

**KNOWLEDGE, ATTITUDES AND PRACTICES OF PATIENTS
REGARDING CORONARY ARTERY DISEASE AT THE CARDIAC CLINICS IN
WINDHOEK, NAMIBIA**

A STUDY SUBMITTED IN FULFILMENT OF THE
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By

JUSTA F. DE KLERK

8900566

Main Supervisor: Prof L.F. Small

Co-supervisor: Dr L. Pretorius

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ABSTRACT

Phenomena such as urbanisation and individual traits such as health literacy, affect people's exposure and vulnerability to coronary artery disease risk factors. Namibia, as a developing country, is no exception. Although studies have indicated significant effects of predictor variables such as knowledge, attitudes and practices (KAP) on coronary artery diseases, none has been reported in the Namibian context.

The purpose of this study was to determine and describe the knowledge, attitudes and practices of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

This study employed a quantitative approach to assess knowledge, attitudes and practices towards coronary artery disease. Using probability sampling, the study selected 306 respondents, who then completed a self-administered questionnaire. Data collection was done between February and August 2017.

From the results, it emerged that the respondents' mean age was 57 with a standard deviation of 12.5. The majority of the respondents were males, with most of them having completed tertiary and secondary education. Many of them also reported on co-morbidities and results revealed a high prevalence of hypertension, elevated cholesterol levels and diabetes. Regarding knowledge, as an underlying construct and test bed, respondents were tested on the most common signs and symptoms of myocardial infarction. Results revealed that respondents had limited knowledge about coronary artery disease (CAD), but were able to recognise the related symptoms. Practices did not always correlate with knowledge, as the majority of the respondents were aware of the adverse

effects of smoking and alcohol consumption, but still indicated to have been smoking and consuming alcohol. The respondents appeared to have positive attitudes regarding self-image. This was based on their self-rating on being overweight or not and the objective Body Mass Index (BMI) obtained from each respondent. The subjective self-rating did not correlate with the objective data obtained during data assessment of BMI. Many were overweight, but regarded themselves as having normal weight.

The study concluded that respondents had limited knowledge on some aspects of CAD and that their practices do not reflect their knowledge levels. Their practices also appeared to be in contradiction with their attitudes.

Recommendations were made to the Ministry of Health and Social Services, private hospitals, in-service education departments and training institutions for post-graduate students regarding health education and preventative measures.

Keywords: Coronary artery disease; knowledge; attitudes; practices and Health Belief Model.

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LIST OF ABBREVIATIONS

The following is the list of abbreviations used in the study:

BMI	Body Mass Index
BP	Blood Pressure
CAD	Coronary Artery Disease
CVD	Cardiovascular Disease
HBM	Health Belief Model
HDL	High-Density Lipoproteins
KAP	Knowledge, Attitude and Practice
LDL	Low-Density Lipoproteins
MI	Myocardial Infarction
MOHSS	Ministry of Health and Social Services
RCH	Roman Catholic Hospital
UNAM	University of Namibia
USA	United States of America
VLDL	Very Low- Density Lipoproteins
WCH	Windhoek Central Hospital
WHO	World Health Organization

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- All the staff of the cardiac clinics
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- My siblings, Catherine, Heidi, Eveline and Raymond

DEDICATION

This work is dedicated to the entire De Klerk–Campbell family, especially to my late father, Johannes C. de Klerk. He taught me that education is power and a woman's greatest protection. The way I saw him always being proud, even when things went wrong, he was so patient, helpful and loving. He is my motivation to continue and never to give up. May his soul rest in peace.

DECLARATION

I, **JUSTA F. DE KLERK**, hereby declare that (“Knowledge, attitudes and practices regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia”), is a true reflection of my own work, and that all the sources used have been acknowledged in the text and the bibliography. The version of this work is an original work, and has not previously been submitted wholly or in part for the degree at any other university.

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JUSTA F. DE KLERK 

Date: 13 March 2018

CHAPTER 1

OVERVIEW OF THE STUDY

1.0 INTRODUCTION

Coronary artery disease (CAD) is the most prevalent type of cardiovascular disorders in adults (Smeltzer, Bare, Hinkle and Cheever, 2010). This is also true for Namibia. This disease has multiple causative factors, but lifestyle practices and attitudes have significant effects on the outcome. The following paragraph will introduce coronary artery disease as defined by Evans and Tippins (2007).

Coronary artery disease develops when the major vessels that supply the heart with blood and oxygen become damaged and diseased due to thickening, narrowing or obstruction. This is due to the build-up of cholesterol and other material, called plaque, on their inner walls of the arteries. This build-up is called atherosclerosis. As it increases, less blood can flow through the arteries resulting in the heart muscle not getting the blood or oxygen it needs. This can lead to chest pain (angina pectoris) or cardiac necrosis, classically called a heart attack). The ultimate result may be permanent heart damage or death (Evans & Tippins, 2007).

Over time, CAD can also weaken the heart muscle and contribute to heart failure and dysrhythmias. Heart failure means the heart cannot pump blood well to the rest of the body, while dysrhythmias are changes in the normal beating rhythm of the heart according to Evans et al. (2007), and Thompson, McFarland, Clifton, Hirsch & Tucker (2002).

Coronary artery disease is, however, affected by lifestyle and could therefore be influenced by lifestyle changes and prevention issues. Increased awareness of coronary artery disease and the risk factors may help reduce the population's exposure to modifiable risk factors and thereby contribute to prevention and control strategies.

1.1 BACKGROUND OF THE STUDY

There has been a myriad of studies conducted on knowledge, attitudes and practices regarding coronary artery disease (Alberts, Urdal & Steyn, 2005; Almahmeed, Amaout, Chettaoui, Ibrahim, Kurdi, Taher & Mancina, 2012).

Salahshoori, Nasirzadeh, Haruni and Pourhaji (2015) state that coronary artery disease is one of the most prevalent problems of modern societies and the most common causes of mortality in many countries. Globally, it is responsible for one in four deaths. Eighty percent of CAD result from tobacco or cigarette smoking, unhealthy diet, physical inactivity and harmful use of alcohol (Vaidya, Aryal & Krettek, 2013). In the recent decades, the number of patients had increased dramatically and this disease has been the leading cause of disability and death in developing as well as developed countries. Thus, in most countries, coronary artery disease prevention and control is considered as a main focus in health delivery systems (Salahshoori et al. 2015).

Urden, Stacy and Lough (2010) state that coronary artery disease is the biggest contributor to cardiovascular-related morbidity. Certain risk factors, such as family history and age, cannot be controlled, but behaviours and lifestyle choices can affect some factors such as

high blood pressure, high cholesterol, obesity, smoking and uncontrolled diabetes (Urden et al. 2010).

The burden of coronary artery disease in the world is enormous and growing, and the majority of those affected are in developing countries. From a global perspective, the large and diverse African population has not been spared this tide. Namibia, as part of Africa, has also been affected.

1.2 ORIENTATION OF THE PROPOSED STUDY

Evidence shows that non-communicable diseases (NCD's), long thought to be the burden of high-income populations, are affecting more low-and middle-income countries, including Namibia. According to a 2014 World Health Organization (WHO) demographic health survey series, coronary artery disease – classified as a non-communicable disease- was among the top 10 diseases and top 15 causes of death in Namibia (WHO, 2014).

The WHO report identified the need for a heart clinic and as a result, the Namibian Heart Centre was opened at the Windhoek Central Hospital for public patients in 2008, and at the Roman Catholic Hospital for private patients in 2011. Services are available for adult cardiac disease management and therapy, angina pectoris (acute chest pain), acute coronary syndrome, which includes myocardial infarction (heart attack). Services provided at these heart centres are heart failure management, diagnostic cardiac catheterisation, coronary angiography, and balloon-angioplasty as well as stent implantation. The cardiac clinics also render echocardiography, implant of pacemakers,

renal denervation therapy for severe hypertension and coronary and cardiac surgery services for all. According to the Namibian Heart Centre statistics (2015), 1 500 patients had been referred to the Namibian Heart Centre in 2015. A total of 179 patients underwent cardiac surgery in 2015. Statistics for coronary artery disease had not been centralised until the opening of the Namibian Heart Centre.

Coronary heart disease not only affects health, but also has an impact on finances. The cost of diagnostic and therapeutic services for patients with coronary artery disease is very high although the treatment is effective. However, it would be more cost-effective to prevent the disease in the first place. The economic burden of coronary artery disease can be reduced through effective prevention programmes.

Finances could be saved and re-allocated to other priorities. Lack of knowledge and negative attitudes among people might also lead to them seeking medical help too late. It seems, therefore, there is need to educate people to reduce the risk of coronary artery disease in Namibia.

Reducing the risk of this disease would also reduce the economic burden.

It is evident from literature that diverse demographic, socio-psychological and cultural variables also influence an individual's perception of risk and can affect health-related behaviour choices.

Being knowledgeable is critical to empowerment. The attempt to promote positive changes in people's lifestyles is a complex process, which requires an understanding of their knowledge, attitudes and practices towards health issues. WHO (2009) defines health literacy as the cognitive and social skills, which determine the motivation and ability of

individuals to gain access to, understand and use information in ways that promote and maintain good health. Health literacy means more than the ability to read pamphlets and successfully make appointments. The community could be empowered by improving the people's access to health information and their capacity to use it effectively.

Low levels of health literacy are associated with poorer health outcomes, less use of health services and less involvement in self-management of chronic conditions. The education, however, depends on information on current knowledge, attitudes and practices of respondents. Knowledge could lead to changes in attitudes and practices. It is evident from WHO (2009) findings that levels of knowledge, attitudes and practices may affect prevention of coronary artery disease. If patients do not perceive themselves to be at risk, that attitude may have detrimental consequences on their health.

1.3 STATEMENT OF THE PROBLEM

There appears to be a gap in the centralisation of Namibian statistics regarding knowledge, attitudes and practices of coronary artery disease. Akinbobye and Akinkugbe (2003) note an upward trend in the prevalence of this disease in sub-Saharan Africa over the past five decades, which is steadily increasing, especially in younger ages, both males and females.

According to the WHO health rankings, Namibia -with a population of 2.2 million -had a 5.29 percent mortality rate due to coronary artery disease compared to 5.25 percent in South Africa with a population of 50 million. Currently coronary artery disease (CAD) is ranked fourth out of 50 causes of mortality in Namibia (WHO, 2014). This is a concern in Namibia with such a small population.

Although coronary artery disease has been prevalent among the white population in Namibia, the dynamics have changed drastically over the past decade (Statistics Namibia Heart Centre, 2015). The situation could be attributed to the increased trends in urbanisation and changes in lifestyle across all races in the country. Progressive urbanisation, and the adoption of a "Western" lifestyle could be a large contributor to the rising burden of this disease in the developing world (WHO, 2009). Developing nations may be ill-equipped to handle this burden and this coupled with poor literacy rates and lack of awareness of the disease and symptoms may result in worse disease outcomes (WHO, 2009).

Despite the increased prevalence of coronary artery disease and the necessity of the public's knowledge of risk factors, no comprehensive investigation on patient's knowledge, attitudes and practices regarding coronary artery diseases has been conducted in Namibia.

1.4 PURPOSE OF THE STUDY

The purpose of the study is to determine and describe the knowledge, attitudes and practices of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

1.5 OBJECTIVES OF THE STUDY

The objectives of this study are:

To determine and describe the knowledge of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

To determine and describe the attitudes of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

To determine and describe the practices of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

1.6 SIGNIFICANCE OF THE STUDY

Kothari (2004) states that the significance of a study pertains to the larger issues of a study and the justifications for understanding the study. The study was prompted by the number of cardiovascular cases that are on the increase in Namibia. (Statistics Namibian Heart Centre, 2015). The researcher's aim was to determine the knowledge, attitudes and practices regarding coronary artery disease.

Measuring knowledge, attitudes and practices of people regarding coronary artery disease would provide an efficient process of creating awareness and encourage prevention as it would allow for a more tailored education programme appropriate to the needs of the community. The findings of the study would also contribute to further planning and improvement of service delivery to patients.

1.7 PARADIGMATIC PERSPECTIVES

Cresswell (2007) defines a paradigm as the view of the world, which influences people's actions and belief systems. This perspective influences people's understanding and perception of everything. To direct and focus studies, all research work needs to be placed in a paradigm. In this study, the paradigmatic perspectives involved the meta-theoretical, theoretical and methodological assumptions.

1.7.1 Meta-theoretical assumptions

These assumptions are axiomatic statements, not meant to be examined, or tested, by the study (Klopper, 2008). In nursing, the meta-theoretical assumptions comprise the individual, environment, health and nursing. In this study, the individual is the respondent with a coronary artery disease. The environment entails the work and living areas of the respondents. Health, in this study, relates to the wellness of the respondent and nursing is defined as a group of related activities performed by a registered nurse in the cardiac unit.

1.7.2 Theoretical assumptions

Theoretical assumptions involve all the theories and beliefs that are used as a departure point for a study (Bouso, Poles, De Almeida & De Cruz, 2013). One such assumption is the Health Belief Model (HBM).

Several health promotion models identify health-protecting behaviours and seek to explain what makes people engage in preventive behaviours. According to Smeltzer et al. (2010), a health protecting behaviour is defined as any behaviour performed by people,

regardless of their actual or perceived health condition. One model, the Health Belief Model, was designed to foster understanding of why some people choose actions to prevent illness while others do not (Smeltzer et al. 2010).

According to Polit and Beck (2012), the HBM has become a popular framework in nursing studies, as it focuses on patient compliance and preventative healthcare practices. The model postulates that health-seeking behaviour is influenced by a person's perception of a threat posed by a health problem and the values associated with actions aimed at reducing the threat. Since then, the HBM has been adapted to explore a variety of long- and short-term health behaviours. This model was also used to explore knowledge, attitudes and practices regarding CAD.

1.7.3 Methodological Assumptions

The methodological assumptions focus on analysis of the methods used in acquiring the data (Cohen, Manion & Morrison, 2001). These include the researcher's conclusions and suppositions, which are reflected in the conduction of the whole research process. In this study, a quantitative cross-sectional study was conducted. Chapter 3 discusses the process in detail.

1.7.4 Definition of concepts

Knowledge: Is defined as acts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject (Bradbery, 2015).

Attitude: Is defined as a settled way of thinking or feeling about something (Bradbery, 2015).

Practice: The actual application or use of an idea, belief, or method, as opposed to theories relating to it. (Bradbery, 2014)

Coronary artery disease: Refers to a progressive atherosclerotic disorder of the coronary arteries that results in narrowing or complete occlusion. In the heart, atherosclerotic changes are clinically known as CAD. This disease process is also known as coronary heart disease because other heart structures ultimately become involved in the disease process (Urden, Stacy & Lough, 2010).

Cardiac clinics: These refer to the two clinics, the one in Windhoek Central Hospital for public patients and that at the Roman Catholic Hospital for private patients.

1.8 LIMITATIONS OF THE STUDY

There were limitations to this study that should be noted. The respondents self-reported their smoking and alcohol intake practices that may have affected the reliability of the data.

Knowledge, attitudes and practices assessment from population surveys invariably posed the problem of social desirability. The Hawthorne effect may have played a role in this study, whereby respondents were reluctant to admit socially unacceptable KAP to avoid

giving a negative impression (Jones, 1992). The researcher assured the respondents that confidentiality and anonymity would be maintained.

1.9 CHAPTER ORGANISATION

This study was presented in six chapters.

Chapter 1: Background and Introduction

This chapter provided an overview of the topic and highlighted the research problem, research objectives, the scope and the significance of the study. The purpose of this chapter was to provide a comprehensive background to the research study and an overview of the key elements of the study.

Chapter 2: Literature Review

This chapter reviewed the literature in line with the objectives of the study. The literature search linked this with the research problem, and the research instrument. The chapter reviewed previous research on the same subject as this study and to analyze the findings.

Chapter 3: Research Design and methodology

In this chapter, the research design and methodology were described. This included the definition of the population, sample design, data collection and the overall research process.

Chapter 4: Data analysis

This chapter described the process of data analysis.

Chapter 5: Discussions of the results

In this chapter, a discussion of the analysis of the data were done. Any commonalities or differences emerging from the data were explained. This chapter was the centre of the research and was the major component of the research study.

Chapter 6 Conclusion, limitations and recommendations

This chapter drew conclusions on the study, including the limitations and recommendations were also advanced.

1.10 SUMMARY OF THE CHAPTER

The health problems relating to coronary artery disease have become a global phenomenon. This chapter gave an overview of the study in which the background, statement of the problem, purpose, objectives, significance of the study and limitations were discussed.

The following chapter discusses the literature relating to the topic under study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter introduced the research and set the scene of what prompted the study and what it would investigate. This chapter discusses what is already known through literature around the topic.

According to Polit and Beck (2012), a literature review provides a summary of research on a topic of interest and is usually prepared by the researcher to place the research problem into context. To ensure the research project is completed and understood, the researcher undertook extensive data collection on numerous studies and literature sources to gain knowledge and understanding of the subject. Textbooks, journal articles, internet sources and fact sheets of WHO were included in the review. An electronic search of the literature was performed using online databases, such as PubMed, Google, Google Scholar, Science Direct and Sage. Websites of key stakeholder organisations such as WHO and American Heart Association (AHA) were also included in the review.

The keywords used in the literature review were: coronary artery disease, cardiovascular disease, myocardial infarction, hypertension, diabetes, cholesterol, knowledge, attitudes and practices.

The discussion was divided into sections to give it meaning and relevance to the study. These sections are:

- Description and pathophysiology of coronary artery disease
- Risk factors for coronary artery disease
- Health Belief Model

- Studies on the prevalence of risk factors, knowledge, attitudes and practices regarding coronary artery disease

The chapter discussion commences with the pathophysiology and risk factors.

2.2 DESCRIPTION AND PATHOPHYSIOLOGY OF CORONARY ARTERY DISEASE

Coronary artery disease is considered the biggest contributor to morbidity and mortality in men and women globally. It is a progressive atherosclerotic disorder of the coronary arteries that results in their narrowing or complete occlusion. Atherosclerosis is a progressive disease that affects arteries throughout the body. In the heart, atherosclerotic changes are clinically known as CAD. It is thought to begin as fatty streaks of lipids that are deposited in the intima of the arterial wall. These lesions commonly begin early in life, perhaps even in childhood. The development of atherosclerosis over many years involves an inflammatory response, which begins with injury to the vascular endothelium. The injury may be initiated by smoking, hypertension, elevated cholesterol, diabetes and other factors (Hinkle & Cheever, 2013; Urden, Stacy & Lough, 2010).

