A literature review on the risk factors associated with heart disease and heart attack

**Abstract**

*This literature review aims to assess the relationship between lung and breathing problems that affect daily activity and ever having a heart attack. The covariates of interest are if the subject has diabetes and if the subject abuses alcohol. It will look at these predicting variables and how closely they relate to the outcome – ever having a heart attack. These additional covariates will be studied to see if there are significant affects of the covariates and the relationship between lung and breathing problems and heart attack. Lastly, we hypothesized that additional covariates, alcohol abuse and diabetes, will directly affect and exaggerate the relationship between lung and breathing problems that affect daily activity predicting having a heart attack.*

**Disclaimer**

The purpose of the writing is to fulfill course requirements for BB H 411W and to stand as a personal writing sample, but the findings should not be treated as generalizable research.

Heart disease is the number one cause of mortality, accounting for 610,000 people annually. For every 4 people in your life, one of them will die of heart disease. It is scary how closely this disease is to many people. Each year, 735,000 Americans will have had a heart attack. These numbers are readily increasing in the United States due to many factors (Mozaffarian et al. 2015). There are a variable number of risk factors that result in a person to develop heart disease and eventually have a heart attack. Specifically, this review will focus on diabetes and alcohol abuse as risk factors that contribute to heart attacks.

Overall, cardiovascular diseases are common causes of death throughout the world. Not only does it affect a person’s health, but their overall quality of life and wellbeing (Durmaz, et al. 2009). Quality of life is affected in many ways, but problems with daily activities in the patients due to their health proved to be a major risk factor for a lower quality of life (Durmaz, et al. 2009). This overview provides insight on how deeply heart disease affects a patient’s life, which makes this research all the more meaningful. Further research on quality of life can provide ideas on target interventions on the most vulnerable quality of life patients.

Lung function affects heart disease and the association between the two factors. Essentially, reduced lung function is a significant predictor of cardiovascular disease as well as deaths related to heart disease (Yeh, et al. 2014). This community based study surveyed men and women to find that lower lung function predict congestive heart failure. Overall, these significant results can be used to test lung functioning and use it to diagnose cardiovascular disease at earlier stages.

Another specific risk factor relating to cardiovascular disease is diabetes. Diabetes, specifically type 2, is closely related to obesity. It is well known that obesity as well as diabetes both influences the development of heart disease. In one specific study, it found that of the deaths related to cardiovascular disease, 52.3% of them were also related to something diabetes related as well (Rolley, et al. 2008). This study also cited that in the United States, 30-70% of people who are diagnosed with diabetes die of a cardiac related disease (Gu et al 1998). These statistics reveal that diabetes is significantly and closely related to cardiac mortality.

Not only does diabetes relate to obesity in the body, it also interferes with varying insulin levels in the body. These mechanisms result in the development of cardiovascular disease. This study looked at men who were free of cardiovascular disease and diabetes at baseline. Of the 970 men in the study, 164 of the subjects throughout follow up tests had a heart attack in the 22-year span study. At the first five-year follow up, researchers found that the subjects with the highest levels of insulin were three times more likely to have a heart attack when compared to those with lower levels (Anonymous, 1998). This is important due to the fact that high levels of insulin in the blood are a condition that precedes diabetes. This is significant because high levels of insulin in the blood is directly linked to diabetes. This link shows that even pre-diabetic symptoms are direct predictors to cardiovascular mortality rates.

Relating to the previous study, this following study discusses the mechanisms of the metabolic pathways involved in diabetes and cardiovascular health. Metabolic abnormalities from obesity and insulin resistance are predictors to endothelial dysfunction and plaque formation in the arteries – both are factors involved in cardiovascular disease (Caballero 2012). This study examined clinical research involved in insulin resistance in the body. It provided more deeper, specific insight on the pathways and mechanisms involved in cardiovascular disease. It discussed that the underlying factor in type 2 diabetes and cardiovascular health is obesity. The cause-effect relationship between obesity leading to insulin resistance in the body causes cell dysfunction due to fat build up in the body (Caballero 2012). This build up and inflammation in the body directly leads to cardiovascular disease.

Lastly, finishing up the understanding of how diabetes influences cardiovascular disease, this study examines sex differences in heart disease. This cohort study performed oral glucose tolerance tests to study insulin resistance (Malik et al. 2013). Relating to the previous study, the mechanism of insulin resistance is a direct predictor to diabetes and heart disease. After examining the glucose levels in the participants and comparing the sex differences; it found that those with diabetes, a major risk factor for heart disease, had a 1.9 increase in men and a 3.3 increase in women for having a fatal ischemic heart disease (Malik et al. 2013). In conclusion, the extensive literature describes the diabetes as a major risk factor associated with cardiovascular disease, and the mechanisms involved in the metabolic pathways between the two.

There is differing literature on the subject of alcohol consumption and cardiovascular health. While some literature suggest that moderate alcohol consumption can be beneficial, other literature points to the fact that alcohol abuse is extremely detrimental to one’s health. The first literature describes differences in biomarkers associated in hearth health. The main finding was that alcohol consumption significantly changed levels of HDL and LDL cholesterol in the body (Brien et al. 2011). Alcohol abuse changed the levels of high-density lipoprotein cholesterol in the body, an important factor in cardiovascular health. This cholesterol is the “good” cholesterol, and alcohol abuse decreases this, resulting in poorer cardiac health (Brien et al. 2011). Although alcohol is known to increase HDL levels, the over-consumption of alcohol has a reverse effect.

Expanding on the fact that alcohol abuse negatively affects one’s heart, this following study looked deeper into the effects of alcohol on the heart. Specifically, it found that alcohol consumption is directly related to the increase expression of the *c-myc* gene. This gene promotes cell death in the body that can specifically cause heart cells to die leading to increasing heart damage (Walker et al. 2013). Overall, this study on rat subjects found that excessive alcohol consumption results in cardiac muscle death, which is directly related to a heart attack.

On the other hand, moderate alcohol consumption can have protective effects on the heart. As stated before, moderate alcohol consumption can increase HDL levels, which promote heart health. A specific study on 192,067 women and 74,919 men without heart disease or diabetes found that moderate alcohol intake was associated with a lower risk for a heart attack (Movva et al. 2013). Specifically, it found that maintain an alcohol intake bwlowe 46 grams per day in men and 23 grams per day in women minimizes the risk of death relating to a heart attack (Movva et al. 2013). This was an extensive study, but the main findings found that metabolic factors involved in moderate alcohol consumption have protective effects on the heart.

Finally, the last study is a prospective cohort study on four U.S. communities. It studied 4,410 adults aged 65 and older. All of the participants are free of any signs of cardiovascular disease at baseline. This study grouped participants in weekly consumption ranging from none, less than one, one to six, seven to 13 and 14 or more drinks weekly (Mukamal et al. 2005). This study found that those who consumed a moderate amount of alcohol (about two drinks per day), had the lowest risk of coronary heart disease among all participants, even those who abstained from any alcohol consumption. This study shows the link that the inverse relationship likely protects the heart, especially in levels of HDL (Mukamal et al. 2005). Ultimately, this study provides further specific evidence of the protective effects of alcohol; however, researchers do not recommend moderate drinking as a way to prevent heart disease.

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