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RESEARCH DISSERTATION

Lifestyle Behaviours, Psychological Wellbeing and Cardiovascular Disease in Women Executives and Senior Management

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Declaration

I, Rhiannon Crowhurst, hereby declare that this dissertation is my own unaided work and has neither been submitted to any other University, nor for the purpose of any other degree.

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Rhiannon Crowhurst Date

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Abstract

This study investigated whether the lifestyle behaviours and psychological well-being of women executives and managers predicted their ten-year risk of developing cardiovascular disease. The sample of South African women executives and managers work in a variety of industries in the cities of Johannesburg, Durban and Cape Town. The study sought to determine the predictability of the women executives and managers' risk of developing cardiovascular disease through examining their level of alcohol consumption, level of physical exercise and the nutritional and dietary choices that they made as well as their level of depression, anxiety and stress. The data was gathered through an executive health and wellness programme and logistic regression and Chi-squared tests of association were used in conducting the analyses. The results suggested that the level of alcohol consumption and the nutritional and dietary choices made were predictive of the individual's ten-year risk of developing cardiovascular disease. Additionally, the level of anxiety was found to be associated with the risk of developing cardiovascular disease. The results suggest that both individuals and organisations should prioritise the changing of unhealthy lifestyle behaviours, specifically excessive alcohol consumption and daily dietary choices, in order to lower their risk of developing cardiovascular disease.

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Chapter one: Literature Review

1.1 Introduction

This research report focuses on the influence that lifestyle factors and psychological well-being have on the risk that women in positions of senior management have of developing cardiovascular diseases. Lifestyle behaviours, in particular, are an area of health that may be altered by the individual as these are to a large degree controlled by the decisions that individuals make. These lifestyle behaviours may be influenced by the work that an individual does on a daily basis (Sparks, Cooper, Fried & Shirom, 1997). Furthermore, an individual's psychological well-being may also be influenced by factors in the work environment, work tasks and work culture (Sultan, 2010). Thus by investigating the risk of cardiovascular disease as predicted by these two aspects may provide companies and individuals with valuable information about how to lower risk and make health improvements that benefit both the individual and the organisation. The research recognises that the individuals in question are female managers in South Africa and that their lifestyle choices may be influenced by a multitude of factors pertaining to their gendered positions in the workplace, in their household and within the greater social context that they live in. The focus on women in positions of senior management and executives is of particular relevance as the literature on their health is lacking in comparison to their male counterparts. There are also more women entering into positions in upper management, and as such, their particular well-being and needs are of importance.

1.2 Definition of Cardiovascular Disease

The World Health Organization defines cardiovascular diseases as "disorders of the heart and blood vessels" (WHO, 2015j). Cardiovascular disease thus includes diseases such as rheumatic heart disease, coronary heart disease, congenital heart disease and cerebrovascular disease (Steyn, 2007; WHO, 2015j). This research will investigate the risk that an individual has of developing cardiovascular disease, or their chances of developing cardiovascular disease according to the presence or absence of certain risk factors.

1.3 The Difficulties associated with Cardiovascular Disease

The WHO (2015j) estimates that seventeen and a half million people die each year of a cardiovascular related disease, making it the top cause of death globally. These deaths may be costly to the economy as individuals who are working and contributing toward the economy are thus removed from the system (Hope, 1997). Cardiovascular disease also places a heavy burden on a country's health system and infrastructure (WHO, 2015j). The burden on the economy is substantial as many patients require chronic care (Thom *et al*., 2006 as cited in Romero, Morris & Pikula, 2008). Individuals with cardiovascular disease may require constant care and nursing as they may become physically or cognitively impaired by the cardiovascular disease. They also frequently occupy hospital time and resources, which limits the number of other patients that the hospitals may focus on and assist. In the instances where they may return to work and are not severely affected by the disease, they may have more frequent hospital visits and as such, their work hours may be interrupted or less productive due to the interruption of seeking medical assistance at the hospital (Mitchell & Bates, 2011). Furthermore, statistics show that 43% of women over the age of 39 who have coronary heart disease will die within five years of experiencing a myocardial infarction (Bassuk & Manson, 2008).

Coronary artery disease is a chronic disease that requires monitoring and ongoing treatment in order to prevent any complications that could result in heart failure. This may disrupt their working hours and productivity as well as put a burden on the health care system. According to Lee (2010), an individual with coronary artery disease may experience reduced quality of life and oftentimes the individual suffering from coronary artery disease may experience depression. The depression rates among individuals with coronary artery disease also impacts on the heath system dramatically as they require more hospital visits and the utilisation of hospital facilities (Lee, 2010).

Cardiovascular disease also affects the individual's quality of life (Juenger, Schellberg, Kraemer, Haunstetter, Zugck, Hertzog & Haass, 2002; Stroke.org, 2015). Cardiovascular disease may affect the life of the individual quite dramatically as they may no longer be able to care for themselves, they may be physically impaired and they may be emotionally affected such as through feeling nervous about the future, about their health, about their abilities, and about how others may treat them as a result of the disease (Stroke.org, 2015). Their behaviour may change, they may have difficulties understanding speech, they may feel frustrated at their inability to be independent, they may experience impairment of their memory and cognitive

abilities and they may have problems communicating due to paralysis (Stroke.org, 2015). Further complications include issues to do with movement and balance, vision, control over the bladder and bowels as well as a feeling of excessive tiredness (Stroke.org, 2015).

In other instances, such as surviving a heart attack, the individual may be able to return to a normal life not long after the attack, however they could also experience feelings of anxiety due to concerns about having another heart attack as well as depression (National Health Services, 2015). In recovery, an individual will need to make many changes to their lifestyle in order to lessen their chances of further complications. The individual could experience angina when they exert themselves and as such, experience restrictions on physical activities (National Health Services, 2015). They could also experience a lower quality of life because they may perceive life as unfair and they may feel helpless and worried about their future (National Health Services, 2015; Stroke.org, 2015).

Furthermore, the individual may experience themselves as a burden on their family and friends (Overturf Johnson, Sulmasy & Nolan, 2007). The family may not feel the same way but caring for someone full time can be an exhausting and draining experience that may cause feelings of resentment. This also means that the individual may become a financial burden on their relatives, their organisations or on the economy as they require constant care.

It is clear that cardiovascular disease may have life-changing consequences for the individual and their loved ones as well as on the economy and health system. According to the data collected by the World Health Organization, the death rate due to cardiovascular disease for South African women was 260 women per 100 000 in 2012 (WHO, 2015j). In this way it is important to understand the risk factors of the development of cardiovascular disease in order to attempt to prevent the development of this disease. Cardiovascular disease is particularly important in research as, for the most part, it can be prevented through addressing lifestyle factors and behaviours. These risk factors include tobacco use, obesity, poor diet, sedentary or low levels of physical activity as well as excessive alcohol use (WHO, 2015j). The risk factors may cause increased blood pressure, increased glucose levels as well as increased weight or obesity (WHO, 2015j). Cardiovascular disease can for the most part be prevented through a change in behaviours regarding diet, exercise, smoking habits and drinking habits. Lifestyle behaviours may also be associated with the individual's psychological well-being as their mental health may influence their decisions they make as well as their social environment on a daily basis (Mental Health.gov, 2012).

In this study, the risk of cardiovascular disease is categorized as Low to Moderate risk, Moderate Risk, High Risk, Very High Risk. This risk profile was established according to the National Cholesterol Education Program guidelines (National Institutes of Health, 2005) which comprise of the individual's risk score and the presence of certain risk factors. This will be explained further in the Methodology Section below.

The Framingham risk equation was developed according to the findings of the Framingham studies. The Framingham studies started in 1948 in the American town of Framingham (Framingham Heart Study.org, 2015). The study recruited 5209 individuals between the ages of 30 and 62 in order to identify any common characteristics associated with the development of cardiovascular disease (Framingham Heart Study.org, 2015). The participants were followed for several years, and over time their children and spouses were included in the study (Framingham Heart Study.org, 2015). Later, a separate study was done to be more inclusive of the diverse population of people in Framingham (Framingham Heart Study.org, 2015). The study identified "high blood pressure, high blood cholesterol, smoking, obesity, diabetes, and physical inactivity" as risk factors for developing cardiovascular disease (Framingham Heart Study.org, 2015). Related factors such as the age of the individual as well as their gender are also taken into consideration (Framingham Heart Study.org, 2015). Numerous studies have investigated the link between these variables and the risk of cardiovascular disease, these are discussed below.

1.4 Research on Markers of Cardiovascular Disease

Cigarette smoking

Smoking is the inhalation and exhalation of the smoke made by burning tobacco in the form of cigarettes, cigars or pipes (Oxford Dictionary, 2015). According to the statistics found by the World Health Organisation in 2009, (WHO, 2016k) 3% of women in Africa are smokers.

Cigarette smoking has long been known to have adverse effects on physiological health (Haveman-Nies, de Groot & van Staveren, 2003; Marinho, Blay, Andreoli & Gastal, 2008; WHO, 2014). Smoking has been linked to coronary heart disease (Hata *et al*., 2011; Huxley & Woodward, 2011; Koplan & Satcher, 2002), strokes (Shah & Cole, 2010; World Health Organization, 2007 as cited in Marinho *et al*., 2008) and diabetes (Marinho *et al*., 2008). Smoking has also been shown to cause diseases such as chronic bronchitis, emphysema and arterial damage (Tey, Pallavi & Joshi, 2014). Furthermore, smoking has also been identified as

a risk factor for cardiovascular disease (Myint, Sinha, Luben, Bingham, Wareham & Khaw, 2008; Woodward, Huxley, Lam, Barzi, Lawes & Ueshima, 2005; National Institute of Mental Health, 2002).

Smoking may put strain on the heart as the nicotine narrows the coronary arteries (Sandmaier, 2005). This may increase blood pressure (Sandmaier, 2005). Furthermore, smoking can reduce the oxygen levels in the blood (Sandmaier, 2005). This means there is less oxygen available for the heart, and if the heart does not receive oxygen rich blood, the individual may experience chest pain (Sandmaier, 2005). This is one of the symptoms indicative of a heart attack (Sandmaier, 2005).

A study by Shields and Wilkins (2013) on smoking and heart disease found that individuals who were classified as current smokers were more than 50% more likely to be diagnosed with heart disease or to pass away as a result of heart disease. Quitting smoking has been found to lower the risk associated with developing heart disease but it is not certain how many years an individual needs to have stopped smoking for in order to reach the same level of heart disease risk as that of a non-smoker (Shields & Wilkins, 2013).

The risk of developing cardiovascular disease as a result of cigarette smoking may also be further compounded by the gender and age of the individual. A systematic review of the literature on the effect of gender on the relationship between smoking and lung cancer showed that women smokers have a 25% higher relative risk of coronary heart disease than men who smoke (Huxley & Woodward, 2011). Smoking was also found to raise the risk of developing coronary heart disease amongst middle-aged individuals (Baba *et al*., 2006).

In South Africa, a study showed that 16.2% of 25 532 individuals were daily smokers (Human Sciences Research Council, 2013). This indicates that in South Africa, cigarette smoking is a possible lifestyle factor that could impact negatively on the health of the employees and contribute to their risk of developing cardiovascular disease.

High systolic blood pressure

A measure of an individual's blood pressure is a measure of the pressure of the blood in the arteries as caused by the contraction of the heart (MedicineNet, 2015; National Institute on Alcohol Abuse and Alcoholism, 2010). When a patient has high blood pressure, the heart needs to work harder to ensure that every heartbeat pumps blood around the body. This creates excessive pressure within the blood vessels which may cause them to become damaged

(Novartis Pharmaceuticals, 2005). This can cause damage to the organs of the body (Novartis Pharmaceuticals, 2005). High blood pressure is a risk factor for the development of cardiovascular disease (Myint *et al*., 2008; National Institute of Mental Health, 2002). High blood pressure is also linked with a higher risk of diabetes type II (Ta, Nguyen, Nguyen, Campbell & Nguyen, 2010), kidney disease, stroke, heart attack and problems with vision (Novartis Pharmaceuticals, 2005).

A study conducted by Yasar, Ko, Nothelle, Mielke and Carlson (2011) on women over a nine-year period showed that increased systolic blood pressure or pulse pressure increased the risk for cognitive impairment later in life. This indicates that the risk factors related to cardiovascular disease may also cause other symptoms that may be debilitating. These symptoms may also cause an individual psychological suffering as they feel frustrated with the symptoms and the inabilities they may cause. They may also further hamper the individual at work and as a result their performance and drive may decline.

High blood pressure may be hereditary in some instances (National Heart, Lung and Blood Institute, 2015). Alterations in normal body functioning caused by either the individual's genes or by their environment, may cause high blood pressure. Whilst the changes by the individual's genes cannot be controlled, the changes caused by the environment are for the most part, controllable and modifiable (National Heart, Lung and Blood Institute, 2015). Lifestyle habits may cause the individual to develop high blood pressure. These include poor dietary choices, especially a high intake of sodium, physical inactivity, and excessive drinking patterns. Furthermore, obesity or being overweight may also contribute toward developing high blood pressure (National Heart, Lung and Blood Institute, 2015). An individual's weight is also affected by the lifestyle behaviours such as poor diet, inadequate exercise, heavy drinking and smoking. Further factors that put an individual at risk of developing high blood pressure include the individual's age, their ethnicity, their gender and stress (National Heart, Lung and Blood Institute, 2015).

High cholesterol levels

Cholesterol levels refers to the levels of the two types of lipoproteins that carry cholesterol around the body (National Heart, Lung and Blood Institute, 2012). Having high cholesterol refers to the imbalance of these lipoproteins which results in too much cholesterol in the bloodstream, which, in and of itself, does not have any symptoms (National Heart, Lung and Blood Institute, 2012). High blood cholesterol has however been linked to coronary heart

disease (National Heart, Lung and Blood Institute, 2012). In a study by Lackland (as cited in Cardiovascular Week, 2005), it was found that individuals with both high cholesterol and high blood pressure were at greater risk of stroke and heart disease. Hypercholesterolemia (excessive cholesterol in the blood stream) and hypertension are both risk factors for cardiovascular disease (National Institute of Mental Health, 2002; Ortega, Palencia, López-Sobaler, 2006; van Wyk *et al*., 2005).

High cholesterol may be caused by a multitude of factors related to our daily lifestyles (Heart UK, 2015; National Health Services A, 2015). These factors affect the cholesterol in our bodies by increasing the levels or by causing an imbalanced ratio of good cholesterol to bad cholesterol. Obesity and being overweight may cause high cholesterol (National Health Services A, 2015). Furthermore, poor dietary habits such as a diet that is particularly high in saturated fat and a lack of physical activity may increase one's cholesterol level and/or act as a compounding factor for those who are overweight. A large waist circumference could also be an indicator for high cholesterol levels (Seidell, Perusse, Despres, & Bouchard, 2001).

Cigarette smoking is a further risk factor that may cause an imbalance between good and bad cholesterol. Smoking minimizes the amount of HDL or good cholesterol in the bloodstream (Batić -Mujanović, Zildzić. Beganlić & Kusljugić, 2006). It also increases an individual's heart rate and reduces the amount of oxygen in the bloodstream. Certain medical conditions may also play a role in the development of high cholesterol. These include diabetes type two, kidney or liver problems as well as an underactive thyroid gland (National Health Services A, 2015). Finally, antidepressants have also been shown to possibly increase cholesterol levels (Heart UK, 2015).

Diabetes

Stroke and heart disease are the leading causes of death amongst diabetic individuals (National Institute of Diabetes and Digestive and Kidney Diseases, 2013). The 2014 World Health Statistics indicate that in 2012 approximately 1.5 million deaths were caused by diabetes (WHO, 2015h). Diabetes is a metabolism disorder and in individuals who do not have diabetes, the pancreas makes the correct amount of insulin to take the glucose into the cells from the blood. In individuals who have diabetes, the pancreas does not make enough insulin or the cells do not use the insulin as they should (National Institute of Diabetes and Digestive and Kidney Diseases, 2013). As a result, high levels of glucose may build up in the bloodstream. This is harmful to the body as the high glucose levels may damage blood vessels and nerves, which

may impact on the heart (National Institute of Diabetes and Digestive and Kidney Diseases, 2013). Type 2 Diabetes may be caused and compounded by lifestyle behaviours such as a diet high in sugar and saturated fats, inadequate exercise and smoking (National Diabetes Education Program, 2007).

Diabetes is a major risk factor for cardiovascular disease (National Diabetes Education Program, 2007). According to the National Diabetes Education Program (2007), approximately 65% of individuals with diabetes experience fatal strokes or die from heart disease. Individuals with diabetes are thus at greater risk of developing heart disease or experiencing a stroke (National Institute of Diabetes and Digestive and Kidney Diseases, 2013). Diabetes is a risk factor for cardiovascular disease, especially amongst women (Bassuk & Manson, 2008; Myint *et al*., 2008). Women who are in their child-bearing years are believed to have a protective factor due to their hormones (PennState Health, 2016), but diabetic women are at high risk, no matter their age, as the risk associated with diabetes nullifies the protective factor.

Diabetic individuals often have other risk factors which act as further risk factors for heart disease. These include abdominal obesity, irregular blood fat levels, high blood pressure and being a smoker (National Diabetes Education Program, 2007; National Institute of Diabetes and Digestive and Kidney Diseases, 2013). The National Diabetes Statistics Report (Centers for Disease Control and Prevention, 2014) of the United States found that incidences of hospitalisation due to stroke in 2010 were 1.5 times higher among diabetic individuals compared to those who did not have diagnosed diabetes. They also found that hospitalization due to heart attack in 2010 was 1.8 times higher amongst patients with diagnosed diabetes than those without diabetes (Centers for Disease Control and Prevention, 2014).

According to the International Diabetes Federation (2015), "there were 2.7 million cases of diabetes in South Africa in 2014". The prevalence of diabetes in South Africa in individuals in their adult years (in the range from 20 years old to 79 years old) is 8.4% (International Diabetes Federation, 2015).

Age

According to North and Sinclair (2012), cardiovascular disease is the leading cause of death amongst individuals from the age of sixty-five and above. Aging affects the body in many unfavourable ways, one of which being the effect upon the heart (North & Sinclair, 2012). The cardiovascular system enables all of the body's organs to be nourished with oxygenated blood in order to continue functioning correctly (North & Sinclair, 2012). Aging affects the

cardiovascular tissues through a range of debilitating changes to the structure as well as the functioning of the various cardiovascular organs such as hypertrophy, increased arterial stiffness, and altered functioning of the left ventricle to mention a few (North & Sinclair, 2012). The effects age has may also create further risk factors, for example: Increased arterial stiffness may cause an increase in systolic blood pressure, which is a further risk factor for CVD (North & Sinclair, 2012). An individual in this age group may develop cardiovascular disease and the effects that age has on the cardiovascular system may further compound the disease and/or the treatment (World Heart Federation, 2011). North and Sinclair (2012) surmise that it will remain the leading cause of death in these older individuals as age is a major risk factor for cardiovascular disease. The American Heart Association (2015) completed a study over a period of six years (2005-2011) to examine the annual number of adults per thousand that had diagnosed heart attacks or experienced coronary heart disease resulting in death. They found in the age group from 35-44 years old, 10 women per thousand experienced a heart attack or a coronary heart disease resulting in death. In the age group from 45-54, 35 women per thousand died due to these cardiovascular diseases and this increased dramatically the older an individual got as in the range of 55-64 year olds, 60 per 1000 women experienced a heart attack or a coronary heart disease resulting in death.

The quality and effectiveness of healthcare in general has improved vastly over the years and as such, individuals are living for many more years. This has led to a larger population of individuals falling within the 65 years and older age range. These individuals may also continue to work beyond the retirement age. This may put strain on their individual health as they continue to work long hours and experience work stress which, in turn, may influence further risk factors for cardiovascular disease.

1.5 Relevance of Investigating Lifestyle Factors and Psychological Wellbeing

It is clear from the above research that lifestyle behaviours may have a role in increasing one's risk of developing cardiovascular disease. One's decisions regarding diet, exercise, smoking and drinking habits may also affect one's psychological wellbeing. For the most part, these lifestyle behaviours are within the control of the individual, however they may be heavily influenced by our daily lives, of which work consumes a vast majority of our time. The working environment may impact on an individual's lifestyle as arrangements are made concerning diet, smoking habits, physical activity levels and the like around the individual's work time

constraints, access and expectations from colleagues. These work related factors may also influence the individual's psychological wellbeing as they may experience stress, anxiety and depression as a result of an inability or incapacity to manage the constant balancing act between job demands. The impact on their psychological wellbeing may also affect their physiological wellbeing through alterations to their lifestyle behaviours. Research has shown that the lifestyle factors- smoking, binge drinking, level of physical activity and poor eating habits are associated with a reduced health-related quality of life (Savolainen *et al*., 2014; World Health Organisation (WHO, 2009). Previous research has linked these lifestyle factors to both mental and physical health problems. Thus it is imperative to investigate the significance of one's lifestyle behaviours as well as one's psychological wellbeing on their risk of developing cardiovascular disease.

1.6 Lifestyle Behaviours

Alcohol consumption

Alcohol consumption is the ingestion of beverages containing alcohol such as wine, beer or spirits. The frequent and excessive consumption of alcohol has been shown to impact on physiological health as well as psychological health. A study by the Department of Health (2007) found that 25.4% of South African women within their sample drank a harmful amount of alcohol over weekends. 3.6% of South African women drank harmful amounts of alcohol during the week. Both of these percentages were higher than those of men (22.5% and 1.4% respectively) (Department of Health, 2007).

