

**SELF-MANAGEMENT STRATEGIES TO PREVENT RISK FACTORS RELATED  
TO CARDIOVASCULAR DISEASE DEVELOPMENT AT GA-MOLEPO AREA  
CLINICS IN THE LIMPOPO PROVINCE, SOUTH AFRICA**

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**THESIS**

“Submitted in fulfillment of the requirements of”

**DOCTOR OF PHILOSOPHY**

In the

**FACULTY OF HEALTH SCIENCES**

(School of Health Care Sciences)

at the

**UNIVERSITY OF LIMPOPO**

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**2022**

## DECLARATION

I pronounce that the thesis “SELF MANAGEMENT STRATEGIES TO PREVENT RISK FACTORS RELATED TO CARDIOVASCULAR DISEASE DEVELOPMENT AT GA-MOLEPO AREA CLINICS IN THE LIMPOPO PROVINCE, SOUTH AFRICA”, submitted to the University of Limpopo for the degree Doctor of Philosophy in Health Science is my work and has never been presented or submitted by me for any degree at this or some other institutions and all material used have been recognized both in the text and the reference list.



7.03.2022

Signature

Date

## **DEDICATION**

This thesis is dedicated to my late parents Reuben Mokganya and Motsatsi Annie Mailula for their wisdom and passion for education. I will always cherish your vision, love, and support during the years of my studies: May your souls continue to rest in perfect peace.

## ACKNOWLEDGEMENT

My acknowledgment and appreciation go to God Almighty for his grace and wisdom throughout my studies. My genuine appreciation, gratitude, salutation, and dedication to the following people:

- My Supervisor Prof TM Mothiba for the help, support, mentoring, inspiration, motivation, and patience - I could not have made it this far without your professional assistance.
- Prof T. Sodi for the continuous and valuable assistance by exposing me to the different methodology of research - I was able to learn and apply knowledge with my research and study.
- Prof RN. Malema my mentor for the spices project, thank you for your support and guidance - you have helped me immensely in understanding and growing as a researcher.
- My study partner and sister Dr. L. Muthelo for being my backbone and the constant heartfelt support during my study.
- My Manager and study partner Mr.s K.R. Mosehla for your companionship, encouragement, understanding, and backbone through and through your gratitude is equal to riches.
- My handsome boys, Nakampe, Lehlogonolo, and Bokang for their valuable love and support during my study.
- My loving husband, My Chief, M.r M. P. Kgatla for being by my side and always being there, supporting, your presence, with devotion love, and gratitude, all I can say is I am truly blessed, *kea leboga Tlou!!!!!!*
- My sisters, Suzan, Pastor MC Ramothwala, and Mrs. Ramapuputla and Name for their continuous prayers, love, and support throughout my study.
- My brothers Thabo and Mpho you never wavered to support me, your support and courage are much appreciated.
- SPICES Project - (Scaling -up Packages of Interventions for CVD prevention in Europe and sub-Saharan) for the financial assistance and giving me the opportunity to explore research in a comprehensive way from Africa to Europe.

## **ABSTRACT**

**Background:** Cardio Vascular Diseases(CVD) are presently the main cause of high mortality rate around the world. In sub-Saharan Africa, CVDs contributes to about 13% of deaths, with 80% deaths being recorded from developing countries. Behavioural and metabolic risk factors contribute to high mortality rate related to development of CVD which self-management strategies and practices could effectively prevent.

**Objective:** To explore and develop self-management strategies to prevent the development of CVD among patients living with chronic conditions at Ga-Molepo Area clinics in the Limpopo Province, South Africa.

**Methods:** A mixed method exploratory sequential design study was conducted in four primary health care settings in a rural setting. A semi-structured one-on-one interviews were conducted with 43 patients selected by non-probability homogenous purposive sampling for a qualitative strand. Qualitative findings that was obtained with thematic Tesch's open coding data analysis method guided the quantitative strand. A simple random sampling was used to sample 347 respondents for the quantitative strand. Descriptive statistics and chi-square were applied to analyze data from the quantitative strand.

**Results:** The qualitative results revealed that there is different self-management strategies used by patients living with hypertension and Diabetes Mellitus as risk factors of CVDs. The self-management strategies include engaging in physical activity, eating a healthy balanced diet, drinking a lot of water and adhering to treatment. The quantitative revealed majority of participants(74%) perform mild exercises with 26% performing moderate exercis. On the other hand 7% are having stress and depression and while 7% are smoking.`

**Conclusions:** The findings indicated that by adopting self-management strategies could be an effective way of preventing the development of CVD which complicates to hypertension and diabetic mellitus. Therefore are encouraged to adhere to strategies adhere to treat, healthy diet and perform mild exercises

**Recommendations** Hence, the government needs to appoint CHW

permanently to strengthen the guidelines on the prevention of CVD and also the risk factors that put the communities at risk of developing CVD. Communities need to adhere to preventative strategies in order to prevent CVD.