Coronary artery disease produces symptoms and complications according to the location, degree of narrowing, thrombus formation and obstruction of blood flow to the myocardium. The most common manifestation is the acute onset of chest pain. Patients may present to an emergency department or clinic with a variety of symptoms, such as shortness of breath, heartburn (abdominal or gastric pain/discomfort), nausea and vomiting (Smeltzer et al., 2010).

According to Urden et al. (2010), research and epidemiological data collected during the past 50 years have demonstrated a strong association between specific risk factors and the development of CAD. Numerous epidemiologic studies also identified several factors that increase the probability of a person developing a heart disease. The risk factors are discussed in Section 2.3.

2.3 RISK FACTORS FOR CORONARY ARTERY DISEASE.

Extensive research has identified factors that increase a person's risk of coronary artery disease in general and myocardial infarction in particular. Risk factors are divided into non-modifiable risk factors and modifiable risk factors. The definitions of non-modifiable and modifiable risk factors are discussed in section 2.3.1 and 2.3.2, respectively. A risk factor may operate independently or in combination with other risk factors. The more risk factors a person has, the greater the likelihood of coronary artery disease. Those at risk are advised to seek regular medical examinations and to engage in heart-healthy behaviour (Smeltzer et al., 2010).

2.3.1 Non-modifiable risk factors

Smeltzer et al. (2010) define non-modifiable risk factors as circumstances over which a person has no control.

2.3.1.1 Age

Although CAD is generally most prevalent among persons aged 60 years and above, myocardial infarction can occur at any age. No one is ever too young to start heart-healthy

living and people over the age of 40 years or having multiple risk factors are at increased risk (WHO, 2010). According to a study by Sanchis-Gomar, Perez-Quilis & Leischik (2016) in the United States of America, the age-adjusted incidence of hospitalised CAD patients was highest in black men and lowest among white women.

2.3.1.2 Ethnicity

Globally, the prevalence of CAD has been highest among the white population but this has changed over the years. South Asian people (from India, Pakistan, Bangladesh and Sri Lanka) living in the United Kingdom have been found to have a higher premature death rate (46 percent higher for men; 51 percent higher for women) than other races, the mortality rate in West African people and people from the Caribbean is much lower - half the global rate for men and two thirds of the rate for women (Akinboboye, Idris & Akinkugbe, 2003).

2.3.1.3 Gender

Traditionally, CAD has been considered a disease of men but it is increasingly obvious that in modern society it affects both gender. It is responsible for a third of all deaths in women over the age of 50 years in developing countries worldwide. CAD rates for post-menopausal women are two to three times higher than those for pre-menopausal women. A number of gender differences are notable in the incidence, mortality, risk factor profile, outcome and clinical presentation. For instance, in the elderly age groups, the prevalence,

incidence and mortality rates tend to be higher for men than for women. However, the protective effect of oestrogen in women, is most often indicated for the gender difference in developing CAD. Oestrogen is often indicated as a contributor to pre-menopausal women's tendency to have lower systolic blood pressure, high levels of high density lipoproteins cholesterol levels than men. Although it is widely believed that oestrogen is protecting women, it has not been fully elucidated, as study has revealed that in the past, women who were susceptible to coronary artery disease were less likely to be referred for coronary artery diagnostic procedures than men. However, as a result of better education of health care professionals and the general public, gender differences now have less influence on diagnosis and treatment (Hinkle & Cheever, 2013; American Heart Association, 2011).

2.3.1.4 Family history

According to Urden et al. (2010), a positive family history is one in which a close blood relative has had a myocardial infarction (heart attack) before the age of 60. This family history suggests a genetic or lifestyle predisposition to the development of CAD. Individuals with a family history have a 50 percent greater risk of having an acute myocardial infarction (heart attack). Current literature on this topic is not available in Namibia as well as definite statistics on family history.

2.3.2 Modifiable risk factors

Smeltzer et al. (2010) defines modifiable risk factors as factors over which a person may exercise control, such as changing lifestyle or personal habit or by using medication.

2.3.2.1 Hyperlipidemia

Hyperlipidemia is a leading factor responsible for severe atherosclerosis and the development of CAD. The metabolism of fats is an important contributor to the development of heart disease. High serum cholesterol is undoubtedly a major risk factor in adults. The total cholesterol is the sum of the high-density lipoprotein cholesterol, low-density lipoprotein cholesterol (LDL) and very low-density lipoprotein cholesterol (VLDL) in the bloodstream (Hinkle & Cheever, 2013).

Cholesterol is processed by the gastrointestinal tract into lipoproteins and further reprocessed in the liver. This physiologic process is vital for the formation of lipoprotein-based cell membranes and other important metabolic processes. Excess low-density lipoproteins particularly adhere to vulnerable points in the arterial endothelium resulting in plaque formation. LDL is the target of current therapy because of the known association with advancing CAD. HDL cholesterol is frequently described as the “good cholesterol” because higher serum levels exert a protective effect against acute atherosclerotic events. In comparison to HDL, LDL cholesterol is usually described as the “bad cholesterol” because high levels are associated with increased risk of CAD, stroke and peripheral arterial disease (The American Heart Association, 2011).

2.3.2.2 Obesity

Smeltzer et al. (2010) define overweight and obesity as abnormal or excessive fat accumulation that may impair health. The distribution pattern of fat on the body is a risk factor. The excess weight carried in the abdominal area subsequently produces a larger waist and may pose a greater risk for CAD. Excess abdominal fat indicates additional fat around abdominal organs. Obesity is a well-known risk factor for hypertension, diabetes and coronary artery disease. It is a disease of modern times and is often associated with a sedentary lifestyle (Smeltzer et al., 2010).

The Body Mass Index is a mathematical formula used to assess body weight relative to height. BMI is calculated as the weight in kilograms divided by the square of the height in metres (kg/m^2). A normal BMI is between 18.5 and 25 kg/m^2 . A BMI between 25 and 30 kg/m^2 indicates that a person is overweight. A BMI greater than 30 kg/m^2 indicates obesity (Urden et al., 2010).

2.3.2.3 Lack of physical activity

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure. Lack of physical activity is the lack of bodily movement, which does not require much energy expenditure. Regular vigorous physical activity using large muscle groups promotes physiologic adaptation to aerobic exercise. Exercise also reduces the incidence of many other diseases, including type 2 diabetes, osteoporosis, obesity, depression and cancers. Lack of regular, moderate physical activity decreases HDL levels and increases triglyceride levels resulting in the increase of coronary events and increase in overall mortality risk (Smeltzer et al., 2010).

Exercise alters the lipid profile by decreasing LDL cholesterol and increasing HDL cholesterol. A sedentary lifestyle has negative effects, regardless of age, gender, BMI, smoking status and presence or absence of hypertension. Life-long physical activity is necessary to prevent atherosclerotic CAD (Hinkle & Cheever, 2013; National Heart, Lung & Blood Institute, 2014).

2.3.2.4 Hypertension

Hypertension, also known as high or raised blood pressure, is defined as a condition in which the blood vessels have persistently raised pressure. Blood is carried from the heart to all parts of the body in the vessels. Each time the heart beats, it pumps blood into the vessels. Blood pressure is created by the force of blood pushing against the walls of blood vessels (arteries), as it is pumped by the heart. The higher the pressure the harder the heart has to pump (WHO, 2013). Hypertension is often described as a “silent killer”, because 30 percent of those affected are unaware that they have seriously elevated blood pressure. According to WHO (2013), complications of hypertension account for 9.4 million deaths worldwide every year. In 2008, worldwide, approximately 40 percent of adults aged 25 and above had been diagnosed with hypertension. The number of people with this condition rose from 600 million in 1980 to 1 billion in 2008. The prevalence of hypertension is highest in Africa at 46 percent of adults aged 25 and above, while the lowest prevalence, at 35 percent, is found in America (Smeltzer et al., 2010).

2.3.2.5 Diabetes Mellitus

Diabetes mellitus is a group of metabolic diseases characterised by increased levels of glucose in the blood (hyperglycemia) resulting from defects in insulin secretion, insulin action or both (Smeltzer et al, 2010). The major classifications of diabetes are type 1, type 2 and gestational diabetes and diabetes mellitus associated with other conditions or syndromes (Urden et al., 2010 & Thompson et al., 2002).

The major sources of this glucose are absorption of ingested food in the gastrointestinal tract and formation of glucose by the liver from food substances. Insulin is secreted by beta cells, which are one of four types of cells in the Islets of Langerhans in the pancreas. Insulin is an anabolic, or storage hormone. After ingesting a meal, insulin secretion increases and moves glucose from the blood into the muscles, liver and fat cells. Individuals with diabetes mellitus (types 1 and 2) have a higher incidence of CAD than the general population. Elevated blood glucose levels are a known risk factor for the development of vascular inflammation associated with atherosclerosis (Marieb & Hoehn, 2007).

According to Marieb and Hoehn (2007), diabetes is the third leading cause of death, primarily because of the high rate of coronary artery disease among people with diabetes. Diabetes is becoming more common in the USA. The number of Americans with diabetes has doubled and increased in all age groups. Studies have revealed that people living with diabetes are estimated at more than 23 million in the United States. Individuals with diabetes mellitus (types 1 and 2) have a higher incidence of CAD than the general population. Elevated blood glucose level is a known risk factor for development of

vascular inflammation associated with atherosclerosis (Marieb & Hoehn, 2007). Sub-Saharan Africa, like the rest of the world, is also experiencing an increasing prevalence of diabetes alongside other non-communicable diseases. It is estimated that 12.1 million people are living with diabetes in Africa, and this is projected to increase to 23.9 million by 2030 (WHO, 2013).

2.3.2.6 Cigarette smoking

According to the National Heart, Lung and Blood Institute (2014), the inhalation of smoking increases the blood carbon monoxide level. This chemical robs the blood of oxygen and triggers a build-up of plaque in the arteries.

Smoking is the most powerful risk factor that men and women can control. Smoking tobacco or long-term exposure to second-hand smoking raises the risk for CAD. The bigger the number of cigarettes smoked per day, the greater the risk. Cigarette smoking unfavourably alters serum lipid levels by decreasing HDL cholesterol and increasing LDL cholesterol (Smeltzer et al., 2010).

Smoking also increases the risk of blood clots forming in the arteries. Blood clots can block plaque-narrowed arteries and cause myocardial infarction. The more a person smokes, the greater their risk for myocardial infarction. (National Heart, Lung & Blood Institute, 2014).

2.3.2.7 Stress

Stress can be defined as a state of mental or emotional strain or tension resulting from adverse or demanding circumstances (WHO, 2013). The AHA (2011) classified stress as a contributing factor for developing CAD. The increased risk from chronic stress has been linked to increased plaque build-up as a result of elevated cholesterol, hardening of the arteries, change in blood pressure and abnormal rhythm of the heart. Living a stressful life can cause people to adopt poor habits like smoking, overeating and excessive alcohol intake, which result in the development of CAD. Regular physical activity not only relieves stress, but also directly lowers one's risk. Staying physically active, developing social support in a person's life and sharing one's feelings and concerns with other trusted people can help reduce stress and decrease the chance of developing CAD, as stated by WHO (2013.)

2.3.2.8 Alcohol

Alcohol is a psychoactive substance with dependence-producing properties that has been widely used in many cultures for centuries. The harmful use of alcohol causes huge disease, social and economic burdens in societies. Environmental factors such as economic development, culture, availability of alcohol, the level and effectiveness of alcohol policies are relevant factors in explaining differences and historical trends in alcohol consumption and related harm. Alcohol-related harm is determined by the volume of alcohol consumed, the pattern of drinking, and, on rare occasions, the quality of alcohol consumed. Alcohol affects the cardiovascular system in number of ways,

WHO (2013) has revealed. The study by WHO (2013) also reveals that too much consumption of alcohol can raise the levels of fat in the blood and can cause serious medical problems namely cardiomyopathy, cardiac dysrhythmias and sudden death. Heavy alcohol consumption increases the risk for hypertension, which in itself is a risk factor (WHO, 2013). Section 2.4 discusses the Health Belief Model.

2.4 THE HEALTH BELIEF MODEL

The Health Belief Model was developed in the 1950s by a group of United States Public Health service social psychologists who wanted to explain why so few people were participating in programmes to prevent and detect disease. The Health Belief Model has been applied to predict a wide variety of health-related behaviours and to understand patient's responses to symptoms of a disease.

2.4.1 Variables influencing health behaviour

The underlying principles of this model are that health behaviour is influenced by variables like demographics plus diseases, barriers and financial and social support as well as perceptual factors.

Demographic factors: These are factors, which include the respondent's characteristics such as age, gender, education, employment and other co-morbidities.

Barriers: This is the second variable that can be defined as factors leading to unavailable or difficulty in gaining access to specific health promotion alternatives.

Resources: This is the third variable, which encompasses factors such as financial and social support.

Perceptual factors: This is the fourth variable that consists of factors that influence how the person views his or her health status, self-efficacy and the perceived demands of the illness (Polit & Beck, 2012).

The Health Belief Model has been applied to a broad range of health behaviours and populations. Three broad areas can be identified as preventive health behaviours (Polit & Beck, 2012).

2.4.2 Preventive health behaviours

Health promotion: Behaviour that includes diet and exercise as well as health risks, namely, smoking behaviours. These behaviours could be regarded as both knowledge and attitudinal in nature, and are referred to in this chapter under Section 2.5.

Sick role behaviour: Refers to compliance with recommended medical regimens, usually following professional diagnosis of illness.

Clinic use: This includes physician visits for a variety of reasons.

These behaviours can be regarded as practices and are referred to in this chapter under Section 2.5.

The above discussions are the core assumptions of the HBM and are related to knowledge, attitudes and practices regarding CAD. The HBM is based on the understanding that a person will take health-related action if he/she feels that a negative health condition

namely CAD can be avoided. The respondent has a positive expectation that by taking a recommended action, he/she will avoid a negative health condition. In other words, by quitting smoking the respondent may reduce the risk of developing CAD (Polit & Beck, 2012; Hinkle & Cheever, 2013).

Polit and Beck (2012) stated that the Health Belief Model (HBM) is a psychological model that attempts to explain and predict health behaviours. This is done by focusing on the attitudes and beliefs of individuals. The model was developed in response to the failure of health screening programmes. Since then, the HBM has been adapted to explore a variety of long- and short-term health behaviours. The HBM could also be used to explore knowledge, attitudes and practices regarding CAD.

The HBM has been used as a theoretical framework in several coronary artery health-related studies, and is thus an appropriate framework for this study (Polit & Beck, 2012). This model suggests that individuals must perceive themselves to be at risk of a health threat before taking actions to reduce risk behaviour or engaging in alternative health behaviour. Since knowledge is often a precondition to understanding the need for lifestyle practices, the individuals with unhealthy lifestyles need to know that they are at risk of getting coronary artery disease.

The next section reviews studies on knowledge, attitudes and practices related to CAD.

2.5 STUDIES ON THE PREVALENCE OF RISK FACTORS, KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING CORONARY ARTERY DISEASE

The researcher departed from an assumption that differences may, and indeed, exist between different population strata. The approach in this study was to organise the presentation from a developing and developed countries perspective, specifically as Namibia comprises two population strata that fit this organisational framework. The first discussion was on a developing countries perspective.

2.5.1 Developing countries perspective

Developing countries are defined as countries with little industrial and economic activity and where people have low incomes (Bradbery, 2015). Coronary artery disease is seen as the major cause of morbidity and mortality in most developing nations around the world (Celermajer, Chow, Marijon, Anstey & Woo, 2012).

Over the past decade or more, the prevalence of risk factors for atherosclerotic coronary artery disease has been increasing in the developing countries, including China and India (Celermajer et al., 2012). According to the World Health Organization (WHO 2009) reports, in Iran, 41.3 percent of all deaths in 2005 were due to CAD and the number is anticipated to reach 44 percent by 2030. The increase in these populations has prompted the early detection of arterial damage and provided important insights into disease patterns. In addition, because of urbanisation and mechanisation, in the near future the prevalence of these diseases will increase. According to Salahshoori et al. (2015), people with CAD may face major changes in their relationships, work, values, social and physical, and self-care abilities, therefore, their general health may be compromised.

A prerequisite for healthy behaviour and preventative measures and to increase their self-care abilities is knowledge. The knowledge implied in this study is about risk factors. Several studies have reported on the prevalence of risk factors in developing countries. These risk factors were discussed separately.

2.5.1.1 The prevalence of risk factors in developing countries

The prevalence of the risk factors was discussed as it related to developing countries. The four risk factors discussed were hypertension, obesity, smoking and alcohol consumption.

- **Hypertension**

Hypertension is one of the risk factors for coronary artery disease. It is stated that there is a strong relationship between hypertension and diabetes with coronary artery disease (Evans & Tippins, 2007). According to Burger, Pretorius, Fourie and Shutte (2016), hypertension has been identified as one of the African continent's biggest health challenges. In South Africa, a study found 78 percent of adults older than 50 years were suffering from hypertension (Lloyd-Sherlock, Beard, Minicuci, Ebrahim & Chatterji, 2014). High blood pressure, or hypertension, is also recorded among the major risk factors for CAD in Namibia, according to the Ministry of Health and Social Services Health Information System (2007). To emphasize this concern, health facility-based records indicated that hypertension, heart failure, hypertension, and stroke collectively were responsible for eight percent of all health facility deaths in Namibia. The prevalence of hypertension is highest among women and men living in the Khomas region than any other regions in Namibia (Health Information System, 2007).

- **Obesity**

Keates, Mocumbi, Ntsekhe, Sliwa and Steward (2017) reveal that the prevalence of obesity is markedly higher in African women than men, in contrast to other regions of the world. Overall, obesity is more prevalent among women (10–15 percent) than in men (4–5 percent). The countries with the lowest prevalence of obesity are typically located in the poorest regions of Central and Western Africa (Keates et al., 2017).