The National Institute of Alcohol Abuse and Alcoholism (2010) confirms that alcohol affects the heart, the brain, the immune system as well as the liver and pancreas. It affects the heart by causing health problems inclusive on cardiomyopathy, irregularities with heartbeat, stroke (Patra *et al*., 2010) and high blood pressure (Okubo, Suwanzono, Kobayashi & Nogawa, 2001). It affects the brain through interference with the pathways of communication, as well as changes to the functioning of the brain (National Institute of Alcohol Abuse and Alcoholism, 2004; NIH Senior Health, 2015). This can affect an individual's mood as well as alter their behaviour (Harder, Ayer, Rose, Naylor & Helzer, 2014; Cooper, 2002). To illustrate how severely the brain is affected by alcohol in the short term- after having a few drinks, one may experience slowed responses, not being able to walk straight, vision becomes clouded, and speech becomes slurred (National Institute on Alcohol Abuse and Alcoholism, 2004).

Sometimes, memories can be difficult to retrieve or lost after an evening of drinking (National Institute of Alcohol Abuse and Alcoholism, 2010). This may cause the individual to behave recklessly such as drinking and driving which may result in harm to the individual.

The functioning of the immune system is also known to be lowered when alcohol is consumed, which may indicate that frequent drinkers have higher risk of contracting other diseases such as the flu or stomach bugs (National Institute of Alcohol Abuse and Alcoholism, 2010). The liver may be affected by heavy drinking which include the development of health problems such as alcohol hepatitis, fibrosis and cirrhosis (American Liver Foundation, 2016). The liver functioning may also be affected and as such, the liver does not rid the body of toxins, which means that they may travel to the brain and may cause hepatic encephalopathy, the symptoms of which include reduced attentional capabilities, anxiety, depression, coma, mood and personality changes, loss of coordination as well as death (National Institute of Alcohol Abuse and Alcoholism, 2010). The pancreas may be affected through the accumulation of toxic substances from the alcohol which may cause pancreatitis which affects the digestion process. Alcohol is also linked to the development of cancers such as throat, liver and breast cancer (National Institute on Alcohol Abuse and Alcoholism, 2015; National Institute of Alcohol Abuse and Alcoholism, 2010). Furthermore, binge drinking has been identified as a risk factor for stroke (Hillblom, Saloheimo & Juvela, 2011).

However, the National Institute of Alcohol Abuse and Alcoholism (2010) also found that alcohol can work as a protective factor against coronary heart disease. This is when moderate consumption of alcohol is practiced (i.e. one drink per day for women, and two drinks per day for men). Alcohol may reduce the build-up of fat in the arteries and raise the levels of good cholesterol. That being said, there are numerous other factors that affect how alcohol affects the individual, including medication, genetics as well as family history (National Institute of Alcohol Abuse and Alcoholism, 2010).

A study by Wannamethee and Shaper (2003) on 7275 men measured the weight change as well as changes in alcohol intake twice with a time lapse of five years. The study found that men who were classified as heavy drinkers at time two, they had the highest gains in weight as well as high BMIs. Alcohol has been linked to obesity in both men and women (Lourenço, Oliviera & Lopes, 2012; Lukasiewicz, Mennen, Bertrais, Arnault, Preziosi, Galan & Hercberg, 2005) and weight gain and high BMI reflective of obesity is a risk factor for ischemic stroke (Suk *et al*., 2003).

South Africa has very high levels of alcohol consumption (WHO, 2014e). The World Health Organisation's Global Status on Alcohol and Health gives South Africa a rating of 4 out of 5 in terms of risky patterns of drinking with 5 being the riskiest (WHO, 2014e). The study shows that the average South African adult consumption per capita is at 11.0 litres of pure alcohol per year which is much higher than the African regional average of 6.0 litres (WHO, 2014e). It is also higher than the global average of 6.2 liters (WHO, 2014e). More than 50% of women and more than 25% of men in South Africa abstain from drinking alcohol but the high consumption of alcohol per capita indicates that a smaller proportion of people are drinking excessively (WHO, 2014e). In South Africa, drinking and alcohol are associated with many South African traditions for example at social occasions, such as at a "braai", usually go hand-in-hand with drinking alcoholic beverages.

A drinking culture such as this may influence the workplace too. In a study by Cárdenas and colleagues (2013) in interviews with Latin American female executives one participant mentioned exclusion as a result of not fitting in with her male colleagues (Cárdenas *et al*., 2013). She iterated that because she did not have beer-drinking and football in common with them, she was sometimes excluded from decision making as she was not present at informal gatherings (Cárdenas *et al*., 2013). In this way, it has been suggested that women who work in male dominated industries may be more inclined to participate in after work drinking to try to fit in or as a result of feeling pressurised by male colleagues but in a study by Garabedian (2006), this was not found to be true. No support was found to show that choices in drinking were influenced by the gender of an individual's colleagues (Garabedian, 2006). Garabedian (2006) also found that there is a positive relationship between the work environment and the consumption of six or more alcoholic drinks twice to three times weekly. Work environment influences this through easy access to alcohol from a nearby shop as well as colleagues regularly meeting after work for drinks. In light of the statistics above as well as the exploration of the impact of the South African drinking culture on the level of alcohol consumption, alcohol consumption may be a possible factor worth investigating in the risk that South African female managers have of developing cardiovascular disease.

Physical activity

Physical activity is defined by the World Health Organization (2015) as "any bodily movement produced by skeletal muscles that requires energy expenditure". WHO (2015b) recommends that adults between the ages of 18 to 64 should engage in moderate-intensity physical activity

for at least 150 minutes in a week, or high intensity physical activity for 75 minutes. It is inclusive of exercise but not limited to exercise as it also includes everyday exertion such as walking and the lifting of objects. Physical inactivity or being less physically active than recommended is one of the top ten risk factors for death (WHO, 2015b).

Sufficient levels of physical activity have been shown to reduce likelihood of diabetes, coronary heart disease, stroke, hypertension, cardiovascular diseases, high cholesterol levels and cancer (Bassuk, & Manson, 2014; Blair, Cheng & Holder, 2001 as cited in Carlsson, Andersson, Wolk & Ahlbom 2006; Fransson, Alfredsson, de Faire, Knutsson, & Westerholm, 2003; Haslam & Wittert, 2009; Heart UK, 2015; Savolainen *et al.*, 2014; Twinn, Lee, Phil & Thompson, 2010; WHO, 2015b). Dhaliwal, Welborn & Howat (2013) also found that recreational physical activity was a protective factor against cardiovascular-related death whilst obesity and physical inactivity are risk factors for cardiovascular disease (National Institute of Mental Health, 2002).

A study by Williams (1996) found that women who engaged in more exercise (in the form of running) than the recommended guidelines for physical activity were found to have increased levels of HDL cholesterol concentrations which provided positive health changes, including reduced risk of coronary heart disease as well as reductions in their BMI value.

Carlsson and colleagues (2006) investigated the association between low levels of physical activity and mortality carried out with a sample of 27 734 women. They found that "women with low physical activity had a 3.22 times increased mortality compared with the most active women" (Carlsson *et al*., 2006, p.480). Alongside this finding, Carlsson and colleagues (2006) found that approximately 30% of the excess risk associated with women who were classified as sedentary in terms of their physical activity was linked to the lifestyle behaviours of diet and smoking. Further research showed that women in their early sixties who engaged in low levels of physical activity had almost three times increased mortality compared to women that engaged in high levels of physical activity (Carlsson *et al*., 2006).

Diet and nutrition

An individual's diet is made up of the type and amount of food that they consume on a daily basis. This influences whether or not they consume the right amount of nutrients necessary for health. The dietary requirements of each person will differ according to age, intolerances, gender and religious values amongst others, but the WHO (2015c) state that a healthy diet

consists of a balance between the different food groups and a balance of nutrients from proteins, carbohydrates, fruits and vegetables and fats.

An individual's diet will affect their health in a number of ways. The diet that an individual follows will affect their weight and thus Body Mass Index. An individual's BMI refers to their Body Mass Index which is an "index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults" (WHO, 2015a). An unhealthy diet may lead an individual to become overweight or obese. South African nutritional surveys have shown that South African diets may lack a high consumption of fruit and vegetables which may result in a lowered consumption of fibre, while they consume large proportions of plant and animal fat as well as alcohol (Steyn, 2007). A diet filled with fats and alcohol may result in weight-gain and a higher BMI. A high BMI is indicative of obesity and has been found to be a risk factor for cardiovascular disease (Flegal, Carroll, Ogden & Johnson, 2005; Whitlock, Lewington, Sherliker, Clarke & Emberson *et al*., 2009).

Obesity was found to be a predictor for cardiovascular disease (Hubert, Feinleib, McNamara & Castelli, 1983). In women, obesity has also been related to the incidence of atherothrombotic stroke (Hubert *et al*., 1983). Being overweight or obese was also found to be related to a higher risk of coronary heart disease (The Global Burden of Metabolic Risk Factors for Chronic Diseases Collaboration, 2014; Haslam & Wittert, 2009). Results showed that coronary heart disease was less likely to arise in lean women as opposed to women who are overweight or obese. There was a decline in coronary heart disease among lean women as compared to overweight or obese women (Cairns, Balkwill, Canoy, Green, Reeves, & Beral, 2015). Thus, it is clear that a healthier diet that contributes to a healthy BMI can be a protective factor against cardiovascular disease.

Research has shown that obesity is related to coronary heart disease, hypertension, type II diabetes and certain types of cancer (Aronne, 2002; Haslam & Wittert, 2009). Individuals who are obese have also been found to have respiratory difficulties as well as osteoarthritis (Haslam & Wittert, 2009). Abdominal obesity is also a key criterion for the diagnosis of metabolic syndrome and metabolic syndrome is commonly linked to type II diabetes (Haslam & Wittert, 2009). An individual's diet may also affect their cholesterol levels, as saturated fat may elevate one's cholesterol (Heart UK, 2015).

It was found that some women had developed physiological stomach issues such as heartburn as a result of stress (Muhonen, 2011). The results also suggested that this may also be

compounded by their skipping of meals and drinking too much coffee (Muhonen, 2011). Sleeping problems were also found to occur as a result of thinking about work and stress while trying to sleep (Muhonen, 2011). Research has shown that eating very little fruit and vegetables is associated with increased mortality (Carlsson *et al*., 2006). In a systematic review, Quirk *et al*., (2013) found that adherence to a healthy whole food diet inclusive of vegetables, fruit and lean meat was associated with a reduced risk of depression. A similar finding was made in a separate systematic review by Sanhueza, Ryan and Foxcroft (2012) whereby diets inclusive of omega-3 fatty acids, fish and nuts alongside the fruit and vegetables were also found to offer a protective effect against depression. A high consumption of refined carbohydrates, sugar cold drinks and saturated fats as well as a low intake of fiber has been linked to type II diabetes (Haslam & Wittert, 2009).

An individual's diet may affect their weight. Excess body fat has been linked with the risk factors of cardiovascular disease such as hypertension and dyslipidaemia (Lam, Koh, Chen, Wong & Fallows, 2015). Lapidus, Bengtsson, Larsson, Pennert, Rybo and Sjostrom (1984) found that high hip to waist ratios in women had positive associations with risk factors for cardiovascular disease as well as predicted angina pectoris and stroke. Waist/hip ratio used to ascertain abdominal obesity was also found to be related to mortality (Seidell, 2010) and a risk factor in severe cases of sleep apnoea (Seidell, 2010). Furthermore, an individual's BMI was found to be related to ischaemic heart disease (Lapidus, Bengtsson, Larsson, Pennert, Rybo & Sjostrom, 1984).

The three lifestyle behaviour variables, alcohol consumption, physical activity levels and diet and nutrition, under investigation in the current study are based upon the research presented above, possible predictors of an individual's physiological well-being as they are linked to cardiovascular problems as well as many other health outcomes (Bassuk, & Manson, 2014; Flegal *et al*., 2005; Fransson *et al*., 2003; Haslam & Wittert, 2009; Hillblom *et al*., 2011). These lifestyle behaviour variables may be particularly relevant for investigation within female executives and managers as there is currently minimal research in this area.

1.7 Psychological Wellbeing

In this study, psychological well-being refers to an individual's level of depression, anxiety and stress which are indicators of an individual's mental health (National Institute of Mental

Health, 2015; National Institute of Mental Health A, 2015; National Institute of Mental Health B, n.d.).

Depression

The DSM-5 identifies many different depressive disorders but their commonality is the "presence of sad, empty, or irritable mood, accompanied by somatic and cognitive changes that significantly affect the individual's capacity to function" (Diagnostic and Statistical Manual of Mental Disorders (DSM-5), 2013, p155). Depression affects mental and psychological health by affecting the individual's mood, making them experience feelings of guilt, extreme sadness, worthlessness, hopelessness and irritability (National Institute of Mental Health, 2015; WHO, 2012i). It may also affect their interest in activities they usually find interesting, they may withdraw from social occasions and avoid people, they may experience energy loss and difficulties concentrating (National Institute of Mental Health, 2015; WHO, 2012i). They may also experience physical symptoms such as aches and pains, nausea, vomiting and dizziness that cannot be relieved even through medication (Kapfhammer, 2006; National Institute of Mental Health, 2015; WHO, 2012i).

Depression itself can also lead to cardiovascular disease (WHO, 2012i). Individuals with depression have "stickier" blood platelets than other individuals who are not depressed (Ziegelstein, n.d.). This could speed up the process of hardening of the arteries and thus this means that depressed individuals may be at higher risk of having a heart attack (Heart Disease Weekly, 2002; Kushner Resnick, 2004). Depressed individuals may also experience changes to their hormones and nervous system which may make them susceptible to heart rhythm disturbances (Ziegelstein (n.d.) and have a higher chance of developing a heart condition than others (National Institute of Mental Health, 2002). According to Ziegelstein (n.d.), individuals with depression but no previously diagnosed heart condition seem to develop heart disease at a higher rate than others. Nemeroff, Musselman and Evans (1998), corroborating the research presented above, found that depression is a risk factor for death after a myocardial infarction as well as a risk factor for coronary artery disease. Furthermore, Lee (2010) found that depressive symptoms are predictive of coronary artery disease.

Ariyo and colleagues (2000) conducted a study with 4493 elderly individuals who did not have cardiovascular disease at the start of the study which lasted six years. On a yearly basis, the participants completed a depression scale. They found that the participants with the highest

depression scores had a 40% higher risk of developing coronary heart disease as well as a 60% risk of death.

Burokiené, Karciauskaité, Kasiulevicius, Kucinskas and Kucinskiené (2014) examined the association between depression and cardiovascular morbidity in a sample of 317 men and women between the ages of 40 and 85 years of age. 13.6% of the sample were experiencing symptoms of clinical depression. 23.3% of the sample had cardiovascular disease. This study found that cardiovascular disease and depression were significantly related. The results from the research studies mentioned above indicates the importance of investigating the relationship between depression levels and risk of developing cardiovascular disease in female executives and managers.

Anxiety

Anxiety has been defined as the experience of excessive unease and worry (Pearsall, 1999). Symptoms of anxiety may include an inability to relax and let go of worries, feeling very unnerved and having difficulties in concentrating (National Institute of Mental Health A, 2015; Anxiety and Depression Association of America, 2015). Behaviourally, individuals with anxiety may have disrupted sleeping patterns as well as experience physical symptoms such as headaches, muscular tension and aches, shaking, twitches, irritability, nausea as well as fatigue (National Institute of Mental Health A, 2015).

In a study by Lambiase, Kubzansky and Thurston (2013) a sample of 6019 men and women were examined to determine their level of anxiety as well as the severity of the problem. Over a time period of 16 years, 419 strokes occurred, and it was noted that the risk of having a stroke was higher for those who had been found to be experiencing initial anxiety (Lambiase *et al*., 2013). A meta-analysis of studies examining the relationship between anxiety and coronary heart disease showed that anxiety put an individual at higher risk of coronary heart disease regardless of demographic variables and biological risk factors (Roest, Martens, de Jonge & Denollet, 2010).

Janszky, Ahnve, Lundberg and Hemmingsson (2010) identified a correlation between anxiety and coronary heart disease. They used data collected from a national survey based on a sample of approximately 49 000 young Swedish men. These men were conscripted for military duty and were between the ages of 18 and 20 years old. The men that were diagnosed as experiencing depression and anxiety by psychiatrists were found to also be heavier smokers than their peers as well as more physically inactive. Anxiety was found to be related to raised blood pressure.

Furthermore, anxiety was found to correlate with coronary heart disease as well as acute myocardial infarction later in life (Janszky *et al*., 2010).

Pires, Rockett, Salum, Manfro and Bosa (2015) found that in a sample of 65 children and adolescents, the more severe their anxiety disorder was, the more risk factors the participants had. This means that the participants that had higher levels of anxiety were also those with greater risk of developing cardiovascular disease. They also found that generalized anxiety disorder was related to higher levels of blood pressure (Pires *et al*., 2015).

Tully, Cosh and Baune (2013) compiled a narrative review of the literature examining the relationship between generalized anxiety disorder or worrying and cardiovascular disease. Their review consisted of sixty-one articles from the year 1975 to 2011. Their review found that in seven of the articles, in the individuals who did not initially have cardiovascular disease, worrying was found to be related to the development of cardiovascular disease over time. Furthermore, worry and general anxiety disorder were found to be associated with some of the risk factors of cardiovascular disease, such as high blood pressure and hypertension (Tully *et al*., 2013).

Stress

Stress can be seen as "a negative emotional experience which occurs when individuals perceive themselves as being subject to excessive demands, or demands with which they cannot cope" (Cox & Griffiths, 2012, p37).

Fishta and Backé (2015) examined 6 systematic reviews (which included 81 studies) on research papers examining the relationship between psychosocial stress and illness or death caused by cardiovascular disease. All of the systematic reviews found evidence to report a significant relationship between the incidence of cardiovascular disease (illness and related death) and the stress experienced at work due to psychosocial factors. This was consistent for males but the evidence on women at work was somewhat lacking in comparison. Furthermore, Fishta and Backé (2015) found that higher stress or strain was indicative of a significant risk of development of cardiovascular disease. They found that for women, the experience of stress in the home as well as at work was predictive of symptoms of coronary heart disease (Fishta & Backé, 2015).

A study by Hu, Wang, Xu and Xu (2014) on a sample of 440 medical workers found that work stress was found to be positively related to mental health problems. Their study also found that

women, as compared to men, were at a higher risk of stress-related mental problems (Hu, *et al*., 2014). Stress has been linked to influence an individual through headaches, muscle tension, stomach problems and sleeping problems; emotionally through the experience of lack of energy, restlessness, feeling unmotivated, irritable and on the individual's behaviour through withdrawal from social events, emotional outbursts and eating too much or too little (American Psychological Association, 2010; American Psychological Association, 2015; Gandhi, Sangeetha, Ahmed & Chaturvedi, 2014).

Khayyam Nekouei, Yousefy, Neshat Doost, Manshaee and Sadeghei, (2014) studied a sample of 398 individuals who were diagnosed with coronary heart disease. They sought to understand the risk factors and protective factors for coronary heart disease. They found evidence in their study to suggest that anxiety, depression and stress are indeed risk factors for coronary heart disease that may cause an individual to experience a lowered quality of life.

A study by Parswani, Sharma and Iyengar (2013) utilised a mindfulness based stress reduction (MBSR) technique on individuals with coronary heart disease. They randomly assigned thirty men with coronary heart disease into two groups, one of which would experience the mindfulness based stress reduction intervention. They found that the MBSR program was effective in reducing the participants' depression and anxiety symptoms, their perceived level of stress as well as lowered their blood pressure and BMI value. This gives an indication that by lowering stress levels, an individual may experience lowered risk factors for coronary heart disease. This is important to consider in the treatment of coronary heart disease.

Based upon the evidence above, anxiety, depression and stress have been shown to be possible risk factors in the development of cardiovascular disease. More research, particularly on women executives, is required in this area.

1.8 Health and Performance at Work

According to the findings above, it is clear that the lifestyle factors-smoking habits, drinking habits, diet and level of physical activity as well as the psychological wellbeing of individuals are related to their risk of developing cardiovascular disease. Although the current study will not be examining work performance, it is clear that the effects that lifestyle behaviours and psychological wellbeing have on an individual's health may affect the individual's performance in their place of work.

Physical and psychological wellbeing: the implications at work

Good mental health is likely to be a prerequisite for intellectual capital and necessary for skills such as creativity, networking and managing (Zwetsloot & Van Scheppingen, 2007 as cited in Zwetsloot *et al*., 2010). In this way, psychological difficulties may result in suboptimal performance. Sackey and Sanda (2009) studied a sample of women managers who were found to experience workplace stress which affected their psychological well-being as well as their performance at work. These women experienced a lack of energy, job dissatisfaction, an inability to concentrate and becoming more withdrawn and not communicating with colleagues (Sackey & Sanda, 2009).

A South African IDeA report (South African Depression and Anxiety Group, 2015) found that in a sample of 1061 employees and managers, 24% had been diagnosed with depression by a healthcare specialist in the last year. Of those that were depressed, 74% of them experienced difficulty concentrating, indecisiveness or forgetfulness during a depressive episode. It further found that 54% of those with depression said that they took a lot longer to do simple tasks and 50% said that they noticed more errors in their work than usual. Furthermore, the study found that South African individuals with depression took on average, 18 days off of work. However, "more than 80% of those diagnosed with depression continued to work during their last episode of depression" (Sadag, 2015). This may be problematic as the study also found that the same individuals who had rated their own performance to be between eight and ten while not experiencing a depressive episode, 85% of them rated themselves at less than an "8" on the performance scale when experiencing a depressive episode (Sadag, 2015). Thus, the individuals themselves can recognise a decline in their performance levels when experiencing a depressive episode.

Another study on South African employees by Welthagen and Els (2012) found that in a sample of 15 664 employees, 18.3% were receiving treatment for depression, 16.7% were not sure if they could have depression or not and 65% said they did not have depression. The study further found that depression affected the individual's work engagement, burnout and instances of stress-related health issues (Welthagen & Els, 2012).