**Keywords:** CVD, self-management strategies, clinics



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## **DEFINITION OF KEY CONCEPTS**

### **Cardiovascular Disease**

The World Health Organization (2017) defines Cardiovascular Disease (CVD) as a condition that involves narrowed or blocked vessels leading to heart attack, chest pains, stroke, and different conditions that affect the heart muscles, valves, or rhythm. In this study, CVD will refer to conditions such as arrhythmias, coronary artery diseases, deep vein thrombosis, pulmonary embolism, heart attack, or heart failure that arise due to risk factors such as hypertension, and Diabetes Mellitus, of patients from the Molepo local area clinics.

### **Development**

Dunn (2017) defines development as a process in which an individual, someone, or something grows or changes and becomes more advanced with the idea of a new situation. In this study, development refers to adopting a framework to assist in the teaching, training, and mentoring of patients from the Molepo local area clinics, regarding new methods that will empower them to prevent the development of CVD.

### **Strategies**

Barker (2018) defines strategies as the science or art of combining and employing means in planning, directing movements, and operations for obtaining specific results. In this study, strategies mean the planned methods or activities carried out or implemented in practical ways to prevent cardiovascular disease by patients with risk factors from the Molepo local area.

### **Prevention**

MacMillan (2017) defines prevention as an act of stopping something from happening or arising. In this study, prevention refers to the activities or practices carried out by patients with risk factors from the Molepo local area clinics to prevent the development of complications.

**Self-management**

Goldstein (2017) defines self-management as the management by oneself, taking responsibility, and active participation by an individual in his or her behaviour and well-being. In this study, self-management refers to the practices carried out by patients with Hypertension and Diabetes Mellitus as risk factors of CVDs to sustain their life and health well-being by preventing the occurrence of CVD.

**Risk factors**

Risk factors are characterized as” something that increases person’s chances of developing a disease (MacMillan, 2017). In this study, risk factors imply the lifestyle practices such as cigarette smoking and eating high fat diet by patient with Hypertension and Diabetes Mellitus which increases the chances of developing CVD.



## **LIST OF ABBREVIATIONS**

<b>AIDS:</b>	Acquired Immune Deficiency Syndrome
<b>CHW:</b>	Community Health Worker
<b>CVD:</b>	Cardiovascular Disease
<b>COPD:</b>	Chronic Obstructive Pulmonary Disease
<b>CHD:</b>	Coronary Heart Disease
<b>HIV:</b>	Human Immune Virus
<b>NCD:</b>	Non-Communicable Disease
<b>NDOH:</b>	National Department of Health
<b>NLR:</b>	Narrative literature review
<b>SA:</b>	South Africa
<b>SPICES:</b>	Scaling -up Packages of Interventions for CVD Prevention in Europe and sub-Saharan Africa
<b>SPSS:</b>	Statistical Package for the Social Sciences
<b>SDG:</b>	Sustainable Development Goals
<b>PHC:</b>	Primary Health care
<b>TB:</b>	Tuberculosis
<b>WHO:</b>	World Health Organization

# CHAPTER 1

## INTRODUCTION AND OVERVIEW OF THE STUDY

### 1.1. INTRODUCTION AND BACKGROUND

Cardiovascular Disease (CVD) is currently one of the main causes of death around the world, with its significant effect not only noticed in developed countries but also in emerging countries. In 2017, CVD caused 70% of all worldwide deaths with over 80% recorded from emerging countries. The following characteristics increase the likelihood of developing CVD; study age, standard estimates, and health risk factors (WHO, 2017). Moreover, nearly a quarter of all deaths are attributable to the behavioral and metabolic risk factors that individuals can modify.

Sala, Dicembrino, Argine, Baiquiera, Gazzotti, Gubin, Rondini, and Mamer (2017) reported that the therapeutic education and self-management strategies carried out by patients are winning elements in CVD prevention. They are effective if the individual practices on his/her own by staying fit and healthy, both physically and mentally. Sala et al. (2017) further outline that avoiding risk factors such as smoking can improve self-management of long-term health conditions. D'Angelo, Pelletier, and Huta (2017) noted that it is unclear whether people with risk factors for CVD, including diabetes, know about the risk factors for CVD contrasted with those without CVD and or risk factors thereof. The concern of the latter authors is attributed to limited literature elaborating the awareness of the risk factors amongst people with a high absolute risk of developing CVD. A plethora of people are unaware of their risk status; hence health care providers need to screen patients to detect risk factors. Health promotion programmes in the communities that involve an opportunistic CVD screening assessment, community awareness, and improved knowledge of CVD and associated risk factors are needed to reduce the development of NCDs (Kilkenny, Dunstan, Busingye, Purvis, Reyneke, Orgill & Cadilhac, 2016). WHO (2017) highlighted that interventions have proven to provide effective benefits for patients who practice self-management, which includes loss of weight, adjustment of dietary patterns

with increase fruit,` and vegetable intake. Self-management programmes typically emphasize that patients should be their principal caregivers and the important role of family members and the community to support them as well. Regardless of this shared objective, the strategies of self-management programmes that have worked to empower patients have changed fundamentally (Sala et al., 2017).

One significant objective of self-management support is to provide the patient with critical thinking abilities to recognise challenges in their lifelong disease management and generate a plan to forge a solution (Anh-Luu, Huynh, Marshall, & Lee, 2017). In economically developing countries like sub-Saharan, the prevalence of hypertension varies from 5% to 50%, whilst in economically developed countries it ranges from 19% and 30% (WHO 2018). In South Africa (SA) the single leading risk factors contributing to CVD burden were tobacco use (9%), overweight (7.1%), alcohol use (5%), and physical inactivity (5%). The prevalence of hypertension was estimated to be 21% in 2016 Demographic and Health Survey, with prevalence slightly higher in women (14%) than in men (11%) (WHO 2018). WHO (2016) illustrates that the risk factors combined influence enormously the burden of CVD.