- **Smoking**

WHO (2014) data on the prevalence of tobacco smoking in 29 African countries, revealed a differential pattern of tobacco use across the African continent. For example, 45–50 percent of the adult population of Morocco and Egypt, 43–44 percent of Cameroon and the Republic of the Congo, and 44–60 percent of Mauritius and Sierra Leone reported tobacco use (Keates et al., 2017). By contrast, Ethiopia and Ghana had a lower prevalence of smokers. Consistent with the rest of the world, smoking prevalence is consistently higher in men than women, as reflected by the predominance of smoking-related diseases among Tanzanian men. The absolute number of smokers in sub-Saharan Africa alone is projected to increase by nearly 1.5-fold to >200 million people by 2030 (Keates et al., 2017). The prevalence of smoking among adolescents is also on the rise. According to a study done by Alberts et al. (2005) in a rural population in South Africa regarding the prevalence of coronary artery disease and associated risk factors, there was a high prevalence of tobacco use in men (57 percent) than in women (35.4 percent). This shows that developing countries practice high-risk behaviour regarding smoking.

- **Alcohol intake**

A WHO report on high-risk alcohol intake noted high abstinence rates in the predominantly Muslim populations of Northern Africa, in contrast to high rates of alcohol consumption (when compared with the rest of the world) in Southern Africa (Keates et al., 2017). In a South African study conducted in the Western Cape, alcohol use was found to be 57 percent in males (Alberts, Urdal & Steyn (2005). Monti, Ruggieri, Vincentelli, Capuano & Pugliese, 2015) revealed in a study about CAD risk factors in Sub Saharan Africa that alcohol intake is related to poverty and low socio-economic positions. Large sections of the population in the Western Cape study are of low socio-economic status (Keates et al., 2017). According to the WHO (2011), medium alcohol consumption levels can be found in Southern Africa, with Namibia and South Africa having the highest levels .

2.5.1.2 Studies on knowledge, attitudes and practices in developing countries

From the literature, it emerged that knowledge was lacking in many developing countries. A hospital-based cross-sectional study was conducted at the National Institute of Cardio-Vascular Disease at Karachi, Pakistan. According to that study, findings highlighted lack of knowledge of modifiable risk factors for heart disease among respondents admitted with acute myocardial infarction (heart attack) in Pakistan (Khan, Jafary, Faruqui, Rasool, Hatcher & Chaturvedi, 2006).

In a related study by Vaidya et al. (2013), knowledge was also identified as a crucial factor for preventing CAD. It was evident from that study that respondents with high school or more education know more than those with less education. It emerged that respondents with education less than high school did not want to change their current lifestyle. They

also did not think that changing their behaviour would lower their risk for developing CAD. This study concluded that poor knowledge, inappropriate attitude and highly adverse behaviour regarding CAD existed among the less educated respondents of Nepal. Finally, the results of the study by Vaidya, Aryal & Krettek (2013) showed the potential and possibility that community health promotion has to improve coronary artery health literacy.

However, in many studies, positive attitudes, especially regarding coronary artery disease risks, were not always followed by good practice, as proven in a study done in Saudi Arabia (Yahya & Yusoff (2012). Another study done among overweight Bangladesh people showed that their attitude towards exercise was good with support from their general physicians. However, they would not volunteer going to the gymnasium without referral from the physician. In a study conducted in Nigeria by Akinpelu, Oyewole and Adekunla (2015) about 54 percent of males and 45 percent of women accurately perceived themselves in self-verbal and visual perception respectively. This study also provides the prevalence of misperception of weight status in the rural community population. Therefore, the assessment of knowledge, attitudes and practice on coronary artery disease and the association of these three components are considerably the most important factors for prevention. (Yahya et al., 2012).

Another study conducted in Malaysia indicated that knowledge regarding the advantage of exercise on cholesterol, diabetes and hypertension were less among the older respondents. However, older people had a positive attitude towards exercise but they lacked sufficient knowledge and motivation. The study also revealed that less than half of

the respondents were engaging in exercise due to motivation from others (bin Mohamed Roshdin Murad, Rahman, Rahman & Haque, 2016).

Another study conducted in Africa by Asma and Pederson (2017), people's knowledge of the health risks of tobacco use appears to be partial at best, especially in low and middle income countries where information about these hazards are limited.

In another study done in the Western Cape, common medical terminology regarding CAD was not understood. All respondents were familiar with the term "heart attack", but not myocardial infarction. The two are related but not interchangeable. Some respondents described it, "heart attack" in more general terms as a heart problem, whereas others provided a more detailed explanation. Respondents also commented that they had heard of conditions associated with CAD but felt uninformed owing to poor communication from health care providers. Respondents in the study were hesitant and unsure when asked what they thought CAD meant and were unable to provide a definition. Some respondents described CAD as conditions affecting the heart (Surka, Steyn, Everett – Murphy, Gagiano & Levitt 2015).

Knowledge can be regarded as a general concept like in the previous discussion, or can be more specific and relating to knowledge about risk factors. These risk factors were discussed as non-modifiable and modifiable under Section 2.3.

Numerous studies were reported about respondents' knowledge about risk factors on CAD. One such study was conducted by Zungu and Djumbe (2013), about knowledge and lifestyle practices of hypertensive patients attending a primary health care clinic in Botswana. The study concluded that only one third of the respondents had adequate levels

of knowledge regarding the treatment of hypertension. The same study revealed, however, that most of the respondents were aware of the dangers of smoking and how to reduce stress.

The knowledge, attitudes and practices concepts are intertwined, and quite often attitudes and practices are related to knowledge. Some studies conducted in the developing countries reflected on aspects of the Health Belief Model. One such study was conducted in the North-West Province of South Africa by Burger, Pretorius, Fourie & Shutte (2016). Results indicated that despite the respondents (African men) having an adverse coronary artery (CA) risk profile and a relatively good knowledge of CAD risk factors, no relationship could be indicated between knowledge and practice. One third of the men in the study had two or more risk factors. The findings indicated that these respondents might know about CAD, nevertheless they may be unaware of their own susceptibility (Burger et al., 2016).

In a knowledge, attitude and practice study conducted in Nigeria, it was reported that respondents may not have relevant information that can inform their health condition and enhance the attitude of health seeking behaviour. It was also suggested by Surka et al. (2015), that attitudes and practices of respondents can be influenced by genetic and environmental determinants, namely, social, economic and ethnic factors, as demonstrated by respondents in the Western Cape. Respondents indicated that they felt helpless about making lifestyle changes. This was largely attributed to dire living conditions and poverty. Respondents who were diagnosed with CAD confirmed that they could not cope with the disease. They also associated unhealthy diets with their circumstances and with poverty in general (Surka et al., 2015).

The next discussion focuses on the developed countries perspective.

2.5.2 Developed countries

A developed country is defined as being industrialised that has a highly developed economy and advanced technological infrastructure relative to other less industrialised nations. Countries with a high income, high gross domestic product and a high human development index are classified under developed countries (Bradbery, 2015). The overall burden continues to grow in both developed and developing countries. There are distinct differences in patterns regarding CAD, and the patterns as they relate to the developed countries are discussed.

A study conducted by Roth, Huffman, Andrew, Feirign, Mensah, Naghavi & Murray (2013) on developed countries revealed large differences in their coronary artery disease mortality. In developed countries, despite the overall increase in the CAD burden, age-adjusted death rates for most causes of CAD are declining. Japan, a developed country with a high income, has one of the lowest rates of CAD mortality in the world alongside with Taiwan, followed by France, Spain and Canada.

In contrast with these developed countries, Germany has one of the highest mortality rates in Western Europe due to the high prevalence of risk factors. The mortality rate in Austria, Finland and Sweden are even higher than in Germany. This wide variation was attributed to the differences in dietary patterns, other risk factors, political governance and the resulting policy decisions (Roth et al., 2013).

On the other hand, CAD mortality has been declining recently in the USA and in regions where economies and health care systems are relatively advanced, but the experience is often quite different around the world (Sanchis-Gomar, Perez-Quiles, Leischik & Lucia (2016).

2.5.2.1 Prevalence of risk factors in the developed countries

The prevalence of the risk factors are discussed as they relate to developed countries. The four risk factors to be discussed are hypertension, obesity, smoking and alcohol intake.

- **Hypertension**

Hypertension prevalence in the developed countries appeared to be similar to that of developing countries (See point 2.5.1.1). Over a 10-year period, the prevalence of hypertension nearly doubled in both gender and in all age groups among Canadians, particularly among the younger population groups. In another study from Germany and the Czech Republic, it emerged that hypertension increased (although marginally), specifically in areas with high unemployment and overcrowding (Psaltopoulou, Hatzis, Papageoriou, Adroulakis, Briasoulid & Tousoulis (2017).

- **Obesity**

The prevalence of obesity in the developed countries has doubled and in some instances tripled. It is reported that in almost half of developed countries, one out of every two people is overweight or obese. These populations are expected to get more obese in the

near future. It should be noted, however, that this increase in obesity is affecting some countries more than others. As an example, obesity and overweight have grown modestly in Canada, England, Italy, Spain and the United States, but have increased by 2-3 percent in Australia, France, Mexico and Switzerland (Kreatsoulas & Anand (2017).

- **Smoking**

Studies have revealed a decline in the prevalence of smoking in developed countries compared to the developing countries. This was evident in a study Kreatsoulas and Anand, (2010) conducted in Canada. Similar results about the decline in smoking rates were revealed in Sweden. The study indicated an overall decline in smoking prevalence by 10 percent in the total population and by 12 percent in CAD respondents. This resulted in a reduction in overall mortality (Bjorck, Capewell, O'Flaherty, Lappas, Bennett & Rosengren (2015).

- **Alcohol consumption**

Studies have revealed that alcohol consumption is a contributing factor to increase in mortality in general. Specific studies have been done to establish the association between CAD and alcohol consumption. In Canada, one such a study revealed that alcohol consumption ranked second (behind tobacco use), as a CAD risk factor (Giesbrecht, Stockwell, Strang & Thomas, (2011).

In other developed countries like Scotland (Wennerholm, Bromley, Johansson, Nilsson, Frank & Faresjo (2017) and Italy the consumption of alcohol is reported as still being problematic (Napolitano, Napolitano, Arnese, Crispino & Panariello & Guisepe (2017).

These results are comparable with findings in USA in which 78 percent of respondents reported regular alcohol use (Napolitano et al., 2017).

2.5.2.2 Studies on knowledge, attitudes and practices regarding CAD in developed countries

Literature was explored for specific information on suitable studies on knowledge, attitudes and practices regarding CAD in developed countries. A study conducted in Germany and the Czech Republic revealed a significant association between knowledge and nutrition quality. The study demonstrated that respondents with a college diploma had higher scores with regards to knowledge of healthy foods and avoidance of unhealthy foods (Psaltopoulou et al., 2017).

In Italy, respondents with a lower or middle education were found to be less knowledgeable compared to those with a tertiary education. In practice, the majority of the respondents self-reported that they quit smoking and were engaging in physical activity as well, and were in the process of weight loss as a preventative measures for CAD (Tadesco, Giuseppe, Napolitano & Angelillo, 2014).

According to Andsoy, Servinc, Iyigun & Kopp (2015), the level of knowledge of risk factors for coronary artery disease varies among different populations. In a cultural-based study conducted in the USA, it emerged that the white population had a higher level of knowledge about risk factors of CAD than other often disadvantaged groups, such as African-Americans.

Another study was conducted in Sweden among patients admitted with acute myocardial infarction (AMI) and the general public. The respondent indicated ability to recognise AMI symptoms, namely, chest pain, radiating pain in left arm, nausea and vomiting. The majority of respondents indicated that they would seek medical assistance urgently in the occurrence of symptoms related to myocardial infarction. (Henriksson, Larsson, Arnetz, Herlitz, Svensson, Thuresson, Zwdigh, Wernroth & Lindahl (2015).

Some studies were also conducted on gender differences regarding CAD. Crouch (2008) revealed that although women's knowledge of heart disease was quite good, they did not recognise heart disease as the leading cause of death in their gender group. The study also revealed that younger women were smoking more frequently than older women. The majority of women reported that they exercised on a regular basis (Crouch, (2008).

Another study about coronary artery disease and women conducted in Italy by Tadesco et al. (2014) revealed that almost all respondents reported having heard about CAD. A total of 89.4 percent identified smoking and 74.7 percent identified cholesterol as risk factors for CAD. Women who were more knowledgeable were married and better educated regarding CAD. Only 23 percent knew the main CAD preventative measures and indicated that they received information from their physician about CAD.

Some studies also focused on marital status and its association with cardiovascular health and all-cause mortality. Such a study was conducted in the United States by Schwandt, Coresh & Hinden (2010) and suggested that losing a spouse has differential impacts on men's and women's coronary artery health in older ages. Findings show marital disruption is associated with the onset of coronary artery disease in middle-aged women but not in

men. A general perception exists that married people have a somewhat healthier profile, however, the cross-sectional study conducted could not determine whether healthier people are more likely to get married or whether marriage improved on individual's health (Schwandt et al., 2010).

Previous studies of employment and coronary artery disease in men have established job strain as a predictor of CAD risk. People, more than ever before are in paid employment. According to a study conducted in the USA by Lee, Colditz, Berkman and Kawachi (2002), various dimensions of employment environments were examined. The results revealed that full time workers in high strain employment had a multivariate relative risk of CAD compared with full time workers in low strain jobs. This also relates to stress from hierarchical structures and decision making in the work place. The study also found that respondents in high strain employment were more likely to report a personal history of hypertension and elevated cholesterol. They were more likely to smoke, consume more alcohol and exercise less than respondents in low strain employment (Lee et al., 2002).

A different approach to the role of alcohol in the prevention of CAD is necessary, as indicated by the findings of a study conducted in Great Britain by Farooqi, Nagra, Edgar & Khunti (2000). Respondents in the study were not clear on the link between alcohol and CAD.

2.6 SUMMARY OF THE CHAPTER

This chapter presented the pathophysiology, risk factors, Health Belief Model and studies on knowledge, attitudes and practices regarding coronary artery disease. The next chapter discusses the research design and methodology.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

Chapter 2 dealt with the review of literature related to the study topic. This chapter describes the research methodology used in the study. The chapter addresses the methods and procedures employed to accomplish the objectives of the study.

3.2 OBJECTIVES

The objectives of this study were to:

- Determine and describe the knowledge of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.
- Determine and describe the attitudes of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.
- Determine and describe the practices of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

3.3 RESEARCH DESIGN

A research design is defined as an overall research approach or the strategy taken, which guides the researcher in planning and implementing a study (Lavrakas, 2008). There are a number of research designs that a researcher could use. This study employed a quantitative, cross-sectional, descriptive approach. The motivation for this type of approach was discussed.

3.3.1 Quantitative

Quantitative research is defined as an approach for testing theories by examining the relationships among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures (Cresswell, 2014). The intent is to establish, confirm, or validate relationships and to develop generalisations that contribute to theory. The premise for quantitative research is on deductive rather than inductive reasoning. This study examined the relationship between variables regarding knowledge, attitudes, and practices regarding coronary artery disease.

3.3.2 Cross-sectional study

A cross-sectional study is a study conducted in the present time to examine what currently exists. All the data is collected at one time (De Vos, Strydom, Fouche & Delpont, 2011). In this study, the respondents completed questionnaires at one time during the period the researcher was collecting data. The existing knowledge, attitudes and practices were determined.

3.3.3 Descriptive

In a descriptive approach, the researchers describe, observe and document aspects of a situation as it naturally occurs. This approach may also be used to collect, organise and summarise information about the situation being investigated. In addition, it may also be used to study frequencies and perform other statistical calculations (Carpi & Egger, 2008). In this study, the knowledge, attitudes and practices were described in relation to CAD.

3.4 RESEARCH METHOD

This refers to the tools used to gather data (Dawson, (2006, p.14), Blaxter, Hughes and Tight (2006, p.29) refer to the research method as a key part of the research process. The following were addressed: research settings, population, sampling and sampling method, research instrument and testing of the instrument and finally the data collection and analysis.

3.4.1 Research settings

The research site was identified and ethical approval was obtained from the Management of the Roman Catholic Hospital (RCH) [See Annexure 2], Permanent Secretary of the Ministry of Health and Social Services [See Annexure 3] and the University of Namibia (UNAM) Ethics Committee [See Annexure 1].

This site consisted of two cardiac clinics, namely the clinics at the Roman Catholic Hospital and the Windhoek Central Hospital. These two clinics also comprise the Namibian Heart Centre. The referrals to these two clinics were from different regions in Namibia.

3.4.2 Population

A population, as described by Polit and Beck (2012), refers to an entire set of individuals or objects having some common characteristics. The group should have a set of characteristics about which the researcher wishes to draw a conclusion. The population is a particular group of individuals, who are the focus of the research (Grove, Burns & Gray, 2013).

The population in this study are all the patients referred to the Namibian Heart Centre in 2017. Based on the statistics from the Namibian Heart Centre, patients referred to the mentioned centre in 2015, numbered 1,500. The predicted number of patients for 2017, and thus the total population, would thus also resemble 1,500.

Next to be discussed was inclusion and exclusion criteria, followed by sampling and sampling method.

- **Inclusion criteria**

The inclusion criteria in this study was respondents 18 years and older and being referred to the cardiac clinics in 2017. In this study, only respondents who were referred with history of chest pain, abnormal electrocardiographic changes, abnormal cardiac rhythm and confirmed diagnosis of CAD were included in the study.

- **Exclusion criteria**

The exclusion criteria in this study were respondents younger than 18 years. Respondents with congenital heart problems were also excluded.

3.4.3 Sample and sampling method

A sample is described by Polit and Beck (2012) as a limited part of a population whose properties are studied to gain information about the whole. Sampling is also explained as the process of selecting units from the target population so that by studying the sample, generalisation of findings can be made to the population (Polit and Beck, 2012). A stratified random approach was followed.

- **Stratified approach**

A stratified random sampling is a method of sampling that involves the division of a population into smaller groups known as strata. The two cardiac clinics formed the strata. Their individual representation to the total population was 27 percent (Windhoek Central Hospital) and 73 percent (Roman Catholic Hospital), respectively. See also tables 3.2 and 3.3. The first activity was to determine the sample size for both clinics. This was done by probability sampling.

