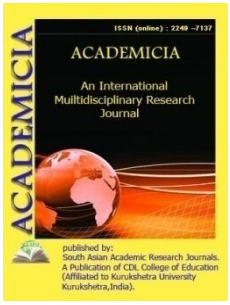
ACADEMICIA
An International Multidisciplinary Research Journal
(Double Blind Refereed & Peer Reviewed Journal)



DOI: 10.5958/2249-7137.2021.02376.4

AN OVERVIEW ON CARDIOVASCULAR DISEASE

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ABSTRACT

In the United Kingdom, cardiovascular disease is a major and increasing issue, accounting for almost one-third of all fatalities and causing considerable morbidity. It is also of special and urgent importance as emerging nations undergo lifestyle changes that bring new risk factors for cardiovascular disease, resulting in an increase in cardiovascular disease risk throughout the developing globe. Because the burden of cardiovascular disease may be reduced via deliberate risk reduction, primary prevention should be a top goal for all health policymakers. International recommendations agree on the significance of quitting smoking, losing weight, and exercising, however guidelines differ somewhat in their approach to hypertension and significantly in their approach to achieving an optimum lipid profile, which remains a controversial topic. Although formerly popular concepts like the polypill seem to be empty of in-vivo effectiveness, there are still areas of potential interest, such as the advantage of lowering serum urate and the utility of lowering homocysteine levels.

KEYWORDS: *Alcohol, Cardiovascular Disease, Diet, Exercise, Hypertension, Primary Prevention, Smoking, Uric Acid.*

INTRODUCTION

Coronary heart disease (CHD), cerebrovascular disease (CVD), peripheral arterial disease (PAD), rheumatic and congenital heart disorders, and venous thromboembolism are all examples of cardiovascular disease (CVD). CVD is responsible for 31% of global mortality, with CHD and cerebrovascular accident accounting for the bulk of this.Throughout England, CVD accounts for almost 34% of all fatalities, while in the European Union, the number is closer to 40%. As the incidence of CVD risk factors increases in formerly low-risk nations, the global rate of CVD is expected to climb. Currently, 80 percent of CVD deaths occur in developing countries, and CVD is projected to overtake infectious illness as the leading cause of death in most developing countries. CVD is not only a major cause of death, but it is also the leading cause of disability-adjusted life years worldwide.

The INTERHEART research investigated the impact of CVD risk factors such as dyslipidemia, smoking, hypertension, diabetes, and abdominal obesity, as well as the preventive benefits of fruits and vegetables intake and regular physical exercise. These risk variables were shown to be constant across all populations and socioeconomic levels examined, indicating the feasibility of globally consistent methods to CVD primary prevention[1]–[4].

Lifestyle Modifications:

Exercise:

Exercise is widely acknowledged to have a beneficial influence on the majority of health outcomes, and CVD is no exception. Even at extremely high levels of exercise, the risks of death and morbidity are low, and in the vast majority of cases, the benefits exceed the dangers.The National Institute for Health and Clinical Excellence (NICE) recommends 150 minutes of moderate intensity aerobic exercise or 75 minutes of intense aerobic activity each week. This may be characterized in terms of perceived changes in metabolic rate or in terms of relative metabolic rate changes. They also recommend doing muscle-strengthening exercises two or more times each week. 8 NICE only makes a consensus recommendation on the benefits of exercise for primary prevention, while the AHA and ESC guidelines provide class 1 A recommendations with almost similar prescriptions, based on a robust and consistent body of evidence.

Diet:

Diet is believed to have a major influence in CVD risk, but the body of data isn't conclusive, and the recommendations aren't unanimous either. The American Heart Association recommends the DASH diet, which is low in sugar and saturated fats and rich in vegetables, fruits, and whole grains. This has been proven to reduce blood pressure (BP) and low-density lipoprotein cholesterol (LDL-C), both of which are independent risk factors for CVD, but it does not claim to demonstrate a direct reduction in CVD risk[5], [6]

Smoking:

Smoking has long been recognized as a significant risk factor for cardiovascular disease.Smoking doubles the 10-year CVD death rate in Europe, according to 21 studies, and smoking is responsible for 30% of CVD mortality in the United States. Not only is it harmful, but it also has a dose-dependent impact with no known safe lower limit. Passive smoking is also

hazardous, since it raises CVD risk by 30% in the workplace, and UK public health measures such as smoking bans have been linked to a substantial reduction in CVD occurrences.