The Heart and Stroke Foundation of South Africa (2018) showed that patient-centered therapeutic relationships are widely explored as a means to address the challenges of chronic diseases and morbidity management. A study was done by Ntuli, Maimela, Alberts, Choma, and Dikotope (2015) in rural areas of Limpopo Province of South Africa, to determine the high blood pressure prevalence and its risk factors in the people from the rural areas of the province with lifetime diseases. They reported that patients need to manage their disease for a lifetime. Self-management of the diseases or knowledge, and participation in strategies that assist to maintain their health, has been effective in decreasing mortality and hospitalisation rates (Egan & Lackland, 2018). It is evident through this background that there is a need to aid the clinician in identifying and mitigating the health risks of patients, either due to lifestyle or existing disease conditions, and to ensure that patients engage in strategies

that promote physical and psychological health, which could lead to improved risk reduction.

## **1.2. PROBLEM STATEMENT**

The American Heart Association (2019) estimates that 65% of patients with diabetes die from some form of CVDs, and more than 480,000 Americans die each year of smoking-related illnesses. Many of these deaths are because of the effects of smoking on the heart and blood vessels (WHO 2020).

Africa is estimated to have 15.9 million adults living with DM which is a regional prevalence of 3.1%. The diabetes prevalence in South Africa has reached 11.3%, the highest in Africa. The country will also register an estimated 96,000 deaths due to diabetes in 2021, while the cost of diabetes-related health expenditure has risen to 1,700 USD per person, totalling an estimated 7.2 billion USD. In South Africa, studies have also reported prevalence estimates for hypertension as high as 38.6% and diabetes as high as 8.66% (WHO 2021).

The quality of health in Primary Health Care (PHC) facilities has a direct impact on the effectiveness of improving health outcomes of chronic disease patients. These PHC facilities are the first points of entry in medical health care delivery with connections to higher levels within the framework of the health system and other services (Manual for Health Promotion, 2020). The role of the PHC facilities is to focus on the individual, community resources, to tackle health and social issues. The weight of lifelong diseases affects the person in terms of lost productivity, the expense of care, as well as social aspects (Manual for Health Promotion, 2018).

CVD is one of the leading chronic diseases in our communities with a prevalence rate of 18% predominantly in Limpopo, which is due to a lack of knowledge regarding self-management related to behavioral risk factors like physical inactivity, obesity, an unhealthy diet rich in salt, fat, tobacco and alcohol (Ntuli et al., 2017). The researcher is a clinical nurse practitioner in primary health care and has observed that in primary health facilities during the situational analysis which was conducted in February 2018 for the SPICES Project that there is a rise in the number of patients presenting with chronic diseases in the Evelyn

Lekganyane clinic documented about 100 patients presenting with lifelong diseases such as Diabetes Mellitus and hypertension of which 50% of them have complicated to CVD (Evelyn Lekganyane monthly statistics, 2018). While Nobody clinic documented 80 patients in January 2017 with 30% of patients on cardiovascular treatments (Nobody clinic Monthly statistics, 2018). These statistics reflect that there might be a problem with the self-management of chronic diseases by patients. According to Sustainable Development Goals (2015), there is a growth in CVD and its complications such as stroke and NCDs. It is estimated that in 2025 there will be an economic burden of CVD due to exposure to risk factors such as smoking, lack of adherence to treatment and overweight.

### **1.3. PURPOSE OF THE STUDY**

- The purpose of the study was to develop and implement self-management strategies of patients living with Hypertension and Diabetes Mellitus to prevent the development of CVD.

#### **1.3.1 Objectives of the study**

##### *1.3.2.1 Phase 1: Situational analysis*

The following are the focus of situational analysis:

- To explore the self-management strategies used by patients with Hypertension and Diabetes Mellitus to reduce risks of developing CVDs.
- To describe the level of knowledge of patient living with Hypertension and Diabetes Mellitus related development and prevention of CVD?.
- To describe the self-management strategies used by patients with Hypertension and Diabetes Mellitus to reduce risks of developing CVDs.
- To train community health workers to implement self-management strategies to people living with Hypertension and Diabetes to reduce the development of CVDs

### **1.4. RESEARCH QUESTIONS**

- Which self-management strategies that be used by people living with Hypertension and Diabetes Mellitus to the reduce the development of

## CVDs

- What is the knowledge held by patients living Hypertension and Diabetic mellitus related development and prevention of CVD?
- Which modules could be used to train community health workers to implement self-management strategies to people living with Hypertension and Diabetes to reduce the development of CVDs

## 1.4 RESEARCH METHODOLOGY

An exploratory sequential research design of mixed-method research approach was adopted in this study. The mixed-method research approach enabled the researcher to develop and implement patient self-management strategies to prevent development of CVD from Hypertension and Diabetes Mellitus. It allowed the researcher to achieve complementary results by using the strengths of the qualitative method to enhance the quantitative method (Tarig & Woodman, 2018).

