F=.210; p=.889
	50000-1lakh	71	95.4366	14.41500		
	1lakh-1.5lakh	22	94.9545	10.77686		
	>1.5lakh	8	96.1250	10.62031		
Employment	Permanent	158	93.9747	12.74140	232	t=-1.069; p=.286
	Temporary	76	95.9605	14.43832		
Type of family	Nuclear	144	94.2222	13.78275	232	t=-.577; p=.565
	Joint	90	95.2556	12.58728		
Support person	Spouse	87	94.2299	12.24622	Between groups=2 Within groups=231 Total=233	F=.620; p=.539
	Parent/s	76	93.7237	14.08034		
	Family/friend	71	96.0563	13.80361		

Table 5 show that Work-life balance is associated with type of profession as indicated by the significant difference among the five professional groups (F(4, 229)= 6.558; P<.001) wherein teachers (Mean=99.9565; SD=13.50548)reported higher work-life balance as compared to nurses (Mean=95.8737; SD=13.68665), engineers (Mean=94.0741; SD=14.57239) and doctors (Mean=93.6786; SD=10.50239). The lowest work-life balance is noted among police personnel (Mean=86.1053; SD=8.64241). There is no significant difference in work-life balance among the four different age groups (F (3, 230)= 534; p=.659), among male and female (t (232) =-.255; p=.799) among the married and unmarried professionals (t (232) =-.871; p=.384). Also, work-life balance is neither significantly associated with the level of income (F (3, 230) = 210; p=.889), nor type of employment (t (232) =1.069;p=.286), the type of family (t (232) =.577;p=.565) and the support person (F (2, 231) =.620; p=.539) of professionals.

This study aimed to identify the influence of emotional intelligence on work-life balance among professionals across different domains of work post Covid-19 pandemic. The findings of multiple regression analysis show that emotional intelligence accounts for a statistically significant but

low variation in work-life balance ($R^2=0.071$; $p<0.001$). The Beta Coefficient shows that with one unit increase in emotional intelligence the work-life balance will increase by 0.605. The test of correlation show that there is a significant weak positive correlation between emotional intelligence and work life balance ($r=0.267$; $p <0.001$). Similar findings are reported by earlier researchers among female faculty of public sector universities in Pakistan (Naz, Ahmad & Batool, 2021), female professionals in Rajasthan, India (Chauhan, Maheshwari & Goswami, 2020) and Corporate sector employees in Pakistan (Qasim, Khaskhely & Pitafi, 2020), healthcare professionals in Pakistan (Malik, Haider & Hussain, 2019), faculty members' performance at Universities in Tamil Nadu, India (Vasumathi, Sagaya & Poranki, 2019) and police officers in Malaysian Peninsula (Kumarasamy, Pangil & Mohd Isa, 2016). The reason for the weak relationship between emotional intelligence and work-life balance in this study could be because the professionals are from different domains with different level and type of skill, knowledge and attitude requisite. Further in-depth study can be conducted to explore the level of emotional intelligence as well as work-life and the relationship between the constructs using larger sample and/or advanced statistical analysis.

There is a significant positive correlation between emotional intelligence and the dimensions of work-life balance; Work-place Support ($r=0.246$; $p<0,001$), Satisfaction with Work-Life Balance ($r=0.419$; $p<0.001$) and Improved Effectiveness at Work ($r=0.317$; $p<0.001$). Emotional intelligence has no statistically significant relationship with the dimensions; Work Interference with Personal Life ($r=0.011$; $p=0.869$) and Personal Life Interference with Work ($r=0.117$; $p=0.073$). This could be due to the infant stage deviations in the work patterns and schedules brought about by the Covid-19 Pandemic across professions, wherein some professionals might have been working through online and/or offline mode and at varied timings during the data collection period

Findings also reveal a significant association between emotional intelligence and the level of income ($F(3,230)=3.605$; $p=.014$) wherein professionals earning higher income (Mean=48.8750; SD=5.59177) showed higher level of emotional intelligence as compared to other income groups. This finding can be used to explain that financial stability is an important determinant of emotional health, wherein professionals having higher earnings have less financial stress, therefore are able to control and manage emotions better. However, there was no significant association between emotional intelligence and age, sex, marital status, type of profession, nor with employment status, type of family nor support person of professionals.

Significant association is identified between work-life balance and type of profession ($F(4, 229)=6.558$; $P<.001$) wherein higher work-life balance was identified among teachers (Mean=99.9565; SD=13.50548) and lowest among police (Mean=86.1053; SD=8.64241). Teachers' work schedules are probably more streamlined and consistent as compared to police, nurses and physicians who work in shifts and at times continue working beyond single shift. Also having to deal with young minds every day, teachers might be feeling more productive and satisfied with their work, whereas nurses and doctors mostly work with the sick, suffering and with those in distress. Further, the emotional intelligence among teachers is also found to be higher than all other group of professionals which maybe favorable in maintaining better work-life balance. Lowest work-life balance is identified among police personnel. This could be because police have to rush to places and people most of the time in order to deal with lot of crime and fraudulent behaviors that are disturbing and dissatisfying thus affecting their work-life balance. This finding can be further researched in depth for deeper understanding of factors

determining work-life balance among professionals. Malik, Haider & Hussain (2019) reported that physicians maintained better work life balance than nurses and pharmacists in Pakistan. There is no significant association between work-life balance and age, sex, marital status, income, nor with employment status, type of family nor support person of professionals

RECOMMENDATIONS/CONCLUSION

Work-life balance is about crafting and sustaining healthy work environment that will enable employees to maintain a balance between work and home responsibilities thus strengthening loyalty and productivity. This study intended to explore some of the issues related to work life balance in the Indian context among professionals across different work domains post Covid-19 pandemic. All though weak influence of emotional intelligence on work-life balance has been identified among the professionals, there is a significant association between the income and emotional intelligence and between the type of profession and work-life balance. Further exploration of determinants of emotional intelligence as well as work-life balance among professionals from individual domains in the Indian context can be explored for deeper understanding. With the increase in number of dual career couples, it is crucial to adopt practices which would help improve productivity and enhance quality of work and family life. While most countries in the developed world have put in place family friendly work practices, the same is yet to be seen in good measure in India. Apart from flex time, part time, work from home and child care facility; supportive work environment and employee specific initiatives by organizations might improve work life balance among professionals.

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COMPARATIVE SOCIO-ECONOMIC STATUS OF THE ORGANIC AND CONVENTIONAL RICE FARMING SYSTEMS OF THE SAMPLE FARMERS IN GORAKHPUR DISTRICT OF UTTAR PRADESH

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ABSTRACT

The present study is the comparative socio-economic status of the Organic and Conventional Rice in Gorakhpur District of Uttar Pradesh. The Farm Level Data and required information of Rice collected by primary and as well as secondary level in Gorakhpur district where three blocks (Pipraich, Sahjanwa and Campierganj) were selected. The total numbers of 120 farmers were selected in which 60 Organic farmers who is growing rice with help of Government Subsidies and 60 Conventional farmers. The Average age of Organic farmers are 51.06 years and conventional farmers are 50.67 years. The Average literacy rate is 76.67 per cent of organic farmers and 73.33 per cent literacy rate of conventional farmers. The Family composition are overall 43.53 per cent male, 41.53 per cent female and 15.42 per cent children in organic farming, while conventional farming are 39.70 per cent male, 37.31 per cent female and 22.99 per cent children. The total land holding size on average for per farmer was found 2.16 ha and

net cultivated area was 98.61 per cent, Gross cropped area was 264.35 per cent in organic farming, while conventional farming total land holding size on average for per farmer was found 2.55 ha and net cultivated area was 97.25 per cent, Gross cropped area was 200.78 per cent. The Overall 43.33 per cent of the total organic farmers were acting as agriculture, 5 per cent farmers were engaged in agriculture and dairy, 11.67 per cent farmers were agriculture and service, 30 per cent farmers were agriculture and business, 10 per cent farmers were agriculture and others, where as in conventional farmers 43.33 per cent of the farmers were acting as agriculture, 25 per cent farmers were engaged in agriculture and dairy, 15 per cent farmers were agriculture and service, 15 per cent farmers were agriculture and business, 1.67 per cent farmers were agriculture and others. The overall per farm maximum investment on tractor was 67.52 percent in Organic Rice Farmers whereas in Conventional Rice Farmers 70.90 percent.

KEYWORDS: *Organic Farming, Conventional Farming, Land Utilization Pattern, Cropping Pattern, Farm Assets And Investment.*

INTRODUCTION

India is the land of organic farming in past century. Organic farming is not a new concept in India, with farmers having tilled their land without the use of chemicals largely relying on organic residues, cow dung and compost etc. since time immemorial. In current situation of India ranks first in the number of organic farmers and fifth in terms of area of organic farming. Sikkim becomes the first state in the world to become fully organic and other states including Tripura and Uttarakhand have set similar targets. North East India has traditionally been organic and the consumption of chemicals is far less than the rest of the country. Similarly, the tribal and island territories are being nurtured to continue their organic story.

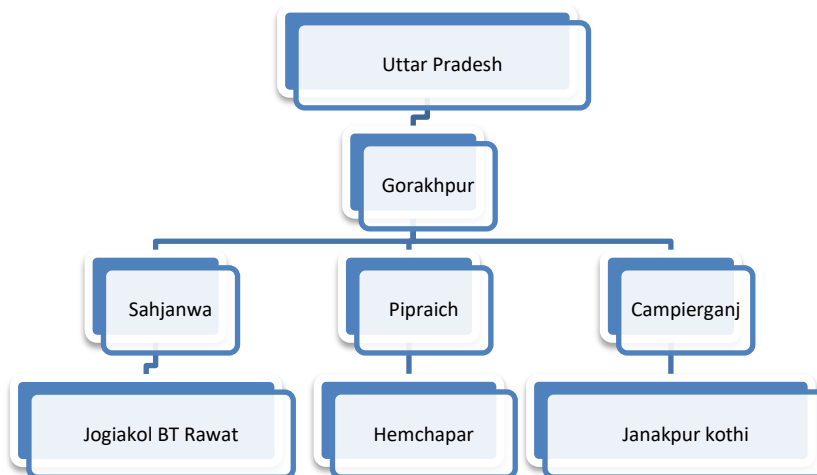
Rice (*Oryza sativa*) is one of the chief grains of India. India has the largest area under rice cultivation. India is the world second largest producer of rice and the largest exporter of rice in the world. Rice farming is categorized into two parts: organic rice farming and conventional rice farming. Organic rice farming is a system that avoids the use of chemical fertilizers, pesticides and growth regulators, through organic farming systems in pursuit of natural balance. While conventional rice farming is at the opposite end, and is represented by intensive mechanized agriculture based on maximizing productivity and profitability.