Stopping smoking is the most cost-effective strategy in CVD prevention, with some benefits seen as soon as a month after quitting. Regardless of the duration or severity of the smoking habit, all recommendations suggest quitting, with immediate and long-term advantages.Nicotine replacement treatment (NRT), buproprion (a norepinephrine dopamine reuptake inhibitor), and especially varenicline (a partial nicotine receptor agonist) are all widely prescribed pharmacologically. Both of the first two increase abstinence rates by 50–70%, whereas varenicline triple abstinence rates.

Weight:

BMI > 25 is a risk factor for CVD, with the lowest all-cause mortality observed at BMI 20–25. However, since BMI 20 is associated with higher all-cause mortality, reductions below this level are not usually advised. No particular weight-loss strategy is recommended in the recommendations, although maintaining a healthy weight is recommended to reduce CVD risk. BMI is a strong predictor of CVD risk, especially at higher levels, although there is solid evidence that visceral adiposity and liver fat are important risk factors at all levels of BMI. This helps to explain why the CVD risk profile in overweight people differs depending on where the adipose tissue is deposited. There is growing evidence that, in addition to lowering BMI, lowering waist circumference as a proxy for lowering visceral fat should be a key goal for lowering CVD risk.

Alcohol:

Given the recognized consequences of frequent and excessive alcohol use, alcohol consumption is a contentious topic. The problem arises because previous data indicated a J-shaped curve in terms of risk, with abstention linked to an increase in CVD compared to light drinkers, and low levels of alcohol use linked to a reduced risk of CHD. Aside from the known physiological effects of alcohol, such as interfering with platelet aggregation, data from the INTERHEART research seems to support these assertions, indicating lower risk for those who drink moderately or little[7], [8].

However, a recent large mendelian study by Holmes et al. found that decreases in alcohol consumption are linked with lower CVD risk throughout the alcohol intake spectrum within a genetic subgroup for alcohol dehydrogenase. This suggests that lowering alcohol consumption, especially for moderate drinkers, is linked to a lower risk of cardiovascular disease. The ESC recommendations state that there is no safe amount of alcohol consumption.

Medical Treatment:

- *Lipid-reduction therapy:*

Lipid-lowering interventions have long been utilized in primary prevention, and sub-fractions of blood lipids have been investigated to distinguish their separate impacts on the CVD risk profile.LDL-C is the most well-studied atherogenicsubfraction, with a significant link between LDL-C levels and CVD risk: lowering LDL-C by 1.0 mmol/L reduces CVD mortality and non-fatal MI risk by 20–25 percent.

Although it has been suggested that increased levels of high-density lipoprotein cholesterol (HDL-C) are cardio protective, the causal connection has yet to be established. The negative CVD profile of HDL-raising medications like torcetrapib, as well as a recent randomized randomization study showing no inherent advantage from naturally higher HDL-C levels, support this debate.

- *Anti-Hypertensive Therapies:*

Hypertension is a risk factor for the development of CVD on its own. Increasing blood pressure over 115/75 mmHg has a constant and exponential impact, with each 20 mmHg rise in systolic blood pressure (SBP) or a 10 mmHg increase in diastolic blood pressure (DBP) doubling the risk of a cardiovascular event.Previous meta-analyses have revealed a decrease in CVD risk over a broader range of blood pressures, indicating that there is no upper limit to the benefit of lowering blood pressure and no clear cut-off point beyond which additional reductions become detrimental.According to recent meta-analyses, the advantages of decreasing blood pressure from a baseline of 140 may be ambiguous or perhaps harmful. This data suggests that lowering blood pressure reduces mortality in hypertensives, but there is no evidence for early therapy in normotensive or pre-hypertensive individuals.