The experience of stress at work and job dissatisfaction was also shown to negatively affect absenteeism and productivity (Helge, 2001). A meta-analysis revealed work-family conflict as the most common stressor in the workplace that was related to lower self-reported measures

of physical as well as mental health (Goh, Pfeffer & Zenios, 2015; Lynch, 2015). It was also associated with higher mortality rates among participants in the various studies (Goh *et al*., 2015; Lynch, 2015). The study found that long hours at work/overtime were related to more illnesses as diagnosed by a doctor as well as more instances of mortality (Goh *et al*., 2015; Lynch, 2015). Furthermore, job stress, social support, and overtime work have been shown to contribute to an increased risk of developing cardiovascular disease (Hwang & Hong, 2012). Stress as a result of work-family conflict may affect women's physical and psychological health as they struggle to maintain a balance between the expectations they need to meet at work as a member of senior management and the expectations they need to meet at home as a mother and wife.

Wang and colleagues (2006 as cited in Burton, Schultz, Chen & Edington, 2008) noted that ten to eighteen percent of absenteeism was linked to mental health problems. In a study of employee absenteeism with a sample drawn from over seventy South African organisations, it was found that in 2009 over a six-month period, 3.4% of cases of sick leave were due to psychological health problems such as depression, anxiety and stress (Johnson, n.d.). This study also found that depression was said to be the reason for 1.2% of the sick leave taken by female employees, while this was only the case for 0.7% of the male employees' sick leave (Johnson, n.d.).

Experts from Alexander Forbes Health have estimated that absenteeism costs the South African economy approximately R 47 billion per year (Alexander Forbes Health, 2013). This value alone indicates the extent to which ill physical and psychological health may affect the economy, let alone the organisations and individuals themselves. Furthermore, the level of lost productivity may be exacerbated as employees may not always take the day off when experiencing poor health which may impact on their ability to do their work and cause them to function at a suboptimal level. They may not exhibit the necessary skills in performing well which may negatively influence their productivity (Burton *et al*., 2008). Burton and colleagues (2008) examined a plethora of literature and found that depression in the workplace was also found to have a great impact on the presenteeism of employees. Smoking seemed to be a coping mechanism in handling presenteeism at work (Alexander Forbes Health, 2014). However, while smoking may provide short term assistance, it has been associated with many diseases that may contribute to early retirement as a result of poor health (Alexander Forbes Health, 2014).

Munir and colleagues (2007) studied participants with a range of different chronic illnesses and participants with depression and anxiety were found to have experienced significant work limitations in the form of symptoms that acted as a hindrance in performing their work. A study done on a Dutch working population found similar results. They found that chronic illnesses such as diabetes and migraines were reported by approximately 36% of the sample and the participants reported that they felt these chronic illnesses negatively influenced their ability to do their work (De Vroome *et al*., 2008 as cited in Zwetsloot *et al*., 2010).

Individuals who have survived a heart attack may experience feelings of uncertainty regarding the future which may affect their company loyalty or work ethic (National Heart, Lung and Blood Institute A, 2015). They may feel that their hard work may not have time to pay off and they may also become distracted by the disease as opposed to focusing on their work (National Heart, Lung and Blood Institute A, 2015). Research has also indicated the onset of depression post-heart attack or stroke (Heart.org, 2014; National Stroke Association, 2016; Paolucci, 2008). The onset of depression may be debilitating to the individual when returning to work. They may find themselves lacking motivation to continue daily activities, avoiding meals, intensifying unhealthy habits such as drinking or smoking. They may also experience physical limitations such as paralysis of one side of the body as a result of stroke and this may cause them to feel embarrassed or doubtful of their abilities (Stroke Recovery Burlington, 2016). They could also be treated differently as others view them as needing help or being incapable.

In South Africa, the recent statistics show that over an eight-year period between 1997 and 2004, 195 deaths occurred each day as a result of cardiovascular disease (Bradshaw as cited in Steyn, 2007). Thirty-three of those deaths were due to heart attack and sixty were due to stroke. A further study by Bradshaw and colleagues (2000) showed that chronic disease (including cardiovascular disease) caused over half of the deaths of individuals under the age of 65 years old. Pestana, Steyn, Leiman and Hartzenberg (1996) sought to estimate the cost of cardiovascular disease to the South African economy. This was calculated "based on reasonable assumptions of data and models developed in other countries" (Pestana *et al*., 1996). The results indicate that in 1991 in South Africa, CVD had an estimated total burden on the economy of "between R4.135 billion and R5.035 billion". This estimate excluded the cost of rehabilitation and hospitalisation following the cardiovascular disease (Pestana *et al*., 1996).

Thus it is clear that cardiovascular disease clearly impacts not only upon the individuals it afflicts but also the organisations that these individuals work with and the broader economy to

which they contribute. Accordingly, further investigations into the factors that predict cardiovascular disease appears to be warranted.

1.9 Executives and Managers: The Importance of their Health

The health of the managers and executives within a company directly affects the business' performance and ultimately their bottom line (Davis, Collins, Doty, Ho & Holmgren, 2005). Research into the lifestyle factors is of particular importance as it is an area that workplace health promotion strategies can specifically target and work to change for the better. The health and well-being of the individuals in management and executive positions is an extremely important area of study as their health has a direct impact on the productivity of the company as well as its effectiveness in achieving organisational goals (Helge, 2001; Raderstorf & Kurtz, 2006; Zwetsloot *et al*., 2010). There are many ways in which their health and wellbeing may affect the productivity and financial capabilities of the organisation such as through absenteeism, presenteeism (Burton *et al*., 2008) and early retirement due to health complaints to name a few.

Individuals in management and executive positions are highly valuable to their respective companies as they are the individuals in positions of authority and power within the company and as a result, are usually very involved with highly influential decision-making. Managers also offer direction and support to teams and staff members. Managers offer motivation and guidance to the staff that they manage as well as function as a source of knowledge and reference for their teams by virtue of their expertise (Coetzee, 2010). Thus, the health of executives and individuals in senior management is central to the running of the organisation as if their health is suffering, so too may their work performance. The occurrence of absenteeism of executives and senior management may also affect the performance of other employees who do not have the authority on decision-making as well as access to certain resources necessary to continue their work.

Executives and individuals in positions of senior management are also in a position of authority and they may thus influence their subordinates, directly or indirectly. They may influence directly as their values and beliefs inform policies and decisions within the workplace, as well as through the behavioural example they offer (Dannenberg, 2015). Indirectly, their influence may become a part of the workplace culture and climate. If the executive and senior management staff are health-focused and their behaviours exhibit this value, a health-focus

may be adopted within the organisation through the policies and workplace culture (Muls, Dougherty, Doyle, Shaw, Soanes, Stevens, 2015). Employees that are health-focused may make healthier lifestyle choices which may be beneficial to the organisation's productivity as a whole. This health-focus may also affect the employees at the individual level too as they may experience an enhanced, higher quality of life (Savolainen *et al*., 2014; World Health Organisation-WHO, 2009).

Executives and managers are also usually employees with many years of experience and education and in this way are very valuable resources to the company. Managers have usually undergone much training and development to be able to fulfil the requirements of the position that they hold. This shows that the health and wellbeing of individuals in management and executive positions should be a priority for organisations as they function as key role players in the productivity and profitability of their organisations (Silverthorne & Wang, 2001). In this way, the health of these individuals is imperative as losing them as a staff member due to health complaints or death may be very costly to the organisation which has invested much time and money in developing them and would also then need to invest more time and money into developing and preparing an individual to replace them (Wescott, 2011).

1.10 Women Executives and Managers: The Importance of their Health

A focus on the health and wellbeing of female executives and management in particular can be considered an important aspect of gender diversity. Promoting their health exemplifies to the company that having female executives is important (Fairchild, 2014). This may work to attract and retain a larger talent pool as well as promote equality within the organisation. It emphasises that the company appreciates the value of gender diversity as a focus on female wellbeing would incorporate recognition of their needs by virtue of their multiple roles.

By having more female executives and management, this allows the company a broader perspective when dealing with the needs of shareholders and stakeholders. According to a study by Zenger and Folkman (2012) for the Harvard Business Review which was based on performance reviews as captured through 360-degree performance appraisals, men were outperformed by women in twelve of the sixteen competencies they identified as necessary to be an effective leader. These included skills such as building relationships, taking initiative, motivating others, analyzing issues and collaboration. These leadership competencies are largely person-focused and thus it is clear that the female leader plays a role in the day-to-day

productivity of the organisation. This further emphasises the idea that female executives and managers should be an imperative of organisations.

Research into the health of managers has largely concentrated on male managers and male executives (Goyal & Nadeem, 2004; Nelson & Burke, 2000). This may be due in part to the previous inequality that saw less women in the workplace itself, and even less so in management positions. Thus, up until quite recently, males have held the vast majority of the upper management positions. According to the Quarterly Labour Force Survey of 2013- 2014, in South Africa more women are entering the workforce (Statistics South Africa, 2014). In 2014, the year to year change was recorded at 2.9% (Statistics South Africa, 2014). In 2013 during the second quarter of the year, 378 000 women were employed as managers and in the same time period of 2014, this figure had increased to 404 000 (Statistics South Africa, 2014). This represents a 6.9% change over the yearly period (Statistics South Africa, 2014). The Quarterly Labour Force Survey of 2015 shows that in the fourth quarter of 2014, this figure had increased to 428 000 women employed as managers (Statistics South Africa, 2015). This data shows that women are developing a more prominent presence in management.

This being said, the health of women managers and executives in the workplace has not been thoroughly researched (Goyal & Nadeem, 2004; Nelson & Burke, 2000). The research that has been conducted on female health in the workplace has mostly focused in a general way on women at work or alternatively with very specific groups of women such as those that are pregnant (Pritchard, 1994). Very few studies have focused on the health of female managers and executives specifically, but the research that has been conducted has tended to focus on identifying trends in their health, their health behaviours (Twinn *et al*., 2010) and levels of stress (Goyal & Nadeem, 2004). With more women entering positions in upper management and on executive boards (Nelson & Burke, 2000), the research on female executive health is not sufficient. The research that has been done on the health of male executives and managers is also not entirely generalizable as it excludes many factors that may influence women in the workplace. This is particularly relevant as an individual's health is acted upon by a multitude of factors. These unique factors that may influence the health of female managers, both directly and indirectly will be discussed below.

The lifestyle and psychological wellbeing risk factors explained above indicate the importance of their investigation in their role in the risk of developing cardiovascular disease. This is of particular importance in female managers and executives as this is an area that has been under-

researched. The statistics and research findings discussed in the literature review indicate that women are seriously affected by cardiovascular diseases (Juenger *et al*., 2002; National Health Services, 2015; Overturf Johnson *et al*., 2007). Furthermore, aspects of work may compound the effect of lifestyle and psychological wellbeing risk factors as individuals in managerial and executive positions may find that their jobs and positions are characterised by long hours at work, intensive deadlines, supervision and coordination of staff, important decision making and continuous learning and development. Individuals in these positions may experience stressful situations as they deal with their daily on-goings in their jobs. The experience of a female manager/ executive may be different from their male counterpart in that female managers may experience unique challenges in the workplace.

Female managers may take on multiple roles beyond being an employee. One of the major challenges that female managers have at work is managing their work-family conflict (Cárdenas *et al*., 2013). This may be especially true of single working mothers as well as working mothers that subscribe to following conventional gender roles within the family. Research has investigated both the management of the stressors in the workplace and the stressors and responsibilities associated with home life such as child-care and household duties. This research has shown that working women are also still largely responsible for the domestic duties and take on the primary role in running the household (Kaila, 2004; Nelson & Burke, 2000; Schnittker, 2007) despite the finding that men are increasingly partaking in more household chores than in the past (Aguiar & Hurst, 2007 as cited in Cárdenas *et al*., 2013). Working women have been found to experience higher work-family conflict than working men (Koyuncu, Burke & Wolpin, 2012). This conflict between work and family has been negatively linked to psychological wellbeing (Koyuncu *et al*., 2012) and the juggling of their roles as an employee, wife and mother may also lead to increased stress levels (Beatty, 1996; Kaila, 2004).

Taking on multiple roles and the duties and expectations that are associated with those roles may leave some female managers in a position of trying to balance their tasks and time accordingly to be able to fulfill the duties associated with all of their roles. The Quarterly Labour Force Survey (Statistics South Africa, 2014; Statistics South Africa, 2015) further found that the majority of the female workforce in South Africa spend 40-45 hours per week at work. This busy schedule may lead some female managers and executives to feel constrained by time and thus prioritise certain activities and tasks over others. Their position within the organisation and the associated level of work and time spent at work, may impact on the lifestyle choices that women managers and executives make on a daily basis (Au, Hauck &

Hollingsworth, 2012; Magee, Caputi & Iverson, 2011). A female manager who may prioritise getting the children ready for school and arriving at work on time may not eat breakfast, or buy lunch from a local take away store near their work. They may also buy take-aways or convenience foods for dinner as a result of insufficient time to prepare a home cooked meal in order to fulfill other duties such as fetching children, helping the children with homework, spending quality time with the family and so on (Chamanifard, 2011).

A further stressor for female managers is the hindrances that they may face in terms of advancement in the workplace (Kaila, 2004). These hindrances include being discriminated against because of stereotyped views of women's abilities (Kaila, 2004). Negative stereotypes about a women's competency in her role at work may negatively affect her performance even if she herself does not believe the stereotype (Steele, 1997 as cited in Jones, Ruff & Paretti, 2013). This can be done through stereotype threat and through a fear of living up to the stereotype (Jones *et al*., 2013). Stereotypical ideas are not only held about women's competencies at work but also regarding their leadership abilities (Cárdenas *et al*., 2013). This cynicism about a woman's leadership abilities may come from the incongruence between values usually attributed to leaders and those usually attributed to women (Eagly & Karau, 2002 as cited in Cárdenas *et al*., 2013). Leaders are usually seen as competitive, assertive and ambitious (Cárdenas *et al*., 2013). These traits are usually associated with men while typical feminine qualities include warmth and caring (Cárdenas *et al*., 2013). This incongruence may lead individuals to hold stereotypical beliefs that favour men in leadership roles. Additionally, women are faced with the juggling of these stereotypes as they may be expected to exhibit traits necessary for the leadership role such as those mentioned above, while still fulfilling their gendered expectations (Peus, Braun & Knipfer, 2015).

The prevalence of negative female stereotypes is evident in a study by Mihail (2006) on a sample of 323 business school students in Greece. It was found that male students held significantly more negative stereotypes about women as managers than female students did (Mihail, 2006). A similar finding was found in a cross-cultural study by Elsaid and Elsaid (2012) on a sample of Egyptian and American men and women. It was found that among Americans, women had more favourable attitudes about female managers while both male and female Egyptians held more negative attitudes about female managers. This indicates that an individual's cultural values will influence their beliefs about gendered leaders.

Similar results were found in a South African study by Booysen and Nkomo (2010). In a sample of 592 individuals, black and white men were found to be less likely to attribute leadership qualities to women. This finding was more common amongst black men than white men. White women however attributed leadership qualities to both men and women equally. In contrast, black women were more likely to associate women with leadership qualities than men (Booysen & Nkomo, 2010). This finding has roots in the cultural values within South Africa.

If a female manager is influenced by these stereotypes they may dis-identify with their work domain and role as the negative stereotyping pervades their thinking and influences their behaviour (Steele, 1997 as cited in Jones *et al*., 2013). In this way a female manager may begin to de-value their role at work and this may undermine their self-esteem at work as well as personally (Jones *et al*., 2013). This, in turn, may impact on the psychological well-being of female managers as they feel the constant need to prove themselves and their worth.

A meta-analysis of studies done by Goh and colleagues (2015) on the stressors in the workplace that affect employee health found results that indicate that low organisational justice was the second highest stressor associated with participants who had illnesses as diagnosed by a doctor. Low organisational justice was also found to be tenth in a top ten most common stressors associated with lower self-reported physical health, and was found to be in fourth position in relation to its impact on self-reported mental health (Goh *et al*., 2015; Lynch, 2015). This may be a further stressor for women in the workplace, as stereotyping and discrimination may affect the female managers' perceptions of organisational justice.

Further stressors, although not specific to female managers, may also affect their lifestyle behaviours. In Johannesburg specifically, many people travel far distances to and from work (Group Communication and Tourism Department, 2015). Many individuals work tens of kilometres from work and so much of their time is spent travelling. This is further compounded with the traffic delay at peak times. This is another reason why individuals may be likely to drive through a take away drive-through as they do not have the time or the inclination to cook after sitting in traffic. Furthermore, the time constraints are a possible reason for insufficient physical exercise. The long travel distances are often not realistic to cycle or walk, and the traffic and time taken to get home may also reduce one's inclination to go to the gym or exercise.

The technological climate of today has implications for levels of physical activity too. Our daily exertion levels have been minimised as technology serves the need for convenience,

efficiency and speed. Instead of taking the stairs, we now utilise elevators, instead of walking or cycling to and from work, we utilise motorised transport. The technological advancements of this day and age to a large extent promote sedentary behaviour (Owen, Healy, Mattews, & Dunstan, 2010). That being said, the busy work life that a manager leads may also decrease any inclination to be physically active after long hours at work, as well as working toward balancing work-family life. While issues such as traffic congestion, technology and time constraints may not be unique to women managers, they may be factors that further affect the lifestyle decisions made by working women (Jaines, 2013; Owen *et al*., 2010; Springen, 2012; Stevinson, 2014).

A further stressor for women in the workplace is that of sexual harassment. Sexual harassment refers to "unwanted sexual attention" (Welsh & Nierobisz, 1997, p.505) and it includes non-physical advances such as sexual innuendos, inappropriate remarks and leering as well as physical advances such as groping and forced sexual encounters (Crucet, Graells, Cabral, & Lane, 2010). Research has shown that although sexual harassment is not only committed against women, "women had a higher incidence of sexual harassment (1.1%) than men (0.7%)" (Grainger & Fitzner, 2006 as cited in Hunt, Davidson, Fielden & Hoel, 2010). This statistic was found in a study by Britain's Department of Trade and Industry in 2005 (Grainger & Fitzner, 2006 as cited in Hunt *et al*., 2010). A similar finding appears in the analysis of the Australian Human Rights Commission survey on sexual harassment by Charlesworth, McDonald and Cerise (2011) that found that in a sample of individuals who had experienced sexual harassment at work or at a work function in the last five years, 152 of the 226 participants were women. Sexual harassment may affect a woman's self-esteem and performance at work. Sexual harassment may make an individual feel uncomfortable at work and unsafe which may elicit feelings of anxiety, stress and nervousness. Physiologically, victims of sexual harassment may experience headaches, jaw clenching, feeling short of breath and weight gain or loss (Cogin & Fish, 2009; Dansky & Kilpatrick, 1997 as cited in Cogin & Fish, 2009). These physiological and emotional responses may negatively affect the employee's health and wellbeing.

Discrimination, stereotyping, sexual harassment as well as their work-family conflict may affect their physiological and psychological wellbeing directly as well as indirectly. The challenges that women managers face in the workplace or as a result of work may also affect their lifestyle choices and behaviours on a daily basis. These decisions and behaviours, regarding diet, exercise, smoking and alcohol use may negatively affect their physiological as

well as psychological health. Further factors that may influence these behaviours and decisions include, the media portrayal of women, and the South African crime rate, each of which will be examined below.

Media portrayal of women.

Women in general are often influenced by the media portrayal of women's bodies and looks (Mask, 2011; McGlynn, 2000) and as such, this pressure to conform to the perfect figure and body as portrayed by the media may influence the way a woman thinks about their own body and relates to food and exercise. Women managers often have jobs that require long hours, have high pressure to perform and deliver as well as have the associated stress. This may leave women managers facing the conundrum of wanting to follow a healthy and balanced diet and exercise plan while finding it difficult to incorporate into their schedule. Smoking has been lauded as a weight loss tool and as such many women have used smoking as an alternative to eating and in controlling their diets (Strauss & Mir, 2001; White, 2012; White, McKee & O'Malley, 2007). A study done by Strauss and Mir (2001) on a sample of 1132 adolescents found that normal weight girls with the intention to lose weight smoked twice as many cigarettes in one day as the girls of normal-weight who were not trying to lose weight. In a similar study by Fulkerson and French (2003) on a sample of adolescents from a multitude of racial and ethnic backgrounds, it was found that among the different racial and ethnic groups smoking was used as a form of weight loss and weight control. Similar findings were also found among a sample of 107 adult women (White, 2012). 55.1% of the women said they utilised smoking rather than dieting as a weight-loss strategy, and 43% said that they used smoking as a strategy to avoid overeating (White, 2012). Another study by White, McKee and O'Malley (2007) found that participants who had weight and eating concerns had stronger belief in smoking as a weight loss mechanism. This may influence the lifestyle decision to engage in smoking. Smoking is also addictive and as such, attempts to break the habit are very difficult to follow through on (WHO, 2015d).

Furthermore, tobacco companies have begun using equality as an angle to promote smoking in women. These companies try to convince more women to begin smoking by promoting gender equality and in so doing, may appeal to many women who agree with equal rights and have an equality mindset. They also attempt to promote smoking in women as they introduce different flavoured cigarettes as well as advertisements that appeal more to the feminine market. (Eriksen, Mackay, Schugler, Gomeshtapeh & Drope, 2015).

South African crime rate.

The crime rate in South Africa may influence a female manager's decisions regarding partaking in exercise such as running, jogging or cycling. Statistics in South Africa show that between 12% of South Africans were prevented in walking to the shops for fear of crime (SSA Victims of Crime Survey 2013/14, 2014). 34.7 % of South Africans felt they were prevented from walking to open spaces such as parks because of the crime in their area (SSA Victims of Crime Survey 2013/14, 2014). In cases of theft of personal belongings, 44.2% of the cases occurred in the street in a residential area (SSA Victims of Crime Survey 2013/14, 2014). The perceptions that South Africans have of crime may influence their decision to not engage in exercises such as jogging, cycling or running.