- **Probability sampling**

This technique allows each member of the population to have the same chance of being included in the sample and each element of a particular size has the same probability of being chosen (Polit & Beck, 2012). The sample size was calculated in Table 3.1, and was based on a confidence level of 95 percent, and a confidence interval of 5 (Creative Research Systems, 2016).

Table 3.1: Formula and calculation of sample size

Formula of Sample Size calculation	Calculation of Sample Size
$\text{Sample size (ss)} = \frac{Z^2 * (p) * (1-p)}{c^2}$ <p>Where: Z = Z value (e.g. 1.96 for 95% confidence level) p = percentage picking a choice, expressed as decimal (.5 used for sample size needed) c = confidence interval, expressed as decimal (e.g., .04 = ±4</p> $\text{New SS} = \frac{\text{SS} - 1}{1 + \text{Pop}}$ <p>Where pop = population</p>	$\frac{(1,96 \times 1,96) * (0,5) * (1-0,5)}{0,05 \times 0,05}$ <p style="text-align: center;">▼</p> $\frac{(1,96 \times 1,96) * (0,5) * (1-0,5)}{0,05 \times 0,05}$ <p style="text-align: center;">▼</p> $\frac{(3,8416) * (0,5) * (0,5)}{0,0025}$ <p style="text-align: center;">▼</p> $\frac{0,9604}{0,0025}$ <p style="text-align: center;">▼</p> <p>Old-ss = 384,16</p> <p>New ss = $\frac{\text{ss} - 1}{1 + \text{population}}$</p> <p style="text-align: center;">▼</p> $\frac{384,16 - 1}{1 + 1500}$ <p style="text-align: center;">▼</p> <p>=306</p>

- **Sample division between the two cardiac clinics.**

This was based on the cardiac clinics' individual representations. As is evident in Table 3.2, the population numbered 1,500 in total, with 400 respondents from Windhoek Central Hospital and 1,100 from Roman Catholic Hospital, based on patient statistics. This represents a 27 percent ratio for the Windhoek Central Hospital and a 73 percent for Roman Catholic Hospital. The calculated sample size, which was 306, was thus accordingly divided between the two clinics. For the Windhoek Central Hospital the calculated sample size was 82, and for the Roman Catholic Hospital it was 224.

Table 3.2: The different stages [stratification] incorporated during sampling

Determining population size	
▼	
1,500	
▼	
Calculate sample size	
▼	
306	
Stratified between the two clinics	
▼	
Windhoek Central Hospital 27 % weight	Roman Catholic Hospital 73% weight
▼	▼
82	224
▼	▼
Determining minimum time period for data collection	Determining minimum time period for data collection
▼	▼
Minimum six months	Minimum six months

Due to the required physical assessments to be conducted, all the patients had to visit the clinics at least twice a year. The implication was that for all patients to have an equal opportunity to be included in the study, the period of data collection required was at least six months. This positioned the study in a prospective timeframe.

Table 3.3: Random selection of respondents

	Sample numbers collected	
	Windhoek Central Hospital 27 % ratio (weight)	Roman Catholic Hospital 73% ratio (weight)
February 2017	No permission yet received	24
March 2017		30
April 2017		20
May 2017	12	30
June 2017	20	43
July 2017	24	38
August 2017	20	31
Total	76	216
Expected	82	224
Missing/incomplete	6	8
Total for both clinics	292	

The final stratification activity conducted by the researcher was the random selection of respondents for each clinic. The researcher randomly visited the clinic at the Windhoek Central Hospital twice a week, and the one at the Roman Catholic Hospital three times a week. The visits were determined by duty roster allocation, and the respondents available on these days were approached. At the Roman Catholic Hospital clinic, the minimum monthly questionnaires distributed and collected were 20, while at Central Hospital ten were collected. See Table 3.3 above.

3.4.4 Research instrument

Research instruments, also called research tools, are the devices used to collect data. Questionnaires may be used to measure knowledge levels, opinions, attitudes, beliefs, ideas, feelings and perceptions. Moreover, questionnaires may be used to gather factual information about respondents (Grove et al., 2015). For the purpose of a quantitative research, Polit and Beck (2001) claim that questionnaires are an efficient method to collect data from a large number of respondents.

The researcher chose this method of data collection, namely a questionnaire, to measure knowledge levels, attitudes, and practices of respondents regarding coronary artery disease. The questionnaire allowed the respondents ample time to think and decide on the answer themselves.

The questionnaire was developed after consultation with the literature [See Annexure 5]. Two related questionnaires were found and adapted. The questionnaires were developed

in English. Subsequently, the questionnaires were also used as an interview guide for respondents with literacy constraints. The questionnaires were coded to ensure anonymity.

- **Construction of the instrument**

The literature was consulted through various library databases and adaptations were made from two existing instruments. These adaptations were made to suit the Namibian situation. The instruments that were consulted and adapted were Yahya, Muhamad and Yusoff (2012) and Vaidya et al. (2013). Only sections of both instruments were used and they were dually acknowledged.

The questionnaire of this study was divided into three sections, namely:

Section 1: Dealt with demographics in order to understand the representativeness of the respondents. It covered age, gender, marital status and level of education. Furthermore, employment status, place of residence, weight, height and other co-morbidities were covered in section one. Close ended questions were used to obtain demographic data.

Section 2: Dealt with knowledge and practice. It covered respondent's knowledge about CAD and sources on information about CAD. It included testing of respondent's knowledge about the signs and symptoms of coronary artery disease.

Furthermore, practices on smoking, consumption of alcohol, blood pressure measurement and exercise were included. Closed-ended and ordinal questions were asked and responses recorded on the 1-5 Lickert scale to test knowledge and practices.

Section 3: This section sought to understand the respondents' attitudes towards coronary artery disease. It covered self-rating of respondents' perception of their weight, and need and reason to change current lifestyle. The significance of stress, smoking, use of alcohol as contributing factors of CAD were also determined as well as importance of regular follow up at a health facility. Nominal and ordinal questions rated on the 1-5 Lickert scale were used to test attitude.

3.4.4.1 Relationship between the instrument and the health belief model

In table 3.4 the relationship between the instrument and the Health Belief Model is indicated.

Table 3.4: Relationship between the instrument and the health belief model

Section in the questionnaire	Question	Health belief Model
Knowledge	<p>Question 2.1</p> <p>Self-rating of knowledge about Myocardial infarction (MI)</p>	<p>Perceived seriousness</p> <ul style="list-style-type: none"> • Being able to identify the signs and symptoms of a MI can enable a respondent to seek help promptly and early when symptoms are experienced • Early identification of symptoms and treatment may prevent disability and death from CAD • Perceived seriousness may also come from beliefs.
Practice	<p>Question 2.5</p> <p>Self- rating on smoking</p> <p>Question 2.6</p> <p>How many cigarettes smoked per day</p>	<p>Perceived benefits</p> <ul style="list-style-type: none"> • Respondents perceptions on obtaining benefits when stop smoking
Attitude	<p>Question 3.3</p> <p>Self- rating on weight</p>	<p>Perceived benefits</p> <ul style="list-style-type: none"> • Respondents perceptions on benefits gained when losing weight • Perceived barriers • Respondents on perceptions on barriers like finances and effort like exercises.

3.4.4.2 Testing of the instrument

The first concept to be discussed is validity.

a) Validity

Nieswiadomy (2014) defines validity as the extent to which a test measures what is meant to be measured. Part of the validity confirmation was obtained during the pilot study. The validity of the data obtained through this method was governed by the respondents' willingness or ability to provide accurate information. Validity varies from one sample to another and from one situation to another, therefore, validity testing affirms the appropriateness of an instrument for a specific group or purpose rather than the instrument itself (Grove et al., 2013). The types of validity covered in this research included face and content validity of the instrument.

b) Face validity

Face validity was used to verify whether the instrument appeared to be valid or appeared to measure the construct it was supposed to measure. To assess face validity, the instrument was submitted to a group of intensive care nurses with experience in nursing patients with coronary artery disease. They agreed to the face validity of the instrument. In addition, this instrument was adapted from related instruments in literature with documented face validity (Yahya et al., 2012; (Vaidya et al., 2013).

c) Content validity

Content validity examined the extent to which the measurement method included all the major elements relevant to the construct being measured. The questionnaire was based on

a thorough literature review and the focus was on whether the content was clear and appeared to measure what it was supposed to measure. This also ensured that irrelevant questions were not asked. The questionnaire was also submitted to a group of physicians and a senior cardiologist, with experience and knowledge on the topic. They made suggestions for the adequacy and relevance of the questions. One of the suggestions made was to include retired respondents (pensioners) because a large portion of referred respondents were elderly people. Another suggestion was to include co-morbidities. Self-rating of respondents' weight was another suggestion from a physician to compare with their weight and height. That was to assess if respondents have any knowledge about BMI. Literature confirmation was obtained from Yahya et al. (2012) and Vaidya et al. (2013).

d) Reliability

Keller and Casadevall-Keller (2010) depict reliability as the degree to which different methods or people would arrive at the study findings. Equally, Tyler (2010) and Nieswiadomy (2014) define reliability as the degree to which the same instrument provides a similar score when used repeatedly. Cronbach's alpha, a measure used to assess the reliability or internal consistency of a set of scale or test items, was also used in this study. According to Goforth (2015), the reliability of any given measurement refers to the extent to which it is a consistent measure of a concept, and Cronbach's alpha is one way of measuring the strength of that consistency.

In this study, the Cronbach's alpha measurement results of the original instruments were used. A maximum of 75 percent of items from the two instruments were used. The first instrument reported a Cronbach's alpha result of 0.73 (knowledge), 0.71 (attitudes) and

0.60 (practices) (Yahya et al. (2012). The second instrument reported a Cronbach's alpha result of knowledge and attitudes at 0.941 (Vaidya et al. (2013).

3.4.4.3 Pilot testing

A pilot study is a small-scale preliminary study that is conducted before the main research (Stachowiak, 2008). After receiving approval from the University of Namibia Ethics Committee, the researcher conducted a pilot study among 10 patients from the cardiac clinics. The purpose of the pilot study was to establish the overall quality and clarity of the instrument. The cover letter was read before distributing the questionnaires and respondents signed the consent form after they agreed to participate in the pilot study. Respondents were asked to write their remarks about the questions if they found that they were not clear or had any difficulty understanding them.

The pilot study included technical aspects and the time it took to complete a questionnaire. This testing included the respondent's ability to read and comprehend the content of the instrument. This supported the content validity of the instrument. The responses from the pilot study provided the researcher with information on whether all the respondents understood the questions in the same way. The pilot study focused on readability, technical aspects and aspects of time.

The respondents found the questionnaire fairly easy to read and questions were clear. The fact that all the answers only required a tick or cross, made it easy to complete. Six candidates requested a change in the format on the question of marital status. The format was changed. The average time taken to complete a questionnaire was not more than 15

minutes. After the pilot study, appropriate revisions were made to the instrument before the major study commenced. The 10 pilot study respondents were excluded in the main study.

3.4.5 Data collection method

Data collection is the process of acquiring respondents and collecting the data for a study (Grove et al., 2015). The researcher was actively involved in the process of data collection and used the services of a registered nurse from the ICU for translation purposes. A small percentage of the respondents could not communicate in English, but only in the Oshiwambo vernacular. The translator was conversant in both English and Oshiwambo vernacular. The translator was also familiar with the theoretical and practical aspects of the subject and only assisted with translation and adhered to the ethical principles as presented.

Data collection took place from 9 February to 30 August 2017 at the Roman Catholic Hospital (RCH) Cardiac clinic. [See Table 3.2]. However, data collection only commenced on 3 May 2017 at the Windhoek Central Hospital (WCH) clinic due to a delay in getting permission to conduct the research from the Ministry of Health and Social Services, which was only received on 28 April 2017. Data was also collected between Monday and Friday, as both cardiac clinics only operate during week days.

Researcher started off with introduction with the staff of the cardiac clinics and presented her supporting document as proof to conduct the research (Annexure 1) followed by introduction with all the respondents at the clinics. The purpose, objectives and

significance of the study were explained to the respondents present. The researcher also explained the importance of honest completion of the questionnaires.

The three to five patients were randomly selected per day by means of lottery. The selection process was done by letting the respondents pick a paper with either even or odd numbers from a box. The respondents with odd numbers were chosen to participate in the study. The respondents were given questionnaires to fill in and were asked to drop them in a box provided after completion.

The respondents were informed in detail about the matter to which they were consenting. All were informed that they could withdraw from the study at any time for any reason. The researcher also encouraged the respondents to only participate once because some came for follow ups more than once while the data collection process was still in progress.

The researcher did not put any respondent at risk during the data collection process. Voluntary consent was obtained from everyone. Some of the respondents signed a consent letter. [See Annexure 4]. A thumb print was obtained as signature from respondents interviewed by the researcher, who had literacy constraints, and were given a copy of the consent letter. Some also gave consent verbally but did not want to give their name, surname and signature on the consent form. They preferred to remain anonymous, which was respected by the researcher.

The researcher used the observation room of the cardiac clinic at the WCH to conduct interviews with respondents with literacy constraints. Respondents with literacy constraints were mostly elderly respondents. Some experienced problems with sight and found it challenging to read the questionnaire. The observation room provided privacy and

an opportunity to get clarification, instead of conducting the interviews in waiting areas and corridors. A scale was available at the observation room and weight and height could also be recorded, which were some of the requirements in the questionnaire.

The cardiac clinic of the Roman Catholic Hospital is bigger and a corner at the clinic, which provided privacy, was used for interviews. Respondents at both clinics took the questionnaires and completed them while waiting to be called into the doctor's consulting rooms. The respondents deposited the completed questionnaires in sealed boxes placed in the clinics. The boxes were collected at the end of the week, emptied and replaced for the next questionnaires. A total of 292 questionnaires were received from the sample group of 306 respondents. The response rate was 90 percent.

3.4.6 Data analysis

Statistical techniques are analysis procedures used to examine, reduce and give meaning to the numerical data gathered in a study (Grove et al., 2013). A statistical computer software program, the latest Statistical Package for the Social Sciences (SPSS) no 24 and the assistance of a statistician were used to analyse data. [See Annexure 6].

After data was collected, it was screened and coded for ease of entering the variables onto an Excel spreadsheet. The data were presented in a descriptive format as well as an analytical format. The descriptive format consisted of frequencies, averages, tables and figures. Analytic statistics were used to test for Chi square. For the analytical format, statistics were used to test for associations between dependent and independent variables. See Table 3.5 for an outline of the variables considered in this study.

Table 3.5: Outline of variables

DEPENDENT VARIABLE	INDEPENDENT VARIABLE
Knowledge	Age
	Gender
	Marital status
Attitudes	Level of education
	Place of residence
	Smoking
Practices	Alcohol consumption
	Exercise

3.5 ETHICAL CONSIDERATIONS

Leedy and Ormrod (2012) encourage researchers to pay close attention to ethical issues when conducting a research study. Among the most important issues to consider when conducting a research study are maintaining the privacy of respondents, obtaining informed consent, and fully disclosing to respondents the purpose of the study (Leedy & Ormrod, 2012).

The ethical aspects of a study take precedence over any other areas of the study. The rights of study respondents were protected. Ethical considerations, as applied in this study, are discussed under the following headings: permission to conduct research, informed consent, protection of human respondents, confidentiality and anonymity.

3.5.1 Permission to conduct research

The study was approved by the University of Namibia Research Ethics Committee in accordance with the University of Namibia's Research Ethics Policy and Guidelines as well as Faculty/Centre/Campus Research & Publications committee sitting with the Postgraduate Studies Committee.

Written permission for collecting and using the data was obtained from the Management of the Roman Catholic Hospital and the Office of the Permanent Secretary of the Ministry of Health and Social Services.

3.5.2 Informed consent

Informed consent concerns respondents' participation in a research in which they have full understanding of the study before the study begins (Nieswiadomy, 2014). Participation in

the study was voluntary; no coercion took part in the study. The following elements of informed consent were considered and applied.

After the researcher's self-introduction to the respondents, positive identification and presentation of a letter of permission from the MOHSS as well as RCH, the purpose of the study was explained to the respondents. Anonymity was assured as discussed further under ethical considerations.

A written informed consent was obtained from the respondents, who were adults (>18 years), which was completed in duplicate. Some only provided verbal consent. They were informed that the study aimed to assess the knowledge, attitudes and practices towards coronary artery disease. No false promises were made to anyone in the selected population.

3.5.3 Confidentiality and anonymity

Confidentiality involves protection of the respondent's identities by the researcher (Nieswiadomy, 2014). Confidentiality was maintained in the sense that no information was linked to any respondent. No information provided during the course of the study was revealed or made available to any person other than the supervisors of the study and none of the respondent's names were mentioned.

The human rights according to Grove et al, (2013) stipulates protection in research are the right to self-determination, right to privacy, right to anonymity and confidentiality. The researcher treated the respondents with respect by keeping their information confidential. They were all equally valued by sharing results of research with the public. The researcher

treated them as autonomous agents by informing them about the purposed study and allowed them to voluntarily choose to participate or not.

Data collected were entered into the laptop, which was secured with a password only known by the researcher. On the basis of the right to privacy, the researcher protected the respondents' anonymity by allocating numbers to the questionnaire instead of actual identities.

No false promises were made to anyone in the selected population. Participation in the study was voluntary, with no coercion to take part in the study.

3.5.4 Right to refuse to participate or to withdraw from study

All respondents participated in this research voluntarily. Even when the random sampling procedure was used to select participants, prospective respondents were given the opportunity to decide if they wished to participate and they were informed of their right to withdraw from the study at any time and the right to refuse to provide information. They also had the right to clarification about the study. The researcher also ensured that the selection of the respondents and their treatment during the course of the study were fair. They were selected for reasons directly related to the problem being studied and not for their easy availability.

3.6 SUMMARY OF THE CHAPTER

This chapter provided a detailed discussion of the research design and methods of the study, including population, sample and sampling methods, development and implementation of the intervention, data collection and data analysis procedures followed.