Two strands were followed using the exploratory sequential design to achieve the study purpose. Thus, in Phase I, the researcher collected qualitative data in the first strand and analyzed the results. Thereafter, the results were used to build on the quantitative strand in Phase II. The results of both phases guided the development and implementation of self-management strategies to prevent the development of CVD from Hypertension and Diabetes Mellitus. The methodology provided a better understanding of or evidence for explaining a research problem than either qualitative or quantitative methods alone cannot produce (Creswell, 2014). The research approach was applied according to phases;

- Phase 1 of the study addressed Objective 1 and Objective 2, where the first objective was to explore the self-management strategies used by patients with Hypertension and Diabetes Mellitus to prevent CVD. The second objective was to describe the patients` practices as self management strategies to reduce the development of CVD.
- The third objective was to describe the self-management strategies used by patients with Hypertension and Diabetes Mellitus to reduce risks of developing CVDs. A qualitative strand approach was used to achieve the first three objectives then the quantitative strand was guided by the results of qualitative strands during Phase 2 of the study.
- The fourth objective was develop and implement self-management strategies of patients living with Hypertension and Diabetes Mellitus to prevent the development of CVD as guided by Orem`s theory of nursing.
- The researcher implemented developed self-management strategies of patients living with Hypertension and Diabetes Mellitus to prevent the

development of CVD in Phase 3.

#### **1.4.1. Research design**

The exploratory sequential design was applied in this study by following three phases Phase I begins with the collection and analysis of qualitative data. Phase II findings are built on the qualitative results, where the researcher conducts a quantitative research approach phase to generalize “the initial qualitative findings. The researcher then interprets how the quantitative results build on the initial qualitative results (Cresswell, 2014). In this study, the exploratory design was used to assist the researcher to form a complete picture of the prevention of risk factors related to CVD and be able to develop patient self-management strategies. Through an exploratory sequential design the participants were asked about their knowledge, practices and self-management strategies used by those with risk factors e. g. chronic conditions , hypertension and diabetic mellitus to reduce the development of CVD? The research design will be discussed in detail in Chapter 3.

##### *1.4.1.1 Study site*

The study was conducted in Limpopo Province in the Molepo area, which falls under the Capricorn District of the Polokwane municipality. Four clinics were selected from this area. Namely; Evelyn Lekganyane (one of the busiest facilities because it is situated at the head office of Zion Christian Church - the largest churches in South Africa with high number of patients with hypertension and diabetic), the Nobody clinic with the high number of patients with hypertension, the Mamushi clinic which follows the other two clinics with a high number of CVD patients, and the Soetfontein clinic. The above facilities are primary health care facilities referring patients to Mankweng tertiary hospital (Limpopo Province). Furthermore, the facilities provides primary health care comprising of promotion, preventive and curative services at the community level and they are having high number of patients presenting at the facilities compared to other clinics in Molepo area.

##### *1.4.1.2 Study population*

The population is defined as the entire collection of participants that are interest to the researcher (Burns & Grove, 2014). Furthermore, the



population is explained as individuals or objects known to have similar characteristics in a certain geographical area (Jacqueline, Guarte & Barriors, 2017). The study population consisted of patients with risk factors and diagnosed with hypertension and diabetes mellitus at the Evelyn Lekganyane clinic, the Mamushi clinic, the Nobody clinic, and the Soetfontein clinic in the Molepo local area. The average population for this study is 347 according to Taro Yamane (2017) formula using the population of the clinics patients with risk factors, hypertension, and diabetic Mellitus.

#### **1.4.2 Qualitative Strand of the Study**

Qualitative strand of the study was the first part of this study and it marked the beginning of Phase I. This is because the qualitative facts direct the quantitative portion of the study (Creswell, 2014), whereby the findings presented narratively described the Paradoxical description of self-management strategies used by patients living with Hypertension and Diabetes-Mellitus. The findings resulted in the adoption of using inter heart which is a non-laboratory tool to screen all those who have been interviewed to assess if there are at risk or not to develop CVD.

##### *1.4.2.1 Sampling*

Webster (2016) explains sampling as the technique of selecting a suitable sample or a representative part of a population to determine the characteristics of the whole population. For this study, purposive sampling was adopted To select participants in a qualitative strand. Purposive sampling is defined as a non-probability, judgemental, selective, or subjective sample that select participants based on the characteristics of a population and the objectives of the study (Allison (2015).

##### *1.4.2.1.1 Sampling of the clinics*

Molepo local area consists of eight clinics, and as such, the researcher applied purposive sampling to select clinics with a high statistic of a patient living with Hypertension, and Diabetic Mellitus at their facilities. Four clinics were sampled because of their high statistics of patients with risk factors, Hypertension, and Diabetic Mellitus. Namely; Evelyn Lekganyane clinic, the

Nobody clinic, Mamushi clinics, and the Soetfontein clinic.

#### *1.4.2.1.2 Sampling of the participants*

Homogenous purposive sampling was used to select the participants. According to Allison (2018), homogenous purposive sampling is when the researcher uses participants with the same characteristics. The researcher specifies the characteristics of the population of interest which is followed by locating an individual who matches these characteristics. Three hundred and forty-seven patients from four clinics were selected to participate in the study and they were found as representative of the overall population. Non-probability, homogenous purposive sampling was done on patients who visited the clinic on the day. Patients living with Hypertension and Diabetic Mellitus at four clinics in the Molepo local area were purposively selected.