Reported that majority of (51.25 per cent) respondents were belonging to the middle age group and majority (27.5 per cent) of respondent passes high school. The majority of the respondents 67.50 belong to the OBC group. The majority of 46.25 percent respondent were having medium land holding (2-4 ha.) (Saini *et al.* 2017). More than 50% of the sample farmers were found from marginal categories where as 48% comes under small and medium size of farms. Per farm investment was inversely related with size of holding. The rice, wheat and maize, and sugarcane were the main crops of cropping pattern, cropping intensity was highest on marginal farms followed by small and medium size of farms (Chaudhary *et al.* 2017). The resulted average holding of arable land was 33 per cent higher in organic farms (0.72 ha) compared to conventional farms (0.54 ha). The number of cattle per farm and therefore, the access to manure did not differ between the two groups. In both organic and conventional farms, the main crops grown in the Kharif season were paddy, soybean and amaranth, while in the Rabi season; wheat was the dominant crop, with some farmers also growing pulses, vegetables and spices (Frank *et*

al. 2018). The reported that little more than half of the respondents (53.33 per cent) were old aged, followed by middle aged (32.50 per cent) and young aged (14.17 per cent) categories. The education level one-fourth of the respondents (24.17 per cent) belonged to illiterate category, followed by primary school education (20.83 percent), higher secondary school education (17.50 percent), middle school education (16.67 percent), secondary school education (15.00 per cent) and collegiate education (5.83 percent). The Occupation level most of the respondents (87.50 percent) were found to have agriculture as their primary occupation. Respondents with agriculture as secondary occupation constituted only a limited proportion (12.50 percent). The areas of holding land are a large number of proportions of the respondents (60.00 percent) were small farmers followed by big and marginal farmers (20.00 percent)(*Muthukumar et al. 2021*).

MATERIAL AND METHODS

The Gorakhpur district was selected purposely for socio-economic status of the sample farmers. The Study data collected from three different blocks Pipraich, Sahjanwa and Campierganj are randomly selected by different region in Gorakhpur District. From each Block, a list of villages with organic rice and conventional rice cultivation were prepared, from which one village was selected at random to make a sample out of each block for the study. Total number of 40 farmers whose data is collected from which 20 Organic and 20 Conventional Rice farmers are selected for the study from each block. Thus, a final sample of 60 organic farmers and 60 conventional farmers out of 120 farmers from three selected blocks were taken for the present study. The selected villages the list of farmers organic rice and conventional rice farmers was prepared and further classified in four size groups based on their size of holdings viz. marginal farmer (having below 1 hectare), small farmer (having 1-2 hectare), medium (having 2-4 hectare) and large (having more than 4 hectare). From each size group farmers were selected randomly method.



The data were collected from rice farmers by personal interview. The Information regarding the organic rice and conventional rice farmers was collected from socio- economic characteristics, cropping pattern, land holding, asset position, age of organic and conventional rice farmers family size, income, education, occupation, number of the family member available for work, types of machinery and implements, irrigation structure along with their value were procured. The farm level data and required information of organic and conventional rice farmers pertaining to crop year 2020-21 was during December- January by personal survey method. The collected

data were compiled and analyzed with a graphical and tabular method of analysis simple statistical tools such as arithmetical average and percentage were worked out for the purpose of interpretation of results.

RESULT AND DISCUSSION

Age wise distribution of organic and conventional rice farmers

It can be seen from the table that the average farmers age borrowers under organic rice was 51.06 years, while it was 50.67 years conventional rice farmers. It can be seen from the table that at overall farmers was found 21.67 per cent belong to less than 40 years age, 23.33 per cent belong to age group 40-50 years, 26.67 per cent belong to age group 50-60 years and 28.33 per cent belong to more than 60 years in case of organic rice farmers, while for conventional rice farmers overall farms was found 11.66 per cent belong to less than 40 years old, 26.67 per cent belong to age group 40-50 years, 35 per cent belong to age group 50-60 years, 26.67 per cent belong to more than 60 years old.

In this table show that more Marginal farmers belong the age group below 40 years and 50-60 years in organic rice farming, while conventional rice farming belong to the age group 50-60 years. The highest percentage of small farmers belong to age group above 60 years in organic rice farming, while conventional rice farming belongs to age group 40-50 years. The highest percentage of medium farmers belong to age group 50-60 years in organic rice farming, while conventional rice farming belongs to age group above 60 years. The highest percentage of large farmers belong to age group above 60 years in organic rice farming, while conventional rice farming belongs to age group below 40 years and 50-60 years.

TABLE 1: AGE WISE DISTRIBUTION OF ORGANIC AND CONVENTIONAL RICE FARMERS

Sl. No.	Age Group	Organic Rice Farmers					Conventional Rice Farmers				
		Marginal	Small	Medium	Large	Overall	Marginal	Small	Medium	Large	Overall
1.	<40 years	6 (31.58)	3 (10.71)	3 (33.33)	1 (25.00)	13 (21.67)	6 (19.35)	0 (0.00)	0 (0.00)	1 (50.00)	7 (11.66)
2.	40-50 Years	3 (15.78)	9 (32.14)	1 (11.11)	1 (25.00)	14 (23.33)	7 (22.58)	9 (42.86)	0 (0.00)	0 (0.00)	16 (26.67)
3.	50-60 Years	6 (31.58)	6 (21.43)	4 (44.45)	0 (0.00)	16 (26.67)	13 (41.94)	5 (23.81)	2 (33.33)	1 (50.00)	21 (35.00)
4.	>60 years	4 (21.05)	10 (35.72)	1 (11.11)	2 (50.00)	17 (28.33)	5 (16.13)	7 (33.33)	4 (66.67)	0 (0.00)	16 (26.67)
	Total	19 (100)	28 (100)	9 (100)	4 (100)	60 (100)	31 (100)	21 (100)	6 (100)	2 (100)	60 (100)
	Average	50	51.14	53.77	49.50	51.06	51.45	61.16	47.58	45	50.67

(Figures in parentheses indicate percent to total number of farmers)

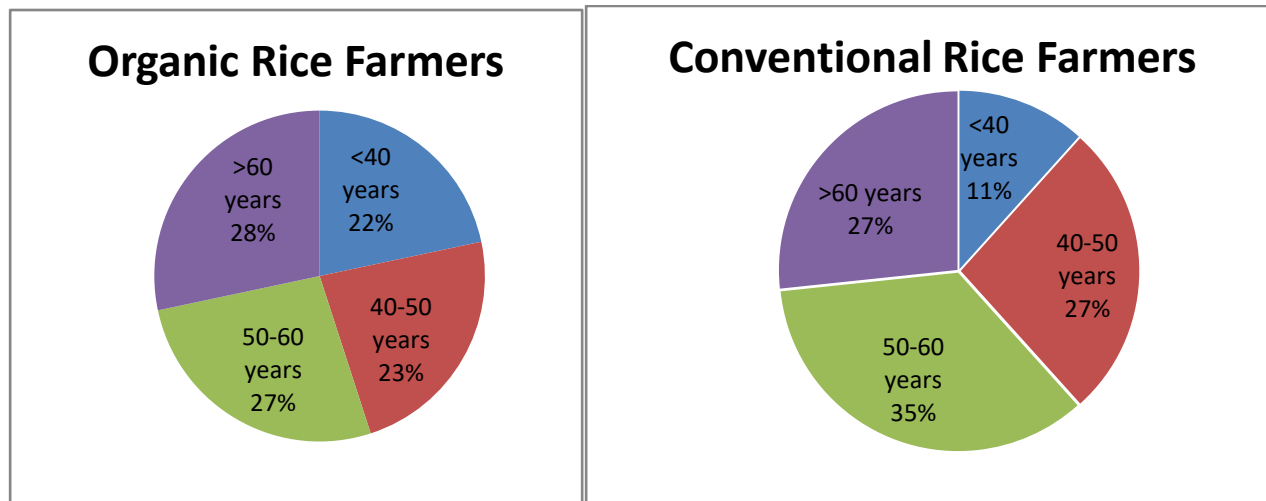


Fig No 1: Age wise Percentage of Organic and conventional Rice Farmers

It can also observe that more of old people are interested in organic rice farming and conventional farming. Most of the sample farmers in both organic and conventional farming were in the age group of 50-60 years. In this age group 50-60 years. In this 50-60 age group, Organic rice farming contributes was 28.33 per cent whereas only 26.67 per cent were involved in conventional farming.

Educational Level of the Sample Organic and Conventional Rice Farmers

The study of collected organic and conventional rice farmer's data show that 76.67 per cent literacy rate of organic rice farmers and 73.33 per cent literacy rate of conventional rice farmers. In these sample survey data, 84.21 per cent marginal, 67.86 per cent Small, 77.78 per cent medium, 100 per cent large Organic rice farmers are educated and 67.74 per cent marginal, 76.19 per cent Small, 83.33 per cent medium, 100 per cent large Conventional rice farmers are educated.

For overall organic rice farmers, 23.33 per cent farmers belong to illiterate group, 11.67 per cent primary school, 3.33 per cent secondary educated, 21.67 per cent high school educated, 26.67 per cent intermediate educated, 10 per cent under graduated and 3.33 per cent post graduate, while overall conventional rice farmers, 26.67 per cent farmers belong to illiterate group, 6.67 per cent primary school, 8.33 per cent secondary educated, 25 per cent high school educated, 20 per cent intermediate educated, 8.33 per cent under graduated and 5 per cent post graduated.

In this table show that more marginal farmers are intermediate education in organic rice farming, while conventional rice farming many farmers are illiterate. The large numbers of small farmer are illiterate in organic rice farming, while conventional rice farming was illiterate and high school education. The large number of medium farmers was intermediate education in organic rice farming, while conventional rice farming was high school education. Many Large farmers are intermediate education in organic rice farming, while conventional rice farming was secondary and under graduate education.

It can also observe that more of intermediate educated are interested to adopt organic rice farming and more of illiterate farmers are interested in conventional rice farming. In intermediate

education, Organic rice farming contributes 26.67 per cent whereas only 20 per cent were involved in conventional farming.

