Literature Review on Cardiovascular Diseases

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Introduction

Cardiovascular diseases (CVD) refer to heart diseases, hypertension, hardening of the arteries, congestive heart failure (CHF), as well as other diseases of the circulatory system. Statistics indicate that cardiovascular diseases are the number one killer in America, accounting for 40% of the total annual deaths (Thom *et al., 2006*). This translates to an average of 1 death after every 33 seconds in relation to cardiovascular diseases.

Other than mortality, the poor management of cardiovascular diseases leads to significant long-term disabilities arising from complications that are related heart attacks, heart failures, strokes, and end stage renal diseases (Grau *et al,* 2001). The costs arising from deaths and disabilities are enormous, with annual estimation of around $330 billion (Thom *et al., 2006*). In 2000 and 2001, the American Heart Association spent approximately $382 million on cardiovascular disease research, both public and professional support as well as in other community service programs (Thom *et al.*, 2006). Cardiovascular diseases are a serious health issue that requires urgent and great attention to help promote awareness and treatment both to the public and health care providers.

Progress in treating, managing, and preventing cardiovascular diseases can be advanced by closely examining the results of previous studies that are related to this disease and understand how to mitigate the already existing information with what needs to be done in future (Northcott, Marshall, & Hilari, 2016). The purpose of this article is to describe the results of

what is currently available in regard to cardiovascular diseases and compare the rigor of the studies, their findings, and posit directions for future research

Diagnosis of Cardiovascular Diseases

The available evidence in relation to the diagnosis of cardiovascular diseases involves the use of various tests that help in determining whether the condition that one suffers from is similar to the doctor's prescription. (Maron, Douglas, Graham, Nishimura, & Thompson, 2005). For proper diagnosis, the doctor has to perform a physical examination and collect data regarding one's personal and family medical history even before doing any other tests (Maron *et al.*, 2005). Other than blood tests and chest x-rays, currently, the tests used to diagnose heart diseases include the following:

- Electrocardiogram (ECG)-This method of diagnosis records electrical signals helping the doctor detect any irregularities in the patient's heart rhythm and structure (Mendis, Puska, & Norrving, 2011) and
- Holter Monitoring-This method of diagnosis employs the use of a holter monitor which is a portable device worn to record a continuous Electrocardiogram for a period of between 24 to 72 hours. The device helps in the detection of irregularities in the heart rhythm that are not found during a regular electrocardiogram exam (Mendis *et al.,* 2011)

With these as the top two methods of cardiovascular diseases diagnosis, research shows that both invasive and noninvasive methods of diagnosis do exist for the purpose of cardiovascular diseases diagnosis, and for this reason, one is able to choose the most suitable method in relation

to their condition (Mendis *et al.,* 2011). Information on how more noninvasive methods can be employed has been left, and more research needs to be conducted in this area to help people get help with minimal interference with their normal system (Mendis *et al.,* 2011).

Increased mortality rate

Globally, death attributed to cardiovascular disease is on the rise. This rise is associated with socio-economic changes in society (Mendis *et al.,* 2011). These changes have encouraged risk factors among the population. Aging population equally leads to the rise in deaths due to cardiovascular disease accounting to 55 % (Thom *et al.*, 2006). While number of deaths caused by strokes, heart attacks, and most circulatory diseases is rising, rheumatic heart disease also has a death rate increase (Mendis *et al.,* 2011). Compared with the increase in world population, it is evident that the preventive measures to control CVD are bearing fruit (Thom *et al.*, 2006).

Pathophysiology

Over the last few years, jobs have been characterized by an overall reduction in the involvement of individuals in physical activities (Libby & Theroux, 2005). This reduction is, however, only slight among the groups that are exposed to such conditions and the increase in the demand for jobs (Tekkeşin *et al.*, 2016). Psychological factors at work places are in most cases linked to individual, organizational, and collective aspects of the organizational activity (Libby *et al*, 2005). One's work environment is likely to have an effect on their health and particularly if the environment involve psychological demands and poor labor-management relations (Fatema, Zwar, Milton, Ali, & Rahman, 2016). Several theoretical models do indicate

that a relationship exists between strenuous workplaces and the contraction of cardiovascular diseases (Fatema *et al.*, 2016).

The people who are involved in works that is physically demanding are less likely to suffer from cardiovascular diseases, compared to those whose jobs involve minimal activity (Mendis *et al.,* 2011). Different models show that psychosocial factors at work have a link between them, cardiovascular morbidity, mortality, and sometimes predictive roles (Fatema *et al.*, 2016). High blood pressure is one of the recognized cardiovascular risk factors which has no threshold effect in its association with cardiovascular morbidity and mortality. Age, lack of physical activity, obesity, and alcohol consumption are the top physiological factors associated with cardiovascular diseases (Northcott *et al.*, 2016).