These factors may influence the health decisions that female managers make. They are of relevance as they provide insight into possible underlying influences that affect the lifestyle behaviours of female managers. The female executive or manager's position within the organisation and the associated level of work and time spent at work, may impact on the lifestyle choices that women managers and executives make on a daily basis (Au *et al*., 2012; Magee *et al*., 2011). Although there are many lifestyle factors that may be impacted on, this research study will specifically look at their lifestyle choices regarding smoking, alcohol consumption, diet and nutritional intake as well as level of physical activity. These lifestyle factors may affect the risk that female managers and executives have of developing cardiovascular disease.

1.11 Rationale

Organisations should prioritise the health of its employees. In South Africa, more women are entering the workplace (Casale & Posel, 2002; Ntuli, 2007 as cited in Sprague, 2008) and despite seeing more and more women taking up executive and management positions, the research into their cardiovascular health is lagging, not only in South African literature but internationally too. The vast majority of the literature has focused on men, and from the literature review above, it is evident that women have a unique experience within the workplace as well as in balancing their work and home lives and thus, the research gathered on men in the workplace cannot be generalised to women. It is also important that the cardiovascular health of the executive and senior management of companies is researched as these employees are highly valuable to their organisations as they usually have much experience and education and are responsible for highly important decision-making. Their experience of ill health will affect

the organisation's performance and achievement of goals. Their particular tasks and duties make them a unique group to study as they are usually faced with high demands, long hours at work and important decision-making and this may impact on their lifestyle and the health decisions they make on a daily basis. This research will begin to fill this gap on the cardiovascular health of female executives and management in the literature. This research may also be helpful in designing tailor-made cardiovascular health and well-being interventions aimed at lifestyle and psychological wellbeing risk factors, specifically for females in management and executive positions.

1.12 Research Aims

The aim of this research was to investigate if the risk of developing cardiovascular disease could be predicted by the lifestyle factors and the psychological well-being of the individual. The lifestyle factors include their drinking habits, nutrition/dietary habits as well as their levels of physical activity. The aspects of psychological well-being include depression, stress and anxiety. This research is specifically interested in investigating this within a sample of women managers and executives. This is a particularly interesting sample as the research thus far is limited and becoming more and more necessary as more women enter positions within upper management.

1.13 Research Questions

The research questions for this study are as follows:

1. Can the risk of developing cardiovascular disease be predicted by the lifestyle factors of women in positions of senior management and above?
    a. In particular, are drinking habits predictive of risk of cardiovascular disease in women in positions of senior management and above?
    b. In particular, are eating and dietary habits predictive of risk of cardiovascular disease in women in positions of senior management and above?
    c. In particular, is the level of engagement in physical exercise predictive of risk of cardiovascular disease in women in positions of senior management and above?

2. Can the risk of developing cardiovascular disease be predicted by the psychological aspects of well-being of women in positions of senior management and above?

    a. In particular, is depression predictive of the risk of cardiovascular disease among women in positions of senior management and above?

    b. In particular, is anxiety predictive of the risk of cardiovascular disease among women in positions of senior management and above?

    c. In particular, is stress predictive of the risk of cardiovascular disease among women in positions of senior management and above?

Chapter 2: Methodology

1.1 Introduction

This chapter focuses on the research methods utilised in carrying out the study. It includes details on the sample and sampling methods, the research design, the instruments used in gathering the data as well as a detailed procedure of how the study was conducted and analysed.

1.2 Sample and Sampling

The data was collected by a company called HealthInsite. The company has a programme called ExecCare which provides health and wellness information to companies regarding the health of their managers and executives. The data was collected over the time span of 3 years, from 2012-2014, permission was granted to the researcher by HealthInsite (see Appendix A). The initial data set included 4802 individuals. The researcher chose to isolate the results for the women from the sample for use in the research study. The sample in question was thus made up of 1163 women who are all in positions of senior management and above. The data collected however lacked information about the individual's racial group. The mean age of the sample was 43.19 years old with a standard deviation of 7.087 years (see Table 1 below). The sample is made up of individuals from a range of different companies and sectors from Johannesburg, Cape Town and Durban. The participants were acquired through their interest in utilising the ExecCare service offered by HealthInsite.

The sample included 163 individuals (14.1%) from the age group from 20 years old to 35 years old. The majority of the sample was in the age group of 36 to 45 years old (50.8%). 30.4% of the sample was in the age range from 46 to 55 years old, and only 4.7% of the sample fell into the range from 56 to 72 years old.

Table 1

Mean age, standard deviation, and age groups among female executives and senior managers

	Mean	**Standard deviation**
Age of the sample	43.19	7.087
Age Groups	Frequency	Percentage of sample
20-35	163	14.1
36-45	585	50.8
46-55	350	30.4
56-72	54	4.7
Total individuals:	1152	99.04
Missing data:	10	0.96

1.3 Research Design

The research was quantitative in nature. It followed a non-experimental, ex post facto design as the independent variables, lifestyle factors and aspects of psychological well-being, are pre-existing and were not manipulated in any way (Stangor, 2011). There were no control and experimental groups and thus the participants could not be randomly assigned. The design was also cross-sectional and a between-subjects design (Huck, 2012). It should be noted that due to the cross sectional nature of the study as well as the non-experimental design, causal inferences cannot be made (Huck, 2012; Stangor, 2011).

1.4 Procedure

This section explains the procedure that the researcher followed, as well as the procedure that HealthInsite followed in obtaining the data.

The researcher applied for ethical clearance for the study. Once ethical clearance was obtained (Protocol Number: MORG/15/001, see Appendix D), the researcher contacted HealthInsite to request access to the data. HealthInsite then cleared the data of any information that may be identifying to either the executives and managers or to the companies to which they belong. In this way the data was completely anonymised. Thereafter the data was analysed as discussed below. After conclusion of the analysis and the interpretation of the results, a copy of the final research report will be provided to HealthInsite.

The procedure that HealthInsite followed in obtaining the data began when the executive or manager booked an appointment with HealthInsite ExecCare. A week prior to the appointment, the client received an email with a link to a pre-assessment questionnaire which they were required to fill in. On the day of the appointment, the client was welcomed and then shown to the first room where a blood sample was taken by a trained professional. They were then taken to see a biokineticist for an ECG, posture analysis and a flexibility assessment. The client was then shown to the next room for their doctor's appointment which includes a basic medical examination as well as a discussion of their results on the pre-assessment questionnaire. They were also given the results from their blood sampling and these results were explained to them by a medical professional. They were then taken to the next room where they consulted with a personal trainer and completed a fitness test. The manager/executive was then taken to the next room where they consulted with a dietician regarding their current diet and nutritional intake, as well as received advice on how to change their diet to make it healthier. They then consulted with a counsellor regarding the results on the DASS-21 and any other issues that they may have wanted to discuss. They were then shown to the final room where they received a massage and were thanked for their time.

1.5 Instruments

Data collection was done through the Executive Wellbeing Programme. The programme used two instruments to gather the necessary data. These are the pre-assessment questionnaire as well as an appointment with ExecCare which will be explained in more detail below. The

Framingham Risk Equation was utilised in calculating the individual's ten-year risk of developing cardiovascular disease.

Pre-assessment questionnaire

This questionnaire was sent to the managers/executives via email a week before the appointment with ExecCare (Appendix C). It gathered information on their biographical details, occupational information, their goals for the assessment, their wellness goals for the year, their health interests, their family structure and family medical history. It then asked for information pertaining to the individual's own medical history and their lifestyle habits (including their smoking habits, drinking habits, physical activity levels and diet).

In this study, smoking habits were measured on a scale whereby the individual indicated how many cigarettes they smoke in a day. They are given five options, namely: "None", "less than 5 cigarettes", "5-10 cigarettes", "10-20 cigarettes" and "more than 20 cigarettes". Smoking behaviour was used in the first two sections of the analysis and excluded for the third section of analysis as smoking was one of the variables needed in calculating the individual's risk of developing cardiovascular disease.

Drinking habits were measured by the individual's indication of how many alcoholic units they typically consume in a week. One unit of alcohol is specified as 125ml glass of wine, 340ml can of beer, or 1 tot of spirits. The participant selected from five options, namely: "Don't drink", "less than 3 drinks", "3-4 drinks", "more than 4 drinks", "Can't do without a drink each day". Drinking habits were coded in this way for the first two sections of analysis. The third section of analysis required this variable to be dichotomized into "Rarely drinks" (made up of those individuals that chose options "Don't drink" and "less than 3 drinks") and "Drinks more than the recommended amount" (made up of those individuals who chose options "3-4 drinks", "more than 4 drinks", "Can't do without a drink each day"). The guidelines indicate that the recommended amount of alcohol weekly for women is 14 units of alcohol per week (National Health Services B, 2015; SABMiller, 2015).

Physical activity levels were measured on a scale where the individual indicated how often they partake in formal aerobic exercise on a weekly basis. The participant chose from four options, namely: "0-1 workouts", "2-3 workouts", "4-5 workouts", "6-7 workouts". Physical activity levels were coded in this way in the first two sections of the analysis. In the third section, the variable was dichotomized into "Exercises rarely" (which included individuals who

chose options “0-1 workouts” or “2-3 workouts”) and “Exercises regularly” (which included individuals who chose options “4-5 workouts”, or “6-7 workouts”).

Diet and nutrition was measured on a 15 item scale (Cronbach α =.663). The scale included items such as: “I eat breakfast within 2 hours of waking on most days (i.e. at least 5-6 days a week)”, “I eat between 2-4 medium portions of fresh fruit every day” and “I eat fish high in essential fats (e.g. salmon, pilchards, mackerel, kippers, yellowtail, anchovies, snapper, whiting) at least 3 times a week and/or take a good omega 3 essential fatty acid supplement”. “Yes” answers were the healthier decision regarding the items. The individual’s score on this item was found by summing the total as “Yes” was deemed a point of one and “No” was deemed a point of 0. The variable was dichotomized into “Healthy” and “Unhealthy” dietary decisions. A cut-off was made at 10 points and above to be deemed as “healthy”. This cut-off was chosen as the median calculated score for the sample was 10. This dichotomised score was used in each section of the analysis.

The pre-assessment questionnaire also asked the client to list any medication that they were currently taking and their obstetric history. Pertaining to psychological health, the questionnaire includes the DASS-21 Scale. The DASS-21 scale includes items such as: “In the past week, I found it hard to wind down” and “In the past week I couldn’t seem to experience any positive feeling at all”. It is answered using a scale from 0 to 3 (where 0 is “the item does not apply to me at all” and 3 is “the item applies to me very much, or most of the time”). The DASS-21 has received internal consistency scores across different samples that range from Cronbach α values of 0.82 (Andreou *et al*., 2011) to 0.93 (Henry & Crawford, 2005; Tully, Zajac & Venning, 2009). The separate scores for each aspect of psychological wellbeing were calculated using the DASS-21 scoring guide. The reliability for each of the subscales: Stress, Anxiety and Depression was .830, .697 and .871 respectively. The scoring guide categorised individuals as experiencing “Normal”, “Mild”, “Moderate”, “Severe” and “Extremely Severe” levels of stress, anxiety and depression respectively. The DASS-21 is not a diagnostic tool for depression, anxiety or stress. The scores attained do not indicate that the individual is depressed, stressed or anxious but rather indicates the degree to which the individual has experienced considerable symptoms over the last week. An individual who is categorised as “Mild” on one of the subscales for example means that they scored above the population mean but are still well below the severity of symptoms experienced by individuals who seek help for their disorder (Gomez, n.d).

The variables Stress, Anxiety and Depression were coded according to the recommended cut-offs for the first two sections of the analysis. The third section required each to be dichotomised and thus the variable was dichotomised into "Normal to Mild" (made up of the participants who were categorised as experiencing "Normal" or "Mild" levels of each aspect of psychological wellbeing) and "Moderate to Extremely Severe" (composed of the participants who were categorised as experiencing "Moderate", "Severe" or "Extremely Severe" levels of each aspect of psychological wellbeing).

Executive Wellbeing appointment

The appointment section of the Executive Wellbeing Programme was explained in the Procedure section above.

Framingham risk category

In this study, the dependent variable: risk of cardiovascular disease is categorised according to the criteria in Table 2 below. The risk category was established according to the National Cholesterol Education Program guidelines (National Institutes of Health, 2005) which comprise of the individual's risk score and the presence of certain risk factors (see Table 2 and 3). The risk categories range from Low to Moderate risk, Moderate Risk, High Risk and Very High Risk of developing cardiovascular disease in the next ten years.

Table 2

Classification of Risk categories (National Institutes of Health, 2005)

Criteria	Category
Heart disease, diabetes OR a risk score more than 20%	Very High Risk
Two or more risk factors AND a risk score between 10-20%	High Risk
Two or more risk factors AND a risk score less than 10%	Moderate Risk
Less than two risk factors	Low to Moderate Risk

The risk score is calculated as combined weighted score determined by the degree of exposure to specific risk factors. The result obtained for an individual represent that individual's percentage risk of developing cardiovascular disease within the next ten years. The equation calculates the score of an individual based on certain criteria: if the individual is a smoker or not, their gender, if they are above a certain age (women above the age of 55 and men above the age of 45 score higher), the individual's total cholesterol and HDL cholesterol levels, and

the individual's systolic blood pressure. These factors were also specifically mentioned by the South African Heart Foundation as the necessary factors to consider in assessing an individual's absolute risk for a heart attack (Steyn, 2007). In the current study, an individual's risk score was calculated using the Framingham equation for women. This score began at 0 and an individual would add or subtract points according to their relevant answers on five aspects, namely: age, total cholesterol according to their age, smoking status according to their age, HDL cholesterol level and Systolic blood pressure according to whether or not they were being treated with blood pressure medication. A risk score of below 9 indicates a less than 1% risk of developing cardiovascular disease in the next 10 years whilst a risk score of 17 indicates a 5% risk of developing cardiovascular disease in the next 10 years. A risk score of above 25 indicates that the individual has a 30% and higher risk of developing cardiovascular disease in the next 10 years.

The risk category was then determined by, in addition to their calculated risk score, identifying the individual's exposure to specific risk factors as set out in Table 3 below.

Table 3

Risk Factors for Cardiovascular Disease (National Institutes of Health, 2005)

Cigarette Smoking (If the individual smokes at all)	Low HDL Cholesterol (Less than 40 mg/dL)
Systolic Blood Pressure (140/90mmHg or higher)	Age (Women-55+ years, Men- 45+ years)

Table 3 indicates the cut-off values for each of the risk factors. These cut-off values indicate the point at which the risk factor is deemed risky and thus used in the classification of the risk categories as calculated in Table 2.

If an individual was deemed to be a smoker, regardless of how many cigarettes they smoked on a daily basis, this was included as a risk factor. If an individual had an HDL cholesterol value of less than 40mg/dL this was included as a risk factor. Furthermore, if an individual had a systolic blood pressure of 140/90mmHg or above, this was considered a risk factor. If the individual was older than 55 years of age, this was flagged as a risk factor. The number of risk factors that applied to each individual were counted and compared to the criteria in Table 2 in

order to ascertain the individual's risk category. Lastly, if the individual had been diagnosed with diabetes or had a risk score that categorised them as having 20% or more risk of developing cardiovascular disease over the next 10 years, this was considered as an additional risk factor for a high risk of developing cardiovascular disease.

Table 2 and 3 indicate the guidelines for calculating an individual's Framingham risk score as well as their risk category. The risk score is the individual's calculated risk of developing cardiovascular disease in the next 10 years. The risk category is the category of risk they fall into according to their exposure to risk factors as well as their calculated risk score.

In the current study, the frequencies pertaining to each of the risk factors are illustrated in Table 4 and 5 below, except for age which is illustrated in Table 1. The women executives had a mean HDL cholesterol level of 67.72mg/Dl (see Table 4). HDL cholesterol is protective against heart disease and as such is considered a "good" cholesterol (National Institutes of Health, 2005). The average for the current study is within the range of cholesterol levels that may lower an individual's risk of developing heart disease as a HDL cholesterol level of 60 mg/dL and above is considered to be ideal (National Institutes of Health, 2005). In the current study, the female executives were found to have a mean systolic blood pressure of 109.50mmHg and the average of 72.91mmHg for diastolic blood pressure. This average of 109.50/72.91mmHg is below the range for concern of developing cardiovascular disease which begins at the blood pressure level of 140/90mmHg.

Table 4

HDL Cholesterol and Systolic Blood Pressure in female executives

	Mean	**Standard Deviation**
HDL Cholesterol	67.72mg/dL	41.76
Systolic Blood Pressure	109.50mmHg	14.80
Diastolic Blood Pressure	72.91mmHg	9.87

In the current study, 91.7% of the sample self-reported that they did not smoke at all, while 2.4% said they smoked fewer than five cigarettes a day. 2.8% said they smoked between five and ten cigarettes per day, 1.5% said ten to twenty per day and 0.3% said they smoked more than twenty cigarettes in a day. See Appendix B for the frequencies for each variable used in the Framingham equation.

Table 5

Cigarette smoking habits of female executives and managers

Number of cigarettes smoked per day:	Frequency	Percentage of sample
None	1066	91.7
<5	28	2.4
5-10	32	2.8
10-20	18	1.5
>20	4	.3
Total individuals:	1148	98.7
Missing data:	15	1.3

1.6 Data Analysis

The analysis was conducted using the SPSS Statistical Programme and took the form of three sections. The first section was a descriptive section that indicated the frequencies within the data. The second section utilised the Pearson Chi² test of association to investigate if there were significant associations between the different independent variables and the dependent variable. The third section utilised binary logistic regression. Binary logistic regression allows the researcher to make predictions about the probability that a particular observation in the data will fall into either of two categories of the dichotomous dependent variable (Huck, 2012). This is appropriate for the purposes of this study as it has a categorical, dichotomous dependent variable (Risk of Cardiovascular Disease) as well as seeks to investigate the probability of

being at risk of developing cardiovascular disease as a function of the lifestyle factors and the psychological well-being of women in positions of senior management and above.

The variable "risk of cardiovascular disease" was dichotomised as low to moderate risk and moderate to very high risk in order to use this technique. This means that the dependent variable has mutually exclusive categories and independence of observations. This statistical technique is appropriate as the independent variables (Level of Physical Activity, Diet and Nutrition, Alcohol Consumption, Depression, Anxiety and Stress) are categorical in nature. Furthermore, it is appropriate as the researcher sought to investigate the probability of being at risk of developing cardiovascular disease as a function of the lifestyle factors and the psychological well-being of women in positions of senior management and above.

1.7 Ethics

HealthInsite granted the researcher access to the dataset (Appendix A) and removed all identifying information from the dataset before providing the researcher with this dataset. In this way, the participants have remained anonymous to the researcher, and their details will remain confidential. The data that was collected by HealthInsite was done so in an ethical and professional manner. The data given to the researcher was archival as it was gathered in the time period between 2012 and 2014. The consent forms that the participants signed explained the purpose of the tests (such as the ECG), as well as the procedure involved in performing the test and the possible risks involved with doing so. The consent forms also state that a doctor will be on site should they need to see a doctor during the consultation. The pre-assessment questionnaire informs the participant that the information that they provide to HealthInsite is confidential and that if they feel uncomfortable answering any of the questions, they may choose not to answer and the decision to do so would not harm them in any way. HealthInsite also provided a contact number should the participant have had any queries. The participant also had access to a counsellor during the appointment with ExecCare which was imperative as some of the questions asked within the questionnaire were of a sensitive nature.

Chapter 3: Analysis and Results

This chapter discusses the analysis of the data as well as the results that emerged following the analysis. The results are presented in terms of three sections, namely the frequencies and descriptive section, the bivariate analysis and the multivariate analysis for the different variables.

1.1 Frequencies and Descriptives pertaining to the Data

The total amount of individuals in each of the risk categories are indicated in Table 6 below. The total sample included 1163 individuals. Of these, 1119 were found to be classified in the low to moderate risk category. Sixteen individuals were found to be in the moderate risk category, there were no individuals in the high risk category and twenty-eight were categorised as being at very high risk of developing cardiovascular disease.

Table 6

Risk categories among female executives and senior managers

Risk Category	Frequency	Percentage of sample
Low to Moderate Risk	1119	96.2
Moderate Risk	16	1.4
High Risk	0	0
Very High Risk	28	2.4
Total individuals:	1163	100
Missing data:	0	0

According to a publication by the United States' National Institute of Health (2005), the Framingham equation as well as the recognition of certain cardiovascular risk factors in calculating one's risk of cardiovascular disease can be useful to the individual in that they may then be aware of their risk and become better informed on how to lower their risk. In this view,

it is better to have as low risk as possible. Due to the minimal amount of individuals found to be in the categories other than low to moderate risk, it was the researcher's decision to combine the categories moderate risk, high risk and very high risk into a larger category in order to conduct a sensible analysis. Thus the variable regarding risk of developing cardiovascular disease has two levels- namely: low to moderate risk and moderate to very high risk. This resulted in a marginally better balance between the categories as low to moderate risk of developing cardiovascular disease included 1119 individuals, while the moderate to very high risk category included 44 individuals. This allowed the researcher to conduct a more sensible analysis. The researcher does recognise the limitation in combining the different categories, as being moderately at risk may be vastly different to being very highly at risk, however the imbalance between the different risk categories severely affected the analysis as will be discussed below.

Initially the researcher did not intend to use a binary logistic regression, but instead sought to use an ordinal regression. This would have been an appropriate technique as the dependent variable, Risk of Cardiovascular Disease consisted of more than two levels, i.e. Low to Moderate Risk, Moderate Risk, High Risk and Very High Risk. These levels are ordered and thus an ordinal regression would have been appropriate. However, on running the statistical technique, warnings arose indicating that there were missing cells. In essence, the warnings were indicative of the fact that there were not enough individuals within the sample that fell into each of the combinations of the independent variables with the dependent variable (see Appendix E).