TABLE 2: EDUCATIONAL STATUS OF THE ORGANIC AND CONVENTION RICE FARMERS

Sl. No.	Education	Organic Rice Farmers					Conventional Rice Farmers				
		Marginal	Small	Medium	Large	Overall	Marginal	Small	Medium	Large	Overall
1.	Illiterate	3 (15.79)	9 (32.14)	2 (22.22)	0 (0.00)	14 (23.33)	10 (32.26)	5 (23.81)	1 (16.67)	0 (0.00)	16 (26.67)
2.	Primary	4 (21.05)	3 (10.71)	0 (0.00)	0 (0.00)	7 (11.67)	3 (9.68)	1 (4.77)	0 (0.00)	0 (0.00)	4 (6.67)
3.	Secondary	1 (5.26)	1 (3.57)	0 (0.00)	0 (0.00)	2 (3.33)	1 (3.23)	3 (14.29)	0 (0.00)	1 (50.00)	5 (8.33)
4.	High School	4 (21.05)	8 (28.57)	1 (11.11)	0 (0.00)	13 (21.67)	3 (25.80)	5 (23.80)	2 (33.32)	0 (0.00)	15 (25.00)
5.	Intermediate	6 (31.59)	5 (17.87)	3 (33.34)	2 (50.00)	16 (26.67)	7 (22.58)	4 (19.05)	1 (16.67)	0 (0.00)	12 (20.00)
6.	Under Graduate	1 (5.26)	2 (7.14)	2 (22.22)	1 (25.00)	6 (10.00)	2 (6.45)	1 (4.76)	1 (16.67)	1 (50.00)	5 (8.33)
7.	Post Graduate	0 (0.00)	0 (0.00)	1 (11.11)	1 (25.00)	2 (3.33)	0 (0.00)	2 (9.52)	1 (16.67)	0 (0.00)	3 (5.00)
	All	19 (100)	28 (100)	9 (100)	4 (100)	60 (100)	31 (100)	21 (100)	6 (100)	2 (100)	60 (100)
	Literacy Level	16 (84.21)	19 (67.86)	7 (77.78)	4 (100)	16 (76.67)	21 (67.74)	17 (76.19)	5 (83.33)	2 (100)	44 (73.33)

(Figures in parentheses indicate percent to total number of farmers)

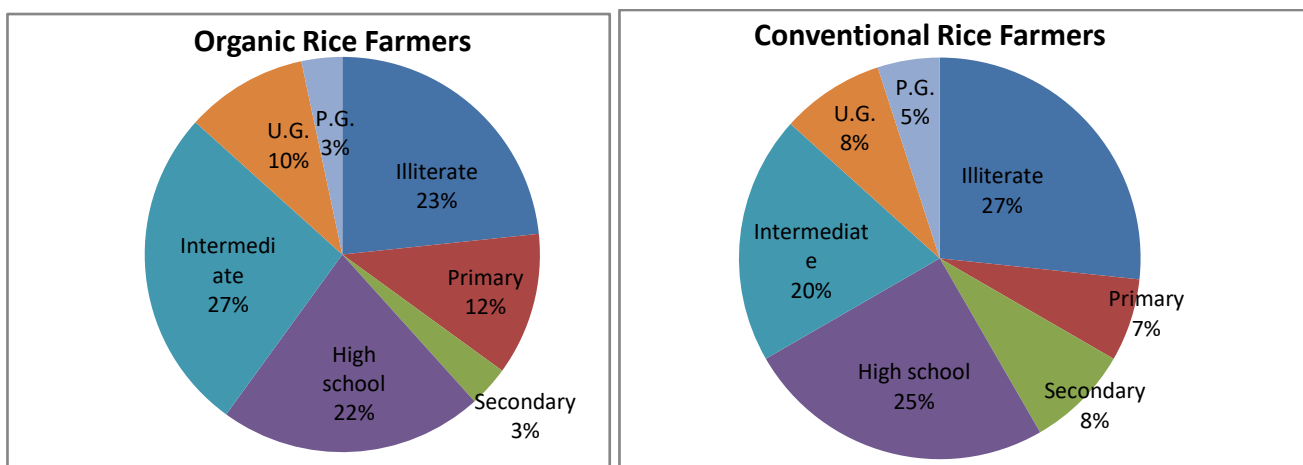


Fig No 2: Education wise per cent distribution of organic and conventional rice farmers Occupation Pattern of the sample organic and conventional farmers

In this given table show the main occupation was only agriculture was 36.84 per cent marginal, 39.29 per cent small, 66.67 per cent medium and 50 per cent large organic rice farmers, while conventional rice farming was 51.61 per cent marginal, 52.38 per cent small and 66.67 per cent

medium. The agriculture and dairy occupation are 10.71 per cent small farmers in organic rice farming, while conventional rice farming 25.81 marginal and 9.52 per cent small farmers. The agriculture and service occupation are 15.79 per cent marginal, 10.71 per cent small and 25 per cent large farmers in organic rice farming, while conventional rice farming 12.90 per cent marginal, 9.52 per cent small, 33.33 per cent medium and 50 per cent large farmers. The agriculture and business occupation are 42.11 per cent marginal, 21.43 per cent small, 33.33 per cent medium and 25 per cent large farmer in organic rice farming, while conventional rice farming 6.45 per cent marginal, 28.58 per cent small and 50 per cent large farmers. The agriculture and other occupation are 5.26 per cent marginal and 17.86 per cent small farmers in organic rice farming, while conventional rice farming 3.23 per cent marginal farmers. The table3. revealed that the overall 43.33 per cent of the total farmers were acting as agriculture, 5 per cent were engaged in agriculture and dairy, 11.67 per cent were agriculture and service, 30 per cent were agriculture and business, 10 per cent were agriculture and others in organic rice farmers where as in conventional rice farmers 43.33 per cent of the farmers were acting as agriculture, 25 per cent were agriculture engaged in agriculture and dairy, 15 per cent were agriculture and service, 15 per cent were agriculture and business, 1.67 per cent were agriculture and others. They can be observed that large number of farmers main occupation was only agriculture in both organic and conventional rice farming.

TABLE 3: OCCUPATION PATTERN OF THE SAMPLE ORGANIC AND CONVENTIONAL RICE FARMERS

Sl. No	Occupation	Organic Rice Farmers					Conventional Rice Farmers				
		Marginal	Small	Medium	Large	Overall	Marginal	Small	Medium	Large	Overall
1.	Agriculture only	7 (36.84)	11 (39.29)	6 (66.67)	2 (50.00)	26 (43.33)	16 (51.61)	11 (52.38)	4 (66.67)	0 (0.00)	26 (43.33)
2.	Agriculture and Dairy	0 (0.00)	3 (10.71)	0 (0.00)	0 (0.00)	3 (5.00)	8 (25.81)	2 (9.52)	0 (0.00)	0 (0.00)	15 (25.00)
3.	Agriculture and Service	3 (15.79)	3 (10.71)	0 (0.00)	1 (25.00)	7 (11.67)	4 (12.90)	2 (9.52)	2 (33.33)	1 (50.00)	9 (15.00)
4.	Agriculture and Business	8 (42.11)	6 (21.43)	3 (33.33)	1 (25.00)	18 (30.00)	2 (6.45)	6 (28.58)	0 (0.00)	1 (50.00)	9 (15.00)
5.	Agriculture and others	1 (5.26)	5 (17.86)	0 (0.00)	0 (0.00)	6 (10.00)	1 (3.23)	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.67)
		19 (100)	28 (100)	9 (100)	4 (100)	60 (100)	31 (100)	21 (100)	6 (100)	2 (100)	60 (100)

(Figures in parentheses indicate percent to total number of farmers)

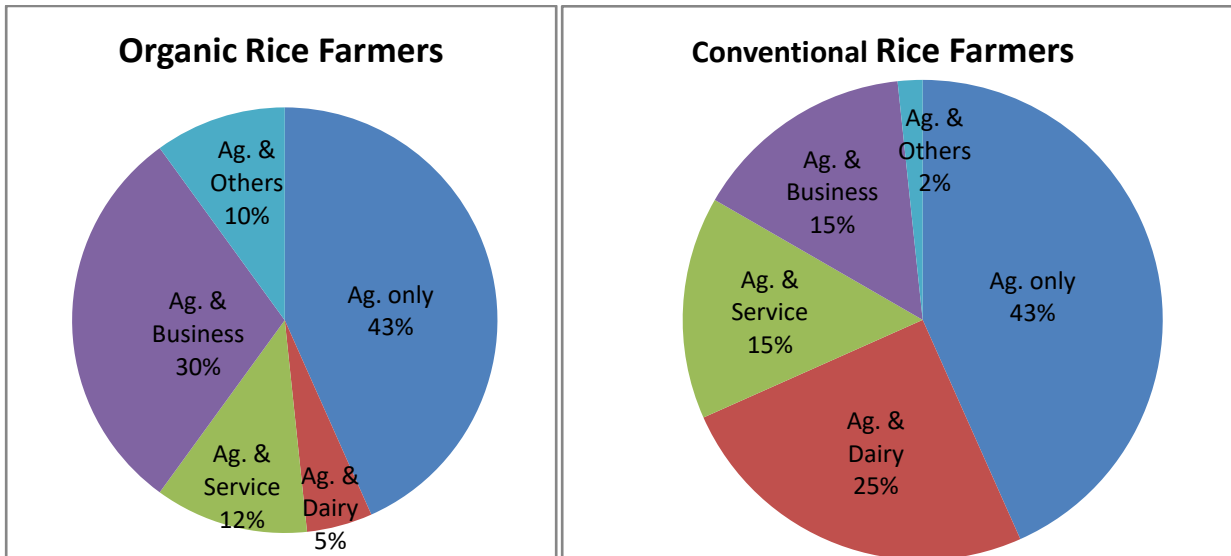


Fig No 3: Occupation Wise per cent distribution of organic and conventional rice farmers

Family Composition of the sample organic and conventional farmers

The overall level in organic rice farmers, the average size of the family was 402 family members consisting of 43.53 per cent adult’s males, 41.04 per cent adult’s females and 15.42 per cent children. The total numbers of persons in small groups was highest with 198 people consisting of 43.94 per cent adult’s males, 39.39 per cent adult’s females and 16.67 per cent children. The overall level in conventional rice farmers, the average size of the family was 461 family members consisting of 39.70 per cent adult’s males, 37.31 per cent adult’s females and 22.99 per cent children. The total numbers of persons in marginal groups was highest with 228 people consisting of 38.60 per cent adult’s males, 36.84 per cent adult’s females and 24.56 per cent children. The total family members in marginal group was 114 members, consisting of 39.47 per cent adult’s males, 43.86 per cent adults females and 16.67 per cent children in organic rice farming, while conventional rice farming total family members in marginal group was 228 members, consisting of 38.60 per cent adult’s males, 36.84 per cent adult’s females and 24.56 per cent children.

The total family members in small group was 198 members, consisting of 43.94 per cent adult’s males, 39.39 per cent adults females and 16.67 per cent children in organic rice farming, while conventional rice farming total family members in small group was 170 members, consisting of 40.59 per cent adult’s males, 37.65 per cent adult’s females and 21.76 per cent children. The total family members in medium group was 65 members, consisting of 46.15 per cent adult’s males, 41.54 per cent adults females and 12.31 per cent children in organic rice farming, while conventional rice farming total family members in medium group was 46 members, consisting of 43.48 per cent adult’s males, 36.96 per cent adult’s females and 19.57 per cent children. The total family members in large group was 25 members, consisting of 52.00 per cent adult’s males, 40.00 per cent adults females and 8.00 per cent children in organic rice farming, while conventional rice farming total family members in marginal group was 17 members, consisting of 35.29 per cent adult’s males, 41.18 per cent adult’s females and 23.53 per cent children.