- *Glucose in the Blood:*

Glucose management is important in diabetics, but it has no statistically meaningful relationship with CVD risk in non-diabetics. On average, people with diabetes mellitus (DM) have a higher risk of cardiovascular disease (CVD), while those with impaired fasting glucose (IFG) have a higher risk of CVD and DM development. Serum glucose decrease has been found to lower CVD risk in diabetics, with the lowest risk occurring at normal blood sugar levels. More severe glucose reductions were harmful, with specific thiazolidinediones and dipeptidyl peptidase-4 inhibitors posing a particular CVD risk. In contrast to conventional treatment, recent studies with oral hypoglycaemics from the sodium/glucose transporter 2 inhibitor family, such as empagliflozin, have proven to decrease all-cause mortality by 32 percent, CVD death by 28 percent, and HF death by 35 percent. Although it seems that these advantages were mediated by cardio-renal haemodynamic effects rather than glucose reduction, the significant benefits shown would suggest that it be used early in diabetes patients. More evidence on these medicines is needed to update current recommendations.

- *Anti-platelet Therapy:*

Antiplatelet treatment is an important component of secondary prevention, however it should be avoided in individuals without comorbidities for primary prevention owing to a higher risk of bleeding and no evidence of CVD risk reduction. The counsel given to diabetic patients is contradictory: According to ESC recommendations, the danger of bleeding outweighs the advantages of aspiration treatment, while the American College of Chest Physicians recommends aspirin therapy in patients with DM and a 10% chance of a 10-year CVD event.

LITERATURE REVIEW

B. Reamy et al. discussed about prevention of cardiovascular disease[9]. In the United States and across the globe, cardiovascular disease is still the leading cause of mortality. Cardiovascular

disease prevention is a goal that can be achieved. According to a World Health Organization study published in 2010, lowering risk factors in young people and maintaining an optimal risk profile until age 50 may avoid 90% of atherosclerotic cardiovascular disease occurrences. Poor risk profiles are caused by a variety of factors, including misinformation and poor execution of established preventative measures, misguided concerns about medicines, and a misunderstanding of optimal food and lifestyle choices. Every patient needs a personalized cardiovascular disease preventive plan that includes methods for reducing modifiable cardiovascular risk factors.

S. Wiloughby et al. discussed about Platelets and Cardiovascular disease[10]. Platelets have an essential function in cardiovascular disease that is frequently overlooked. For example, greater pro-aggregatory stimuli or decreased anti-aggregatory chemicals may change the platelet's usual response, resulting in enhanced platelet activation/aggregation, which can occur in both chronic (e.g. stable angina pectoris) and acute cardiovascular disease situations (e.g. acute myocardial infarction). Furthermore, platelet hyper aggregability has been linked to coronary artery disease risk factors (e.g. smoking, hypertension, and hyper cholesterolaemia). Finally, the growing usefulness of anti-platelet treatments in the therapy of the aforementioned disease states underlines the critical role platelets play in cardiovascular disease etiology. The normal physiologic role of platelets in maintaining homeostasis, the pathophysiologic mechanisms that lead to platelet dysfunction in cardiovascular disease, and the role and advantages of anti-platelet treatments are all covered in this article.

DISCUSSION

Cardiovascular disease (CVD) is a general term for conditions affecting the heart or blood vessels. It's usually associated with a build-up of fatty deposits inside the arteries (atherosclerosis) and an increased risk of blood clots.Signs and symptoms can include: Chest pain, chest tightness, chest pressure and chest discomfort (angina) Shortness of breath. Pain, numbness, weakness or coldness in your legs or arms if the blood vessels in those parts of your body are narrowed. The most important behavioural risk factors of heart disease and stroke are unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol. The effects of behavioural risk factors may show up in individuals as raised blood pressure, raised blood glucose, raised blood lipids, and overweight and obesity.

CONCLUSION

The goal of CVD prevention is to decrease the incidence of major cardiovascular events, resulting in less early impairment and morbidity while also extending survival and quality of life. The American, European, and British recommendations all show a variety of strategies for lowering CVD risk profiles, with significant agreement on smoking and exercise, but minor differences in other variables. Pharmaceutical choices have evolved over time, while lifestyle recommendations have remained essentially constant.Primary prevention is evolving, and as more long-term evidence becomes available, we will have a better knowledge of how to decrease CVD risk. If we want to decrease the burden of a preventable illness, we must maintain our efforts.

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