Measures of validity and reliability of the study were discussed. Ethical aspects were also discussed. The following chapter presents the results and analysis for this study.

CHAPTER 4

RESULTS AND DATA ANALYSIS

4.1 INTRODUCTION

The last chapter discussed the design and methodology of the study while this chapter presents the results. In accordance with the layout of the questionnaire, the results have been presented in four sections. These sections are:

- Demographic characteristics
- Descriptive analysis of knowledge and practices
- Descriptive analysis of attitudes
- Additional analytical calculations

4.2 DISCUSSION ON DEMOGRAPHIC CHARACTERISTICS

Under demographic characteristics are age, gender, marital status, and educational background, and employment status, residence according to regions, weight, height and co-morbidities.

4.2.1 Age

The age distribution of respondents is depicted in Figure 4.1,

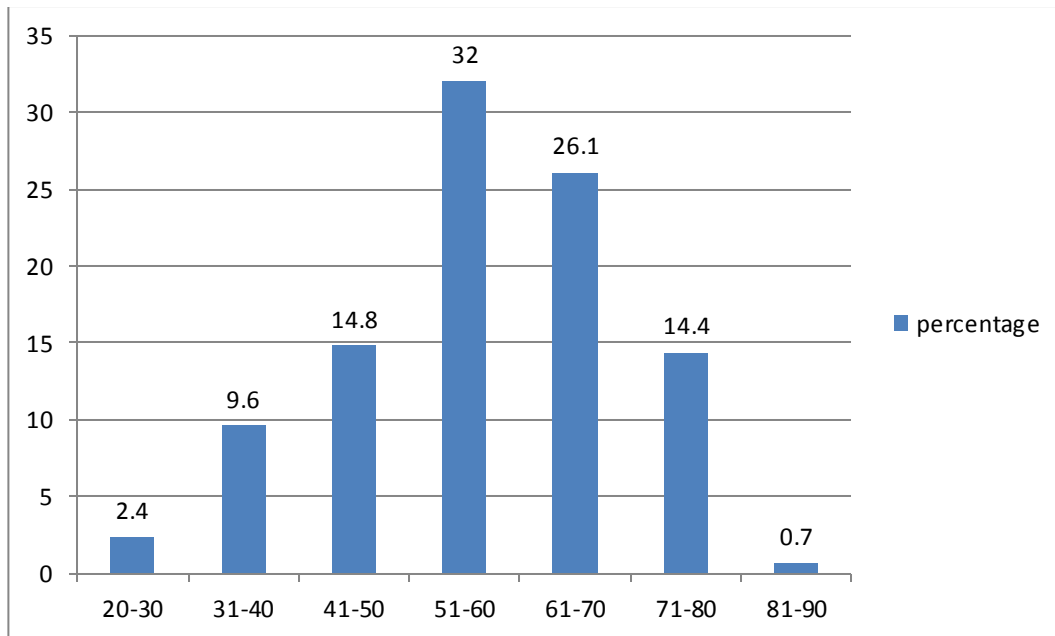


Figure 4.1: Age distribution of respondents (N=291)

The mean age was 57. (Standard. Deviation: 12.545). The research revealed that the dominant age was between 51–60 years and they numbered 32 percent followed by 61–70 years the age range, which was 26 percent. The rest of the respondents were in the 41–50 age group (14.8 percent) and 71–80 years age group (14.4 percent). The least respondents were in the 31-40 years age range (9.6 percent), with 20-30 years (2.4 percent) and 81-90 years (0.7 percent).

4.2.2 Gender

In this study, 60 percent of the respondents were males.

4.2.3 Marital Status

In Figure 4.2, the marital status is illustrated. Respondents from the married group represented 61 percent, while 18.9 percent were widowed, 7.6 percent were single and 6.2 percent were divorced and in a committed relationship, respectively. Thus the majority of

the patients were married, followed by widowed, and then single while the smallest numbers were those in committed relationships or divorced.

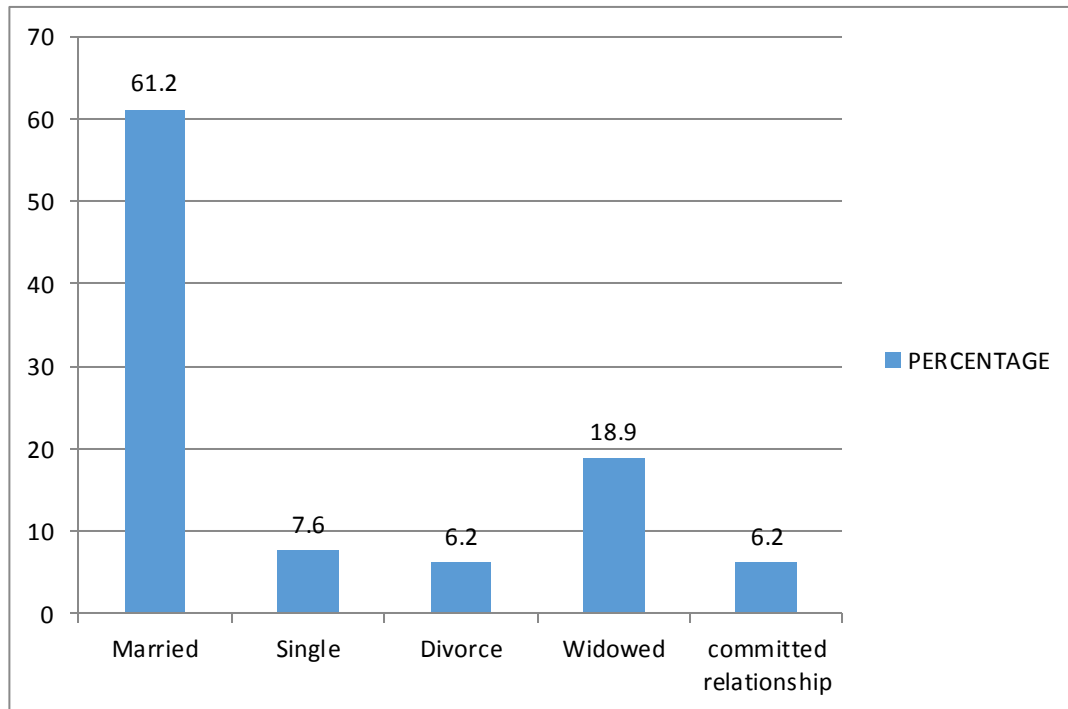


Figure 4.2: Marital status of respondents (N=291)

4.2.4 Education Background

Figure 4.3 indicates the educational background of the respondents. About 25 percent of the respondents had tertiary education, 32 percent had secondary education (Grade 12). 7 percent had secondary education (Grade 11), 19 percent had secondary education (Grade 8-10). 17 percent had primary education and only 0.3 percent of respondents did not attend any formal school. The majority of respondents obtained secondary education (Grade 12) followed by tertiary education.

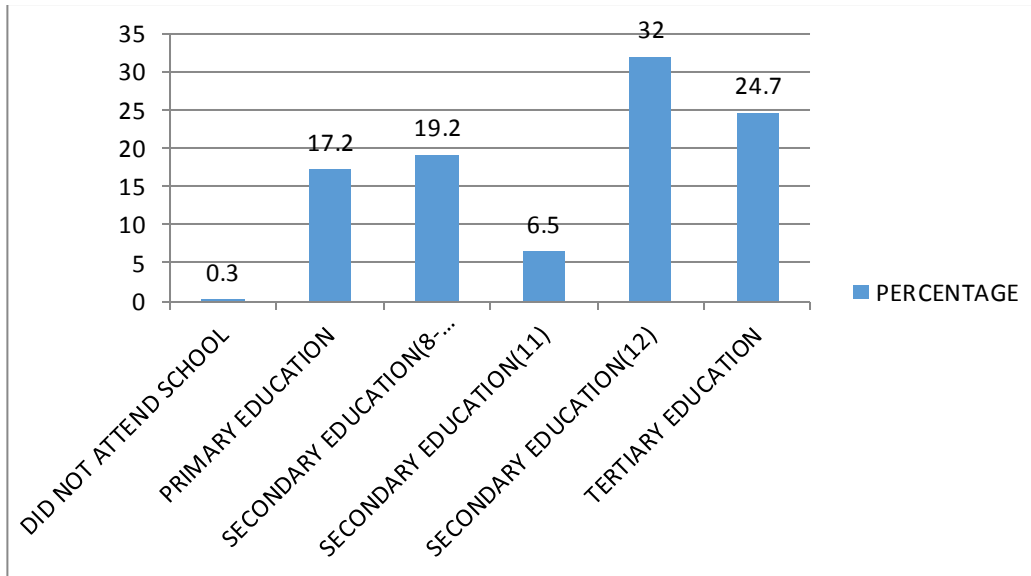


Figure 4.3: Education background of the respondents (N=291)

4.2.5 Employment Status

The employment status is represented by 34 percent of respondents who are retired from formal employment. Thirty percent were employed in the private sector, 14 percent were employed in the public sector (government), 11 percent were self-employed, 6 percent were unemployed and 5 percent were primary caregivers at home. The results indicated that the majority of the respondents who visited the cardiac clinic were the retired, followed by those employed in the private and public sectors, respectively. Very few of the respondents were unemployed, self-employed and primary caregivers, respectively.

4.2.6 Residence according to the regions of Namibia

Figure 4.4 illustrates the regions in which respondents were residing. In terms of residence, 49 percent were from Khomas region, 17 percent from Erongo region, 9 percent from Otjozondjupa region 7 percent from //Kharas region, 3 percent from Oshikoto region and the rest of the regions represented had 2 percent or less. This means the Khomas

region had the most patients followed by Erongo, Otjozondjupa, Hardap, //Kharas, Oshikoto and the rest of the regions.

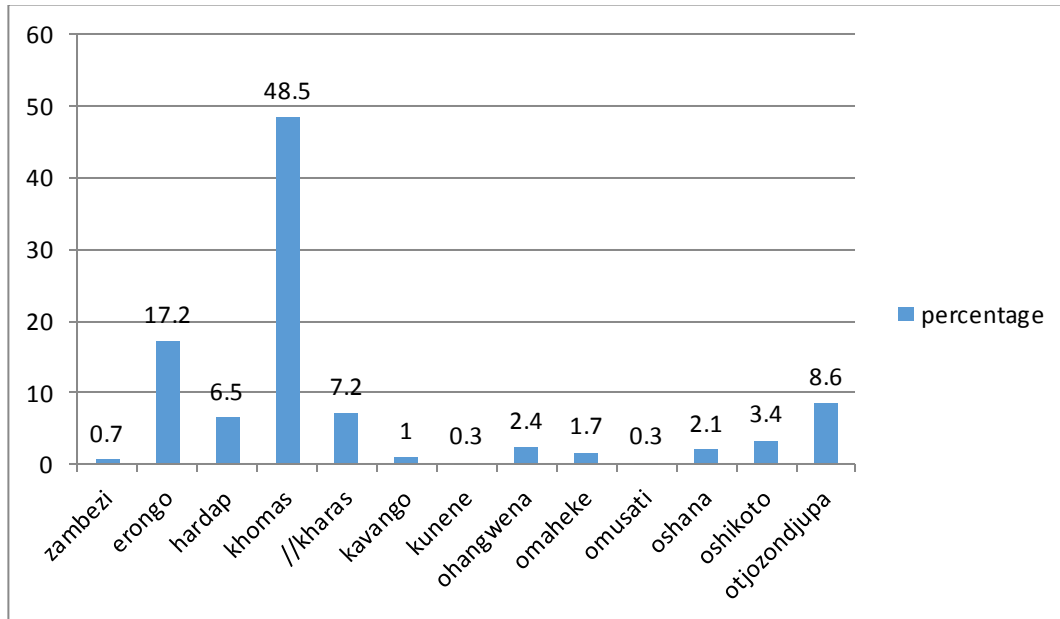


Figure 4.4: Residence according to the regions of Namibia (N=291)

4.2.7 Respondents' Co-Morbidities

Regarding the co-morbidities the 291 respondents were diagnosed with, 70 percent indicated that they were suffering from hypertension, 32 percent had high cholesterol, 19 percent had diabetes and 11 percent had gout while 2 percent had renal problems.

4.2.8 Recorded weight and height

In the instrument, respondents were expected to record their weight and height. These results were supplemented with the real Body Mass Index of the respondents on weight and was addressed by calculating the Body Mass Index of all respondents. See Table 4.7.

4.3 RESULTS ON KNOWLEDGE AND PRACTICES

Knowledge and practices were discussed as structured in the instrument.

4.3.1 Self-rating regarding knowledge about myocardial infarction (heart attack¹)

Figure 4.5 illustrates the self-rating of respondents' knowledge about myocardial infarction. Ten percent of the respondents were well informed about myocardial infarction and 34 percent knew something about myocardial infarction, while 42 percent knew very little about myocardial infarction and 14 percent knew nothing.

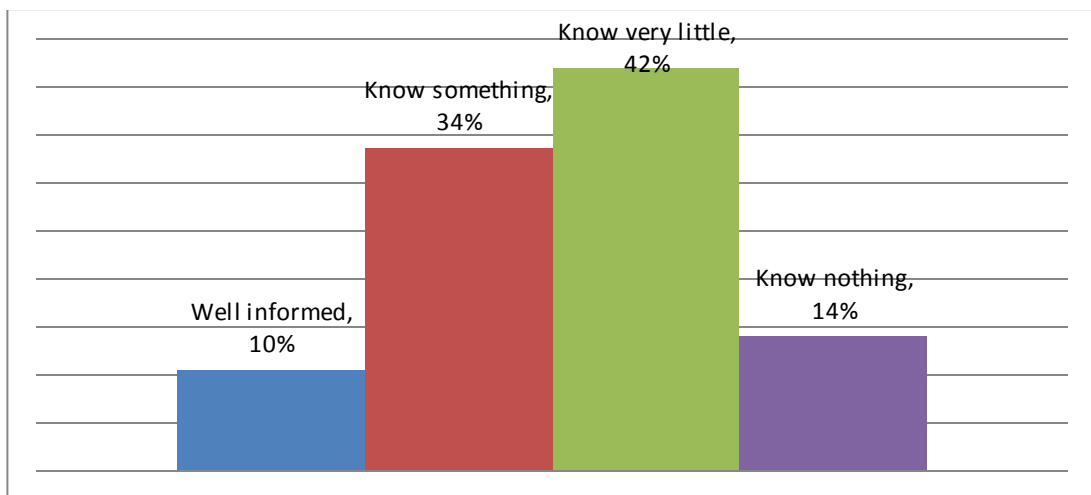
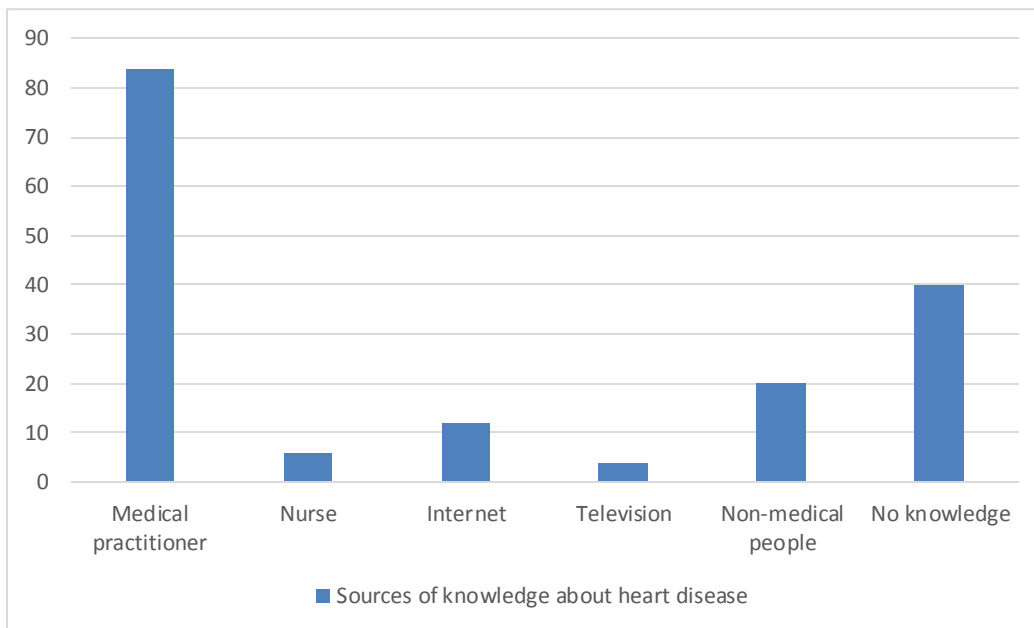


Figure 4.5: Self-rating of respondents regarding their knowledge on myocardial infarction (N=291)

¹ For the purpose of easy understanding the word heart attack was used in the instrument instead of myocardial infarction.

4.3.2 Sources of knowledge (information) about heart disease (N=291).

The majority of the respondents (84) reported that they got information about heart disease from medical practitioners compared to six who got their information from nurses. Just 12 respondents received information about heart disease from the internet, four from the television, 20 from non-medical people while 40 had received no information while 125 was from combined sources.



4.3.3 Recognition of signs and symptoms of myocardial infarction (N=291)

Figure 4.6: Sources of knowledge about heart disease (N=291)

Respondents were tested on the signs and symptoms of myocardial infarction. The answers were rated in regard to chest pain to be never, sometimes or always present during myocardial infarction. In regard to chest pain, 79 percent of respondents indicated always, 19 percent responded sometimes and 2 percent responded never. The question on shortness of breath to be a symptom, 7 percent of respondents answered never, 45 percent

sometimes and 48 percent always. Nausea was rated by 44 percent as never experienced, 42 percent sometimes and 14 percent always during myocardial infarction. Vomiting was rated 49 percent never, 36 percent sometimes and 15 percent always to be experienced during a myocardial infarction. (See Table 4.1)

Table 4.1: Recognition of signs and symptoms of a myocardial infarction

	Never	Sometimes	Always
Chest pain	2%	19%	79%
Shortness of breath	7%	45%	48%
Nausea	44%	42%	14%
Vomiting	49%	36%	15%

4.3.4 Best treatment option when experiencing signs and symptoms of MI

Regarding responses to question on signs and symptoms of a myocardial infarction, 96 percent of respondents reported that they would visit a hospital, while 2 percent responded that no action would be taken. Less than one percent responded that they would consult a traditional healer or remain home until symptoms disappear.