TABLE 4: FAMILY COMPOSITION OF THE SAMPLE ORGANIC AND CONVENTIONAL RICE FARMERS

Sl. No.	Family Composition	Organic Rice Farmers					Conventional Rice Farmers				
		Marginal	Small	Medium	Large	Overall	Marginal	Small	Medium	Large	Overall
1.	Male	45 (39.47)	87 (43.94)	30 (46.15)	13 (52.00)	175 (43.53)	88 (38.60)	69 (40.59)	20 (43.48)	6 (35.29)	183 (39.70)
2.	Female	50 (43.86)	78 (39.39)	27 (41.54)	10 (40.00)	165 (41.04)	84 (36.84)	64 (37.65)	17 (36.96)	7 (41.18)	172 (37.31)
3.	Children	19 (16.67)	33 (16.67)	8 (12.31)	2 (8.00)	62 (15.42)	56 (24.56)	37 (21.76)	9 (19.57)	4 (23.53)	106 (22.99)
4.	Total	114 (100)	198 (100)	65 (100)	25 (100)	402 (100)	228 (100)	170 (100)	46 (100)	17 (100)	461 (100)

(Figures in parentheses indicate percent to total number of farmers)

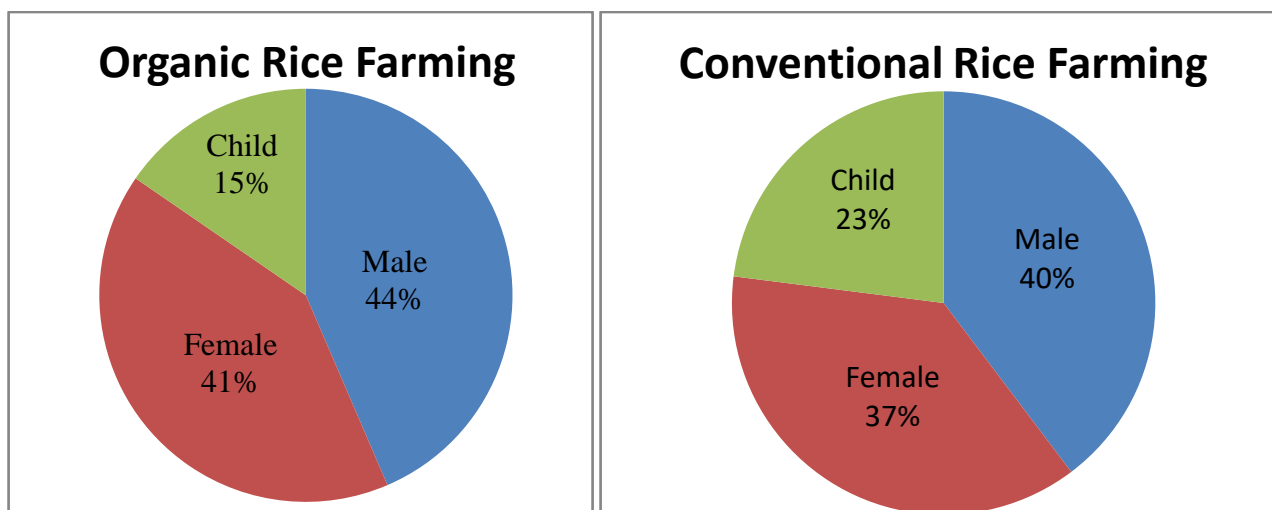


Fig No 4: Family composition percentage of organic and conventional rice farmers

Land Utilization Pattern

Land utilization indicates the area of land actually utilize in different purpose of like crop production, irrigated, leased in etc. it was revealed from the table 5. The average size of land holding pattern of organic rice farmers in respect of marginal ,small, medium and large farmers was 0.55 ha, 1.12 ha, 2.51 ha and 4.45 ha where as in conventional rice farmers of 0.66 ha, 1.21 ha.2.62 ha and 5.57 ha respectively.

The average size of holding at the overall level for all the groups worked out 2.16 hectare in organic farming, while conventional farming average size of holding at the overall level for all the groups worked out 2.55 hectare. The net cultivated area at the overall level for all the groups

worked out 2.13 hectare in organic rice, while conventional rice overall net cultivated area was 2.48 hectare.

TABLE 5: LAND UTILIZATION PATTERN OF THE SELECTED FARMERS

Sl. No.	Particular	Organic Rice Farming					Conventional Rice Farming				
		Marginal	Small	Medium	Large	Overall	Marginal	Small	Medium	Large	Overall
1.	Number of Household	19	28	09	04	60	31	21	6	2	60
2.	Size of Land Holding	0.55 (100.00)	1.12 (100.00)	2.51 (100.00)	4.45 (100.00)	2.16 (100.00)	0.66 (100.00)	1.21 (100.00)	2.62 (100.00)	5.57 (100.00)	2.55 (100.00)
3.	Current Fallow Area	0.01 (1.82)	0.02 (1.79)	0.03 (1.20)	0.05 (1.12)	0.03 (1.39)	0.01 (1.52)	0.02 (1.65)	0.04 (1.53)	0.07 (1.26)	0.04 (1.57)
4.	Net Cultivated Area	0.54 (98.18)	1.10 (98.21)	2.48 (98.80)	4.40 (98.88)	2.13 (98.61)	0.65 (98.48)	1.19 (98.35)	2.58 (98.47)	5.50 (98.74)	2.48 (97.25)
5.	Area Under Irrigated	0.54 (98.18)	1.10 (98.21)	2.48 (98.80)	4.40 (98.88)	2.13 (98.61)	0.65 (98.48)	1.19 (98.35)	2.58 (98.47)	5.50 (98.74)	2.48 (97.25)
6.	Area Sown more than once	1.08 (196.36)	2.21 (197.32)	3.98 (158.57)	7.04 (158.20)	3.58 (165.74)	1.13 (171.21)	1.96 (161.98)	4.04 (154.20)	4.64 (83.30)	2.64 (103.53)
7.	Gross Cropped Area	1.62 (294.55)	3.31 (295.54)	6.46 (257.37)	11.44 (257.08)	5.71 (264.35)	1.78 (269.70)	3.15 (260.33)	6.62 (252.67)	10.14 (182.05)	5.12 (200.78)

(Figures in parentheses indicate percent to total number of farmers)

Cropping Pattern

The table revealed that, crops grow during *Kharif*, *Rabi* and *Zaid* season on sample farmers are varying. The overall area under different crops in *Kharif* season was 1.35 ha in Organic rice farmers while the conventional rice farmers 1.72 ha. The area under different crops in *Kharif* season was observed to be 0.54 ha, 1.1 ha, 2.48 ha and 4.44 ha for marginal, small, medium and large farmers in organic rice farmers where as in conventional rice farmers category was observed to be 0.99 ha, 1.79 ha, 4.27 ha and 5.45 ha for marginal, small, medium and large farmers. The area under different crops in *Rabi* season was 1.08 ha in organic rice farmers while the conventional rice farmers 1.11 ha.

TABLE 6: CROPPING PATTERN OF THE SELECTED ORGANIC AND CONVENTIONAL RICE FARMERS

Sl. No.	Crops	Organic Rice Farmers					Conventional Rice Farming				
		Marginal	Small	Medium	Large	Overall	Marginal	Small	Medium	Large	Overall
Kharif Crops											
1.	Paddy	0.43	0.88	1.24	2.20	1.19	0.33	0.60	1.29	2.75	1.24
2.	Sugarcane	0.00	0.00	0.99	1.76	0.69	0.00	0.00	0.44	1.10	0.39
3.	Vegetable	0.09	0.20	0.24	0.44	0.24	0.65	1.18	2.51	1.54	1.47
4.	Others	0.02	0.02	0.01	0.00	0.01	0.01	0.01	0.03	0.06	0.03
Rabi Crops											
1.	Wheat	0.43	0.88	1.19	2.11	1.15	0.39	0.72	1.28	2.64	1.26
2.	Mustard	0.05	0.11	0.29	0.53	0.25	0.07	0.12	0.21	0.44	0.21
3.	Vegetable	0.04	0.09	0.00	0.00	0.03	0.19	0.35	0.62	1.28	0.61
4.	Others	0.02	0.02	0.01	0.00	0.01	0.01	0.01	0.02	0.04	0.02
Zaid Crops											
1.	Moong	0.52	1.09	2.48	4.40	2.12	0.12	0.14	0.21	0.26	0.18
2.	Others	0.02	0.02	0.01	0.00	0.01	0.01	0.02	0.01	0.03	0.02
Total											
Gross Cropped Area		1.62	3.31	6.46	11.44	5.71	1.78	3.15	6.62	10.14	5.12

The area under different crops for marginal, small, medium and large farmers was observed to be 0.54 ha, 1.1 ha, 1.49 ha and 2.64 ha in organic rice farmers where as in conventional rice farmers category was observed to be 0.66 ha, 1.2 ha, 2.13 ha and 4.4 ha for marginal, small, medium and large farmers. On an average cropping intensity was observed 170.04 percent in organic rice farmers while the conventional rice farmers 169.34 percent. The area under different crops in *zaid* season was 1.34 ha in organic rice farmers. The area under different crops for marginal, small, medium, large was observed to be 0.54 ha, 1.11 ha, 2.49 ha and 4.40 ha. In *Zaid* season, many conventional farmers land was fallow.

Livestock Position of the Selected Organic And Conventional Rice Farmers

The livestock value per farm presented in table 7. It can be observed that per farm total value of livestock was worked out to Rs. 40714.28, Rs. 45000.00, Rs.80000.00, Rs. and 75000.00 for marginal, small, medium large size group farms in organic rice farmers where as in conventional rice farmers Rs. 49833.33, Rs. 60000.00, Rs.55000.00, Rs. and 20000.00 for marginal, small, medium large size group farms. At overall level, livestock value in farm was worked out to Rs.60178.57 in organic rice farmers while the conventional rice farmers Rs. 46208.33.

TABLE 7: LIVESTOCK POSITION OF ORGANIC AND CONVENTIONAL RICE FARMERS (VALUE OF LIVESTOCK IN RS.)