Thus, a statistical impasse led the researcher to the use of the binary logistic regression. While this technique is relevant, it was not the most preferred technique due to the necessary simplification of the dependent variable in order to make use of the technique. The Risk of Cardiovascular Disease variable was dichotomised as Low to Moderate risk and Moderate to Very High Risk. The researcher recognises the limitations incurred as this may oversimplify a more complex construct as well as reduce the robustness of the study's results.

1.2 Lifestyle Factors

The following section highlights the frequencies of each of the lifestyle factors investigated in the current study, including the level of alcohol consumption, the levels of physical exercise and the nutritional and dietary choices made by female executives and managers.

Alcohol consumption per day

493 individuals said that they did not drink alcohol at all, which is approximately 42% of the sample (see Table 7 below). 54.6% of the sample said that they drank less than three drinks per day. 0.5% of the sample said that they consumed three to four drinks per day, a further 0.5% said that they consume more than four drinks per day and the remaining 0.1% (which equates to one individual) said that they could not go without a drink each day.

Table 7

Alcohol consumption habits of female executives and managers

Number of alcoholic beverages consumed per day:	Frequency	Percentage of sample
None	493	42.4
<3	635	54.6
3-4	6	.5
>4	6	.5
Can't go without a drink per day	1	.1
Total individuals:	1141	98.1
Missing data:	22	1.9

Level of physical exercise per week

The results found that within the sample of female executives and senior management, 3.8% of them were very active and worked out six to seven times per week (see Table 8). 32.2% were found to work out four to five times per week, 29.8% were occasionally active and worked out between two and three times per week. 33.1% were however classified as sedentary and worked out between zero and one time per week. This meant, after dichotomising the individuals into active and occasionally active or sedentary, 419 individuals were found to be active and the majority (731 individuals) were found to be only occasionally active or sedentary (see Table 9).

Table 8

Exercise habits per week of female executives and managers

Number of formal aerobic workouts per week:	Frequency	Percentage of sample
0-1 (Sedentary)	385	33.1
2-3 (Occasionally Active)	346	29.8
4-5 (Active)	375	32.2
6-7 (Very Active)	44	3.8
Total individuals:	1150	98.9
Missing data:	13	1.1

Table 9

Dichotomised exercise habits per week

Number of formal aerobic workouts per week:	Frequency	Percentage of sample
0-3 (Sedentary/Occasionally Active)	731	62.9
4-7(Active/Very Active)	419	36.0
Total individuals:	1150	98.9
Missing data:	13	1.1

As an indication of obesity, the individual's body mass index was utilised and the results (see Table 10) show that 1.6% of the sample were underweight, 40.8% were at their normal weight, 30.4% were categorised as overweight and 27.3% were classified as obese.

Table 10

Body Mass Index among female executives and senior managers

BMI	Frequency	Percentage of sample
Underweight	18	1.6
Normal Weight	470	40.8
Overweight	350	30.4
Obese	314	27.3
Total individuals:	1152	99.04
Missing data:	11	0.96

Nutrition and dietary decisions

The results showed that 7.63% of the sample made between zero and five healthy dietary decisions, 51.69% made between six and ten healthy dietary decisions and 40.68% of the sample made healthy dietary decisions (see Table 11). After dichotomising the variable, it was found that 617 individuals were found to be making healthier decisions regarding their diet and nutritional intake while 546 were found to be making unhealthy decisions.

Table 11

Nutritional and dietary choices per week of the female executives and managers

Number of healthy dietary decisions made:	Frequency	Percentage of sample
0-5	88	7.63%
6-10	596	51.69%
11-15	469	40.68%
Total individuals:	1153	99.13%
Missing data:	10	0.87%

1.3 Psychological Wellbeing

The following section illustrates the frequencies of each of the aspects of psychological wellbeing investigated in the current study, including the level of stress, anxiety and depression experienced by female executives and managers.

Stress levels

The results indicate that 76.7% of the sample were found to be experiencing normal stress levels, 11.6% experiencing mild levels of stress and 8.1% experiencing moderate stress levels. 3.3% experiencing severe stress and the remaining 0.3% experienced extremely severe stress levels (see Table 12). This meant that the total number of individuals in the study experiencing severe to extremely severe stress levels was 42 individuals. Despite these individuals

representing a low percentage of the sample experiencing these levels, this is a noteworthy finding in practicality. Once the variable had been dichotomised into those experiencing "normal to mild stress levels" and those experiencing "moderate to extremely severe stress levels", the results showed that in the sample of women, 1027 individuals were deemed to be dealing with normal to mild levels of stress while 136 individuals were deemed to be dealing with moderate to extremely severe stress levels (see Table 13).

Table 12

Stress levels among female executives and senior managers

Stress category:	Frequency	Percentage of sample
Normal	892	76.7
Mild	135	11.6
Moderate	94	8.1
Severe	38	3.3
Extremely Severe	4	.3
Total individuals:	1163	100
Missing data:	0	0

Table 13

Dichotomised stress levels among female executives and senior managers

Stress category:	Frequency	Percentage of sample
Normal-Mild	1027	88.3
Moderate-Extremely Severe	136	11.7
Total individuals:	1163	100
Missing data:	0	0

Anxiety

It was found that 1.9% of the sample were found to be dealing with extremely severe anxiety, 2.6% with severe anxiety, 9.2% with moderate anxiety and 7.7% with mild anxiety (see Table 14 below). The remaining 78.6% were experiencing normal levels of anxiety. The anxiety levels were dichotomised into those experiencing normal to mild anxiety levels and those experiencing moderate to extremely severe anxiety levels (see Table 15). 1004 individuals within the sample were deemed to be experiencing normal to mild levels of anxiety, while 159 were experiencing above moderate levels of anxiety.

Table 14

Anxiety levels among female executives and senior managers

Anxiety category:	Frequency	Percentage of sample
Normal	914	78.6
Mild	90	7.7
Moderate	107	9.2
Severe	30	2.6
Extremely Severe	22	1.9
Total individuals:	1163	100.0
Missing data:	0	0

Table 15

Dichotomised anxiety levels among female executives and senior managers

Anxiety category:	Frequency	Percentage of sample
Normal-Mild	1004	86.3
Moderate- Extremely Severe	159	13.7
Total individuals:	1163	100.0
Missing data:	0	0

Depression

The results show that 83.4% and 7.9% of the individuals in the sample make up those experiencing normal to mild depression respectively. 6.8% of the sample were found to be experiencing moderate depression levels, 1.0% experiencing severe depression levels and 0.9% experiencing extremely severe depression (see Table 16). The dichotomised depression variable found that 1062 individuals were found to be in the range of normal to mild levels of depression, while 101 individuals were found to be experiencing moderate to extremely severe depression (see Table 17).

Table 16

Depression levels among female executives and senior managers

Depression category:	Frequency	Percentage of sample
Normal	970	83.4
Mild	92	7.9
Moderate	79	6.8
Severe	12	1.0
Extremely Severe	10	.9
Total individuals:	1163	100.0
Missing data:	0	0

Table 17

Dichotomised depression levels among female executives and senior managers

Depression category:	Frequency	Percentage of sample
Normal-Mild	1062	91.3
Moderate-Extremely Severe	101	8.7
Total individuals:	1163	100.0
Missing data:	0	0

1.4 Bivariate Results

The Pearson Chi-Square test of association was used to look for associations between the variables in question. This was appropriate to use as each variable is categorical in nature as well as consists of two independent factors, with two or more levels each. A summary of the bivariate results is available for quick reference in Table 24 at the end of this section entitled Bivariate Results.

Table 18

Chi² test- Lifestyle Behaviours and Risk of Cardiovascular Disease

	Df	χ^2	*p*
Dependent Variable: Risk of Cardiovascular Disease			
Alcohol consumption	8	16.692	**.033**
Level of physical exercise	6	7.068	.315
Nutrition and Dietary Decisions	2	16.026	**.000**

Lifestyle behaviours

Alcohol consumption.

The results of the Chi-square test for alcohol consumption and risk categories, χ^2 (8) = 16.692, p =.033 indicates that there is a significant association between the risk of developing cardiovascular disease and the amount of alcohol an individual consumes (see Table 18). The results indicate that 447 individuals who rarely drink alcohol were found to be in the low to moderate risk category. However, 11 individuals who rarely drink fell into the "very high risk" category (see Table 19).

Table 19

The cross-tabulation of number of individuals consuming varying levels of alcoholic beverages and risk categories of developing Cardiovascular Disease

	Risk Categories					
	Low to Moderate Risk	Moderate Risk	High Risk	Very High Risk		
Alcohol Consumption per day					χ^2	*p*
Don't drink	477	5	0	11	16.692	.033
<3 drinks	610	10	0	15		
3-4 drinks	4	1	0	1		
>4 drinks	6	0	0	0		
Can't do without a drink	1	0	0	0		

Level of physical activity.

The Pearson Chi-Square value of χ^2 (6) = 7.068 at the significance level of p=.315 indicates that there is no significant association between the risk of developing cardiovascular disease and the level of physical activity the individual participates in (See Table 18). This indicates that the level of exercise an individual participates in on a weekly basis does not appear to be associated with their risk of developing cardiovascular disease.

Body mass index

Body Mass Index (BMI) is utilised in this study as a proxy for obesity. The Pearson Chi-Square value of χ^2 (6) =27.278 at the significance level of p=.000 indicates that there is a significant association between the risk of developing cardiovascular disease and the BMI of an individual (see Table 20). This may indicate that an individual's BMI and weight category are associated with the risk they have of developing cardiovascular disease. The results indicate that 17 people who were categorised as at low to moderate risk of developing cardiovascular disease were underweight, 448 had a normal weight, 341 were overweight and 303 were obese (see Table

20). Among those at moderate risk for developing cardiovascular disease, none were underweight, 1 was normal weight, 6 were overweight and 9 were obese. No individuals were classified as being at high risk. Among the individuals at very high risk of developing cardiovascular disease, 1 was underweight, 21 were normal weight, 3 were overweight and 2 were obese.

Table 20

The cross-tabulation of the BMI's of individuals and risk categories of developing Cardiovascular Disease

	Risk Categories					
	Low to Moderate Risk	Moderate Risk	High Risk	Very High Risk		
BMI					χ^2	*p*
Underweight	17	0	0	1	27.278	.000
Normal Weight	448	1	0	21		
Overweight	341	6	0	3		
Obese	303	9	0	2		

Nutrition and dietary decisions

The Pearson Chi-Square value of χ^2 (2) =16.026 at the significance level of p=.000 indicates that there is a significant association between the risk of developing cardiovascular disease and the dietary and nutrition choices that an individual makes (see Tables 18 and 21). The results indicate that 33 individuals who were found to have made unhealthy dietary choices were in the category of people at moderate to very high risk of developing cardiovascular disease. This may seem like a small amount in the greater sample, yet considering that only 44 individuals were in the moderate to very high risk category, this indicates that 75% of the individuals in the moderate to very high risk category made unhealthy dietary choices. Furthermore, 606 of the 1119 individuals made healthy dietary choices and were in the low to moderate risk category, which is a 54.2% majority (see Table 21). This may indicate that healthy dietary choices are associated with a lower risk for developing cardiovascular disease.

Furthermore, a Pearson Chi-Square value of χ^2 (2) =0.90 at the significance level of p=.002 indicates that there is a significant association between the individual's body mass index and the dietary and nutrition choices that an individual makes.

Table 21

The cross-tabulation of number of individuals making healthy and unhealthy dietary choices and risk categories of developing Cardiovascular Disease

	Risk Categories					
	Low to Moderate Risk	Moderate Risk	High Risk	Very High Risk		
Nutritional Decisions					χ^2	*p*
Healthy Dietary Decisions	606	6	0	5	16.026	.000
Unhealthy Dietary Decisions	513	10	0	23		

Psychological wellbeing

Table 22

Chi² test- Psychological Wellbeing and Risk of Cardiovascular Disease

	Df	χ^2	*p*
Dependent Variable: Risk of Cardiovascular Disease			
Stress	8	5.307	.724
Anxiety	8	16.498	**.036**
Depression	8	9.534	.299

Stress

The Pearson Chi-Square value of χ^2 (8) = 5.307 at the significance level of p=.724 indicates that there is no significant association between the risk of developing cardiovascular disease and the level of stress an individual experiences (see Table 22).

Depression

The Pearson Chi-Square value of χ^2 (8)= 9.534 at the significance level of p=.299 indicates that there is no significant association between the risk of developing cardiovascular disease and the level of depression an individual experiences (see Table 22).

Anxiety

The Pearson Chi-Square value of χ^2 (8) =16.498 at the significance level of p=.036 indicates that there is a significant association between the risk of developing cardiovascular disease and the level of anxiety an individual experiences (see Table 22 and 23). The results show that of 914 individuals who were found to have normal levels of anxiety, 96.8% of them fell into the "low-to-moderate" risk category for the development of cardiovascular disease. This may

indicate that individuals with normal levels of anxiety may be less likely to be at a higher risk of developing cardiovascular disease.

Table 23

The cross-tabulation of number of individuals experiencing the different anxiety levels and risk categories of developing Cardiovascular Disease

	Risk Categories					
	Low to Moderate Risk	Moderate Risk	High Risk	Very High Risk		
Anxiety Level					χ^2	*p*
Normal	885	13	0	16	16.498	.036
Mild	82	1	0	7		
Moderate	103	2	0	2		
Severe	28	0	0	2		
Extremely Severe	21	0	0	1		

Table 24

Summary table of the Chi² tests- Lifestyle behaviours and Psychological Well-being Variables and Risk of Cardiovascular Disease

	Df	χ^2	*p*
Dependent Variable: Risk of Cardiovascular Disease			
Stress	8	5.307	.724
Anxiety	8	16.498	**.036**
Depression	8	9.534	.299
Alcohol consumption	8	16.692	**.033**
Level of physical exercise	6	7.068	.315
Nutrition and Dietary Decisions	2	16.026	**.000**

1.5 Multivariate Analysis

A binary logistic regression was performed to ascertain the effects of the lifestyle behaviours: exercise, alcohol consumption and diet and nutritional choices as well as the effects of psychological wellbeing factors: stress, anxiety and depression on the risk that participants have of developing cardiovascular disease (see Table 25). The logistic regression model was statistically significant, χ^2 (6) = 20.875, p <.005. The model explained 6.5% (Nagelkerke R^2) of the variance in risk of developing cardiovascular disease and correctly classified 96.2% of cases. The non-significant result of the Hosmer and Lemeshow test χ^2 (6) =.772, p>.005 indicates that the model is a good fit. There was no multicollinearity between independent variables.

Table 25

Logistic regression results for variables predicting the risk of developing cardiovascular disease

	B	Wald Statistic	*p*	Exp B
Predictor				
Depression	-.274	.189	.664	.760
Anxiety	-.221	.204	.651	.802
Stress	-.353	.415	.519	.702
Exercise	.222	.422	.516	1.248
Diet and Nutrition	1.441	15.084	.000	4.224
Alcohol Consumption	1.890	5.310	.021	6.619

The results indicate that Alcohol Consumption and Diet and Nutrition were significant predictors in this model. The results found that those who exhibited harmful drinking patterns were 6.619 times more likely to be at “moderate to very high” risk than those who rarely drank alcohol. Individuals that made unhealthy dietary choices were found to be 4.224 times more likely to be at “moderate to very high” risk of developing cardiovascular disease than those who made healthy dietary choices.

The results indicate that alcohol consumption is significant at p= .021 (Wald Statistic= 5.310). Thus, the odds of being at "moderate to very high" risk of developing cardiovascular disease when an individual engages in harmful drinking patterns is 6.619 times the odds of being at moderate to very high risk of developing cardiovascular disease when an individual rarely drinks alcohol. Thus, in answering the research question 1a- the drinking habits an individual practises are predictive of risk of cardiovascular disease in women in positions of senior management and above.

Furthermore, the results indicate that Nutrition is also significant at p=.000 (Wald Statistic=15.084). Thus, the odds of being at "moderate to very high" risk of developing cardiovascular disease when an individual engages in unhealthy dietary choices is 4.224 times the odds of being at "moderate to very high" risk of developing cardiovascular disease when an individual makes healthy dietary choices. Thus, in answering the research question 1b- the dietary and nutritional habits an individual practises are predictive of risk of cardiovascular disease in women in positions of senior management and above.

The results indicated that the remaining lifestyle behaviour- Exercise heeded a non-significant result at p= .516 (Wald Statistic=.422). Thus, in answering research question 1c- the level of engagement in physical exercise an individual participates in is not predictive of risk of cardiovascular disease in women in positions of senior management and above.

None of the variables relating to psychological well-being (Depression, Anxiety and Stress) were found to be significant predictors in the regression model. Depression heeded a non-significant result at p= .664 (Wald Statistic=.189). Anxiety heeded a non-significant result at p= .651 (Wald Statistic=.204) and Stress heeded a non-significant result at p= .519 (Wald Statistic=.415). Thus, in answering research questions 2a-c, none of the aspects of psychological well-being were found to be predictive of the risk of cardiovascular disease among women in positions of senior management and above.

Chapter 4: Discussion

1.1 Introduction

The statistically significant and non-significant findings of the study are discussed below in accordance with each research question outlined at the outset of this study. The discussion also draws on findings from other studies as well as studies found in the literature review in order to draw a better understanding from the results. The discussion contributes to the knowledge on cardiovascular disease and the factors associated with the development thereof, as well as the implications that the results found in this study may have in organisations in South Africa and on female executives and managers.

1.2 Contributions of this Study to the Research

Alcohol consumption

Analysis of the data using a binary logistic regression indicated that harmful drinking patterns are a significant predictor for an individual's risk of developing cardiovascular disease. Those who consumed more than three alcoholic beverages per day were considered to engage in harmful drinking patterns as these drinking patterns were found to exceed the recommended weekly alcohol consumption (National Health Services B, 2015; SABMiller, 2015). The female managers and executives who exhibited harmful drinking patterns were found to be 6.619 times more likely to be at moderate to very high risk of developing cardiovascular disease than those who rarely drank alcohol. These findings concur with the findings that emerged in the review of the literature (National Institute of Alcohol Abuse and Alcoholism, 2010; Patra *et al*., 2010). The findings from the current study, through a Chi^2 test of association, also examined the direct path between the amount of alcoholic beverages consumed within a week and the risk of developing cardiovascular disease. Previous research has seemed to address this direct relationship through the investigation of other variables that may come about as a result of alcohol consumption, such as obesity (Suk *et al*., 2003).

In the current study, 493 individuals said that they did not drink alcohol at all, which is 42.4% of the sample. 54.6% of the sample said that they drank less than three drinks per day. Thus, more than 90% of the sample (those that do not drink and those that do not consume more than 2 drinks per day) are thus practicing acceptable levels of alcohol consumption. 0.5% of the

sample said they consumed three to four drinks per day, a further 0.5% said they consume more than four drinks per day and the remaining 0.1% (which equates to one individual) said that they could not go without a drink each day.

Although only 1.1% of the current sample were identified as consuming three or more alcoholic beverages per day, the finding is of particular importance as the increased risk of developing cardiovascular disease may impact on the female executives and managers' quality of life, health and work performance. As mentioned in the literature review, individuals who experience cardiovascular disease may require constant monitoring and treatment of the disease, care and nursing due to physical or cognitive impairment and they may experience depression (Lee, 2010) and feelings of anxiety (National Health Services, 2015; Stroke.org, 2015). Their behaviour may also change, they may have difficulties understanding speech and communicating (due to paralysis) and they may experience difficulties with their memory and cognitive abilities (Stroke.org, 2015). These difficulties may affect their ability to fulfill their job tasks (National Health Services, 2015) as well as perform as they did pre-diagnosis. They may also need more time off work for treatment thus affecting absenteeism and possible completion of work tasks, which contributes to the high cost of absenteeism on the South African economy (Alexander Forbes Health, 2013).

The South African Demographic and Health survey in 2003 (Department of Health, 2007) gathered data from 9614 South African adults from all nine of the different provinces in order to make assertions about health and wellbeing concerns. They found that the percentage of South African women who acknowledge that they have consumed an alcoholic beverage within the last 12 months was at 16.0%. This represents one woman in six. Furthermore, the percentage of women that acknowledge having drunk an alcoholic beverage in the last seven days was 10%. This may however be a misrepresentation of alcohol consumption within women in South Africa (Department of Health, 2007), given the drinking culture within South Africa. In comparing the samples, the female executives and managers within the current study drank more regularly than those individuals within the South African Demographic and Health survey in 2003. While acknowledging the potential under-reporting within both samples, this may indicate that women executives drink more regularly as opposed to a sample of diverse South Africans. This may be due to a range of factors, including the executives' financial access to alcoholic beverages or their high workloads by virtue of their positions.

Pisa, Vorster, Kruger, Margetts and Loots (2015) investigated the difference between self-reported consumption of alcohol and biomarker indications of alcohol consumption. The sample included 2010 black South Africans from the North-West province and found that the results from self-reported measures of alcohol consumption may be debatable in some instances. There was a disjuncture between the levels on the biomarkers and the self-reported alcohol consumption (Pisa *et al*., 2015). This may indicate that individuals who claimed to abstain from drinking alcohol were not being truthful. Thus whilst a significant result was obtained for the impact of alcohol consumption upon cardiovascular disease, we should interpret these results with caution. The under-reporting of alcohol consumption may have impacted upon both the statistical significance of the findings and the odds ratio obtained. This is not to say that the result is not meaningful, but rather, that caution should be taken when making definitive claims about alcohol effects.