4.3.5 Self-rating on smoking

Table 4.2 illustrates that of the 64 respondents (15.8 percent), who self-reported on smoking 46 (15.8%) were males and 6.2 percent females. Of the 32 respondents (11 percent) that had quit smoking. 7.6 percent were males and 3.4 percent females.

Table 4.2: Self-rating on smoking (N=291)

Variable	Gender				
	Male		Female		Total
	Frequency	Percentage	Frequency	Percentage	
Smoking:					
Yes	46	15.8	18	6.2	64
No	107	36.8	88	30.2	195
Yes, but stopped	22	7.6	10	3.4	32
Total	175	60	116	40	291

4.3.6 Self-reporting on alcohol consumption

Table 4.3 illustrates that 21.9 percent respondents were males and 18.2 percent females that did not consume alcohol. Of all the respondents who drank alcohol, 2.7 percent of the males and 1.3 percent of females took at least one drink every day, while 7.2 percent males and 3.4 percent females consumed at least one drink per week. Twenty-eight percent males and 16.8 percent females reported to consume alcohol only at social occasions. Self-reported responses on alcohol intake suggested a higher alcohol practice among males than females.

Table 4.3: Self-reporting on alcohol consumption (N=291)

Variable	Gender			
	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Alcohol:				
No	64	21.9	53	18.2
At least 1 drink everyday	8	2.7	4	1.3
At least 1 drink per week	21	7.2	10	3.4
Only at social occasions	82	28.1	49	16.8

4.3.7 Self-reporting of alcohol consumption according to marital status

Table 4.4 illustrates that 56.4% of married respondents, followed by 30.8% widowed, 7.7% single, 2.6% divorced and 2.6% in a committed relationship did not consume alcohol. The respondents who consume at least one drink every day were 66.7% married, 25% single and 8.3% in a committed relationship. Respondents who consume at least one drink per week were 61.3% married, 16.1% in a committed relationship, 9.7% divorced and 6.5% single and widowed respectively. Respondents who only consume alcohol at

social occasions were 64.9% married, 13% widowed, 9.2% divorced, 6.9% in a committed relationship and 6.1% single.

Table 4.4: Alcohol use in relation to marital status (N=291)

Variable	Marital Status				
	Married	Single	Divorced	Widowed	In a committed relationship
Alcohol:					
No	66 (56.4%)	9 (7.7%)	3 (2.6%)	36 (30.8%)	3 (2.6%)
At least one drink everyday	8 (66.7%)	3 (25.0%)	0 (0.0%)	0 (0.0%)	1 (8.3%)
At least one drink per week	19 (61.3%)	2 (6.5%)	3 (9.7%)	2 (6.5%)	5 (16.1%)
Only at social occasions	85 (64.9%)	8 (6.1%)	12 (9.2%)	17 (13.0%)	9 (6.9%)

4.3.8 Self-rating on blood pressure measured

From the results, it emerged that 95 percent (n=276) of the respondents had their blood pressure measured on a regular basis. Only 5 percent (n=15) did not have regular blood pressure monitoring.

4.3.9 Recalling of their latest blood pressure measurement

A total of 93 percent (n=271) of the respondents could recall their latest blood pressure reading. Everyone who did recall could also classify their blood pressure as elevated, normal or decreased. Seven percent could not recall their latest blood pressure.

4.3.10 Frequency of exercise as reported by respondents

Figure 4.7 indicates that 20 percent of respondents exercised more than three days per week, 37 percent exercised once a week, 31 percent exercised once a month and 12 percent did not have time for exercise.

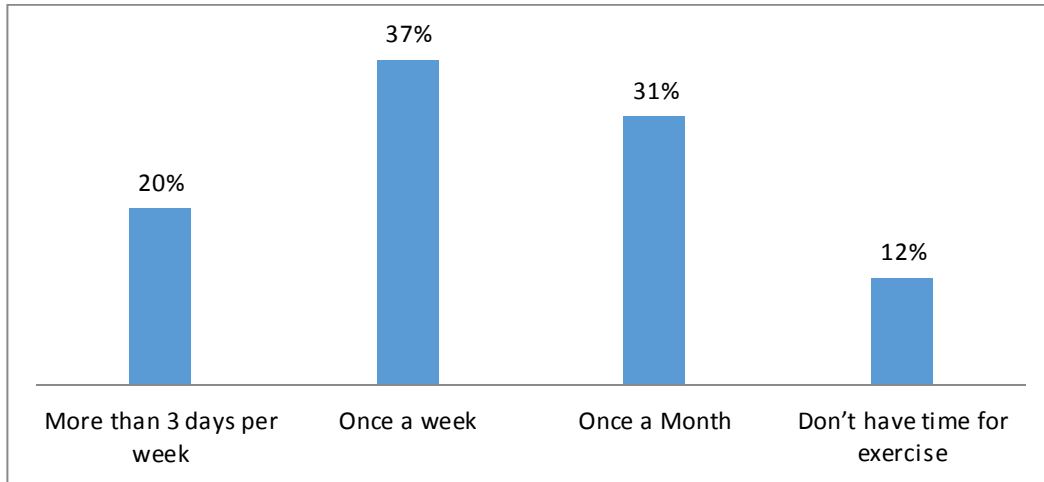


Figure 4.7: Frequency of exercise by respondents (N=291)

Table 4.5 illustrates that males engaged more in exercise than females. Twelve percent of the males and 8.5 percent the females reported to exercise more than three days per week, while 19.2 percent males and 16.8 percent females reported to exercise once a week, and 21.3 percent of males and 9.9 percent of females reported to exercise once a month. 7 percent of male respondents and 4.4 percent of females reported that they did not have time for exercise.

Table 4.5: Comparison between males and females regarding exercise (N291)

Variable	Gender			
	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Exercise:				
More than 3 days per week	35	12	25	8.5
Once a week	56	19.2	49	16.8
Once a month	62	21.3	29	9.9
Don't have time for exercise	22	7.5	13	4.4

Table 4.6 illustrates that married respondents exercised more than respondents who were single, divorced, widowed or in a committed relationship. Twenty-one percent of married

respondents, 40 percent of single, 16 percent of divorced, 12.7 percent of widowed and 22.2 percent of respondents in a committed relationship reported that they exercised more than three days per week. Thirty-seven percent of married, 27 percent single, 27 percent divorced, 40 percent widowed and 33.3 percent respondents in a committed relationship revealed that they exercised once a week. Twenty-eight percent of married, 18 percent of single, 33.3 percent of divorced, 43 percent widowed and 38 percent in a committed relationship reported that they exercised once a month. 14 percent married, 13 percent single, 22 percent divorced, 3.6 percent widowed and 5.5 percent of respondents in a committed relationship did not have time for exercise.

Table 4.6: Self-reporting of exercise by respondents based on marital status (N291)

Variable	Marital Status				
	Married	Single	Divorced	Widowed	In a committed relationship
Exercise:					
≥ 3 days per week	37 (21%)	9 (40%)	3 (16%)	7 (12.7%)	4(22.2%)
Once a week	66 (37%)	6 (27%)	5 (27.7%)	22 (40%)	5(33.3%)
Once a month	50 (28%)	4 (18%)	6 (33.3%)	24 (43.6%)	7(38.8%)
Don't have time for exercise	25 (14%)	3 (13%)	4 (22%)	1 (3.6%)	1 (5.5%)

4.3.11 Self-rating on significance of stress as a contributing factor to CAD

Figure 4.8 shows that 72 percent of the respondents rated the effect of stress on the heart as highly significant. Seventeen percent of the respondents rated stress as very significant, 8 percent as slightly significant and 2 percent as significant. Rating scale: 1, No significance, 2, very low significance, 3, slightly significant, 4, mildly significant, 5, moderately significant and 6 highly significant.

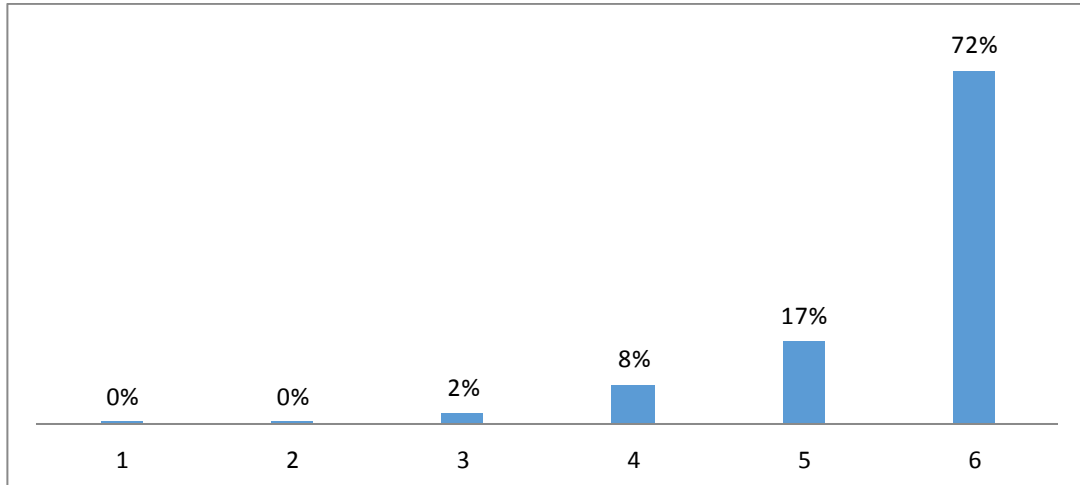


Figure 4.8: Rating on the significance of stress as a contributing factor for CAD (N=291)

4.4 RESULTS ON ATTITUDES

4.4.1 The rating of the importance of exercise in the prevention of CAD

The results revealed that 77 percent of the respondents indicated that it is very important to exercise regularly. 13 percent stated that it was important, 5 percent were neutral or not

sure, while 3 percent considered exercise as unimportant and 1 percent as not important at all.

4.4.2 Self-rating regarding body weight versus calculated Body Mass Index

Question 3.3 in the instrument requested the respondents to classify themselves as being of normal weight, overweight or underweight. From a total of 266 respondents, 68 percent rated themselves as being normal weight, 26 percent as being overweight, 4 percent as being underweight and 2 percent as obese. These results were supplemented with the real Body Mass Index of the respondents on weight and was addressed by calculating the Body Mass Index (BMI) of all respondents. A Body Mass Index is a measure of weight against the square of height (Smeltzer et al., 2010).

Table 4.7: Self-rating regarding body weight versus calculated Body Mass Index (N=291)

Sample (N=266)	Underweight	Normal	Overweight	Obese
Range	BMI <18	18≥BMI<25	25≥BMI<30	≥30BMI
Frequency	1	40	125	100
Percentage	N/A	15%	47%	38%

The results revealed only one respondent in the underweight category, 15 percent in the normal weight, 47 percent in the overweight and 38 percent in the obese range. This reveals that the majority of the respondents were in the overweight category, followed by those that were obese and a smaller number in the normal range.

4.4.3 Self-rating need to change current lifestyle (N=291)

Results further revealed that 84 percent of the respondents wanted to strongly change their life style while 16 percent did not consider it necessary to change their lifestyle.

4.4.4 Motivation to change current lifestyle

This item required a follow up response from any respondents who indicated that he or she wanted to change their lifestyle. This open-ended question requested a motivation. The results revealed that 71 percent wanted to feel better, while 2 percent were reacting to family pressure. Some motivation was provided by the encouragement of health care providers (2 percent), while 4 percent indicated that they wanted to avoid unnecessary medication.

4.4.5 Self-rating on stress

In terms of stress, 73.5 percent of the participants indicated that they had a stressful life while 26.4 percent did not believe they had a stressful life (Figure 4.8). The rest, 2 percent, were not sure whether they had a stressful life or not. However, the stress factor was more dominant in males (44.6 percent) than in females (28.8 percent).

Table 4.8: Self-rating of stress in respondent’s life compared to males and females (N=291)

Variable	Gender			
	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Stress:				
Yes	130	44.6	84	28.8
No	45	15.4	32	10.9

4.4.6 Self-rating of smoking as a contributing factor for CAD (N=291)

The results revealed that 98 percent of respondents rated smoking as a contributing factor for CAD, while the remaining 2 percent did not indicate smoking as a contributing factor for CAD.

4.4.7 Self-rating of alcohol consumption as a contributing factor for CAD (N291)

Ninety-five percent of respondents rated the use of alcohol as a contributing factor for CAD.

4.4.8 Importance of regular follow up at a health facility

On the question of regular follow up visits at a health facility, 74 percent (n=214) respondents indicated that it was very important, 14 percent (n=42) stated that it was just important and 7 percent (n=21) were not sure while (n=14) were missing data.

4.5 ADDITIONAL STATISTICAL ANALYSIS CONDUCTED

Selected statistical calculations utilising the Chi square, were performed. Analyses were done to identify associations between the dependent variables, namely, knowledge, attitudes and practices with the independent variables, which were mainly self-reporting on smoking, consumption of alcohol, measuring of blood pressure, reading of the blood pressure and exercise.

4.5.1 Knowledge levels associated with demographic characteristics

In this section, the association between knowledge of MI with age, gender, marital status, employment status, education background and place of residence (regions) was tested.

Table 4.9: Association between knowledge about myocardial infarction with gender and age

VARIABLES	Rate of knowledge about a heart attack				Chi squared value (P-Value)
	Well informed	Know something	Know very little	Know nothing	
GENDER					
Male	18(10.3%)	58(33.1%)	73(41.7%)	26(14.9%)	0.907
Female	12(10.3%)	38(32.8%)	52(44.8%)	14(12.1%)	
AGES					
20-30	1(14.3%)	1(14.3%)	5(71.4%)	0(0.0%)	0.026
31-40	4(14.3%)	11(39.3%)	8(28.6%)	5(17.9%)	
41-50	5(11.6%)	16(37.2%)	19(44.2%)	3(7.0%)	
51-60	10(10.8%)	34(36.6%)	39(41.9%)	10(10.8%)	
61-70	7(9.2%)	26(34.2%)	35(46.1%)	8(10.5%)	
71-80	3(7.1%)	8(19.0%)	19(45.2%)	12(28.6%)	
81-90	0(0.0%)	0(0.0%)	0(0.0%)	2(100.0%)	

Table 4.9 illustrates no statistically significant association between self-rating knowledge about a myocardial infarction and gender ($p=0.907$).

A statistically significant association was found between self-rating of knowledge about myocardial infarction and age ($p=0.026$). The study revealed that the age group 51 to 60 years was well informed and had a greater knowledge about myocardial infarction than the younger and older age groups.

4.5.2 Possible link between self-rating on knowledge about MI and education

Table 4.10 illustrates a statistically significant association between knowledge about a myocardial infarction and education ($p=0.004$). More respondents with secondary and tertiary education indicated to be well informed and know something about myocardial infarction than respondents with primary education.

Table 4.10: Association between knowledge about myocardial infarction and education.

VARIABLES	Rate of knowledge about a heart attack				Chi squared value (P-Value)
	Well informed	Know something	Know very little	Know nothing	
EDUCATION					
None	0(0.0%)	0(0.0%)	1(100.0%)	0(0.0%)	0.004
Primary Education	0(0.0%)	10(20.0%)	24(48.0%)	16(32.0%)	
Secondary Education (8-10)	6(10.7%)	16(28.6%)	26(46.4%)	8(14.3%)	
Secondary Education (11)	3(5.8%)	6(31.6%)	7(36.8%)	3(15.8%)	
Secondary Education (12)	9(9.7%)	40(43.0%)	35(37.6%)	9(9.7%)	
Tertiary Education	12(16.7%)	24(33.3%)	32(44.4%)	4(5.6%)	

4.5.3 Link between self-rating on knowledge about MI, marital status and employment

Table 4.11 illustrates a statistically significant association between self-rating on knowledge about a myocardial infarction and marital status ($p=0.034$). This indicates that married respondents had a greater knowledge level than other respondents.

Concerning the relationship between self-rating knowledge on MI and employment status, a statistically significant association was found ($p=0.026$). This indicates that respondents who were employed in the private sector possessed greater knowledge about MI than the unemployed, retired, primary caregivers, respondents employed by the government sector and the self-employed group.

Table 4.11: The possible association between knowledge about MI and marital status and employment.

VARIABLES	Rate of knowledge about a heart attack				Chi-squared value (P-Value)
	Well informed	Know something	Know very little	Know nothing	
MARITAL STATUS					
Married	18(10.1%)	68(38.2%)	75(42.1%)	17(9.6%)	0.034
Single	5(22.7%)	5(22.7%)	9(40.9%)	3(13.6%)	
Divorced	1(5.6%)	8(44.4%)	8(44.4%)	1(5.6%)	
Widowed	4(7.3%)	12(21.8%)	24(43.6%)	15(27.3%)	
In a committed relationship	2(11.1%)	3(16.7%)	9(50.0%)	4(22.2%)	
EMPLOYMENT					
Unemployed	2(11.8%)	1(5.9%)	9(52.9%)	5(29.4%)	0.026
Pensioner	11(10.9%)	27(26.7%)	44(43.6%)	19(18.8%)	
Primary Caregiver	0(0.0%)	5(41.7%)	6(50.0%)	1(8.3%)	
Private sector formally	8(9.3%)	40(46.5%)	32(37.2%)	6(7.0%)	
Government sector	5(11.9%)	9(21.4%)	20(47.6%)	8(19.0%)	
Self employed	4(12.1%)	14(42.4%)	14(42.4%)	1(3.0%)	

4.5.4 Possible association between self-rating on knowledge about a MI and residence of respondents according to the regions of Namibia

Table 4.12 illustrates no statistical association between knowledge about MI and the regions where respondents come from ($p=0.108$). The place of residence has no influence on knowledge about MI.