Particulars	Organic Rice Farmers					Conventional Rice Farmers				
	Marginal	Small	Medium	large	All	Marginal	Small	Medium	large	All
Buffalo	25000 (61.40)	25000 (55.55)	80000 (100)	5000 0 (66.66)	45000 (74.77)	24000 (48.16)	4000 0 (66.66)	30000 (54.54)	0 (0.00)	23500 (50.85)
Cow	15714.28 (38.59)	20000 (44.44)	0 (0.00)	2500 0 (33.33)	15178.5 (25.22)	18333.33 (36.78)	2000 0 (33.33)	25000 (45.45)	20000 (100.0)	20833.3 (45.08)
Goat and sheep	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	7500 (15.05)	0 (0.00)	0 (0.00)	0 (0.00)	1875.0 0 (4.05)
Total	40714.28 (100.00)	45000 (100)	80000 (100)	7500 0 (100)	60178.5 (100)	49833.33 (100)	6000 0 (100)	55000 (100)	20000 (100)	46208.3 (100)

(Figures in parentheses indicate percentage to the respective total livestock value)

Farm assets and investment of Organic Farmers and Conventional Farmers

The fixed capital assets play an importance role in any business. The capital assets and investment was presented in table: 8. Overall per farm investment on farm building 3.95 percent, cattle shed 3.72 percent, well and tube wells 1.98 percent, electric motors 1.49 percent, pumping set 3.47 percent, spray pump 3.18 percent, tractors 67.52 percent, thresher 9.51 percent, plough 3.22 percent, harrow 1.42 percent and seed drill 0.48 percent in Organic Rice Farmers where as in Conventional Rice Farmers on farm building 4.16 percent, cattle shed 3.70 percent, well and tube wells 1.95 percent, electric motors 1.49 percent, pumping set 3.53 percent, spray pump 2.45 percent, tractors 70.90 percent, thresher 10.00 percent, plough 2.73 percent, harrow 1.34 percent and seed drill 0.45 percent respectively. At the overall per farm maximum investment on tractor was Rs. 105293.73(67.52 percent) in Organic Rice Farmers whereas in Conventional Rice Farmers Rs.107045.07 (70.90 percent). The table clear that the maximum investment in large size of group in Organic Rice Farmers and Conventional Rice Farmers

TABLE 8: FARM ASSETS AND INVESTMENT OF SELECTED ORGANIC AND CONVENTIONAL RICE FARMERS (VALUE OF ASSETS IN RS.)

Sl. No	Particulars	Organic Rice Farmers					Conventional Rice farmers				
		Marginal	Small	Medium	Large	Overall	Marginal	Small	Medium	Large	Overall
	Farm Building	5025.33 (6.98)	6235.25 (6.65)	6324.55 (3.20)	7050.05 (2.70)	6163.00 (3.95)	4050.25 (7.02)	5625.2 (6.34)	7234.04 (3.63.)	8225.25 (3.18)	6287.93 (4.16)
	Cattle Sheds	4022.4 (5.59)	5384.53 (5.74)	6556.66 (3.31)	7272.33 (2.79)	5812.67 (3.72)	4032.54 (6.98)	5284.53 (5.96)	6156.66 (3.09)	6872.33 (2.66)	5590.52 (3.70)
	Well and Tube wells	2382 (3.31)	2733.33 (2.91)	3488.23 (1.76)	3766.67 (1.44)	3094.55 (1.98)	2482 (4.30)	2333.33 (2.63)	3333.33 (1.67)	3666.67 (1.42)	2955.98 (1.95)
	Electric Motors	1852.32 (2.57)	2023.33 (2.15)	2588.45 (1.31)	2866.67 (1.10)	2334.20 (1.49)	1662.32 (2.88)	2223.33 (2.50)	2488.45 (1.24)	2666.67 (1.03)	2261.85 (1.49)
	Pumping Set	3700 (5.14)	4100 (4.37)	6506.66 (3.29)	7333.33 (2.81)	5413.20 (3.47)	3800 (6.58)	4100 (4.62)	6406.66 (3.21)	7033.33 (2.72)	5338.605 (3.53)
	Spray Pumps	2600 (3.61)	4400 (4.69)	6046.66 (3.06)	6799.99 (2.61)	4946.50 (3.18)	1600 (2.77)	3400 (3.83)	4026.66 (2.02)	5799.99 (2.24)	3708.82 (2.45)
	Tractor	38000 (52.82)	48000 (51.21)	14000 (70.88)	19500 (74.91)	105293.73 (67.52)	28000 (48.53)	50000 (56.41)	150000 (75.32)	200000 (77.48)	107045.07 (70.90)
	Thresher	7865.55 (10.93)	13566.67 (14.47)	17342.43 (8.78)	20556.66 (7.89)	14841.37 (9.51)	6665.55 (11.55)	9545.67 (10.77)	12242.43 (6.14)	15256.66 (5.91)	10934.69 (10.0)
	Plough	4143.33 (5.75)	4388 (4.68)	5542.22 (2.80)	6048.33 (2.32)	5033.78 (3.22)	3343.33 (5.79)	3588.67 (4.04)	4542.23 (2.28)	5048.33 (1.95)	4133.67 (2.73)
	Harrow	1706.67 (2.37)	2124.67 (2.26)	2340 (1.18)	2742.2 (1.05)	2229.84 (1.42)	1506.67 (2.61)	1816.67 (2.04)	2040 (1.02)	2742.2 (1.06)	2027.80 (1.34)
	Seed drill	640 (0.88)	766.66 (0.81)	769.9 (0.38)	874.2 (0.33)	763.21 (0.48)	550 (0.95)	706.66 (0.79)	666.9 (0.33)	814.2 (0.31)	684.96 (0.45)
	Total	71937.74 (100)	93722.52 (100)	197505.74 (100)	260310.4 (100)	155944.1 (100)	57692.66 (100)	88624.06 (100)	199137.36 (100)	258125.63 (100)	150969.93 (100)

(Figures in parentheses indicate percentage to the respective total investment)

CONCLUSION

The major components i.e. age wise distribution, education status of the farmers Land utilization pattern, cropping pattern, farm building, machinery & implements and livestock position of per farm were considered. This is observed that large number of farmer's main occupation only agriculture in both organic and conventional rice farming. It was found that maximum investment on the farm building followed by machinery implements and livestock. On overall farm per farm investment was positively related with holding size but per hectare investment was inversely related. In the cropping pattern paddy in *Kharif*, wheat in *Rabi* and moong in *Zaid* season stood on first rank among all the crops. It was found as per farm maximum investment on tractor in Organic Rice Farmers whereas in Conventional Rice Farmers. The maximum investment in large size of group in organic rice farmers and conventional rice farmers.

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**AN INVESTIGATION INTO CAUSES OF DOMESTIC VIOLENCE
AMONG YOUNG SPOUSES IN MABVUKU, HARARE, ZIMBABWE**

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ABSTRACT

Harmony in marriage is critical to the well-being of family and society. The family is the mainstay of society and the nation. When it is plagued with violence and abuse, the whole society is fragmented and in desperate need of healing. Domestic violence causes traumatized families and leaves a broken society which consequently breeds nations that are overwhelmed by grief or frustration. Harmony in spousal life should be prioritized for the comfort of its members and society at large.

Young Christian couples in Mabvuku frequently resort to physical violence when faced with seemingly irreconcilable differences. Instead of amicably uniting and resolving together, facing the challenges as a combined force, some spouses blame each other for the situation before them. In such disputes, domestic violence often erupts. Several young spouses seem to be unable to resolve conflict harmoniously without resorting to violence. Others seem to be unskilled enough to devise methods and strategies that are anti-violence. These Christian young couples seem to have one remedy to spousal conflict, violence-like someone with only a hammer, treats every problem like a nail. Every week, 5-10 cases of domestic violence are reported to the Mabvuku police station, (Shiri, 2024)

It is a tragedy to assume that because spouses live together, they instinctively know and understand each other. Those who claim to be Christians will never know how to worship until they know how to love God and each other. Love is of God. The unconverted heart cannot originate nor produce this plant of heavenly growth, which lives and flourishes only where Christ reigns, (Pipim, 2007).

Although domestic violence has become a global threat and a lot has been said about the vice, this paper is specifically centered on young Christian couples in the Mabvuku Community where rare studies have been conducted yet.

KEYWORDS: *Domestic Violence, Communication, Abuse, Empowerment, Love, Unity, Harmony, Mayhem, Infidelity.*

INTRODUCTION

Purpose

This study seeks to find out the causes of domestic violence among Christian young couples in Mabvuku and explore alternative strategies to alleviate the scourge and promote love respect and harmony among couples. To assist spouses to be aware that marriage determines their happiness or sadness in this life and in the life to come. As sincere Christians, they should be always conscious of making plans that warrant divine approval.

Findings

Domestic violence knows no gender, religion, or profession. Lack of induction when these young spouses tire the note in matrimony. The dearth of spirituality among professed couples. Inadequate family life resources compounded spousal challenges too. Too prescriptive strategies paid insignificant changes in couples. More empowerment seminars must be offered to young couples.

Methodology

The researcher implored the qualitative research technique which entailed the use of in-depth interviews, focus groups, and observations. The study aimed to reflect on how young Christian couples in Mabvuku comprehended the importance of adhering to biblical principles of marriage and how it impacted spousal relationships. The Happy Home Ministry was a strategy designed to help these young couples through enrichment seminars and counseling programs.

Domestic violence appears to be rampant among young Christian couples in Mabvuku. What seems to be disturbing is that this transpires against the backdrop of clear biblical teachings like:

1. Christians should highly esteem love in all their endeavors. Love suffers long, love is kind, does not envy, does not parade itself, is not puffed up, does not behave rudely, does not seek its own, is not provoked, thinks no evil, does not rejoice in iniquity but rejoices in truth, bears all things, believes all things, hopes all things, endures all, love never fails, (1 Corinthians 13:4-7).
2. The Bible spells, "Be angry, sin not; let not the sun go down upon your wrath. Neither give place to the devil, (Ephesians 4:26-27).
3. Christians are encouraged to be kind to one another, tenderhearted, and forgiving one another, even as God for Christ's sake has forgiven us, (Ephesians 4:32).

Although these young Christian couples are exposed to the above biblical principles, they seem to be oblivious to the fact that the character of the home impacts much on the condition of society and that the weight of each family's influence will tell in the upward or downward scale, (White, 1905). Yet love is not genuine when it keeps faith and spirituality at a distance and greets morality with resistance, (Pipim, 2007).

Biblical Expectations on Marriage

The Bible admonishes man to live joyfully with his beloved wife all the days of his life, (Ecclesiastes 9:9), and to make their home a little heaven on earth, (White, 1952). Couples must make the home so pleasant and cheerful that it becomes the most attractive place on earth for every family member.

Husbands are mandated to love their wives as Christ did to the church and gave Himself for her, (Ephesians 5:25). In every Christian home, kindness and patience should rule, and love be revealed in action, (White 1893). Whoever does not love does not know God, because God is love, (1 John 4:8). Husband and wife must learn to respect each other and promote love and confidence within the sphere of marriage. The exercise of force is contrary to the principles of God who desires only the services of love, and love cannot be commanded, nor can it be won by force or authority. Only by love is love awakened, (White, 1898).

Unity is the fundamental pillar of the marriage institution. The couple must be able to leave and cling to each other. Coherence and harmony are the products of espoused unity by every proponent of peace.

As God's people, couples are supposed to be agents of wholeness and harmony wherever they live. Their fundamental role is to be a community of blessing for the sake of others, (Fleming, 2013).

Literature Review

Causes of domestic violence in Mabvuku Young Christian couples.

More often, domestic violence does not happen in a vacuum. Several triggers punctuate, fan, and hatch this vice. These causes range from social to economic matters and if they were guarded against, most marriages could be transformed from bitterness to sweetness while relationships would be reinforced. These causes include the following: poor communication, verbal abuse, financial issues, insecurity, poverty, and infidelity.