To corroborate this idea, statistics from the World Health Organisation (WHO, 2014m), showed that South Africans rank in the top thirty of the countries globally that have the highest alcohol consumption rates. Alcohol consumption in South Africa has increased from 10.1 litres of pure alcohol per capita (an average taken from their study done over two years from 2003-2005) to 11 litres of pure alcohol per capita (an average taken from their study done over two years from 2008-2010). The global average consumption per person over the age of 14 is 6.2 litres of pure alcohol in one year (WHO, 2014n). Among the individuals in South Africa that are considered to be 'drinkers', 27.1 litres of pure alcohol are consumed per capita (WHO, 2014m). This indicates that when the South Africans that abstain from drinking alcohol are excluded, the remainder of South Africans that do consume alcohol, drink heavily. Therefore, we can conclude that the 1.1% of the current sample that indicated that they drank heavily may be indicative of under-reporting, given that we would expect a higher level of heavy drinking within the sample.

"South Africa is a hard drinking country" (Seggie, 2012, p.587). While there are many people that do abstain from alcohol consumption, there are many individuals who do consume alcohol regularly. The results found in the current study pertaining to the number of alcoholic beverages consumed may have been under-reported. Within a country with a drinking culture, one may not realise the extent of their alcohol consumption as the individuals against which they may gauge their alcohol consumption may also consume large amounts of alcohol. An individual may not recognise the extent or frequency of their alcohol consumption as they do not seem to drink much more or much less than their friend groups, families or colleagues.

Furthermore, they may have under-reported their level of alcohol consumption as a result of denial or embarrassment. There is a negative stigma surrounding alcohol consumption in terms of being classified as an alcoholic or someone with an addiction (AlcoholRehab, 2016). Gomberg (1988) found that women perceived a more severely negative attitude towards female alcohol consumption and intoxication as opposed to male alcohol consumption and intoxication. This may have influenced the individual's honesty within the current sample as they may not wish to admit (to the medical professionals as well as themselves) that their levels of drinking may become, or are already, problematic.

A peculiar finding indicated 11 individuals who rarely drink alcohol fell into the very high risk category. This may indicate an underlying factor that is influencing the individual's risk of developing cardiovascular disease. This is however unsurprising as according to Steyn (2007) of the South African Heart Foundation, risk of heart disease can be affected by a multitude of factors, and the factors may have multiplicative effects on the level of risk the individual has of developing cardiovascular problems. In this way, it is possible for an individual who has moderate levels on a multitude of risk factors to be at higher risk than someone who has an extremely high level of risk on just one risk factor. This may explain the above results as an individual may drink to excess and not have fallen into the moderate to very high risk category because they may have excessive alcohol consumption as their only risk factor in developing cardiovascular risk. Alternatively, this finding may have arisen due to under-reporting of the level of alcohol consumption.

Nutritional and dietary choices, levels of physical activity and obesity

The findings from the binary logistic regression conducted also revealed that unhealthy dietary choices are a significant predictor of moderate to very high risk of developing cardiovascular disease. Individuals that made unhealthy dietary choices were found to be 4.224 times more likely to be at moderate to very high risk of developing cardiovascular disease than those who made healthy dietary choices. 33 individuals who were found to have made unhealthy dietary choices were in the category of people at moderate to very high risk of developing cardiovascular disease. This may seem like a small amount in the greater sample, yet considering that only 44 individuals were in the moderate to very high risk category overall, this indicates that 75% of the individuals in the moderate to very high risk category made unhealthy dietary choices. Furthermore, 606 of the 1119 individuals who made healthy dietary choices were in the low to moderate risk category, which is a 54.2% majority. This indicates

that within the current study, healthy dietary choices were found to be predictive of a lower risk for developing cardiovascular disease. This finding has implications for organisations as the dietary decisions a female executive or manager makes affect their risk of developing cardiovascular disease. Their choices may also negatively affect organisations as mentioned above. This is a potential area for intervention so as to lessen the risk that women executives and managers face of developing cardiovascular disease. This will be addressed later in the discussion.

A significant association was found between the women executives and managers' BMI score and their nutritional and dietary decisions. This indicates that the dietary choices that an individual makes may also affect their body mass index. An unhealthy diet may lead an individual to become overweight or obese (National Health Services, 2014; National Heart, Lung and Blood Institute A, 2012). Individuals who are obese have also been found to have greater risk of respiratory difficulties as well as osteoarthritis (Haslam & Wittert, 2009). As an indication of obesity, body mass index scores for the current sample indicated that 1.6% of the sample were underweight, 40.8% were at their normal weight, 30.4% were categorised as overweight and 27.3% were classified as obese. A significant association was found between the risk of developing cardiovascular disease and the BMI of an individual. This may indicate that an individual's BMI and weight category are associated with the risk they have of developing cardiovascular disease. This concurs with the significant association found between both alcohol consumption and nutrition and dietary choices and the risk of developing cardiovascular disease respectively. Both alcohol consumption and dietary choices may affect an individual's body mass index value (Krauss *et al*., 2000; Lourenço *et al*., 2012; Lukasiewicz *et al*., 2005; Steyn, 2007).

As discussed in the review of the literature above, obesity has been found to be a risk factor for cardiovascular disease (Hubert *et al*., 1983; Flegal, Carroll, Ogden & Johnson, 2005; Whitlock *et al*., 2009) and coronary heart disease (The Global Burden of Metabolic Risk Factors for Chronic Diseases Collaboration, 2014; Haslam & Wittert, 2009). It has also been related to the incidence of atherothrombotic stroke in women (Hubert *et al*., 1983). Furthermore, obesity has been linked with the development of type II diabetes, hypertension and certain types of cancer (Aronne, 2002; Haslam & Wittert, 2009).

Being overweight or obese in modern day society may also negatively affect one's emotional wellbeing. The female executives and managers may be influenced by the media portrayal of

women's bodies and looks (Mask, 2011; McGlynn, 2000) and as such may experience a constant pressure to look a certain way that others approve of, especially when coupled with the stereotypical beliefs and expectations that individuals may have of overweight or obese individuals.

The literature review revealed that women in the workplace may experience negative stereotyping and the negative associations and branding by virtue of their gender (Puhl, Moss-Racusin, Schwartz & Brownell, 2008). This negative stigmatisation may be further emphasized due to some of the perceptions held about overweight individuals. Overweight individuals may be perceived as lacking self-control, unintelligent, lazy or unsuccessful (Giel *et al*., 2012; Puhl & Heuer, 2010). These stereotypes may have emerged from the perception that weight is within one's control and that an individual may be overweight as a result of their own laziness or their overeating (Puhl & Heuer, 2010). Individuals that are overweight may experience prejudice in the workplace, including less opportunities for promotion, being paid less than normal weight peers, and unequal and unfair selection practices (Puhl, 2009; Puhl *et al*., 2008). The stereotypes may also affect the way that subordinates respond to them and the way that they treat the manager or executive.

It would be expected that the women in the study can afford to make healthier choices in terms of the food that they choose to buy. The women in this study may have greater access to the healthier foods that the general population of South Africans do not, by virtue of their position and yearly earnings. Healthier foods such as vegetables and health breads are often perceived to be costlier than unhealthier foods such as take-away meals (Coxall, 2014). The results indicate that the majority of these women make unhealthy dietary decisions. This may be as a result of their demanding work schedule and responsibilities (Bryan, 2015; Winston, Johnson & Wilson, 2008). They may want to make healthier dietary decisions but feel they have insufficient time to do so. They may then favour convenience foods or take-aways as they have insufficient time to make meals. This is supported by the finding that 285 of the female executives and managers said they did not eat three main meals. This may be as a result of feeling as though they do not have the time to do so.

57.7% of the sample of female executives and managers were deemed to be obese or overweight. This result may have emerged partly as a result of other findings within the study. Nutritional and dietary choices as discussed above may have affected the percentages that indicate that the majority of women executives and managers within the sample are overweight

and obese. Furthermore, this finding may be explained through the results on the level of physical exercise that the sample were found to partake in. 3.8% of the sample were very active and worked out six to seven times per week. 32.2% were found to work out four to five times per week, 29.8% were occasionally active and worked out between two and three times per week. 33.1% were however classified as sedentary and worked out between zero and one time per week. This meant, after dichotomising the individuals into active and occasionally active or sedentary, 419 individuals were found to be active and the majority (731 individuals) were found to be only occasionally active or sedentary.

Researchers found that in a representative sample of South African women, 49% were found to be inactive, 27% were found to engage in minimal amounts of exercise and 25% were found to be sufficiently active (Lambert & Kolbe-Alexander, 2000). These findings are comparable to the findings on level of physical exercise engaged in by the sample of women executives and managers. Research has shown further health consequences as a result of low levels of exercise, over and above the risk of cardiovascular disease. These include that sedentary levels of physical exercise may contribute to an individual's risk of deep vein thrombosis (National Health Services A, 2014), lipid disorders, colon cancer and osteoporosis (WHO, 2002p).

The results that were found are not likely to be due to the cost and affordability of gym contracts or health club subscription fees. Although these costs may range from approximately R199-R1950 per month (Planet Fitness, 2015; Shevel, 2013; Virgin Active Red, 2016) the women in the sample are executives or part of senior management and may presumably be earning enough on a monthly basis to afford gym membership fees or health club subscription fees.

These results indicating insufficient levels of physical exercise may have emerged as a result of the apparent lack of time (Sit, Kerr, & Wong, 2008) due to working hours and work load of the women managers and executives. The working hours of managers and executives may be long and include overtime hours in order to complete work for tight deadlines (Byron, 2005). This may mean that they spend time that they may have otherwise spent exercising, at work. Additionally, this may impact on the women in the sample prioritising other activities rather than exercising such as family time, fulfilling domestic duties and time spent on hobbies.

However, it should be noted that the instrument used to obtain the data on physical activity asks questions pertaining to formal aerobic exercise such as brisk walking, swimming, playing football and so on. The instrument did also include items pertaining to the amount of minutes an individual would engage in informal aerobic exercise on an average day. This data was not

provided to the researcher. This may indicate that individuals answering the questionnaire may have indicated that they engaged in informal aerobic exercise on a regular basis. Seen in conjunction with the items pertaining to formal exercise, an individual may spend their time engaging in informal rather than formal exercise and as such been categorised as sedentary within the current study, while this may not necessarily have been the case. The unavailability of the data related to informal aerobic exercise is a possible limitation of this study.

1.3 Psychological Wellbeing

None of the variables relating to psychological well-being (Depression, Anxiety and Stress) were found to be significant predictors of the risk of developing cardiovascular disease. There are nonetheless relevant points of discussion that emerge when considering the levels of stress, depression and anxiety that should be considered.

Stress

The results indicate that 76.7% of the sample were found to be experiencing normal stress levels, 11.6% experiencing mild levels of stress and 8.1% experiencing moderate stress levels. 3.3% experiencing severe stress and the remaining 0.3% experienced extremely severe stress levels.

In comparison to other similar samples, the stress levels within the current sample were seemingly at a much lower level. A study by Nasurdin, Ramayah and Kemaresan (2005) investigated if neuroticism moderated the relationship between job stress and organisational stressors such as conflict and blocked career. The sample of 285 managers was made up of 43.2% of female managers and almost 38% of the sample were below the age of thirty. It was found that the average manager experienced high levels of job stress. Another study by Yirik, Oren and Ekici (2015) examined the organisational stress levels among a sample of 318 managers. The sample was made up of 53.1% male managers. The results showed that both the female and male managers indicated high levels of stress.

Volmink (2014) recently conducted a study on the occupational stress of a sample of staff working at a public hospital in Johannesburg. The sample of 166 individuals included staff from administration, front line, back office and management. 68.1% of the sample had a stress level above the reference mean which is indicative of the experience of stress. The stress levels were investigated among the different job categories and significant differences were found

according to the job categories. The managers were found to have the highest mean stress level (Volmink, 2014).

In comparison to the samples above, the stress levels of the female executives and managers appear to be at a lower level than other similar samples. The model of Job demands and resources may be used to examine these findings further (Bakker & Demerouti, 2007). This occupational stress model suggests that the experience of stress or motivation within one's job may result due to the balance between the job demands and the job resources that the individual has access to in order to meet the job demands (Bakker & Demerouti, 2007). The model conceptualises job demands as "those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs", (Bakker & Demerouti, 2007, p. 312). Job demands include the high work load, challenging work tasks, an unsuitable/ill-equipped working environment and negative/ challenging interactions and relationships in the workplace. The model suggests that an individual who has a demanding job may experience health impairment as they find themselves emotionally and physically exhausted and lacking energy (Demerouti & Bakker, 2011).

Job resources refer to the physical, social, psychological and organisational aspects of the job/role that offer the individual assistance in achieving their goals at work, furthering personal development and decreasing their job demands and the related physiological and psychological costs (Bakker & Demerouti, 2007). Job resources include access to the necessary resources, autonomy, social support, meaningful work, a comfortable and secure work environment, efficient leadership and friendly, appropriate relationships with co-workers and team members. The resources are necessary in their own right as well as in assisting the individual to deal with the job demands (Demerouti & Bakker, 2011). The model assumes that job resources may create motivation in the individual as they provide a means to manage their job demands (Demerouti & Bakker, 2011). The model also suggests that the presence of job resources may lead to increased engagement in the work an individual does (Demerouti & Bakker, 2011).

This model could possibly be used to explain the stress levels of the female executives and managers. The current study, it should be noted, does not have data pertaining to the workload, work tasks and schedules or access to resources of the women executives and senior management. It may, nonetheless, be assumed that due to their position within their respective organisations, that most of their tasks are challenging and that their workload is high. The high

percentage of the women in the sample that experienced normal levels of stress (76.7%) may indicate that these executives and managers have access to high levels of job resources in order to manager their job demands successfully most of the time. It may be assumed that by virtue of their job positions, these women may have a degree of control and autonomy over their work tasks and schedules. They also presumably have work environments that are conducive to their necessary performance in meeting deadlines and fulfilling tasks. Furthermore, the results that emerged may be indicative of a self-selection bias in that the women who were included in the sample may have participated in the ExecCare programme out of their own interest in doing so. This may indicate that some of the women included in the sample were likely to be those who prioritise health and wellness and as such, may already be aware of and practicing stress-management behaviours.

Researchers identified that having lower control and autonomy within the job role may affect one's stress and anxiety levels (Akin, Baloglu & Karsli, 2014). Akin and colleagues (2014) studied the stress and anxiety levels of 177 female university administrators and found that the overall levels of anxiety were low and the stress levels were moderate. However, they also found that those with lower managerial positions were found to have higher levels of anxiety and higher levels of stress. Those within lower managerial levels may be individuals with less autonomy or less control over their work schedules. This may relate to the results found in the current study in that the executives and managers presumably have a high level of autonomy and control which may have impacted on the majority experience of normal stress and anxiety levels. Future research may consider investigated the relationship between psychological wellbeing and the work demands and resources available to female managers and executives.

However, despite the relatively lower percentage of women in the sample experiencing moderate to very high stress levels, there are still 11.7% of women within the sample that are experiencing moderate to very high levels of stress. This may be as a result of an imbalance between job demands and resources. These women who are experiencing moderate to very high levels of stress may be in a workplace where they do not have support from their colleagues, an extremely high workload, poor access to information or work that is not challenging or meaningful to them to name a few possible reasons for their experience of stress. They may also be experiencing strain due to a work-life imbalance. This is a possible area for future research.

The 11.7% noted above represents 136 individuals that were deemed to be dealing with moderate to extremely severe stress levels. Despite these individuals representing a low percentage of the sample experiencing these levels, this is a noteworthy finding. This has implications as heightened stress levels may affect the individual's health as mentioned in the literature review above. While it is an anomalous finding within the current study, stress has been linked to the risk of developing coronary heart disease (Fishta & Backé, 2015; Khayyam Nekouei *et al*., 2014). Stress has also been found to affect an individual's performance through headaches, muscle tension, stomach problems and sleeping problems (American Psychological Association, 2010; American Psychological Association, 2015). Stress may also cause an individual to experience a lack of energy, restlessness and disinclination (American Psychological Association, 2010; American Psychological Association, 2015). It may also affect their emotional wellbeing through outbursts and irritability (American Psychological Association, 2010; American Psychological Association, 2015).

The symptoms that individuals who are stressed may experience may also affect their work performance as their muscle tension and headaches (American Psychological Association, 2010; American Psychological Association, 2015; Gandhi *et al*., 2014) may not allow them to fully focus on their work, or are emphasized depending on their work tasks and the equipment they utilise while at work. They may thus fall behind on their tasks or fail to meet deadlines. The possibility of irritability and emotional outbursts may affect relationships with colleagues and clients as they may react in a way that is negative, impatient or harsh and impact negatively on the relationship (American Psychological Association, 2010; American Psychological Association, 2015). As a leader within their respective organisations, the way that a leader behaves and responds to their subordinates may shape the work environment and the work culture which may in turn affect the performance of the other employees. Stress has been found to affect the performance, productivity, job satisfaction and interpersonal relationships of individuals within organisations (Alexopoulos, Palatsidi, Tigani & Darviri, 2014; Gandhi *et al.*, 2014; Helge, 2001; Sackey & Sanda, 2009; South African Depression and Anxiety Group, 2015).

Anxiety

Anxiety was not found to be a significant predictor of the risk of developing cardiovascular disease in the logistic regression analysis. However, a pertinent finding indicated that 1.9% of the sample were found to be dealing with extremely severe anxiety, 2.6% with severe anxiety,

9.2% with moderate anxiety and 7.7% with mild anxiety. The remaining 78.6% were experiencing normal levels of anxiety. This indicates that 159 female managers and executives were experiencing above moderate levels of anxiety. Researchers found that in a sample of 4351 South African adults, anxiety disorders were the most prevalent lifetime mental health issues experienced, with 15.8% of the sample experiencing anxiety (Herman, Stein, Seedat, Heeringa, Moomal, Williams, 2009). The levels of anxiety experienced by the women executives and managers seems to be somewhat higher than those experienced by a representative sample of South Africans, even when considering that most of this sample was unemployed (Herman *et al*., 2009).

The Anxiety and Depression Association of America (2016) identified some of the sources of anxiety in the workplace. Their results revealed that individuals may find their work responsibilities, solving problems, imminent deadlines and changes to the work environment and methods of working as anxiety-provoking. Relationships with their colleagues and clients were also mentioned as triggers for anxiety as well as the management of staff (Anxiety and Depression Association of America, 2016). In the current study, information about the sources of anxiety were not examined, but these findings may provide some understanding for the results in the current study. The managers and executives that are experiencing moderate to very high anxiety levels may be having similar difficulties as the role of a manager or executive may presumably require the individual to attend to their work responsibilities and work towards tight deadlines. They are also assumedly responsible for the management of staff members. This may include handling tense conflict situations, solving dilemmas as well as attending to the relationships between themselves and colleagues. If this is the case for the female executives and managers in question, their performance in their role may be hampered as they may feel ill-equipped to handle these situations. Their anxiety in response to these circumstances may result in strained relationships, reluctance to participate in meetings or social situations and avoidance of the anxiety provoking situation (Anxiety and Depression Association of America, 2016). These may all impact on their performance at work (Anxiety and Depression Association of America, 2016).

Furthermore, symptoms related to anxiety may affect the individual's performance at work, such as through difficulties in concentrating (National Institute of Mental Health A, 2015; Anxiety and Depression Association of America, 2015), disrupted sleeping patterns which may result in lethargy and listlessness as well as headaches, muscular tension and aches, shaking, twitches, irritability, nausea and fatigue (National Institute of Mental Health A, 2015). These

could possibly affect the female executive or manager's relationships with colleagues and subordinates and their ability to meet their deadlines and fulfil their duties.

This may be costly to the organisation as the individual may be absent from work (Johnson, n.d.) in the event of an anxiety or panic attack. They may become overwhelmed by their anxiety levels and become incapacitated for a period of time. If they are absent from work, this may result in loss to the company. An executive and manager who is absent for a long period of time or absent from work on a regular basis may affect the productivity of the organisation (Alexander Forbes Health, 2013) as they may be responsible for decision-making, and have authority to disseminate information to other employees so they may continue their work tasks. The manager may also be a source of motivation for their teams or employees and their absence may lower the morale or productivity levels. Failure to meet their deadlines as a result of their absenteeism may cause the company to lose clients. In order to counter these possibilities, the individual may require training on different coping mechanisms to better the manner in which they deal with their anxiety (Anxiety and Depression Association of America A, 2016). In order to aid the individual in coping with their anxiety, the organisation would possibly benefit from sending them to a psychologist who may be able to assist the employee in identifying the triggers for their anxiety as well as developing coping mechanisms to deal with anxiety.

The current study, through Chi^2 analyses, found a significant association between the risk of developing cardiovascular disease and the level of anxiety an individual experiences. The results show that of 914 individuals who were found to have normal levels of anxiety, 96.8% of them fell into the low to moderate risk category for the development of cardiovascular disease. This may indicate that individuals with normal levels of anxiety may be less likely to be at a higher risk of developing cardiovascular disease. These results concur with the findings of the literature review. Anxiety has been linked to greater risk of stroke (Lambiase, Kubzansky & Thurston, 2013), coronary heart disease (Roest *et al*., 2010; Janszky *et al*., 2010) and acute myocardial infarction (Janszky *et al*., 2010).

Depression

The results of the current study found that in neither the chi-squared test of association nor the logistical regression was a significant relationship found between depression levels and the risk of developing cardiovascular disease. The results do indicate relevant points of discussion for the depression levels of female managers and executives. The findings show that 83.4% and

7.9% of the individuals in the sample make up those experiencing normal to mild depression respectively.

These results indicate that the majority of the sample of women executives and managers had normal to mild levels of depression whereas 7.7% were experiencing moderate to extremely severe levels of depression. In comparison to other samples of individuals in similar studies, the levels of depression and anxiety within the sample of executives and managers seem somewhat comparable and ranged from lower to approximately equal levels of depression. When compared to Americans, 6.6% of Americans had experienced at least one major depressive episode over a year long period of the United States population (Center for Behavioral Health Statistics and Quality, 2015). Researchers found that Africans had a 9.7% prevalence in the sample over an individual's lifetime and a 4.9% prevalence among the sample over a year long period (Tomlinson, Grimsrud, Stein, Williams & Myer, 2009). The study also found that women were "1.75 times more likely to experience lifetime depression than males" (Tomlinson *et al*., 2009, p.3). The sample included South African adults from diverse backgrounds, both employed and unemployed and educated and uneducated (Tomlinson *et al*., 2009). A South African IDeA report (South African Depression and Anxiety Group, 2015) found that in a sample of 1061 employees and managers, 24% had been diagnosed with depression by a healthcare specialist in the last year. Thus in comparison to the sample of South African employees and managers, the women executives and managers seem to have fewer instances of depression.