Table 4.12: Knowledge about a myocardial infarction and regions in Namibia

VARIABLES	Rate of knowledge about a heart attack				Chi squared value (P-Value)
	Well informed	Know something	Know very little	Know nothing	
RESIDENCE					0.108
Zambezi	0(0.0%)	1(50.0%)	1(50.0%)	0(0.0%)	
Erongo	9(18.0%)	15(30.0%)	20(40.0%)	6(12.0%)	
Hardap	0(0.0%)	2(10.5%)	12(63.2%)	5(26.3%)	
Khomas	13(9.2%)	50(35.5%)	64(45.4%)	14(9.9%)	
//Kharas	1(4.8%)	6(28.6%)	8(38.1%)	6(28.6%)	
Kavango	0(0.0%)	1(33.3%)	2(66.7%)	0(0.0%)	
Kunene	0(0.0%)	0(0.0%)	0(0.0%)	1(100.0%)	
Ohangwena	0(0.0%)	1(14.3%)	5(71.4%)	1(14.3%)	
Omaheke	1(20.0%)	1(20.0%)	2(40.0%)	1(20.0%)	
Omusati	0(0.0%)	0(0.0%)	0(0.0%)	1(100.0%)	
Oshana	2(33.3%)	3(50.0%)	0(0.0%)	1(16.7%)	
Oshikoto	2(8.0%)	4(40.0%)	3(30.0%)	1(10.0%)	
Otjozondjupa	2(8.0%)	12(48.0%)	8(32.0%)	3(12.0%)	

4.5.5 Possible association between self-rating on knowledge about a MI and smoking and alcohol consumption

Table 4.13 illustrates that there was no statistically significant association between knowledge of MI and smoking ($p=0.447$). A statistically significant association was found between self-rating on knowledge on MI and alcohol consumption ($p=0.001$). It indicated that respondents who were not consuming alcohol were better informed about MI than respondents that do consume alcohol.

Table 4.13: Association between knowledge about MI, smoking and alcohol consumption

VARIABLES	Rate of knowledge about a heart attack				Chi-squared value (P-Value)
	Well informed	Know something	Know very little	Know nothing	
Self-rating on smoking					0.447
Yes	3(4.7%)	21(32.8%)	32(50.0%)	8(12.5%)	
No	24(12.3%)	61(31.3%)	81(41.5%)	29(14.9%)	
Yes, but stopped	3(9.4%)	14(43.8%)	12(37.5%)	3(9.4%)	
Drink alcohol					0.001
No	11(9.4%)	36(30.8%)	48(41.0%)	22(18.8%)	
At least 1 drink everyday	5(41.7%)	1(8.3%)	5(41.7%)	1(8.3%)	
At least 1 drink per week	3(9.7%)	5(16.1%)	20(64.5%)	39(9.7%)	
Only at social occasions	11(8.4%)	54(41.2%)	52(39.7%)	14(10.7%)	

4.5.6 Possible association between self-rating of knowledge on a MI and exercise

Table 4.14 indicates that a statistically significant association was found between knowledge about a MI and exercise ($p=0.000$). Results reveal that respondents who exercised once to three times a week had greater knowledge about MI compared to respondents that engaged in exercise less than once a week.

Table 4.14: The possible association of self-rating on knowledge about MI and exercise

VARIABLES	Rate of knowledge about a heart attack				Chi squared value (P-Value)
	Well informed	Know something	Know very little	Know nothing	
Exercise					
3 days per week	13(21.7%)	17(28.3%)	21(35.0%)	9(15.0%)	0.000
Once a week	9(8.6%)	43(41.0%)	44(41.9%)	9(8.6%)	
Once a month	1(1.1%)	25(27.5%)	46(50.5%)	19(20.9%)	
No time for exercise	7(20.0%)	11(31.4%)	14(40.0%)	3(8.6%)	

4.5.7 Possible association between self-rating on knowledge about a MI and blood pressure measurement as well as recalling of blood pressure measurement

Results shown in Table 4.15 did not reveal any statistically significant association between self-rating on knowledge of MI and measuring of blood pressure ($p=0.785$) and the recalling of the latest blood pressure measurement ($p=0.352$).

Table 4.15: Possible association between self-rating on knowledge of MI and blood pressure measurement and recalling of latest blood pressure reading

VARIABLES	Rate of knowledge about a heart attack				Chi squared value (P-Value)
	Well informed	Know something	Know very little	Know nothing	
Measuring Blood Pressure					
Yes	29(10.5%)	90(32.6%)	118(42.8%)	39(14.1%)	0.785
No	1(6.7%)	6(40.0%)	7(46.7%)	1(6.7%)	
Reading of Blood Pressure					0.352
Normal	12(10.8%)	34(30.6%)	49(44.1%)	16(14.4%)	
Slightly low	5(19.2%)	8(30.8%)	10(38.5%)	3(11.5%)	
Slightly high	6(5.5%)	41(37.3%)	46(41.8%)	17(15.5%)	
Very high	3(12.5%)	9(37.5%)	12(50.0%)	0(0.0%)	
Don't know	4(20.0%)	4(20.0%)	8(40.0%)	4(20.0%)	

4.5.8 Possible association between self-rating of knowledge on MI and stress as a contributing factor for CAD

Table 4.16 illustrates that there is no statistically significant association between self-rating of knowledge about MI and stress as a contributing factor for coronary artery disease ($p=0.087$).

Table 4.16: Possible association between self-rating knowledge about MI and stress as a contributing factor for coronary artery disease

VARIABLES	Rate of knowledge about a heart attack				Chi squared value (P-Value)
	Well informed	Know something	Know very little	Know nothing	
Significance of stress on the heart					
Not important	0(0.0%)	0(0.0%)	1(100.0%)	0(0.0%)	0.087
Mildly important	3(33.3%)	3(33.3%)	3(33.3%)	0(0.0%)	
Neutral	1(4.0%)	4(16.0%)	14(56.0%)	6(24.0%)	
Moderately important	5(10.4%)	9(18.8%)	25(52.1%)	9(18.8%)	
Extremely important	21(10.1%)	79(38.2%)	82(39.6%)	25(12.1%)	

4.5.9 Possible association between gender and smoking

Table 4.17 shows a statistically significant association between gender and smoking ($p=0.031$). More male respondents smoked than female respondents.

Table 4.17: Association between gender and smoking

VARIABLES	Gender		Chi squared value (P-Value)
	Male	Female	
Smoking			
Yes	46(71.9%)	18(28.1%)	0.031
No	107(54.9%)	88(45.1%)	
Yes, but stopped	22(68.8%)	10(31.3%)	

4.6 SUMMARY OF THE CHAPTER

This chapter provided a detailed discussion and illustration of results regarding demographic characteristics, knowledge, practices and attitudes. Additionally, dependent and independent variables were statistically analysed. The following chapter presents the discussion on the results.

CHAPTER 5

DISCUSSION OF FINDINGS

5.1 INTRODUCTION

This chapter presents the discussion of the findings of the study. The first discussion is on the demographic characteristics of the respondents.

5.2 DISCUSSION OF DEMOGRAPHIC CHARACTERISTICS

5.2.1 Age distribution of respondents

The majority of the respondents were between 51–60 years. The mean age was 57 with a standard deviation of 12.545. According to WHO (2010), the age group at risk for CAD is generally 60 years and above. The findings in this study therefore resemble the data from the WHO.

5.2.2 Gender

Regarding gender, 60 percent of the respondents were male. According to Smeltzer et al. (2010) heart disease has long been recognised as a cause of morbidity and mortality mostly affecting men. In this study, it was also males that were mostly referred to the cardiac clinics.

5.2.3 Marital status

The majority of the respondents were married, followed by those widowed, and then single while the smallest number was those in committed relationships. A statistically significant association between self-rating on knowledge about a myocardial infarction and marital status was found ($p=0.034$). This indicates that married respondents had a greater knowledge level than the respondents who were single, divorced, widowed and in a committed relationship. This finding correlates with a study that was conducted in Italy, which found that married women were more knowledgeable about heart disease than other women (Tadesco et al., 2014)

5.2.4 Education background

All the respondents who had completed a minimum of education were 17.2 percent. There were, however, 82 percent with secondary and tertiary education. In a study conducted in the United States of America by Andsoy et al. (2015), findings indicated that respondents with a low level of education had nearly twice the incidence of CAD compared to respondents with a higher level of education. On the contrary, in this study findings indicated that respondents with a higher education level were mostly affected by CAD.

5.2.5 Employment status

A large number namely 34 percent of the patients, were retired from formal employment. This result is parallel with the report of the WHO (2010), reported that the prevalence of CAD is generally the greatest among persons aged 60 years and above, the period of retirement. The second largest group of respondents which resembled 30 percent, were employed by the private sector. In this current study, it can be concluded that respondents

in high demand employment environments could be at risk of developing CAD. The literature appeared to be silent on any association between any employment status and CAD.

5.2.6 Place of residence according to regions in Namibia

In terms of residence, 48 percent of the respondents resided in the Khomas region and 17 percent in the Erongo region. This means that the Khomas region had the most patients visiting cardiac clinics followed by Erongo, Otjozondjupa, Hardap, //Kharas and Oshikoto region. The Khomas region is home to 11 percent of the total population of Namibia (Brinkhoff, 2015). The representation of Khomas region in this study does not reflect the population distribution in Namibia. A possible explanation for this scenario is the availability of secondary and tertiary health facilities. The Khomas region has more medical practitioners as well as diagnostic and treatment facilities. It has thus by far the best health facilities while Omaheke and Ohangwena regions have the least access to a doctor and nurse (Namibian Health fact sheet, 2001).

5.2.7 Self-reported co-morbidities

Self-reported co-morbidities indicated by respondents were hypertension, high cholesterol, diabetes, gout and renal problems. Seventy percent indicated that they were suffering from hypertension, 32 percent had high cholesterol, 19 percent diabetes, 11 percent gout while 6.2 percent had renal problems.

This is in line with findings reported by WHO (2013) that indicated that approximately 40 percent people had been diagnosed with hypertension worldwide. The reported co-

morbidities of hypertension link up with the findings of the MOHSS that revealed a mortality rate of 8 percent due to hypertension (MOHSS, 2007).

5.3 KNOWLEDGE OF THE RESPONDENTS

Knowledge is an important part that promotes behaviour change and people must have adequate and correct information about CAD in all its manifestations. This includes the ability to recognise symptoms of CAD, basic interpretation of personal vital signs like blood pressure and treatment options as well as effects of stress as a contributing factor to CAD. Where these abilities are lacking, patients should be able to acquire knowledge from health care workers.

In this study, only 10 percent of the respondents were well informed about the meaning of myocardial infarction while the rest either knew something or very little. In a related study conducted in the Western Cape in South Africa, respondents indicated limited knowledge about myocardial infarction (Surka et al., (2015). However, in a study in Sweden (a developed country), different results were obtained. In the study in Sweden, the majority of the respondents (79 percent) knew that chest pain, shortness of breath and nausea and vomiting are possible symptoms of a myocardial infarction (Henriksson et al., 2015). The conclusion in this current study was that the majority of the respondents were not well informed although they were knowledgeable about the signs and symptoms of MI.

Hypertension is a crucial risk factor in the development of CAD. All patients should have regular blood pressure measurements, but most importantly they must be able to interpret

these measurements. The ability to interpret blood pressure measurements could prompt earlier health-seeking behaviour, especially if they measure their own blood pressure. In this study, 93 percent could recall and interpret their latest blood pressure measurement. This is a more positive finding compared to literature findings that reveal that CAD patients are usually not able to interpret blood pressure measurements (Smeltzer et al., 2010). This finding should, however, be considered within the context that no statistically significant association was found between the ability to interpret own blood pressure measurements and knowledge about myocardial infarction. (See Table 4.15).

The ability to recognize signs and symptoms, as well as to interpret own blood pressure measurements, could assist with early health-seeking behaviour, and thus treatment options. This ability, which is interchangeable with knowledge, thus affected respondents' practices. Most of the respondents (96 percent) indicated that they would visit the hospital should any of the mentioned symptoms be experienced). These findings are similar to a study conducted in Sweden where the majority of the respondents indicated that they would seek medical care urgently should they experience any symptoms of a myocardial infarction (Henriksson et al., 2015).

They were also requested to indicate how they obtained their knowledge regarding CAD. More than one option was available. The main sources of information were the medical practitioners (80 percent). This finding appears to be positive compared to a study conducted in the Western Cape, South Africa, where respondents felt uninformed due to a lack of education from health care providers. A related study in Italy also found that

only 23 percent of the respondents received information from their medical practitioners (Tadesco et al., 2014).

This study found that was thought provoking that only 10 percent of the respondents indicated nurses as sources of information. The scope of practice of a registered and enrolled nurse, however, entails the prevention of disease and promotion of health by teaching and counselling individuals or groups (Government Notice 206 of 2014).

The majority of respondents (73 percent) indicated that they were experiencing stress in their daily lives. About 72 percent of the respondents rated the effects of stress on the heart as highly significant. The American Heart Association (2011) classified stress as a contributing factor to developing CAD. Although no statistically significant association was found between stress as a contributing factor for CAD and knowledge about a myocardial infarction, respondents strongly indicated that stress could have an effect on the heart. Living a stressful life could cause people to adopt poor habits like smoking and excessive alcohol consumption, which was evident in this study.

BMI was calculated by dividing the participants' weight by their height. The respondents in this study underestimated themselves in verbal and visual perception as overweight (47 percent), obese (28 percent), normal weight (15 percent) and one respondent in the underweight category. In a study conducted in Nigeria by Akinpelu et al. (2015), about 54 percent of males and 45 percent of women accurately perceived themselves in self-verbal and visual perception respectively. The findings in this study is contrary to the outcome of the BMI in which the majority of the respondents were in fact normal weight (68 percent) followed by those that were overweight (26 percent), underweight (4 percent)

and obese (2 percent). It can be concluded from the result of this study that motivation to lose weight is likely to be impeded by respondents' inability to recognise their actual body size.

5.4 PRACTICES OF THE RESPONDENTS

The focus regarding practical aspects was on smoking, alcohol consumption and exercise.

In this study, 22 percent of the respondents indicated that they smoked. No information is available in Namibia regarding the prevalence of smoking, but the literature findings indicate that about 20 percent of the population worldwide (1.25 billion) are smoke (WHO, 2013). It also emerged through literature review that there are differences between developed and developing countries. In Canada and Sweden (developed countries), for instance, prevalence of smoking is less (Kreatsoulas & Anand, 2010); Bjorck et al. (2015), while in sub-Saharan Africa (developing countries) there is increased smoking (Asma & Pederson, 2017). In this study, smoking was found to be widely practised. In addition, in this study no statistically significant association was found between smoking and knowledge about myocardial infarction ($p=0.447$).

Sixty percent of the respondents indicated that they consume alcohol at least once a week. This finding correlates with are port by WHO (2011), which indicates that medium alcohol consumption levels are found in Southern Africa with Namibia and South Africa having the highest levels. Alcohol consumption thus appears to be practised widely. A statistically significant association was found between alcohol consumption and knowledge about

myocardial infarction The respondents, who did not consume any alcohol, or only on social occasions had more knowledge about a myocardial infarction ($p=0.001$).

Involvement in regular exercise was the third item of the practice section. Exercise is regarded as an important in decreasing LDL cholesterol and increasing HDL cholesterol in lowering the risk of developing CAD (Smeltzer et al., 2010).The results in this study indicated that 57 percent of the respondents exercised at least once to three times a week. According to WHO (2017), globally around 23 percent of adults were not active enough (men 20 percent and women 27 percent).This study did not find optimum level of activity. In addition a statistically significant association was found between self-rating of knowledge about MI and exercise ($p=0.000$). (See Table 4.14).Results revealed that respondents who exercised once to three times a week had greater knowledge about a MI compared to the respondents who engaged in exercise less than once a week.

5.5 ATTITUDES OF THE RESPONDENTS

The focus of this part of the study was on perceptions regarding a variety of aspects. These include smoking and alcohol consumption as contributing to ill-health, importance of regular follow-up visits and necessity of lifestyle changes.

The prevalence of smoking was already discussed under practices. The focus on the attitudes was on their perceptions regarding smoking. Ninety-eight percent of the respondents perceived smoking as a contributing factor to CAD. In a study in Italy, the majority of respondents reported that they quit smoking as they perceived it to be contributing to CAD (Tadesco et al., 2014).Though it can be concluded that respondents

in this study perceived smoking as contributing to CAD only 22 percent indicated they smoke. (See Table 4.2).

The prevalence of alcohol consumption was also discussed under practices. The focus on the attitudes was on the respondents' perceptions regarding alcohol consumption. Ninety-five percent of the respondents indicated that alcohol was a contributing factor to CAD, and it can be concluded that they are correctly informed that alcohol has adverse effects on the heart. The findings are also more positive than the study conducted in Leicester (Great Britain) by Farooqi et al. (2000) where the respondents did not seem clear on the link between alcohol and CAD.

Patients with coronary artery disease are required to have lifelong regular follow-up visits. According to the Southern African Heart Association (2103), these patients should be followed up at frequent intervals at the discretion of the treating cardiologist. This is due to the type of drugs prescribed as well as possible complications that need to be detected early. In this study, the majority of the respondents (74 percent) acknowledged the importance of regular follow-up visits. The ideal response should have been an agreement of the importance of regular follow-up visits by all the respondents.

Patients with coronary artery disease often have to make some lifestyle changes. This is not always easy, and requires a certain belief system for benefits to accrue. In this study, 84 percent of the respondents indicated that they do want to make some changes, with the main motivation being to improve their well-being (71 percent). The willingness to change lifestyle, however, is influenced by social, economic and environmental

determinants. In a study in South Africa, respondents stated that they felt helpless about making lifestyle changes, as the financial means are not available (Surka et al., 2015). In this study, results indicated that despite willingness to make lifestyle changes, unemployment was a challenge.

5.6 SUMMARY AND CONCLUSION ON THE DISCUSSION

This chapter provided a discussion on the biographical data as well as important findings regarding the knowledge, attitudes and practices of respondents with coronary artery disease. For each item discussed, a conclusion was provided where applicable. These conclusions were item specific and not study specific. The conclusion regarding the study is provided in Chapter 6.

CHAPTER 6

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

In this chapter the conclusions, limitations and recommendations are presented. The first discussion would be on the conclusions of the study. The conclusions would be formulated and positioned under the objectives. For the purpose of clarity, these objectives are presented again.