Poor Communication

Problems and crises are inevitable in spousal life but, the couple should learn to talk them over. Outstanding challenges should be settled before bedtime. Exchanging ideas, thoughts, opinions, knowledge, and data so that the message is received and understood with clarity and purpose should be every spousal motive in communication. A breakdown in communication among spouses is one of the key factors in marriage problems. The happiness of a couple can be measured to a large degree by the effectiveness of their communication. How a couple communicates is one of the most powerful factors affecting the success or failure of their relationship, (Pelt, 2008). Deliberate listening is highly called for in every conversation. The spouse should be able to articulate both verbal and non-verbal elements in every discourse.

Empathy and sympathy should season every discussion. Allowing one to express freely and finish their speech shows respect to the listening spouse. None should assume they understand what has not been said by encroaching into someone's narration before exhausting the speech. Threats are not called for in any way. Respect, love, and peace should undergird spousal conversations. To listen and also to be heard are keys to assertive communication, (Sutton, 2006).

Verbal Abuse

No abuse occurs in a vacuum. Most domestic violence issues stem from verbal abuse. Verbal abuse is a kind of battering that doesn't leave evidence comparable to the bruises of physical battering. It can be excruciating, and recovery can take much longer, (Evans, 2010). Emotional abuse is not always so easily identified. It is difficult to classify exactly what is wrong, and easier to minimize what is going on since it leaves no bleeding or bruised. Although the

neighbors cannot hear it through the walls, emotional abuse is no less destructive than physical abuse and it is no less wrong, (Holcomb, 2004). Admittedly, verbal violence is problematic to deal with because there is no tangible witness to it. The person can be very different in public and at the same time very vicious in private. While outside, friends and relatives view the abuser as a good person, yet he is very brutal in secret. The effects of verbal abuse are so devastating to its victim although they are invisible. The target is psychologically wounded and internally bleeding. The surroundings are not cognizant of what is happening. Furthermore, the abuser normally denies the charge since the ill-treatment takes place in isolated environments. It is not only the bruises on the body that damage but the wounds of the heart and the scars on the mind, (Mirza, 2024). Unknown to the public, close relatives, and acquaintances, these invisible traits of verbal abuse silently destroy life.

While nobody condones wife-beating, it is equally good to consider both sides of the same coin. Prudence calls for reasoning from cause to effect. At times one wonders how a man comes to beat his wife, yet the wife's words might be the cause of the husband's emotional abuse. It is observed that women use an average of 20,000 words a day, in comparison to a mere 7,000 words that men utter, (Hammond, 2013). There could be a high probability of insulting one's spouse consciously or unconsciously. It seems women have learned to fight with words since they are masters of the art, and husbands can feel helpless before the on-slaughter.(Eggerichs, 2004).This becomes the dilemma of the whole puzzle when domestic violence intricacy inevitably becomes visible where the victim becomes the victimizer.

The secretive nature of verbal abuse is quite a betrayal to the victim as it gradually becomes more intense over time. It also takes different forms and disguises itself more frequently. The ultimate result is the erection of a gulf between the victim, and the abuser, yet no distance should be kept between spouses. Seeing things differently does not mean that a husband is losing control and dominance over the wife. Rather, independent thinking enhances decision-making since issues are analyzed from different perspectives, and sound judgment is reinforced. Allowing each other to finish their statements and respond respectfully even when they see differently promotes healthy discussions. Meanwhile, disruptions and interruptions cultivate unhealthy communications and ultimately spoil conversation. Interpersonal skill impartation to spouses could enhance spousal interactions.

By all means, yelling at each other should be avoided among couples unless a house is on fire, and you are warning your spouse of the impending menace. Trying to understand what one is conveying is important to effective communication and relationship enhancement. It is grievous to note that physical abuse is always preceded by verbal abuse, (Evans, 2010). Yelling at living things does tend to kill the spirit in them. While sticks and stones may break our bones, words break the hearts, (Fulghum, 2024). Nothing is as demotivating as a derogatory utterance. Words indeed destroy an individual's personality. Incautious speech does reduce the dignity of the affected spouse even to the level of starting to doubt her perceptions because of the way the abuser counteracts her feelings. It also breeds an inferiority complex for the abused.

With respect, facts clearly stated should be acknowledged and not avoided but should be appreciated even if it is contrary to what one wants to hear. When the wife's reasoning capacity far outweighs the husband's, he tries to demonstrate his superiority as head of the family by beating his wife. Beating a wife as a solution for a man to reassert his status as head of the family particularly when he is threatened by the wife's superior intellectual power, (Mwanwenda, 1996)

is another evil. The husband should never feel threatened by his wife's acumen since the two do not compete in running their marriage. They should rather complement each other and always bear in mind that constructive ideas need not be shunned but ought to be communicated in a respectful, non-threatening manner and should also be welcomed. The husband should ask himself, what is it that makes the woman submissive without aggression or cohesion? Reasserting one's status by beating a wife is a form of domestic violence.

Financial Issues

Financial issues are also a cause of domestic violence. Questions on how couples should use their hard-earned income, who should be responsible for all family financial obligations, or how relatives should be supported seem to be draining peace in married homes. Money can also become a controversial issue. A housewife may feel that the husband is not providing her with enough money to meet the domestic expenses. Couples may accuse each other of either overspending or being stingy, (Mwamwenda, 1996). Disputes from money issues more frequently become the cause of domestic violence. Couples should understand that times have changed. Depending on a single income alone might not suffice for family financial commitments. These days both husband and wife contribute to the welfare of their family. While the husband might be giving insufficient funds for all domestic expenses, the issue of overspending cannot be ignored. At times, impulse buying overrides the budget and this sudden purchase of items without any pre-shopping intention becomes the basis of contention. Sometimes if the husband's income is too little for the family and the financial obligations overwhelm every cent, it also promotes discordance due to frustrations.

On the other hand, a wife might feel that she is not under obligation to use her money on family duties but spend everything on personal or selfish needs. The husband is left alone to meet all the family's financial necessities. This becomes unbearable on the part of the husband who might be frustrated about bearing all the family's financial burdens alone. Although every spouse is entitled to their money, there is a need to assist each other according to the family budget.

Another disgraceful scenario could be when the husband is heavy-handed, dictating how every cent should be used. In some instances, the man does not allow his wife to be employed for him to control her through his financial muscle. The wife begs for money while the husband demands accountability for every cent spent. This kind of behavior is abusive and brings torment to the spouse. The wife also needs pocket money she uses on her own without accountability to the husband. The aspect of budgeting plays a pivotal role in solving financial challenges. Living within a couple's means boosts contentment and reduces unnecessary anxiety which might escalate to domestic violence. Solving financial problems could help resolve marriage challenges too.

Insecurity

If the wife is more educated and remunerated better than the husband, it sometimes breeds an inferiority complex in the husband who in turn uses threats or beatings as a scapegoat for his deficiencies. Even those who are reputable in society might also be abusers. Does one wonder why husbands become abusers? Why do they batter their wives? Abusers are insecure people who consider anyone who crosses their path to be a personal threat, (Vandeman & Finley, 1992). One wonders how a spouse could be a personal threat instead of a suitable helper. Those people with a sense of insecurity tend to resist any noble suggestion from their spouse. They usually

become nagging or hot-tempered for no apparent reason even on an innocent oversight. This kind of compensatory behavior sounds retrogressive to marriage relationships.

The wife is not in any way a rival but is there to assist and advise as an equal partner for the good of their marriage. Any sign of an inferiority complex on the part of the husband does more harm in conflict management than good. A domineering spirit is not called for where love reigns. Success comes through spousal support, care, and understanding while accusations, dislikes, and quarrels breed failure. Couples should learn to support each other for the success of their marriage and their endeavors.

Competition

Husband and wife are not opponents in marriage and should by no means be competing against each other. Several women have transformed from competitors to partners much to the amazement of their husbands. Man must take pride in what his wife does and stop the blame game, (Cooper, 2005). When spouses begin to compete with each other they have lost the essence of marriage. Instead of cherishing the spirit of rivalry, spouses should learn to complement one another and celebrate their successes together. The focus should shift from what one should get to what positive contribution should one bring to the relationship. Selfishness has bred most of the spousal challenges that have caused domestic violence in most families. When the husband finds happiness in meeting the needs of the wife and the wife finds amusement in meeting the happiness of her husband harmony, and peace are generated in this home. This removes competition between spouses.

Poverty

The absence of enough means to meet necessities such as food, clothing, and shelter remains a challenge in underdeveloped countries of which Zimbabwe is no exception. The link between violence and lack of economic resources and dependence is very evident, they are wedged in an abusive relationship, (Patra, 2018). Poverty is at the heart of all the key problems in Africa, be they social, spiritual, or moral. This is expressed in five noteworthy areas: hunger, low income, disease, dehumanization, and injustice, (Adeyemo, 2009). These five poverty factors contribute immensely as causes of domestic violence. Most family instability stems from inadequate resources. The harsh economic atmosphere spouses are working under does give rise to additional stress on the family. Unemployed husbands spend meager resources that the woman earned on drinking or his girlfriend. The mother needs to use the money for healthcare or school fees and gets very upset. The husband will then vent his frustration on his wife because she is weak. These households become unbearable, and it is the woman who suffers most, (Mahere, 2021). While a harsh economic environment adds stress to families, it should be the duty of every couple to set their priorities all right. Prudence should be exercised especially in the use of depleted resources. Sacrificing family resources for pleasure could be the worst thing a normal person could do. A man should learn to work for the family and appreciate the toils of the wife. Venting one's frustrations on the wife is unacceptable. It is not proper for a husband to find joy in the pain and tears of his wife. Poor spouses can live in harmony even in their poverty if love and respect are esteemed.

A lot of men feel that once they pay the bride price, they have 100 percent control over their wives. This means controlling the woman's sexuality, earnings, and reproductive health, (Mahere, 2021). Payment of lobola does not mean that a wife's rights have been relinquished or

she has become a subject of abuse by the husband. While lobola is a mere token of appreciation, man should learn to respect and honor his wife. Too much control might be an indication of a lack of love. This kind of behavior erodes innovation and motivation on the part of the abused spouse.

Poverty seems to negatively impact couples as it brings with it a plethora of deficiencies and if couples fail to manage their crisis, they end up being frustrated and trapped in the net of squabbles and commotion. Being poor or near-poor brings with it a host of factors: chronic shortages of money, accumulating debts, low levels of literacy, high rates of unemployment, incarceration, substance abuse, depression, and domestic violence, poor houses, and unsafe neighborhoods, (Ooms & Wilson, 2004). Although scarcity is not the only source of domestic violence, the above observation seems to be prevalent in third-world countries like Zimbabwe; where inflation is ever on the rise and the unemployment rate has escalated to unbearable levels. It becomes difficult to live in such a toxic environment even if one is very educated. While the essence of education is partly to reduce poverty through employment, nonetheless, education without a source of stable income leads to poverty. Chronic food insecurity and lack of access to health and education might negatively impact spouses living in poverty. In addition, if all these chronic shortages are not managed properly, there will always be mayhem in couples. Spouses will blame each other for basic shortages and inadequate resources.