Treatment

Up to 90% of cardiovascular diseases are preventable if the risk factors are avoided (Thom *et al., 2006*). There is a very close relationship between cardiovascular diseases and tobacco consumption, being overweight, unhealthy diet, and lack of exercise (Northcott *et al.*, 2016). Cholesterol accumulation thickens blood vessels, increasing the pressure with which the heart pumps (Harumi *et al,* 2016). Available treatment for both men and women is the same. The advocated treatment by many scholars includes changes in one's lifestyle (Harumi *et al.,* 2016), the use of medicine, medical as well as surgical procedures, and cardiac rehabilitation. Harumi (2016) in his work argues that the goals for cardiovascular disease treatment are for purposes of relieving the symptoms, reducing the risk factors in an effort to either slow, stop, or reverse

plaque build-up, lowering the risk of blood clot formation as this can end up causing heart attacks, and preventing complications arising from coronary heart diseases.

Many scientists argue that changing one's lifestyle by quitting smoking of tobacco, following healthy diet plans, being physically active, also maintaining a healthy body weight, as well as proper stress and depression management are some of cardiovascular diseases preventive measures (Tekkeşin *et al.*, 2016). If lifestyle changes are not enough to curb the situation, patients can use medicine as well.

The medicine helps reduce the heart's workload, relieving coronary heart diseases and the risk of sudden death (Rydén *et al.*, 2007). Relevant drugs help the low-density lipoproteins cholesterol levels, the body blood pressure, and other coronary heart disease risk factors. They also prevent blood clots. Drugs prevent or delay the need for surgery (Fatema *et al.*, 2016). Menopausal hormone therapy, surgery, and procedures, as well as percutaneous coronary interventions, can also be possible solutions to cardiovascular diseases treatment (Rydén *et al.*, 2007).

Diet

Based on evidence, low fat diets have no effects on cardiovascular diseases. A reduction in the consumption of additives such as sodium and other industrial trans fats should be avoided (Mendis *et al.,* 2011). Rather than just focusing on individual behavioral counseling, reaching a large number of people is more recommendable (Harumi *et al.,* 2016). This pattern permits greater flexibility and personal preferences in diet choices. Other relevant diets that can be

adopted involve low carbohydrate diets and other paleo diets. These two diets represent the total carbohydrates and ultra-processed foods that are found in modern diets (Harumi *et al.,* 2016).

Stroke

A stroke is a condition that occurs when the brain blood supply is interrupted or reduced, depriving the brain of oxygen and nutrients which may cause blood cells to die (Grau *et al.,* 2001). The early signs of stroke include having trouble when speaking or having difficulties understanding. One may experience confusion, have slurs or at times experience difficulties understanding speech. Paralysis and numbness of the face, arm, and leg are also signs of stroke. (Grau *et al.,* 2001). Trouble with seeing either in one eye or both is also a sign of stroke. (Grau *et al.,* 2001). Stroke also manifests itself when the affected person experiences headaches and having trouble while walking (Northcott *et al.*, 2016).

The connection between stroke and cardiovascular diseases is that stroke may be caused by blocked arteries or by the leading or bursting of a blood vessel (Grau *et al,* 2001). Several types of stroke exist, and these include ischemic stroke that occurs when brain arteries become blocked or narrowed. This reduces blood flow to the brain reduce slowly (Northcott *et al.*, 2016).

The most common strokes include thrombotic stroke and embolic stroke (Northcott *et al.*, 2016). Thrombotic stroke occurs as a result of a blood clot forming in the arteries supplying the brain with blood. Embolic stroke, on the other hand, occurs when blood clots other debris form away from the brain, most commonly in the heart, and then gets swept through the blood stream

and ends up lodging in narrower brain arteries (Northcott *et al.*, 2016). This type of clot is referred to as embolus.

On the other hand antihemorrhagic stroke occurs when a blood vessels in the brain leaks or ruptures.The causes of the hemorrhages may be uncontrolled high blood pressure, overtreatment with coagulants, or weak spots that occurs in blood vessel walls (Grau *et al.,* 2001).

Risk Factors

Risk factors are considered the leading cause of a majority cardiovascular disease (Mendis *et al.,* 2011). Most of these factors can be modified or treated, such as obesity, cholesterol, lack of physical, diabetes, and high blood pressure and tobacco use (Fatema *et al.*, 2016). However, some risk factors are non-modifiable: these include family history, gender, and age. Risk of stroke is, however, similar for women and men (Mendis *et al.,* 2011). The risk factors of stroke include being overweight, obesity, physical inactivity, heavy or binge drinking, and use of illicit drugs such as cocaine and methamphetamines (Grau *et al.,* 2001).

Conclusion

Although the prevalence of cardiovascular disease is increasing, effective analysis of the same in the scientific literature is uncommon, especially on diagnosis and treatment. However, the available results do suggest that a variety of interventions do demonstrate some effectiveness in improving the outcomes of the diseases that were subject to the above review. The types of interventions that demonstrated effectiveness include proper diet, Physical exercise, avoiding drug and substance abuse, and some specific medicinal and surgical procedures.

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