Another possible reason for the low percentage of individuals experiencing moderate to extremely severe depression is that the women executives and managers may have greater access to services such as a psychologist by virtue of their yearly earnings. The average manager in South Africa may earn approximately R10 500 a month (Statistics South Africa, 2010) yet this may be even higher now in 2016. Consultations with psychologists within the private sector charge approximately R750 per consultation (Bosworth, 2016; Du Preez, 2016). Therefore, we would expect that most managers would be able to afford some degree of access to psychological services. This point may be linked to the lower rates of depression, anxiety and stress found in the study which may also be attributed to the sample of women executives and managers being health-conscious and aware of and currently addressing their depression levels.

However, a pertinent finding was made in that 6.8% of the current sample were found to be experiencing moderate depression levels, 1.0% experiencing severe depression levels and 0.9% experiencing extremely severe depression, thus indicating that 101 female managers and executives were found to be experiencing moderate to extremely severe depression.

This has implications in practice. As discussed above in the literature review, depression may affect an individual's mental and psychological health by affecting their mood, making them experience feelings of guilt, extreme sadness, worthlessness, hopelessness and irritability (National Institute of Mental Health, 2015; WHO, 2012i). These symptoms may affect their self-confidence and confidence in their abilities at work. They may also affect their relationships with clients and colleagues, as well as their inclination to perform well at work as they may doubt the quality of their contributions. Their level of participation in their tasks and social situations may also decline as they may experience a loss of interest in activities (National Institute of Mental Health, 2015; WHO, 2012i). This may lead to their avoidance of work and colleagues (National Institute of Mental Health, 2015; WHO, 2012i). Depressed individuals may also experience aches and pains, nausea, vomiting and dizziness (Kapfhammer, 2006; National Institute of Mental Health, 2015; WHO, 2012i). These symptoms may affect their ability to fulfil their tasks as well as lead the individual to be absent from work.

Returning to the research questions posed at the outset of the study, in summation, research question 1a and 1b were answered in agreement as the harmful drinking habits and the nutritional and dietary choices an individual made were found to be predictive of risk of cardiovascular disease in women in positions of senior management and above. Research question 1c was answered in opposition as the level of physical exercise that the individual engaged in was not found to be predictive of the risk of the developing cardiovascular disease. Research questions 2a-c were answered in opposition as depression, anxiety and stress were not found to be predictors of the risk of developing cardiovascular disease within the sample of women executives and managers.

1.4 Risk of Developing Cardiovascular Disease

The dependent variable, Risk of developing Cardiovascular Disease, was calculated using the Framingham equation. Only 44 of the 1163 individuals that were included in this study were classified as being at moderate to very high risk. The Framingham equation has been validated in different populations (Bitton & Gaziano, 2010) and it is the most commonly used equation in calculating an individual's risk score (Bitton & Gaziano, 2010). A study conducted by D'Agostino, Grundy, Sullivan and Wilson (2001) showed that the risk score has been validated across six different American populations. The Framingham equation had previously been utilised within a sample of non-diverse individuals and thus, a further study sought to examine the use of the risk equation in predicting coronary heart disease in samples of various ethnicities. The results indicated that the Framingham equation was suitable for use with individuals from various ethnicities as the risk score had worked well in identifying coronary heart disease events within five years of the beginning of the study (D'Agostino *et al*., 2001).

The risk of developing cardiovascular disease variable is calculated utilising data from six risk factor variables, namely: the individual's smoking habits, their gender, their age, the incidence of diabetes, the individual's total cholesterol and HDL cholesterol levels, and the individual's systolic blood pressure. The results that were found may have arisen due to the absence of risk factors within the sample or the presence of risk factors at a level considered below the point of deeming them "risky". The frequency data revealed findings that may better explain why the percentage of individuals deemed to be at moderate to very high risk of developing cardiovascular disease was so low.

Smoking

Smoking habits were deemed to be a risk factor if the individual confirmed that they were indeed a smoker, rather than focusing on how many cigarettes were smoked in a given time period. In this study, 91.7% of the sample indicated that they were non-smokers. Thus, only 8.3% of 1163 women in the current study were smokers.

The SANHANES-1 study was conducted using a sample of South African individuals across a range of ages and ethnicities (Human Sciences Research Council, 2013). The sample did not include individuals who are living in old age homes, hospitals, homeless individuals or those in educational or military accommodation. The study was conducted in 2012 and showed that 16.2% of 25 532 South African individuals were daily smokers (Human Sciences Research

Council, 2013). The study also found that 6.9% of South African women are smokers (Human Sciences Research Council, 2013). A further study by the World Health Organisation in 2012, revealed that 7.4% of female South Africans were smokers (WHO, 2015l) while Tobacco Atlas' results from a study in 2013 indicated that 9% of women in South Africa use tobacco on a daily basis (Eriksen *et al*., 2015). Thus, it would seem that the results in the current study are similar to other studies with similar samples.

Although these figures are comparable to the results found in the current study, some participants may have reported being non-smokers while they are actually smokers. In a study on South Korean men and women, it was found that in sample of 1620 individuals, 12% of men and 59% of women reported that they were non-smokers while a medical assessment examining the chemical levels of smoking toxins in their bodies showed otherwise (Eriksen *et al*., 2015).

Women may feel less inclined to report their smoking habits as some individuals hold negative beliefs that women who smoke do not conform to gendered expectations (Ritchie, Amos & Martin, 2010). In a study by Marks, Steyn and Ratheb (2001), 1314 Xhosa women were interviewed and 46% of the women said they were non-smokers while the remaining 54% smoked cigarettes or used snuff. The study also examined the attitudes that Xhosa women held about tobacco-products and the consensus of the women interviewed was that tobacco use by black women was shameful and taboo. Of the women who used tobacco, the majority indicated that they did so in private or within a close group of trusted individuals (Marks *et al*., 2001). The view that women engaging in cigarette smoking is taboo may be an underlying factor that influenced the number of individuals within the sample that reported their smoking habits as well as the amount of cigarettes smoked per day. This may have affected the likelihood of finding women executives and managers at high risk of developing cardiovascular disease as the smoking data was utilised in calculating the Framingham equation.

Furthermore, the younger sample may have been comprised of fewer smokers because of the ban on promoting smoking in South African advertising. This younger sample may have been less likely to start smoking as compared to an older sample who would have been subjected to advertising promoting smoking. Prior to 1999 smoking was marketed as a socially acceptable habit and smoking was encouraged through the media portrayal of smoking as trendy, social and grand (Stassen, 2013; Amos & Haglund, 2000). However, quite a number of the current sample were raised in a time when smoking advertising had been banned. Research by the

WHO has shown that a ban on advertising and sponsorship has been an effective measure in controlling the use of tobacco (WHO, 2013q). In this way, the younger sample may have been affected by this lack of smoking advertising and this may be a further reason as to why fewer women indicated being smokers in the current sample.

Diabetes

In the current study, 28 individuals in the sample had been diagnosed with diabetes. That is 2.42% of the sample had diabetes. According to the International Diabetes Federation (2015), "there were 2.7 million cases of diabetes in South Africa in 2014". The prevalence of diabetes in South Africa in individuals in their adult years (in the range from 20 years old to 79 years old) is 8.4% (International Diabetes Federation, 2015). The percentage of women executives and managers with diabetes in the current study is lower than the percentage of South African individuals found to have diabetes within the study by the International Diabetes Federation.

As mentioned above in the literature review, diabetes may be caused and compounded by lifestyle behaviours such as a diet high in sugar and saturated fats, inadequate exercise and smoking (National Diabetes Education Program, 2007). The results found indicate that 91.7% of the current sample do not smoke cigarettes. Smoking is a risk factor for the development of diabetes and as such, the current sample have a reduced risk in this regard. Furthermore, the results indicated that the majority of women in this study do not make healthy dietary choices. However, only three items on the nutrition and diet subsection of the Wellness questionnaire pertains to a diet high in saturated fat ("I remove the fat and skin from meat, poultry and fish before cooking on most days AND when I eat out I leave off the fat and skin", "I choose low-fat or fat-free dairy products most of the time (i.e. low fat or fat-free milk, yoghurt, white cheeses)" and "I am aware of reading labels and either myself or the person buying my snacks purchases products with <10g total fat per 100g most of the time"). As such, the individual may make unhealthy dietary choices such as not eating three main meals or eating fruit every day, but not consume food that is high in saturated fat. Thus, despite making fewer healthy dietary choices, these women may have a lesser risk of developing diabetes by virtue of them not consuming a diet high in saturated fat.

These women in positions of management and above may have greater access to medical services and health care. The public health care services in South Africa leave much to be desired as they struggle to cope with the high volumes of patients (WHO, 2010o), lack of equipment as well as the difficulties associated with poor management (Edmeston & Francis,

2013). Within South Africa, the cost of private healthcare is increasingly high (Edmeston & Francis, 2013, WHO, 2010o). In this way, individuals who can afford the private healthcare costs may be more inclined to make use of these facilities rather than those of the public healthcare based on the negative beliefs and conceptions about public healthcare, both founded and unfounded (Edmeston & Francis, 2013). This may be a further reason why fewer individuals were found to have been diagnosed with diabetes as they may have been to dieticians or general practitioners who may have advised them to alter their diets and manage their weight so as to reduce their chances of developing diabetes.

A further factor that may influence the development of diabetes is the individual's level of physical exercise. The majority of the women in this study do not engage in sufficient levels of physical exercise on a weekly basis. Thus, the percentage of individuals who have been diagnosed with diabetes is lower than what one would anticipate with the knowledge that the majority of the women do not engage in sufficient exercise. This will be discussed further below.

The incidence of diabetes in South African women is generally higher than in South African men (Mollentze & Levitt, 2006). Mollentze and Levitt (2006) conducted a study on 13 827 adults in South Africa and 3.7% of the women in the sample had diabetes as compared to 2.4% of men. Although diabetes was previously known to be commonly diagnosed in older individuals, a study by Koopman, Mainous, Diaz and Geesey (2005) showed that the mean age of diagnosis has fallen. The study compared age at diagnosis of Type 2 diabetes in two studies- the more recent NHANES of 1999-2000 and the NHANES III of 1988-1994. The mean age of diagnosis in the earlier study was 52.0 years old, while the more recent study indicated the mean age of diagnosis to be at 46.0 years of age (Koopman *et al*., 2005). Thus it is surprising that a low percentage of the current sample could confirm diagnosis of diabetes as 30.4% of the sample fell into the age range of 45 to 55 years old. The women managers in the study may however be within the prediabetic range and not realise it as yet.

The prediabetic range is a cholesterol level between 140 and 199 mg/dl (National Institute of Diabetes and Digestive and Kidney Diseases, 2014). 580 women in the current study fell into this range. This indicates that the individuals may have impaired glucose tolerance but would need to undergo a second test in order to establish if their 2-hour blood glucose level is greater than 200mg/dl which may indicate that they have diabetes (National Institute of Diabetes and Digestive and Kidney Diseases, 2014). This research could not investigate the pre-diabetic

levels as the data gathered only indicated the presence or absence of diabetes diagnosis. Knowledge of the pre-diabetic levels may have been more informative in this regard.

A potentially worrying note was that 474 women in the study had a cholesterol level of above 200mg/dl. According to the above information on pre-diabetic cholesterol levels, this may indicate that they may have diabetes but have not been to a healthcare professional for diagnosis. This is particularly problematic as these individuals may be unaware of their potential diabetes risk and may not be receiving any treatment for diabetes or acting in such a way to prevent the onset of diabetes symptoms.

Cholesterol levels

42.1% of the individuals in the study had a total cholesterol level of greater than 200mg/dl. Thus 42.1% of the sample had high cholesterol levels included as a risk factor within the study. Although this is a large percentage of the sample, and may have contributed to risk profiles in the moderate to very high range, it is also a possibility that some of the individuals who had high cholesterol levels had only this one risk factor. As indicated in the literature review above, the presence of only one risk factor (albeit severe presence) does not lead an individual to be categorised as having a moderate to very high risk of developing cardiovascular disease.

In the current study, 37 individuals have a HDL cholesterol level of less than 40mg/dl. This is indicative of a higher risk of developing heart disease as higher levels of HDL cholesterol may offer a protective factor against the development of heart disease as indicated above in the review of the literature (National Institutes of Health, 2005). 922 individuals had a LDL cholesterol level of 160 mg/dl and above. This is indicative of high LDL cholesterol levels and this may put individuals at risk of developing heart disease (National Institutes of Health, 2005). The high number of individuals in the study with high cholesterol levels may have resulted as more than half of the women in the study are overweight or obese. As mentioned above in the review of the literature, obesity may cause high cholesterol levels (National Health Services A, 2015). Furthermore, 546 individuals within the sample (46.95%) were found to make unhealthy dietary choices. This is in line with the findings in the literature review as dietary choices have been linked to heightened cholesterol levels (National Health Services A, 2015). An individual may also develop high cholesterol levels as a result of not participating in sufficient amounts of physical exercise (National Health Services A, 2015). This indicates that their lack of sufficient exercise on a daily basis may have contributed towards their high levels of cholesterol.

Although many individuals within the sample presented with high levels of cholesterol, this may have been their only risk factor for the development of cardiovascular disease. However, these figures indicate that a substantial amount of South African female managers may be experiencing high levels of cholesterol. This is worrying and certainly may have practical implications as mentioned in the review of the literature above.

High cholesterol itself does not present with any symptoms (National Heart, Lung and Blood Institute, 2012) which means that an individual with high cholesterol may not realise that this is the case. High blood cholesterol has however been linked to cardiovascular diseases such as coronary heart disease, stroke as well as heart disease (Lackland as cited in Cardiovascular Week, 2005; National Heart, Lung and Blood Institute, 2012; National Institute of Mental Health, 2002; Ortega *et al*., 2006; van Wyk *et al*., 2005) and as such, high cholesterol levels that go unnoticed may develop into serious diseases.

Blood pressure

The results showed that 94.9% of the sample had a blood pressure level below that of 140/90mmHg. This indicates that 5.1% of the sample are within the range from 140/90mmHg and higher and blood pressure was included as a risk factor when calculating their risk of developing cardiovascular disease.

In the SANHANES study which was based on a South African sample, the mean systolic blood pressure for women was 126.6mmHg. The blood pressure of the sample as a whole (including men and women) was analysed in conjunction to their age and it was found that the mean systolic blood pressure increased as the age of the individuals increased. The mean blood pressure was 118.1mmHg in individuals aged from 15 to 24 years old, and reached more than 149.3mmHg in the older individuals aged 65 years and older. However, the mean systolic blood pressure of those in the 25- 34 age group was at 121.7mmHg. This is a prehypertension level of blood pressure and may be understood as an early warning of the possible development of high blood pressure. Within the current study of female managers and executives, the mean systolic blood pressure was 109.48mmHg, which is below the range (120mmHg-139mmHg) of prehypertension levels of blood pressure. Furthermore, the mean diastolic blood pressure in the current study was 72.91mmHg which is outside of the prehypertension range (80mmHg-89mmHg) (American Heart Association A, 2015).

However, within the current sample, 321 individuals had reached systolic blood pressure levels indicative of prehypertension and 344 individuals had reached diastolic blood pressure levels

within the range of prehypertension levels. Furthermore, 59 individuals had systolic blood pressure levels within the range of 140-180mmHg which are indicative of high blood pressure while 97 individuals were found to have diastolic blood pressure levels above the prehypertension range which indicates high blood pressure. Blood pressure has been associated with diet and level of exercise (WHO, 2015j). Just less than half of the female executives and managers' made unhealthy dietary choices and more than half engaged in low levels of physical activity. Furthermore, as discussed in the literature review, obesity or being overweight may also contribute toward developing high blood pressure (National Heart, Lung and Blood Institute, 2015) and more than half of the women in the study were overweight or obese. Stress has also been linked to the development of high blood pressure (National Heart, Lung and Blood Institute, 2015). The results in the current study indicate that 136 individuals were experiencing moderate to extremely severe levels of stress. Although this only represents 11.69% of the sample, this may have contributed to the high cholesterol levels in 5.1% of the sample.

Although not the majority of the sample, these figures indicate that some of the female managers and executives may be at risk of the diseases and symptoms associated with high blood pressure. This is noteworthy in practicality as the consequences of high blood pressure may affect one's functioning in the workplace through illness. As mentioned in the literature review above, this includes possible damage to the organs of the body as a result of excessive pressure within the blood vessels (Novartis Pharmaceuticals, 2005), the development of cardiovascular disease (Myint *et al*., 2008; National Institute of Mental Health, 2002), diabetes type II (Ta, Nguyen, Nguyen, Campbell & Nguyen, 2010), kidney disease, stroke, heart attack and problems with vision, (Novartis Pharmaceuticals, 2005) and cognitive impairment (Yasar *et al*., 2011). These diseases and symptoms may affect the executive or manager in the workplace as they may find themselves unable to fulfil their job tasks and they may also find their performance is not as it was before the onset of the symptoms and disease.

Age and gender of participants

Age becomes a risk factor for women above the age of fifty-five years old. Thus, age was only considered a risk factor for women executives and managers over the age of fifty-five. The majority of the sample was in the age group of 36 to 45 years old (50.8%). 30.4% of the sample was in the age range from 46 to 55 years old, and only 4.7% of the sample fell into the range

from 56 to 72 years old. The younger sample may have affected their risk of developing cardiovascular disease as their age provides a protective factor against it.

In this way, drawing a better understanding from the way in which the risk profile was established aids in explaining the low percentage of individuals found to be at moderate to very high risk of developing cardiovascular disease.

1.5 Implications for Practice

The major findings from the current study indicated that the nutritional and dietary choices that an individual makes as well as the level of alcohol they consume are likely to negatively influence their risk of developing cardiovascular disease as mentioned above. These appear to be areas in which organisations may intervene. The intervention suggestions noted below may be beneficial to the individual's health as well as their contribution to the organisation's performance and productivity.

A systematic review conducted by researchers for the World Health Organisation was insightful in uncovering the interventions that have been effective in improving dietary choices previously (WHO, 2009r). The systematic review included 395 peer-reviewed studies covering a total of 261 interventions. The review included interventions on policy and environmental level, mass media level, in schools, within the community as well as within the workplace. The workplace interventions are of particular importance to this study. The WHO has indicated that the promotion of healthy food choices has been effectively carried out through the provision of "healthy food and beverages at the workplace facilities" (WHO, 2009r, p.17). This was proved to be effective in 13 studies within the systematic review. This can be implemented through the provision of healthier food options in vending machines as well as at the cafeteria. This provides employees with convenient access to healthier food options.

Furthermore, "involv[ing] workers in programme planning and implementation" (WHO, 2009r, p.17) was found to be effective in promoting healthier dietary decision-making and physical exercise promotion in 9 of the studies within the systematic review. The programmes may also be effective if they aid the individual in "behaviour change strategies and self-monitoring" (WHO, 2009r, p.17). A study in the systematic review emphasised the involvement of the family in promoting healthy dietary choices and found a 19% increase in the consumption of fruit and vegetables. The family was involved by sending out a family newsletter, promoting self-learning as well as hosting a yearly festival. "Positive behavioural

changes were reported in 25 studies" that were included in the systematic review (WHO, 2009r, p.18). Nutritional displays in the cafeteria area also proved to be helpful in increasing the consumption of fruits and vegetables (Pomerleau, Lock, Knai & McKee, 2005).

In terms of reducing the consumption of alcoholic beverages to within the acceptable levels of alcohol consumption, certain interventions have proved to be more effective. Babor and Higgins-Biddle (2001) noted the effectiveness of the brief intervention (For more information, refer to: Bien, Miller & Tonigan, 1993; Kahan, Wilson & Becker, 1995; Wilk, Jensen & Havighurst, 1997). Brief interventions are cost effective and act as a tool to facilitate referral of serious cases of alcohol dependence. Brief interventions are designed with the intent that primary care health workers will implement them and as such may be beyond the scope of organisational involvement. However, the first step within a brief intervention is alcohol education which is followed by advice and thereafter followed by brief counselling (Babor & Higgins-Biddle, 2001). Thus, the organisation may aid in starting the brief intervention by placing posters regarding alcohol statistics and risks of alcohol consumption at strategic positions within the workplace. These posters may include the contact details for psychological services. Furthermore, the organisation may provide their employees with psychological services through the contracting of services through ICAS for example, whereby the employer pays a total sum of money for the services and employees are thus provided with free psychological services. These initiatives may help the employee to evaluate their own alcohol consumption habits and seek help.

1.6 Limitations and Future Research

A possible limitation within this study includes the data that was not collected/ not available to the researcher. These include the demographics of race, the data pertaining to the number of individuals living in the different cities in South Africa and the data pertaining to informal aerobic exercise. Acquisition of this data may have been helpful in understanding the representative nature of the sample of female, South African executives and managers as well as provided greater insight into the findings on the levels of exercises that the executives and managers engage in.

As mentioned above in Chapter Four, there may have been a self-selection bias in that the women executives and managers within the sample may have participated in the ExecCare wellness programme because of an initial health focus or interest in improving their health.

Thus, this is a possible limitation in that the women may have already been aware of or addressing their health concerns when they participated in the research.