Infidelity

Infidelity, or cheating is another marriage deviation that has negatively impacted spouses. Infidelity is the act of being unfaithful to a spouse. It normally means engaging in sexual or romantic dealings with a person other than one's significant other, breaking a commitment or promise in the act. Infidelity comes off as another devastating cause of domestic violence. If a spouse discovers or suspects that the partner is cheating on him or her, there is bound to be an uproar. At times these suspicions are necessitated by envy. Jealousy seems to be a common phenomenon among married couples. The problem with jealousy is that it undermines both the trust and love in which a marriage relationship is established. Society holds that your wife or husband is exclusively yours and therefore is intimately unshareable, (Mwamwenda, 1996). The aspect of exceptionality in sexual intimacy in couples appears to be a genuine cause since this promotes faithfulness among couples and also curbs sexually transmitted diseases. Could this be the appropriate place for the phrase, "Love is jealousy?" People with jealousy easily succumb to domestic violence. Once they suspect that the spouse is cheating on them, they resort to domestic ferocity. The individual often criticizes, scolds, insults, and physically attacks their partner, (Melgosa, 2014). Usually, ladies are susceptible to the unusual movements of their spouses.

On the other hand, it appears love is not jealousy since jealousy is a sign of insecurity. However, couples should build trust in each other if love should flourish between them and should abhor multiple partners. Where there is trust and respect, there is less suspicion. Nonetheless, some people do not care whether they obtain money through dignified means or not. Their quest for wealth may lead them to infidelity. Some men can abuse other people's wives for sexual pleasure. At times promotion at work comes with sexual favors first. No wonder some spouses are accused of infidelity in the workplace. These accusations spark domestic violence between spouses.

Consciousness and Acknowledgement of Domestic Violence in Mabvuku

Following an interview that was carried out on 13 January 2024 by the researcher to find out if people were aware of domestic violence and which type of violence was prevalent in Mabvuku and attempting to discover which gender between males and females were the chief perpetrators, the following were the gathered results. The majority of the respondents indicated that they had heard about domestic violence. The news and media have been the main channels through which people have accessed domestic violence information. Others admit that they had witnessed it from their homes and their neighbors. The table below reveals the types and levels of domestic violence in Mabvuku.

TABLE1. CLASSIFICATION LEVELS OF DOMESTIC VIOLENCE IN MABVUKU

Type of Abuse	Total Sampling (N=41)	Percentage (%)
Physical	32	78
Economic	6	15
Sexual	2	5
Psychological	1	2

Among the four types of abuse, physical violence appeared to be dominant in Mabvuku. 78% of the respondents indicated that physical violence is on the top list, followed by economic abuse constituting 15%. Sexual abuse ranks third, at 5%. Psychological abuse seats at the bottom representing 2%.

Data reflecting on which gender dominates more than the other in domestic violence was also gathered. Below is an alternative table revealing the perpetrators of domestic violence.

TABLE 2. PERPETRATORS OF DOMESTIC VIOLENCE IN MABVUKU

Perpetrators	Grand Sample (N=41)	Percentage (%)
Men	36	88
Women	3	7
Men and Women	2	5

On the issue of ascertaining the main perpetrators of domestic violence, Table 2 shows how the respondents reacted. The table reveals that 88% of domestic violence emanated from men while women perpetrators constituted 7%. Only 5% stemmed from both men and women.

On 27 January 20224, an interview was conducted by the researcher to find out the causes of domestic violence in Mabvuku. The table below shows the results established in sequential order.

TABLE 3. CAUSES OF DOMESTIC VIOLENCE IN MABVUKU IN CHRONOLOGICAL ORDER

Causes
Poor Communication
Financial Issues
Insecurity
Competition
Poverty
Infidelity

The above results reflect the sequential order of causes of domestic violence among Christian young couples in Mabvuku. The list ranges from poor communication, financial issues, insecurity, competition, poverty to infidelity.

Summary of Main Findings

Physical violence appeared predominant in Mabvuku. 78% of the respondents placed physical violence as the number one vice that militates against spousal harmony. Men emerged as the main perpetrators of domestic violence. 88% of domestic violence emanated from men. Cases of domestic violence ranked as follows poor communication, financial issues, insecurity, competition, poverty, and infidelity.

Happy Home Ministry

The happy home strategy is a response to domestic violence among Christian young couples and seeks to improve couples' relationships by promoting love, respect, and harmony in Mabvuku. Another objective of this strategy is to be able to inculcate interpersonal skills to these young couples. To create an awareness of Christ's interest in marriage as its principal initiator and encourage every spouse to learn and rely on Him as the anchor of these relationships.

Vision: To create an environment of love, respect, and tolerant society among Christian young couples in Mabvuku.

Theology: Marriage is the fundamental pillar of the home establishment.

Mission: To revive and reflect Christ-like love to my spouse and community.

Moto: Behold, how good and pleasant it is when spouses live together in peace, (Psalm 133:1).

Plan

- Encouraging building relationships among spouses.
- Creation of a happy home family through a Christ-like life.
- Promote biblical principles among couples
- Family life enhancement seminars.
- Counseling and prayers for the concerned couples.
- Conscientizing couples on little foxes that spoil the marriage vine.
- Effective communication
- Couples' Birthday and anniversary celebrations
- Couple's Outings

Implementation

My Happy Home Strategy began by meeting and sharing my vision with the local church pastor and the first elder of Mabvuku church. Then the pastor through his board recommended to the researcher 8 couples who were assimilated into the focus group. After sharing the vision with the focus group, the same group coordinated the program and mobilized people. Then a meeting was scheduled with all young couples. At the meeting, the researcher shared the advantages of Happy

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A BIBLICAL PRINCIPLE OF FORGIVENESS: A SPOUSAL OINTMENT

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ABSTRACT

An unforgiving spirit poses a serious challenge between spouses across the divide regardless of the period they have stayed together in marriage. More often intolerant vice escalates into physical, mental, and social contests. Lack of forgiveness exposes the victim to unnecessary stress which at times culminates in blood pressure or depression. Ultimately, the repercussions are so gravy ranching from low self-worthy, distorted notions of marriage relationships, isolation, violence, and relentless attitude to ever enduring rather than enjoying marriage. Yet forgiveness can transform conflicts into agents of peace and growth, (Machamire, 2013). Although much has been written on forgiveness, very little relates to spousal forgiveness in particular. Biblical principles that relate to forgiveness in general assist in crafting spousal forgiveness concept for the study. Discoveries reflect that spousal bitterness, marriage dissonance, and aberrations couples experience result from cherishing an unforgiving spirit.

Purpose: *To enhance spousal love and self-wellness in couples through forgiveness. The study draws from Biblical and theological reflections on forgiveness as a model for spousal healthier living where love, harmony, and tolerance are esteemed and celebrated. Scholarly sources have also been consulted. The study is also an attempt to explore mechanisms to enhance spousal love, respect, and harmony.*

Findings: *Forgiveness stems from the divine character of God who forgave humanity from an intrinsically motivated perspective to restore harmony and relationship with His creation. Every believer is a proponent of forgiveness and is obligated to resample their Marker and Redeemer by raising the forgiveness banner high so that love and harmony pervade the environment and lubricate relationships.*

KEYWORDS: *Marriage, Spouse Forgiveness, Aberrations, Dissonance, Resentment, Vengefulness, Love, Harmony, Wellness.*

INTRODUCTION

While in some instances couples destroy love relations by maintaining grudges in marriage and cherishing a spirit of revenge, forgiveness as an essential component in spousal dealings acts as an antithesis to marriage dissonances and helps bury past emotional hurts, builds new bridges of forbearance and love. In life, people who stay together more often step on each other's feet. Admittedly, being hurt by a person you trust, and esteem is quite excruciating and exasperating. Moreso, when that person is your spouse. Most likely it results in a change of attitude towards

the offender. Inversely, valuing relations and understanding how these networks should be unspoiled, provide an optimistic attitude through forgiveness. In as much as machines need lubrication for effective operation, likewise, forgiveness remains the fundamental ointment to ease and soothe spousal friction and corrosion.

Unique Contribution to Theory, Practice and Policy

Forgiveness cannot be delegated; it should be initiated by the offended part. Spouses are never exonerated from self-enslavement emerging from cherishing an intolerant attitude. Unforgiveness numbs relationships and overwhelm affection. Every spouse should treat forgiveness as a salvific issue. Those that stay together are bound to step on each other's foot. However, in as much as the ointment is essential for the efficient and effective operation of machines, forgiveness remains the fundamental ointment to ease and soothe spousal friction and corrosion. It is at the peril of one's life to neglect forgiveness.

Methodology

Archival study method. The Bible and other scholarly sources have been implored to examine the biblical forgiveness model.

Definitions of Forgiveness

Forgiveness relates to the idea of releasing an offender from guilt and restoring the personal relationship that existed before the offense, (Neufeld, 1979). It is an unmerited act of good will that does not let the injured party harbor resentment or take vengeance, (Gudmundsson, 2007). By encompassing forgiveness to the offender, the injured person is cured. Forgiveness is an intimate, mental, and emotional decision a person makes to let go of angry feelings or plans to revenge for what the culprit did to the injured one, (Gudmundsson, 2007). It is the fragrance the violet (flower) sheds on the heel that has crushed it, (Twain, 2021). Choosing to bless the offender instead of cursing him/her creates an atmosphere of peace around and inside the forgiver. This act builds relationships and promotes spousal harmony.

Principal Initiator of Forgiveness

The primary initiator of forgiveness is God, the Creator who through His divine love for humanity pardons iniquity, transgression, and sin, (Exodus 34:6). It is God's prerogative to take away guilt, lifts a censure, pardons, or forgives all kinds of wrongdoing. He casts away humanity's sins as it were into the depth of the sea, (Micah 7:19). He removes their sins as far away from them and Him as the east is from the west, (Psalm 103:12). For the Lord is good, ready to forgive and plenteous in mercy unto all of them that call upon Him, (Ps 86:6). The remedy to human conflicts is provided by God in His word, for conflicts are solved by forgiveness and reconciliation, (Bauer, 2015).

New Testament View on Forgiveness

Two key Greek words *charizomai* and *aphiemi* (Neufeld, 1979) assist in revealing the importance and intensity of forgiveness in the New Testament.

Charizomai: means to remit, forgive, pardon, to give graciously (as a favor).

Aphiemi: to cancel, to remit, to pardon. Literally to let go/ to send away. When God forgives, He does so completely and without reserve, restoring the sinner to the same state of favor he/she formally enjoyed and removing all estrangement and alienation, (Neufeld, 1979). This is what

God exhibited through Christ on the cross of Calvary giving redemption to humanity after the invasion of sin.