#### *1.4.2.2 Qualitative data collection.*

Data was collected using self-developed, semi-structured interviews with a guide in a private room at each clinic until data saturation was reached (Botma, Greeff, Mulaudzi & Wright, 2014). The unstructured questions (open-ended questions) were followed through probing questions to create a platform where patients were allowed to clarify areas not clear to the researcher during the interview sessions. In this study, data were collected from patients living with or previously treated for Hypertension and Diabetes Mellitus. The researcher was guided by the following research question **“Can you briefly describe what you are doing to reduce development of CVDs?”**

A voice recorder was utilized to record the interview sessions upon obtaining approval about its utilization in of the study. Field notes were taken along with the recording to allow the researcher to collect rich data from the study. A checklist was used during qualitative data collection to evaluate the central question asked to all participants in the patients' clinic documents. The data collection is discussed further in Chapter 3.

The findings revealed that there is a different self- management strategies used by patients living with hypertension and diabetic- Mellitus which include engaging in physical activity, eating a healthy balanced diet, and drinking a lot of water. The findings guided the implementation of Phase II – a quantitative strand.

### *1.4.2.3 Qualitative data analysis*

The collected data were translated into English for better transcriptions before data could be analysed. Tesch's method of data analysis, which comprises eight integrated steps, was used to analyze the data (Creswell, 2014; de Vos, Strydom, Fouche & Delport, 2014). The eight steps are discussed in detail in Chapter 3 of this report.

### *1.4.2.4. Trustworthiness of the Study findings*

Trustworthiness refers to the degree to which the evidence of the results reported are sound and the argument made based on the results is strong through maintaining credibility, dependability, confirmability, and transferability (Polit & Beck, 2015). These four strategies are discussed in full in Chapter 3.

## **1.4.3 Quantitative Strand of the Study**

The quantitative strand of the study was the second part of the study. The qualitative results guided the development of the instruments used to collect data for this strand. The first strand's findings presented a paradoxical description of self-management strategies used by patients living with risk factors such as hypertension and diabetes-mellitus. The findings resulted in the adoption of using interheart which is a non-laboratory tool to screen all those who have been interviewed to assess if there are at risk or not to develop CVD.

### *1.4.3.1 Sampling*

Sampling is the process of selecting a portion of the designated population to represent the entire population (Grove et al., 2015). A sample comprises elements or subsets of a population for actual inclusion in the study (De Vos, Strydom, Fouche & Delport, 2014).

#### *1.4.3.1.1 Sampling of the patients*

Simple random sampling was used to select participants. Simple random

sampling ensures that each individual in the population has an equal chance of being selected in the sample (Babbie & Mouton, 2017). All patients consulting the clinic on the first day of data collection diagnosed with hypertension, diabetic Mellitus, and with risk factors were randomly selected. Clinic appointment lists were used to identify patients with risk factors, and also those diagnosed with hypertension and diabetes Mellitus from the four selected clinics. Patients at the clinic were randomly selected using the systematic technique. The researcher assigned a unique number to each responded in the population. A population of 347 after using population respondent was selected to take part in the study from the clinics and the Taro Yamane (2017) formula was used to sample the size.

#### 1.4.3.1.2 Sample size

The sample size in all four clinics was calculated using the Taro Yamane formula outlined by the Department of Sociology and Criminal Justice (2017).

The simplified formula for proportion (Taro Yamane):

$$n = \frac{N}{1 + \frac{N}{e^2}}$$

n - the sample size

N - the population size

e - the acceptable sampling error

\*95% confidence level and p=0.5 are assumed

The Yamane (1967) mathematical formula was used to calculate the sample size in this study. Thus, the total number of participants was 347.

#### 1.4.3.2 *Quantitative data collection*

The results of the qualitative strand in Phase 1 guided the quantitative data collection. A questionnaire guided by both qualitative results and Inter-heart Score Tool (WHO, 2018) was developed to obtain data. A structured questionnaire is a formal list of questions formulated in such a way that the

facts are gathered in a pre-set order (Gupta & Gupta, 2011). The data collection process is discussed in detail in Chapter 3.

#### *1.4.3.3 Data Analysis*

Data analysis was carried out after a collection of data. Polit and Beck (2015) outline data analysis as reduction, organising, and giving meaning to collected data. The quantitative data were analysed using Statistical Package for the Social Sciences (SPSS), version 25 with the assistance of the University Biostatistician. The (SPSS) version is discussed in detail in Chapter 3 of this report.

Internal validity, external validity, face validity, content validity, and reliability were used to indicate how well a method, technique, or test measure was applied to measure validity.

## **15 ETHICAL CONSIDERATIONS**

The following ethical considerations were adhered to:

de Vos et al. (2014) describe ethics as a set of moral principles that are suggested to an individual or a group, which offers rules and behavioural expectations. The following ethical standards were adhered to while conducting the study: Permission to conduct the study, informed consent, confidentiality and anonymity, the principle of justice and protection, and the principle of non-maleficence. More detail on the ethical considerations is discussed in Chapter 3 of this report.