- To determine and describe the knowledge of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.
- To determine and describe the attitude of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.
- To determine and describe the practices of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

6.2 CONCLUSIONS OF THE STUDY

6.2.1 Conclusions on objective one

To determine and describe the knowledge of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

Respondents in this study appeared to have a limited level of knowledge of CAD, however, they demonstrated the ability to recognise signs and symptoms related to

myocardial infarction. It is, however, necessary to have basic knowledge about CAD, as proper prevention and treatment programmes are more sensible.

They also had the knowledge to know when to seek help, especially as they appeared to be familiar with the signs and symptoms of a myocardial infarction. Regarding the signs and symptoms, the majority of the respondents were knowledgeable on how to interpret their own blood pressure measurements. It could be concluded, therefore, that they would seek medical assistance when problems arose and thus prevent undue morbidity and mortality.

The knowledge of these respondents was mostly obtained from their medical practitioners and in this regard they (medical practitioners), were actively involved in health education. Nurses, however, were not sources of information. It appeared from the results as if nurses are not fulfilling an important function, namely, health education.

6.2.2 Conclusions on objective two

To determine and describe the attitudes of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

Some aspects of attitudes in this study relates to knowing about the negative effects of activities but still continue with these activities. Smoking is such an activity. Smoking was well perceived by the respondents as contributing to CAD, but a large number of them still admit to smoke. This might relate to a certain extend to the Health Belief Model where they belief they are not vulnerable to the effects of smoke.

The same principle that was discussed regarding smoking, applies to alcohol consumption. The respondents perceived alcohol consumption as contributing to CAD, but the most of the respondents still consumed alcohol. This could also relate to health beliefs, as they might not regard themselves as vulnerable to CAD due to alcohol consumption.

In this study, the respondents were well aware of the importance of regular follow-up visits. This aspect of regular visitation appeared to be a positive finding.

Willingness to adapt or to change lifestyle practices was evident also in this group of respondents. This indicated a positive attitude towards own health. This characteristic of the respondents, namely a positive attitude, could serve well when recommendations need to be submitted.

Self-image of patients also determined respondents' attitude to possible lifestyle changes and adaptations. In the discussion, it emerged that a significant group was overweight based on their BMI, but still they perceived themselves as not being overweight. This could negatively influence health education with regard to exercise and diet.

6.2.3 Conclusions on objective three

To determine and describe the practices of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

The aspect of smoking was concluded under attitudes, where respondents appeared aware of the adverse effects of smoking, but they still continued with the habit. As stated in the attitude conclusion, this might indicate a belief that they are not vulnerable to CAD. This might negatively influence anti-smoking health education.

Alcohol consumption also overlapped with attitude. In conclusion, discussion on attitudes about alcohol consumption indicated that the respondents were aware of the negative effects of alcohol, but they still engaged in alcohol consumption anyway. The same conclusion, was drawn for smoking, with the respondents not perceiving themselves as vulnerable to CAD due to alcohol consumption. Like with for smoking, this could negatively influence health education to stop alcohol consumption.

About half of the respondents exercised at least once a week. It would be ideal if all the respondents would regularly exercise more than once a week. It can be therefore concluded that exercise is lacking in the respondents in the context of this study.

6.3 LIMITATIONS OF THE STUDY

A possible limitation of this study could have been of a methodological nature. During the process of data collection, a few respondents had problems with reading and writing due to problems with vision. The questionnaire was then used as an interview guide. This could have led to the Hawthorne effect.

6.4 RECOMMENDATIONS OF THE STUDY

The recommendations in this study were submitted for:

- Ministry of Health and Social Services
- Private health sector
- Training institutions, basic and post basic training
- Further research

6.4.1 Recommendations for the MOHSS

- The importance of health education in general should be emphasized again to all nurses. Health education should also acquire components of coronary artery disease. This health education should occur in both primary and secondary health settings.
- Topics to be included in health education should be lifestyle activities like smoking, alcohol consumption, weight control and exercise.
- School outreach programmes should be considered. The focus should be on healthy lifestyle and the avoidance of risk factors.

6.4.2 Recommendations for the private health sector

- The private health sector created a support group for patients with coronary artery disease. This group is dormant and should be reactivated. It is recommended that this reactivation be initiated by the management of the Roman Catholic Hospital.
- Health education that incorporates the prevention of coronary artery disease, should be incorporated in the in-service education programmes of private hospitals.
- The private sector could provide follow up talk shows on the prevention of CAD on national television. The groundwork had already been laid by the cardiac clinic of the Roman Catholic Hospital.

6.4.3 Recommendations for training institutions, basic and post basic training

- Undergraduate and post graduate nursing curricula should be reviewed to include coronary artery disease, specifically regarding prevention and promotion aspects.
- The current programme on health and wellness (a programme at a private university), should be actively promoted. This is a programme that focuses on managers in non-health institutions to initiate health and wellness initiatives in their work areas.

6.4.4 Recommendations for further research

- A study could be conducted to explore and describe the respondent's perceptions regarding alcohol consumption, smoking and exercise as contributing to CAD.

6.5 THE HEALTH BELIEF MODEL AND THE RELATION TO THE STUDY

The underlying principles of this model were that health behaviour is influenced by variables like demographics plus diseases, barriers and financial and social support as well as perceptual factors (Polit & Beck, 2012). In this study, these variables were considered and discussed in the literature review, and instrument compilation.

In the discussion, it was evident that some of the findings might be attributed to perceptual factors, as many of the respondents did not perceive themselves as vulnerable to worsening their CAD by smoking and consuming alcohol.

6.6 SUMMARY OF THE CHAPTER

This chapter presented conclusions, limitations and recommendations. In addition, the relation to the Health Belief Model was also alluded to. The researcher believes the objectives of the study have been achieved, and this is evident in the discussion on the conclusions. Recommendations were also submitted.

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ANNEXURE 1: ETHICAL CLEARANCE CERTIFICATE



ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SONPH/156/2016

Date: 6 December, 2016

This Ethical Clearance Certificate is issued by the University Of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: Knowledge, Attitude and Practices of Patients Regarding Coronary Artery Disease at the Cardiac Clinic in Windhoek, Namibia.

Nature/Level of Project: Masters

Researcher: J.F. de Klerk

Student Number: 8900566

Faculty: School of Nursing and Public Health

Supervisors: Prof. L. Small (Main) Dr. L. Pretorius (Co)

Take note of the following:

- (a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
- (b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
- (c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
- (d) The UREC retains the right to:
 - (i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected, request for an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

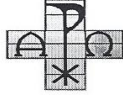
Prof P. Odonkor: UREC Chairperson

A handwritten signature in black ink, appearing to be 'P. Odonkor', written over a horizontal line.

Ms. P. Claassen: UREC Secretary

A handwritten signature in black ink, appearing to be 'P. Claassen', written over a horizontal line.

ANNEXURE 2: PERMISSION FROM EMPLOYER



ROMAN CATHOLIC HOSPITAL
P.O. Box 157, TEL 2702004, FAX 2702034
WINDHOEK, NAMIBIA

08 February 2017

Ms. Justa De Klerk
University of Namibia
School of Nursing
Namibia

Dear Ms. De Klerk

Re: Knowledge, attitude and practices of patients regarding coronary artery disease at the cardiac clinic in Windhoek, Namibia.

Herewith, the Roman Catholic Hospital grants permission and gave reference to your application to conduct the abovementioned study.

Your proposal has been evaluated and found to have merit.

We wish you all the best with this activity.

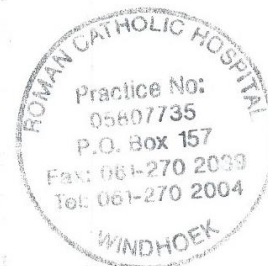
Kind Regards

Sarah, 13

.....
Sr. Sarah Gocela, OSB
Roman Catholic Hospital

BSnipanga

.....
Sr. Bernadette Shipanga
Nursing Service Manager



ANNEXURE 3: APPLICATION TO CONDUCT STUDY



REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Tel: 061 – 203 2562
Fax: 061 – 222558
E-mail: hnangombe@gmail.com

OFFICE OF THE PERMANENT SECRETARY

Ref: 17/3/3

Enquiries: Dr. H. Nangombe

Date: 28 April 2017

Ms. Justa De Klerk
University of Namibia
School of Nursing
Namibia


Dear Ms. De Klerk

Re: Knowledge, attitude and practices of patients regarding coronary artery disease at the cardiac clinic in Windhoek, Namibia

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**
 - 3.1 The data to be collected must only be used for academic purpose;
 - 3.2 No other data should be collected other than the data stated in the proposal;
 - 3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;

- 3.4 A quarterly report to be submitted to the Ministry's Research Unit;
- 3.5 Preliminary findings to be submitted upon completion of the study;
- 3.6 Final report to be submitted upon completion of the study;
- 3.7 Separate permission should be sought from the Ministry for the publication of the findings.

Yours sincerely,


Andreas Mwoombola (Dr)
Permanent Secretary



"Health for All"

ANNEXURE 4: TITLE OF RESEARCH STUDY

Knowledge, attitude and practices regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

Researcher: Ms J De Klerk

Cell: 0812953886

Email: justadeklerk02@gmail.com

Dear respondent, you are being invited to participate in a research study about knowledge, attitudes and practices towards Coronary Artery Disease. This study is being conducted by Justa F. De Klerk in fulfilment of the requirements for the degree of Masters in Nursing Science of the University of Namibia.

You were selected as a possible participant in this study because you were referred to the cardiac clinic. You are kindly requested to answer the questions in the form of a questionnaire, which you are requested to complete. It will take you about 15 to 20 minutes. You are not required to provide your name or contact details. There are no costs to you for participating in the study. There are no foreseeable risks or discomforts in your participation in this study.

The information provided would be used to help health care workers in educational programmes through improvement of acceptability, access to services, prevention and quality care. The study is anonymous. No one will be able to identify you or your answers and no one will know whether or not you participated in the study. Your participation in

this study is voluntary. You are free to decline to answer any particular question you do not wish to answer for any reason.

If you have any questions about the study, please contact me at the at the number and e-mail provided with the introduction

I agree to participate in this research study voluntarily.

Name

Age.....

Cardiac Clinic.....

Date.....

Signature.....

ANNEXURE 5: QUESTIONNAIRE

The University of Namibia

School of Nursing

Research questionnaire for the study of:

Ms J De Klerk [8900566]

Title: Knowledge, attitudes and practices of patients regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia.

Date: August 2016.

Introduction and instructions.

Thank you for taking this time to complete this questionnaire, or to be interviewed by me.

The activity will be about of 15-20 minutes duration.

As explained in the consent form, you do not need to include your name or any other personal information.

All questions require an answer.

1. Demographic characteristics:

1.1 Age: _____

1.2 Sex: [Tick (√) in the appropriate box]

1.2.1	Male	
1.2.2	Female	

1.3 Marital status: [Tick (√) in the appropriate box]

	Choice	Tick
1.3.1	Married	
1.3.2	Single	
1.3.3	Divorced	
1.3.4	Widowed	
1.3.5	In a committed relationship	

1.4 Education background [Tick (√) in the appropriate box]

	Choice	Tick
1.4.1	Did not attend school	
1.4.2	Primary education (Grade1-7)	
1.4.3	Secondary education(Grade 8-10)	
1.4.4	Secondary education(Grade11)	
1.4.5	Secondary education(Grade12)	
1.4.6	Tertiary education	

1.5 Employment status [Tick (√) in the appropriate box

	Choice	Tick
1.5.1	Unemployed	
1.5.2	Pensioner	
1.5.3	Primary caregiver (At Home)	
1.5.4	Employed in private sector formally	
1.5.5	Employed in government sector formally	
1.5.6	Self employed	

1.6 Place of residence. [Tick (√) in the appropriate box

	Choice	Tick
1.6.1	Zambezi	
1.6.2	Erongo	
1.6.3	Hardap	

1.6.4	Khomas	
1.6.5	Karas	
1.6.6	Kavango	
1.6.7	Kunene	
1.6.8	Ohangwena	
1.6.9	Omaheke	
1.6.10	Omusati	
1.6.11	Oshana	
1.6.12	Oshikoto	
1.6.13	Otjozondjupa	

1.7 Weight_____

1.8 Height_____

1.9 Indicate the presence of other health problems [Tick (√) in the appropriate box

	Choice	Tick
1.9.1	Diabetes mellitus	
1.9.2	Hypertension[High blood pressure]	
1.9.3	High cholesterol	
1.9.4	Gout	
1.9.5	Renal problems	

1.9.6 Any others _____

2. KNOWLEDGE AND PRACTICES

2.1. How would you rate your knowledge about a heart attack?

	Choice	[Tick (√) in the appropriate box]
2.1.1	Well informed	
2.1.2	Know something	
2.1.3	Know very little	
2.1.4	Know nothing	

2.2 Source of knowledge [information] about heart disease.]

	Choice	[Tick (√) in the appropriate box]
2.2.1	Medical practitioner [Doctor]	
2.2.2	Nurse	
2.2.3	Internet	
2.2.4	Television	

2.2.5	Radio	
2.2.6	Non- medical people	
2.2.7	I have no knowledge	

2.3 Would the following signs/symptoms be present in a person having a heart attack?

[Tick (√) in the appropriate box]				
	Sign/symptom	Yes	No	
2.3.1	Chest pain			
2.3.2	Shortness of breath			
2.3.3	Nausea			
2.3.4	Vomiting			
2.3.5	Headache			
2.3.6	Abdominal pain			

2.4 What would be the best treatment option for your problem?

	Choice	Tick appropriate box
2.4.1	No response	
2.4.2	Go to hospital	
2.4.3	Over the counter pain medication	
2.4.4	Consult traditional healer	
2.4.5	Stay home and wait for symptoms to go away	

2.5 Do you smoke?

	Choice	Tick appropriate box
2.5.1	Yes	
2.5.2	No	
2.5.3	Yes, but stopped	

2.6 How many cigarettes per day? (If the answer is yes to abovementioned question)

	Choice	[Tick (√) in the appropriate box
2.6.1	< 5 per day	
2.6.2	5-10 per day	
2.6.3	11- 15 per day	
2.6.4	>15 per day	
2.6.5	Replied “no” to question 2.5	

2.7 If you have replied that you have stopped, indicate how long before your diagnosis/referral?

	Choice	[Tick (√) in the appropriate box]
2.7.1	< 6months ago	
2.7.2	7- 12 months ago	
2.7.3	2 years ago	
2.7.4	Longer than 2 years	
2.7.5	Replied “no” to question 2.5	

2.8 Did you consume a drink that contained alcohol?

	Choice	[Tick (√) in the appropriate box]
2.8.1	No	
2.8.2	At least one drink every day	
2.8.3	At least one drink per week	
2.8.4	Only at social occasions	

2.9 Did you ever had your blood pressure measured?

Yes	
No	

2.10 What was the reading of your blood pressure when it was last measured?

	Choice	Tick appropriate box
2.10.1	Normal	
2.10.2	Slightly Low	
2.10.3	Slightly High	
2.10.4	Very High	
2.10.5	Do not know	

2.11 How important do you rate regular exercise in the prevention of heart disease.

(The greater the score, the greater importance)

1	2	3	4	5
---	---	---	---	---

Not important at all

Very important

2.12 How often do you exercise?

	Choice	Tick Appropriate Box
2.12.1	More than 3 days per week	
2.12.2	Once a week	
2.12.3	Once a month	
2.12.4	Don't have time for exercise	

2.13 How would you rate the significance of stress on the heart?

(The greater the score, the greater the significance)

1	2	3	4	5	6
---	---	---	---	---	---

Not significant

Very significant

3.ATTITUDES

3.1 Do you consider yourself?

	Choice	Tick appropriate box
3.1.1	Normal weight	
3.1.2	Overweight	
3.1.3	Underweight	
3.1.4	Very overweight	

3.1 Do you want to change your current lifestyle?

Yes	
No	

3.2 What would be your reason for trying to change your lifestyle? (If the answer is yes to 3.5)

	Choice	Tick appropriate box
3.3.1	Wanting to feel better	
3.3.2	Do it for family	
3.3.3	Encouraged to do so by a health professional	
3.3.4	Wanting to avoid taking medicine	
3.3.5	A relative/friend who developed a heart disease became ill or died	
3.3.6	Answered "no" to question 3.3	

3.3 Do you believe you have a stressful life?

Yes	
No	

3.5 Do you believe smoking is damaging to a person's health?

Yes	
No	

3.6 Do you believe alcohol is doing harm to the heart?

Yes	
No	

3.7 How important do you rate regular follow up at a health facility?

(The greater the score, the greater importance)

1	2	3	4	5	6
---	---	---	---	---	---

Not important at all

Very important

ANNEXURE 6: LETTER FROM STATISTICIAN

Date: 17 October 2017

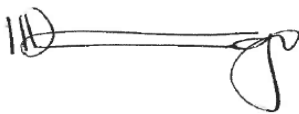
To whom it may concern,

I, Laina Mbongo, a holder of a Master degree in Applied Statistics and Demography (University of Namibia (UNAM)) would like to state that I have helped Ms. Justa de Klerk with her statistical analysis (data manipulation) between the period of 26 September 2017 and 06 October 2017. The work consisted mainly producing frequencies, descriptive statistics, cross tabulations, chi-square test as well as a regression model. The statistical program that was used is Statistical Package for the Social Sciences (SPSS) version 24.

For further inquiries, I can be reached at:

Email: inambongo@gmail.com

Cell: +264 81 128 9927 or +264 81 317 4590

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke, followed by a large, stylized flourish.

Laina Mbongo

ANNEXURE 7: LETTER FROM EDITOR

P O Box 55303
Rocky Crest
Windhoek
Namibia

18 March 2018

TO WHOM IT MAY CONCERN

RE: Language and Technical Editing

This serves to confirm that I have rendered language and technical editing services to **Justa F. de Klerk** on her research assignment **"Knowledge, attitudes and practices regarding coronary artery disease at the cardiac clinics in Windhoek, Namibia"**.

I have looked at spelling, grammar, style and sentence flow as well as formatting of the document.

Yours sincerely



Nkazana S. Mwanandimai (Mrs)

Associate Member # NKA001

Professional Editors' Guild (SA)