Favoris granted out of kindness not from merit on the part of the receiver. The fact that a Christian has been the beneficiary of a full measure of divine pardon places him/her under the strictest commitment to forgive their fellow beings. The religion of Christ entails more than the forgiveness of sin; it means taking away our sins and filling the vacuum with the Holy Spirit. It means divine illumination, rejoicing in God because the heart is emptied of self and blessed with the abiding presence of Christ, (White, 1900).

Need for Spousal Accommodation

Dispute management at times calls for spouses to accommodate and forgive each other. Unfortunately, selfishness and arrogance obstruct others from taking the reconciliation lane. Each spouse has the discretion to either revenge or forgive the other and maintain or suffocate and destroy the relationship. Although some responsibilities can be entrusted to others, forgiveness should be initiated and effected by the one who has been hurt. This is beneficial to the offended one. Failure to forgive attracts gross repercussions to the affected party. Resentment is like drinking poison and then hoping it will kill your enemies (Mandela 2019).

The inability to forgive devastates the injured one more than it affects the wrongdoer. By pardoning the offender, the insulted set themselves free and retained peace of mind. They do not trade their serenity with resentment. Rather, they ignore what happens around, them but control what happens within them (Maxwell 2011). In simpler terms, it is within every individual's ability to accommodate words or engagements that build rather than those that are unhelpful. No one is capable of taking away one's inner peace unless the affected one decides to, (Takaindisa 2024), Spouses should never trade peace for hurt speech and bitterness. It calls for maturity on the part of the spouse to take responsibility for their actions and ask for genuine forgiveness. It is noble to admit one's error and apologize. But even though one fails to own up and say sorry, it is appropriate for the victim to pardon any how since it is the rapeutic to the offended. Like wise, the discretion of a person makes him/her slow to anger, and his/her glory is to overlook a transgression (Proverbs 19:11).

Choosing Forgiveness over Resentment

Choices are crucial in determining one's contentment or misery. Some people have learned that although retaliation looks attractive on the face of it, the situation leaves more pain than forgiveness does. Even as a selfish move, making the effort to forgive is more satisfying than revenging oneself. Being able to forgive is not a point of feebleness as many people think. It is an enormous strength (Machamire 2013). Forgiveness sets the insulted free. It unshackles the mind and promotes cheerfulness and self-determination. Spouses are never exonerated from self-enslavement merging as a result of cherishing an intolerant attitude. Lack of forgiveness is the major reason why most people remain in bondage to the past. Those in oppression are not liberated by what others do but by what they choose to believe, confess, renounce, and forgive (Anderson 2000). There is no justification why couples should esteem amerciless spirit. This kind of defiance numbs relationships and eventually overwhelms affection. It also negatively influences one's well-being, especially the pitiless one. On the contrary, engaging in what shapes relationships tends to bring more nourishing results and promotes fitness of the body and mind

since a merry heart does good like a medicine: but a broken spirit dries the bones, (Proverbs 17:22).

Biblical Reasons Why Christians Should Forgive

The following points and verses have a universal application that also embraces every believer including spouses. A high estimation and demonstration of these fundamental truths creates a conducive environment for love, forgiveness, and peace in marriage. Moreover, this has a crucial bearing in molding characters that resemble Christ. Understanding that in Jesus Christ we have redemption through His blood, the forgiveness of sins according to the riches of His grace, (Ephesians 1:7) soothes the mind and inspires every believer to herald the news in word and action.

Humanity has all been pardoned in Christ. God demonstrates His love toward us in that while we were sinners, Christ died for us, (Romans 5:8). We ought to exume new life as a new creation in Christ. If anyone is in Christ, he/she is a new creation, old things have passed away; behold, all things have become new, (2 Corinthians 5:17). As born-again believers, we have been assigned the ministry of reconciliation, (2 Corinthians 5:18). Christians have been called to intercede for their neighbors including their offenders too. As a chosen generation, a royal priesthood, a holy nation, His special people, spouses should be eager to proclaim the praises of Him who called them out of darkness into His marvelous light, (1 Peter 2:9). It is the duty of everyone to declare the praises of Him who called us from darkness (sin) into His marvelous light.

The church of God is esteemed to bear a high standard. As the elect of God, holy and beloved, they should put on tender mercies, kindness, humility, meekness, longsuffering bearing with one another and forgiving one another, if anyone has a complaint against one another; even as Christ forgave them, so they also must do, (Colosians 3:12-13). Forgiveness is an out growth of love and love fulfills the law. Believers are obliged to love the Lord their God with all their heart, soul, and mind. This is the first and great commandment. The second like it is to love your neighbor as yourself. On these two commandments hang all the Law and the Prophets, (Matthew 22:37-40).

Biblical Principles on Forgiveness

Biblical principles shape the character of believers When these values are adhered to, Christian behavior will attest to the character of Christ the lawgiver. Forgiveness sets all the highest values of love in motion, (Gud mundsson, 2007)

1. You will be forgiven as you forgive. How one forgives others determines that individual's level of pardon to be received from Jesus Christ. "And forgive us our debts, as we forgave our debtors," (Matt 6:12). Those who have injured us deserve our sympathy and love. Keeping resentment militates against mission and fan squabbles and commotion. In as much as people do wrong and expect pardon from God, couples should learn to be tolerant and forgive other's trespassers. The mandate of forgiveness is so central to our faith that to ignore it is to ignore our very salvation (Gudmundsson 2007). Every spouse is encouraged to sincerely consider the issue of forgiveness as a salvific matter. This is also reinforced by what Jesus said again in the same chapter, that if you forgive men their trespasses, your heavenly Father will also forgive you. But if you do not forgive men their trespasses, neither will your Father forgive your trespasses, (Matthew 6:14-15). He who cannot forgive others

breaks the bridge over which he must pass, (Hebert, 2016). The inability to forgive enslaves the offended and removes all the possibilities to cross to a blissful shore.

Retaliation sounds deplorable in marriage as it strains relationships and militates against peace and unity. The principle of forgiveness sustains humanity. There is no room for retaliation. If we practice an eye for an eye, a tooth for a tooth, soon the world will be blind and toothless, (Gandhi, 2019). What kind of a domain would that be with all blind and toothless occupants? It is consoling to appreciate that besides love, forgiveness is another world wide influence that sustains the world. The people who have been forgiven value an act of clemency very much and in turn pardon others as a clear validation of their affection for error-prone associates.

2. The prayer of an unforgiving person is unacceptable before God. If you bring your gift to the altar, and there remember that your brother has something against you, leave your gift there before the altar, and go your way. First, be reconciled to your brother, and then come and offer your gift, (Matthew 5:23-24). Judaism stresses reconciliation between individuals. God would not accept an outward offering if one had oppressed or mistreated one's neighbor and did not make it right. In the Old Testament God accepted only sacrifices offered with a pure heart toward Him and one's neighbor, (Keener, 2014). Broken relationships can hinder our relationship with God. Challenges that crop in with a friend, neighbor, or spouse need prompt settlement.
3. Forgiveness is limitless. The issue of how many times one should forgive is expounded by Jesus Christ when He alluded to the seventy times seven concept, (Matt 18:21-22). It is not feasible for an individual to sin against the other four hundred and ninety intervals a day. This only means that forgiveness is immeasurable. Spouses should not even keep a record of how many times they pardoned each other. Rather they should keep forgiving until it becomes a habit, (Bigger, 2015). It is at the height of ingratitude to pursue the way of sin when we know their repercussions and when the Lord has served us completely from them all, (Keough, A.G. (1978). Acts of kindness should be exhibited at all times. If couples would choose to trade bitterness with grace and forgiveness, marriages would be sweeter, relationships mended, harmony restored, God's ideals prominent, and societies pleasant.

Again, if spouses would emulate Jesus Christ the author of love and forgiveness by meditating on how they were forgiven while they were pondering about their lostness, they would shed the light of forgiveness to their surroundings. Additionally, they would be representatives of a love-deficient society and set an example for meaningful living. These values would be cherished by other spouses too and peace-loving communities would be recognized.

4. Forgiveness is for everyone, not for those who deserve it only. Pardon should be offered to every offender regardless of the intensity of the grievances. But if you do not forgive men their trespasses, neither will your Father forgive your trespasses, (Matthew 6:15). Failure to forgive others is denying our common ground as sinners in need of God's forgiveness. It is the duty of the offended to open wide the route toward reconciliation, (Hendriksen, 1977).
5. It is not difficult to forgive when there has been a confession. For instance, David's confession, "I acknowledged my sin to You and my iniquity have I not hidden. I will confess my transgressions to the Lord, and you forgave the iniquity of my sin," Psalm 32:35). However, even when the offender decides to be adamant, it is healthy for the offended just to let loose.

6. The liberty of knowing the truth. You shall know the truth and the truth shall set you free, (John 8:32). It is only the truth as it is in Jesus Christ that exonerates the grieved spouse from resentment and retaliation. Knowing the truth opens the door to sympathy, empathy, and forgiveness.
7. Forgiveness can elicit healing. When Jesus saw the faith of the men who brought the paralytic, He declared the forgiveness of sin to the invalid and ultimately healed him. (Luke 5:20). Practicing forgiveness with focused attention and effort, can dissipate the grievances that sap spousal energy and spoil happiness, (Bigger, 2015). The dissimilarity between effective and declining marriages is not the non
8. existence of conflict, but the ability of the couple to acknowledge the conflict and set about resolving it, (Trotman, 2005).

What Forgiveness is Not

The points underneath spell out what forgiveness is not.

1. Forgiveness is not denying the reality of the offense.
2. Is not ignoring the offense.
3. It is not downplaying the importance of what transpired.
4. Not excusing the offender.
5. Not holding the offender hostage- one should not be a perpetual debtor.

Confrontation

The offender should be approached with a redemptive intent. This should be done with controlled emotions without agitation. Confrontation can elicit repentance. It should be remembered that forgiveness is not a once-off event but a lifetime process.

Benefits of Forgiveness

The following constitute benefits of forgiveness to spouses who champion this cause and desire for healing and restoration:

1. Realization of peace of mind. Forgiveness is curative to the one who has been pained.
2. It promotes reconciliation and healing.
3. Forgiveness buttresses unity and restoration.
4. Matrimonial longevity and contentment.
5. Approbation is assured to the one who pardons others.

Recommendations

Marriage is a gift given to spouses by God from the beginning. It is the responsibility of every spouse to cherish and promote a forgiving spirit to perpetuate love and harmony in marriage. Forgiveness is a prerequisite for pardon from God and a constant ointment to curb spousal friction, erosion, and unnecessary squabbles. Forgiveness is not an occasional act. It is a permanent attitude, (Luther, 2023). Spouses are more miserable when they withdraw forgiveness and never happier than when they forgive each other.

CONCLUSION

God initiated the vital model for forgiveness to restore humanity from perdition and destruction. Spouses who forgive each other resample their Creator in promoting love, harmony, and life. They also demonstrate to their surroundings better methods of conflict management where love and respect for human dignity are esteemed. However, the self must be subdued. The soul must submit to God before it can be renewed in knowledge and true holiness, (White, 1892). There is joy and contentment where forgiveness thrives.

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