## **16 SIGNIFICANCE OF THE STUDY**

The significance of the study is identified according to the following categories:

### **Nursing care and administration**

The study results will provide health care professionals, medical services experts, including nurses and doctors, with the opportunity to inform and empower patients concerning Hypertension and Diabetes Mellitus and associated impacts on CDVs.

### **Research**

The results of the study might give a benchmark to additional further research

either to affirm or contradict the findings of this study. The study findings may likewise provoke other researchers to raise awareness of Hypertension and Diabetes Mellitus that undermine great wellbeing or deteriorate existing conditions that threaten good health or worsen CVDs.

□ **Nursing education**

The researcher believes that the study findings will add to the current body of knowledge to assist healthcare workers, especially primary healthcare workers, to recognize risks, make patients aware of these risks, and how to self-manage their conditions to prevent further complications.

#### **Benefits to the patients**

Patients' situation will improve as they will be more knowledgeable, possess more useful information and practical things to do, be informed, and be encouraged to prevent further complications and the development of cardiovascular disease.

#### **Community**

The community will be more empowered in the skills of self-management for risk-related factors and non-communicable diseases and therefore, be able to identify those at risk and prevent CVD.

### **1.7 OUTLINE OF THE CHAPTER**

The study context which was primary health care facilities at Molepo area of Limpopo Province was elaborated and the ethical principles adhered to throughout the study were also outlined. The researcher indicated knowledge of the background of the problem on self-management strategies to prevent CVD development as a community nurse working in the clinic of Limpopo Province. Strategies to be developed following this study will contribute in addressing the challenges faced by patients living with Hypertension and Diabetes Mellitus.

### **1.8 CHAPTER SUMMARY**

Chapter 1 has illustrated the reason of conducting the study on the introduction, and background, the problem statement, the purpose of the study, the research questions, the objectives. The theoretical framework and a brief description of the methodology were discussed as ways that could assist the researcher in achieving the aim of the study. Measures to ensure trustworthiness, the significance of the study and ethical considerations were outlined as possible ways to enhance data quality and safety of participants or respondents.

## 1.9. OUTLINE OF THE THESIS

Table 1.1. : Organisation of the chapter

CHAPTER	TASK
<p><b>Chapter 1: Overview of the study</b></p>	<ul style="list-style-type: none"> <li>• An outline of the study and the arrangement of the thesis and problem statement</li> <li>• Research questions and the objectives of the study</li> <li>• Methodology (qualitative and quantitative strand), population and sampling, data collection, data analysis</li> <li>• Measures to ensure trustworthiness, and validity</li> </ul>
<p><b>Chapter 2: Literature review</b></p>	<ul style="list-style-type: none"> <li>• Describing the methodology used to review the literature, expand on the reviewed literature related to the title of the study</li> <li>• Theoretical framework which guided the study data bases searched, the keys search terms used, parameters and the finding of the literature</li> </ul>
<p><b>Chapter 3: Research Methodology</b></p>	<ul style="list-style-type: none"> <li>• A mixed method, exploratory sequential research design was used in this study to achieve its purpose. The chapter discusses the research methods that were used to conduct the study. The chapter also describes how the research was done.</li> <li>• The study site, the population and the sampling are discussed. The researcher also discussed how data were collected and</li> </ul>



	<p>analysand for both qualitative and quantitative strands. Measures to ensure trustworthiness discussed as well as validity</p>
<p><b>Chapter 4:</b> Presentation, interpretation and discussion of findings</p>	<ul style="list-style-type: none"> <li>• This chapter presents, interpret and discuss merged findings from both qualitative and quantitative strands.</li> <li>• The individual semi-structured in-depth interviews were conducted with 43 participants and 347 respondents completed the questionnaires.</li> <li>• The study findings of this strand are presented using tables, charts and graphs after which the description of the findings are presented. The findings of this study are discussed based on the information that emerged from the qualitative data analysis of the self-administered questionnaires with the respondents</li> </ul>
<p><b>Chapter 5: Integration and interpretation of the results</b></p>	<ul style="list-style-type: none"> <li>• This chapter outlines the integration and interpretation of qualitative and quantitative results.</li> <li>• The main aim of integrating qualitative and quantitative data was to bring a clearer understanding of both strands than what was given by qualitative or quantitative results alone.</li> </ul>
<p><b>Chapter 6: Development of the training programme guided by the theoretical frame work</b></p>	<ul style="list-style-type: none"> <li>• This chapter focuses on framework intended to describe an educational programme implementation plan and activities that guided to improve</li> </ul>

	<p>the knowledge and skills of community health workers during the implementation of the self-management strategies</p>
<p><b>Chapter 7: Implementation of the self-management strategies</b></p>	<ul style="list-style-type: none"> <li>• This chapter focuses on the implementation of self-management strategies to prevent risk factors related to CVD development.</li> <li>• The implementation of self-management was guided by the objectives, study findings, Orem’s self-care theory, a health promotion tool for health professionals guidelines</li> </ul>
<p><b>Chapter 8: Summary, recommendations, limitations and conclusion</b></p>	<ul style="list-style-type: none"> <li>• This chapter presents the summary of the study, the limitations and the recommendations.</li> <li>• The background of the study and its intended purpose is summarised in this chapter. The limitations of the study also outline the challenges faced when conducting the study.</li> <li>• The study recommendations were generated based on the study findings.</li> </ul>