This study also had a few limitations pertaining to the instruments used in gathering the data. The instrument used in gathering the data on the women executives and managers' nutritional and dietary choices does not consider those that are vegetarian or vegan. Three of the items pertain to the consumption of fish, meat or dairy. Furthermore, the items of this instrument do not give include any data or indication of how frequently the participant eats take-aways or sweets for example. This information may have been pertinent in understanding their dietary choices better. Furthermore, the items pertaining to smoking exclude the smoking of hookah/ hubbly. Thus, some of the individuals within the study may have indicated that they do not smoke cigarettes but they do smoke hookah pipe.

The current study is also limited in that initially the researcher intended to use multinomial analysis but due the complications listed above in Chapter three, this could not be done. This also led to a further limitation in that the variables investigated had to be collapsed and joined in order to allow for dichotomised variables necessary for logistical regression analysis. The un-dichotomised variables may have provided a richer, more insightful result.

Population data was also not available on each of the variables investigated. This would have been favourable in comparing the sample's levels of the different variables in order to make accurate comparisons between the sample of women executives and managers with a representative sample of South African female managers and executives.

Future research could concentrate on a similar sample's nutritional and dietary choices as well as their level of alcohol consumption in relation to the demands and resources they have at work. This would be of interest as managers and executives' alcohol consumption and nutritional and dietary choices may be influenced by the job demands they face as well as their ability to cope with the demands using the resources available to them. Future research could also utilise the above mentioned interventions for improving nutritional and dietary choices and reducing alcohol consumption in order to ascertain their effectiveness within a South African sample of women executives and managers.

Furthermore, future research on the longitudinal studies of the development of cardiovascular disease in relation to psychological well-being and lifestyle behaviours. This may provide deeper insight into the factors that may affect the development of cardiovascular disease in

women executives and managers, particularly in light of the multiple roles that women play as an employee, mother and spouse.

1.7 Conclusion

This research study has provided a valuable contribution to the knowledge pool of the impact that lifestyle behaviours have on the risk of developing cardiovascular disease in women executives and managers. The study showed that within this sample, high levels of alcohol consumption and the nutritional and dietary choices an individual makes on a daily basis were found to increase the likelihood of having a heightened risk of developing cardiovascular disease. Although not all of the variables were associated with the risk of developing cardiovascular disease as the literature review showed, the levels of alcohol consumption, nutritional and dietary choices and anxiety levels were found to be associated with the risk of developing cardiovascular disease. These results may be helpful to female executives and managers in their personal capacity, as well as to organisations who may use this knowledge to address the health problems of their employees.

Future researchers may further the results from this study by addressing the limitations stated above as well as by focusing their research in the direction of the suggestions made. Despite the limitations of this study, the results of this study may be utilised in understanding the risks that lifestyle behaviours pose to the women executive or manager's ten-year risk of developing cardiovascular disease. This understanding may be accompanied by the priority for organisations and individuals themselves to focus on interventions and behaviour changes in reducing risk of developing cardiovascular disease.

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Appendices

Appendix A: Access to Data from HealthInsite

HealthInsite

18 June 2015

To whom it may concern,

This letter serves as confirmation that Rhiannon Crowhurst has been granted permission to make use of desensitised data supplied by HealthInSite for the purposes of research as part of her Masters dissertation.

Sincerely,

Dr Denis Cronson
Managing Director

Appendix B: Frequencies for variables used in calculating Risk of Developing Cardiovascular Disease

HDL Cholesterol Levels

In the current study, 37 individuals have a HDL cholesterol level of less than 40mg/dl. 1126 individuals had a HDL cholesterol level of above 40mg/dl. This indicates that 96.82% of the women executives and managers have a healthy level of HDL cholesterol.

Table 1

HDL cholesterol levels among female executives and senior managers

Cholesterol Level	Frequency	Percentage of sample
<40mg/Dl	37	3.18
>40mg/Dl	1126	96.82
Total individuals:	1163	100
Missing data:	0	0

LDL Cholesterol Levels

82.37% of the sample of women executives and managers had a LDL cholesterol level above 160mg/Dl. This level of LDL cholesterol is indicative of an individual being at risk of developing cardiovascular disease. 17.63% of the sample indicated that they had a LDL cholesterol level below 160mg/Dl.

Table 2

LDL cholesterol levels among female executives and senior managers

Cholesterol Level	Frequency	Percentage of sample
<160mg/Dl	199	17.63
>160mg/Dl	930	82.37
Total individuals:	1129	97.08
Missing data:	34	2.92

Blood Pressure Levels

In the current study, 45 women executives and managers had blood pressure levels within the 140/90mmHg or higher range, which were considered to be blood pressure levels at a level indicative of being a risk factor of developing cardiovascular disease. 1118 of these women had blood pressure levels that were below 140/90mmHg and thus were not deemed to be a risk factor in developing cardiovascular disease.

Table 3

Blood pressure levels among female executives and senior managers

Blood Pressure Level	Frequency	Percentage of sample
<140/90mmHg	1118	96.13
>140/90mmHg	45	3.87
Total individuals:	1163	100
Missing data:	0	0

Diabetes

28 of the women executives and managers indicated having been previously diagnosed with diabetes which was equivalent to 2.43% of the sample. The other 97.57% of the women executives and managers had not been previously diagnosed with diabetes.

Table 4

Diabetes prevalence among female executives and senior managers

Previous diagnosis of diabetes	Frequency	Percentage of sample
Has been diagnosed with diabetes	28	2.43
Had not been diagnosed with diabetes	1127	97.57
Total individuals:	1155	99.31
Missing data:	8	.69

Smoking

92.86% of the sample of female executives and managers do not smoke cigarettes. 2.44% indicated that they smoked less than five cigarettes per day while 2.79% indicated they smoked between five and ten cigarettes per day. 1.57% of the sample smoked between ten and twenty cigarettes per day and 0.34% said that they smoked more than twenty cigarettes per day.

Table 5

Number of cigarettes smoked per day by female executives and senior managers

Cigarette Smoking per day	Frequency	Percentage of sample
Don't smoke	1066	92.86
<5 cigarettes	28	2.44
5-10 cigarettes	32	2.79
10-20 cigarettes	18	1.57
>20 cigarettes	4	0.34
Total individuals:	1148	98.71
Missing data:	15	1.29

Age Groups

In the sample of women executives and managers, the majority (50.47%) were in the age group between 36 and 45 years old. 14.53% of the sample were between the ages of 20 and 35 years old. 30.36% of the sample were in the age group from 46 to 55 years old while only 4.64% were above the age of 56 years old.

Table 6

Age groups of the female managers and executives

Age Groups:	Frequency	Percentage of sample
20-35 years old	169	14.53
36-45 years old	587	50.47
46-55 years old	353	30.36
56-72 years old	54	4.64
Total individuals:	1163	100
Missing data:	0	0

Appendix C: ExecCare Wellness Questionnaire

EXEC | care
comprehensive executive wellbeing

Wellness assessment - Female

Welcome to the first part of your executive wellbeing programme. In order to maximise the time that we have available with you during your wellness assessment, we require some information from you. The information that you provide is strictly confidential and will only be used by the EXEC | care team of multidisciplinary professionals.

Kindly complete the attached assessment in as much detail as possible and bring it with you to your appointment. Some of the questions may cover sensitive topics. If you should choose not to fill in a particular section of this questionnaire, please indicate this clearly by drawing a line through it. We do however encourage you to answer all of the questions as thoroughly as possible, as the questions included here are aimed at assisting the EXEC | care professionals to optimise your EXEC | care wellness experience.

If you are unsure of any of the questions, please discuss it with our health-care professionals during your onsite appointment.

Should you require anything further from us, please contact us on 0860 12 EXEC (0860 12 3932).

We look forward to welcoming you at EXEC | care.

Yours sincerely
The Executive Wellbeing Company (Pty) Ltd (EXEC | care)

Biographical details

First name:_____ Surname:_____

Title:_____ ID number:_____

Age:_____ Date of birth:_____

Postal address (for personal correspondence):

_____

_____

_____

_____

Tel work:_____

Tel home:_____

Cell:_____

Email:_____

Next of kin

Name:_____

Relationship:_____

Contact details:_____

Other contact person

Name:_____

Relationship:_____

Contact details:_____

Occupational information

Employer:_____ Occupation:_____

Positional title:_____ Site/division:_____

Postal or physical address (report will be delivered here):

_____

_____

_____

_____

_____

Doctor's name:_____

Doctor's contact details:_____

Medical aid name:_____ Medical aid number:_____ Main member:

Goals

	What would you like to achieve by completing this EXEC|care medical assessment?
	Attendance is required by my employer.
	I haven't had an assessment/check-up in the past year.
	I currently have questions/concerns about my health and wellness.
	My health is good and I would like to improve on it.
	I would like assistance in developing motivation to improve my lifestyle.
	I enjoy an opportunity to get away from the office and focus on myself and my wellness.

Other: _____

	What are your wellness goals for the next year?
	Lose weight.
	Increase exercise levels.
	Manage my stress.
	Improve my eating habits.
	Stop smoking.
	Improve fitness.
	Understand my work/life balance or imbalance.

Other: _____

	Please indicate your health interests:
	Weight control.
	Mental health.
	Diet and nutrition.
	Men's health.
	Pregnancy.
	Parenting and children's health.
	Women's health.
	Stress management.
	Sexuality and sexual conditions.
	Sport and fitness.
	Caring for the elderly.
	Substance use and addictions.
	Travel medicine.
	Alternative health.

Other: _____

Family/relationships

	Describe your family structure:
	Living together.
	Divorced.
	Living with life partner.
	Married.
	Separated.
	Single.
	Widowed.

Number of children:_____

Number of brothers:_____ Number of sisters:_____

Family medical history

Has any family member suffered, or died, from any of the following? If so, please provide additional details. Family members comprise of: a parent, grandparent, sibling (brother, sister), aunt, uncle, biological child. Please state the actual condition and your relationship in each case.

Condition	*Family member*	*Age affected*	*Details*
Heart (e.g. heart attack, stroke, heart failure, aneurysms).			
Blood pressure disorders.			
Diabetes.			
Cholesterol disorders.			
Cancer.			
Respiratory disorders (e.g. asthma, tuberculosis).			
Mental health disorders (e.g. depression or anxiety) or substance abuse (including alcohol).			
Allergies, porphyria, or other hereditary diseases.			
Thyroid disease, glaucoma, epilepsy, or nervous system problems (e.g. Parkinson's or Alzheimer's disease).			
Any other significant family history.			

Personal medical history

Please tick any conditions you have or have had in the past and provide as much detail as possible:

	Condition	*Age affected*	*Details*
	Allergies, porphyria, or other hereditary diseases.		
	Heart disease (e.g. heart attack, stroke, heart failure, aneurysms).		
	Diabetes.		
	Cancer.		
	Respiratory disorders (e.g. asthma, tuberculosis).		
	Mental disorders (depression or anxiety) or substance abuse problems (including alcohol).		
	Nervous system disorders (e.g. migraine/recurrent headaches, epilepsy, head injury, blackouts or fainting).		
	Abdominal problems (e.g. irritable bowel, hernia, peptic ulcer disease, piles or rectal bleeding, recent change in bowel habits, gallstones).		
	Musculoskeletal problems (e.g. arthritis, gout, neck or back pain or injury, joint pains or injuries, bone fractures, osteoporosis).		
	Skin conditions (e.g. eczema, skin cancers, moles removed).		
	Urinary tract problems (e.g. kidney or bladder stones or infections, blood in urine, incontinence or leaking urine, difficulty urinating).		
	Cholesterol disorders.		
	Blood pressure disorders.		
	Ear, nose and throat disorders.		
	Any operations.		
	Have you had any tests or investigations in the past 3 years such as colonoscopy, cystoscopy, biopsy, arthroscopy, imaging, mammogram, CT scan, MRI scan, blood tests, other.		

Lifestyle and habits

	Smoking: Do you smoke?
	Yes.
	No.

	If yes, do you smoke	*Number per day*
	Cigarettes.	
	Pipe.	
	Cigars.	

When did you start smoking?				

How many times have you tried to quit smoking?_____

	Have you ever smoked in the past?
	Yes.
	No.

If yes, when did you stop smoking?				

	On average, how many tobacco products are you exposed to from the smoking of others (second-hand smoke)?
	None.
	<5 per day.
	5-10 per day.
	10-20 per day.
	>20 per day.

What types of alcohol do you prefer on a regular basis? _____

How many units of alcohol do you typically consume in a week?		

(1 unit = 125ml glass of wine; 1 can of beer; 1 tot of spirits.)

Additional dietary questions	*Yes*	*No*
Do you ever think that you should reduce your alcohol intake?		
Has anyone ever commented that your drinking is a problem to them?		
Have you ever felt embarrassed or guilty about your drinking?		
Was there ever an occasion when you had a drink in the morning to get going?		
Have you ever been caught driving under the influence of alcohol?		
Has your drinking ever affected your work?		

Recreational drugs	*Yes*	*No*	*If yes:*
Do you use recreational drugs?			Type:_____
			Frequency:_____
Have you ever used them?			Type:_____
			Frequency:_____

Physical activity

	Over the course of an average week, how much time would you spend engaged in formal aerobic exercise such as brisk walking, jogging, swimming, aerobics, football, netball, etc?
	0-1 workouts per week (sedentary).
	2-3 workouts per week (occasionally active).
	4-5 workouts per week (active).
	6-7 workouts per week (very active).

	On an average day, how many minutes of incidental activity would you perform (includes walking, climbing stairs, housework/ gardening, etc.)?
	<10 minutes per day.
	10-20 minutes per day.
	21-30 minutes per day.
	31-40 minutes per day.
	>40 minutes per day.

Nutrition and diet

Please answer 'yes' or 'no' to each of the following questions:	*Yes*	*No*
I eat breakfast within 2 hours of waking on most days (i.e. at least 5-6 days a week).		
I eat 3 main meals (i.e. breakfast, lunch, and dinner) on most days (i.e. 5-6 days of the week).		
I snack in between main meals (i.e. mid-morning and mid afternoon).		
I eat between 2-4 medium portions of fresh fruit every day.		
I include significant portions (i.e. at least 2 full cups) of a variety of vegetables (red, orange, yellow, and green) and/or mixed salad every day.		
I consume at least 2-3 of the below-mentioned natural healthier fats – in controlled portions daily. Examples: unsalted and unroasted nuts (almonds, cashews, walnuts), seeds (sunflower, sesame, pumpkin, linseeds), cold pressed oils (olive, palm fruit), olives, avocado.		
I eat fish high in essential fats (e.g. salmon, pilchards, mackeral, sardines, kippers, yellowtail, anchovies, snapper, whiting) at least 3 times a week and/or take a good omega 3 essential fatty acid supplement daily.		
I remove the fat and skin from meat, poultry, and fish BEFORE cooking on most days AND when I eat out I leave off the fat and skin.		
I choose low fat or fat-free dairy products most of the time (i.e. low fat or fat-free milk, yoghurt, white cheeses).		
I am aware of reading labels and either myself or the person buying my snacks purchases products with <10g total fat per 100g most of the time.		
I understand and make use of GI (Glycaemic Index) to plan my meals and make food choices.		
I drink approximately 2 litres of water (i.e. 8 x 250ml glasses) every day of the week. Note: caffeine-free herbal teas (black, no sugar) are classified as water.		
I limit alcohol to none at all or 1-2 units for women and 1-3 units for men per day AND have at least 2 alcohol-free days per week. Note: 1 unit = 1 single tot, 125ml of wine, 340ml beer.		
I limit coffee to less than 3 cups per day AND I limit my normal tea to less than 4 cups per day.		
When buying meals, snacks, or beverages, I mostly choose the smallest portion (i.e. I do not opt to super-size, I avoid going for seconds at buffets, I do not buy value bulk meals or upsize my portions).		

	Are you comfortable with your weight?
	Yes.
	No.

	During the past year, has your weight:
	Remained stable.
	Increased.
	Decreased.

	If it has not remained stable, why would you say your weight has changed?
	Not applicable.
	Diet changed.
	Changed medication.
	Stress.
	Started/stopped exercising.
	Not sure.

	Do you experience any of the following?
	Indigestion or heartburn.
	Bloating.
	Cravings.
	Stomach pain or cramps.
	Flatulence.
	Tiredness.
	Constipation.
	Erratic appetite.

Medication

Please list all of your current medications:

Name	*Dosage*	*Length of treatment*

Additional medical information	*Yes*	*No*
Are you using contraception?		
If so, which one and when did you start/any recent changes in contraception?		
Have you started menopause?		
If so, when?		
Do you have menopausal symptoms eg: hot flushes, night sweats, etc.		
Are you on Hormone Replacement Therapy?		
If so, which one? And for how long?		
Do you experience painful or uncomfortable pre-menstrual symptoms?		
Do you experience vaginal discharge?		
Do you experience any vaginal bleeding between periods or after intercourse?		
When was your last Pap smear?		
Do you or have you suffer(ed) from incontinence (inability to control passing of urine)?		
Do you suffer from haemorrhoids or varicose veins? Please specify.		
Have you undergone gynaecological treatment and/or surgery not mentioned before?		
If so, please provide some details.		
Have you had or do you currently have any breast problems or concerns not mentioned before?		
If so, please provide some details.		
Are you experiencing any sexual problems or change in libido or taking any medication for it?		

Obstetric history	*Yes*	*No*
Have you received fertility treatment (e.g. IVF, GIFT)?		
Have you been pregnant (complete and/or incomplete pregnancies/miscarriages/terminations of pregnancy)? *(Please provide details about complications if any).*		
Are you currently pregnant?		

Mental health questionnaire

(DASS21 Scale)

Please take a few minutes to work through the following questionnaire. This information will be used in a confidential manner to broadly assess your mental health status – an important pillar in your overall health and wellbeing. If you should choose not to fill this in, please note that this section will be left out in your personal report.

Please read each statement and select a number 0, 1, 2 or 3 which indicates how much the statement has applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:
0 = Did not apply to me at all
1 = Applied to me to some degree, or some of the time
2 = Applied to me to a considerable degree, or a good part of time
3 = Applied to me very much, or most of the time

In the past week:	***0***	***1***	***2***	***3***
I found it hard to wind down.				
I was aware of dryness of my mouth.				
I couldn't seem to experience any positive feeling at all.				
I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion).				
I found it difficult to work up the initiative to do things.				
I tended to over-react to situations.				
I experienced trembling (e.g. in the hands).				
I felt that I was using a lot of nervous energy.				
I was worried about situations in which I might panic and make a fool of myself.				
I felt that I had nothing to look forward to.				
I found myself getting agitated.				
I found it difficult to relax.				
I felt down-hearted and blue.				
I was intolerant of anything that kept me from getting on with what I was doing.				
I felt I was close to panic.				
I was unable to become enthusiastic about anything.				
I felt I wasn't worth much as a person.				
I felt that I was rather touchy.				
I was aware of the action of my heart in the absence of physical exertion (e.g. heart rate increase, heart missing a beat).				
I felt scared without any good reason.				
I felt that life was meaningless.				

Sleeping patterns

	Which term best describes how you feel about the sleep that you are getting?
	I usually feel completely rested after a night's sleep.
	I generally wake feeling moderately rested.
	I generally wake still feeling a bit tired.
	I generally wake feeling very tired indeed.
	I am in a state of chronic exhaustion, even after I have slept.

	Do you snore?
	Yes.
	No.
	Don't know.

On average, how many hours of sleep do you have each night? _____

	Do you experience any of the following?
	Difficulty in falling asleep.
	The need for a nap/snooze.
	Waking up during the night.
	Feeling tired when you wake up.
	Restless sleep patterns.
	Sleeping more over weekends.
	After waking up during the night, difficulty in going back to sleep.

I, _____declare that, to the best of my knowledge, the information provided by me in this assessment is accurate and current.

Signature:_____ Date:_____

Appendix D: Ethical Approval

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (SCHOOL OF HUMAN & COMMUNITY DEVELOPMENT

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: MORG/15/001 IH**
PROJECT TITLE:	The lifestyle factors and well-being of women in positions of senior management and above.
INVESTIGATORS	Crowhurst Rhiannon
DEPARTMENT	Psychology
DATE CONSIDERED	30/06/15
DECISION OF COMMITTEE*	Approved

This ethical clearance is valid for 2 years and may be renewed upon application

DATE: 30 June 2015

CHAIRPERSON
(Professor B. Bowman)

cc Supervisor:

Mr Ian Siemers
Psychology

DECLARATION OF INVESTIGATOR (S)

To be completed in duplicate and **one copy** returned to the Secretary, Room 100015, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure be contemplated from the research procedure, as approved, I/we undertake to submit a revised protocol to the Committee.

This ethical clearance will expire on 31 December 2017

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix E: Table 1 and Table 2 indicating the statistical imbalance that led to a change of analysis

Table 1

The imbalance of individuals in combinations of the lifestyle behaviour and risk category variables that led to analysis complications (included total percentage of the sample that fell into the category in parentheses).

		Nutrition		**Exercise**		**Alcohol**	
		Good Dietary Choices	Bad Dietary Choices	Active	Rarely Active-Inactive	Acceptable level of drinking	Harmful Drinking
Risk Category	Low to Moderate	606 (52.1%)	513 (44.1%)	406 (34.9%)	713 (61.3%)	1108 (95.3%)	11 (0.9%)
	Moderate to Very High	11 (0.9%)	33 (2.8%)	13 (1.1%)	31 (2.7%)	42 (3.6%)	2 (0.2%)

Table 2

The imbalance of individuals in combinations of the psychological wellbeing and risk category variables that led to analysis complications (included total percentage of the sample that fell into the category in parentheses).

		Depression		Anxiety		Stress	
		Normal to Mild	Moderate to Extremely Severe	Normal to Mild	Moderate to Extremely Severe	Normal to Mild	Moderate to Extremely Severe
Risk Category	Low to Moderate	1022 (87.9%)	97 (8.3%)	967 (83.1%)	152 (13.1%)	988 (85.0%)	131 (11.3%)
	Moderate to Very High	40 (3.4%)	4 (0.3%)	37 (3.2%)	7 (0.6%)	39 (3.4%)	5 (0.4%)