## **ER 2**

### **LITERATURE REVIEW**

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#### **2.1 INTRODUCTION**

An in-depth review of literature related to self-management strategies to prevent risk factors related to cardiovascular disease development was given in this chapter. Galvan and Galvan (2017) describe a literature review as an assessment report of data found in the literature related to the selected area of study. The review describes, summarises, evaluates, and clarifies the literature, provides a theoretical base for research and helps to determine the nature of the research. In this study, a Narrative Literature Review Method was chosen to present reviewed literature. Pare and Kitsou (2018) describe a narrative literature review as a traditional way of reviewing the extent of literature and is skewed towards a qualitative interpretation of prior knowledge. Literature was reviewed thematically as outlined in du Plooy-Cilliers, Davis, and Bezeidenhout (2014) utilizing the Narrative Literature Review method. The methodology, the search terms, sources of information, literature parameters, the search findings, the themes derived from literature, and the conclusion and recommendations of the findings are described extensively in this chapter.

#### **2.2 METHODOLOGY**

A Narrative Literature Review (NLR) was adopted as a comprehensive critical, and objective in identifying, analysing, assessing, and interpreting the available information on self-management strategies to prevent risk factors related to the development of CVD (Onwuegbuzie & Frels, 2016). NLR was also selected as a suitable approach to tackle the broader and more abstract research question,

allowing the reviewer to retrieve literature from a variety of sources; the literature was utilised, although it does not review all the available literature. Thus, only relevant literature is chosen and no crucial report is excluded, the body of literature is effectively represented in the final review; and even the literature that controverts the study is included to avoid selection bias (Coughlan & Cronin, 2017).

## **2.3 DATABASE SEARCHES**

Literature was retrieved from the following databases and search engines:

- Elsevier, Science direct, and SABINET.
- PubMed, and Web of Science, Science access and science direct.
- Electronic databases: Biomed, BMC, PLoS ONE, BMJ Open, Etho Med, Search engines: Google Scholar, UL E-Libraries, Chrome and Google books, Hand searches: Reference book, reference lists from retrieved literature academic journal articles.
- Government and parliamentary information: Guidelines, policies, South African Gazettes and SA e-publications.

## **2.4 KEYWORD SEARCH TERMS**

The keywords utilised in the literature search were multiple combinations of Risk factors," CVD," dietary factors," Public interventions", Non-adherence, Alcohol," Smoking, "Medication, Hypertension, Diabetic Mellitus, "Causes, "Self-management," Physical inactivity," Exercises .

## **2.5 PARAMETERS**

Publications only meeting the following standard were included in the literature:

English publications were available from 2012 to date .

## **2.6 FINDINGS**

The study findings of the literature search are outlined as follows:

Sixty-one studies, both using aquantitative and qualitative methods, and four books were reviewed for the study literature .

## **2.7 THEMES**

The themes of the literature are as follows:

- The Prevalence of Heart Diseases
- Dietary Contributory Risk Factors for CVDs
- Background Related to NCDs in South Africa
- Risk Factors for CVDs
- Public Health Service Interventions

- Self-management and other Strategies

### **2.7.1 The Prevalence of Heart Diseases**

Emerging countries will confront a far greater challenge of CVD burden in the 21st century since it has been estimated that there were already twice as many mortalities and more than 3 times as many attributable to CVD in developing countries in 2015 (9.1 million deaths, and 101 million; compared with 5.2 million deaths and 33 million) in developed countries in the same year. The distinction in disease burden between emerging and developed countries is expected to be more extensive by 2020 (Hofman, 2016). CVDs, specifically Coronary Heart Disease (CHD), stroke, and Congestive Heart Failure keep on being the main source of death claiming nearly 1 000 000 lives yearly and representing over 40% of deaths in the United States (American Heart Association, 2018). While cardiovascular disease is frequently considered to be a problem of the elderly, 45% of heart attacks occur among people under 65 years of age (Fuster, Kelly & Venanthanl, 2016). Also, CVDs are the second leading cause of death for those 45 to 64 years of age and the third leading cause of death for those 25 to 44 years of age.

Cardiovascular disease is a significant reason for disability and premature death throughout the world and contributes substantially to the heightening expenses of medical care (Terzia & Waldman, 2016). The fundamental underlying pathology is that atherosclerosis develops over numerous years and is it advances when the signs and symptoms happen. Generally, moderately aged occasions happen suddenly and are frequently deadly , before medical.

care can be given (Alberts, Urdal, Steyn, Stensvold, Tverdal & Nel, 2015). Zühlke (2017) adds that CVD's is among the main three reasons for death in sub-Saharan Africa and this is mostly because of rapid urbanisation which has resulted in an upsurge of coronary heart and coronary artery disease. A portion of the poorer South African provinces had high prevalence rates for overweight and/or obesity, with the lowest rate observed in Limpopo (44% of women and 22% of men) .

However, in a deep rural community in Limpopo among children aged 3-10 years, only 2.5% of boys and 4.3% of girls were overweight. McGorriah, Yusuf, Islam, Rangarajan, Avezum, Prabhakaran, Almahmeneed, Rumboldt, Buday, Dans, Gerstein, Teo and Anand (2018) state that NCDs account for about 70%.

- 80% of patients suffering from chronic disease, while the highest mortality and morbidity rates in South Africa in 2014 were due to obesity or overweight with 55% of women and 30% of men being obese or overweight, of which 42% were not engaging insufficient exercise. About 7 million adults who were tobacco users and those who consume alcohol in South Africa also increase the mortality rates associated with chronic heart diseases, just as anywhere in the world. Heart disease and stroke are South Africa's biggest killer after HIV/AIDS as South Africa die of CVD than of all cancers combined. WHO (2017) demonstrated that SA has the highest level of overweight and obesity in the world which is a contributing factor for heart disease. CVD will remain a major cause of the total burden of a disease caused by a combination of premature death and non-fatal events (NDOH, 2013-2017).

### **2.7.2 Contributory Risk Factors for CVDs**

Risk factors are certain conditions that expand an individual's risk for CVDs, there are risk factors that are non-modifiable and cannot be changed modifiable risk factors can be adjusted, controlled or treated (Pract 2018). Rahman, Moriyama, Ray and Nakayama (2017) outlined that worldwide comparative risk evaluation has estimated that hundreds of thousands or millions of CVD deaths are credited to established CVD risk factors like high

blood pressure, smoking and blood glucose, high body mass index, harmful alcohol use, dietary, environmental exposures and physical activity.

Hypertension is a significant worldwide general well being challenge because of its recurrence and associated risk of cardiovascular and kidney disease. It has been distinguished as the leading causative risk factor of mortality and is ranked third highest as a cause of disability-Adjusted Life Years (Huisman et al., 2016). Hobbs (2018) refers to that around 7 million premature deaths throughout the world are caused by risk factors for example a raised blood pressure of which 4.5% of the illnesses strain are caused by a significant risk factor of cerebrovascular disease, coronary heart disease, cardiac and renal failure. Feigin, Norrving and Mensah (2017) express that treating raised blood pressure has been associated with a 35–40% decrease in the risk of stroke and at least a 16% decrease in the risk of myocardial infarction. Raised blood pressure frequently coexists together with other cardiovascular risk factors, such as tobacco use, overweight or obesity, dyslipidemia, and dysglycaemia, which increase the cardiovascular risk attributable to any level of blood pressure (Mpe, 2017). Byrne, Eksteen and Crickmore (2018) postulate that worldwide these coexisting risk factors are regularly insufficiently addressed in patients with raised blood pressure with the outcome regardless of whether their blood pressure is lowered, they have high cardiovascular morbidity and mortality rates.

Sala et al. (2017) state that diet is an important factor in coronary heart disease development. Food-related risk factors include obesity, high blood pressure, uncontrolled diabetes, and diets high in saturated fats. A low saturated fat, high fibre, high plant food diet can substantially reduce the risk of developing heart disease. Limiting the amount of saturated and trans fats consumed is an important step in reducing blood cholesterol levels, which can lead to a buildup of plaque in the arteries, known as atherosclerosis. This can increase an individual's risk of a heart attack and stroke (Tamosiunas, Luksiene, Bacevience, Radisauskass, Kranciukaite, Virviciute, Peasey & Bobak, 2018).

Karthikeyan (2018) expresses that many NCDs share common risk factors for example tobacco use, lack of exercise, and an unhealthy diet, which converts “into cardiovascular disease, diabetes, and cancer. National prevalence data in



South Africa demonstrates shifts in dietary intake occurring with increasing movement particularly in black people, fat intake has expanded in individuals living in urban settings. Some urban settings and populations are susceptible to NCDs due to hereditary and other ethnic elements for example e.g. familial hypercholesterolemia occurs in one in every 200 Afrikaners, bringing about early cardiovascular disease in affected individuals (Bosworth, Powers & Oddone, 2017).

### **2.7.3 Background Related to NCDs in South Africa**

Mayosi et al. (2015) hypothesize that it is notable that SA has one of the highest rates of overweight, smoking and drinking in the world. Which are generally major contributing factors to cardiovascular disease. Byrne, Eksteen and Chrismore (2018) highlighted that two hundred and fifteen people die every day from a heart attack and strokes one in six months (17,3%) die from CVD, and every hour five people have a heart and ten people have a stroke.

According to the President of South Africa Cyril Ramaphosa during his address of the state of the nation on 16/09/2018. He emphasizes on the main strategy of managing NCD, by scaling up our testing and treating campaign, he further stressed that we need to confront lifestyle diseases such as high blood pressure, diabetes, cancers and CVD. Leeder, Raymond and Greenberg (2015) clarify that hypertension is the leading risk factor for death from CVD, contributing to the largest impact and stroke in South Africa, which is responsible for 1 in 2 (50%) strokes and 2 in 5 (42%) heart attacks. The same author adds that to this problem, over half of the individuals with hypertension know nothing about their condition, of the people diagnosed with high blood pressure, only a third is on treatment, and of those, only a third has satisfactory control of their blood pressure.”

WHO (2017) illustrated that South Africa has the highest rate of high blood pressure reported among people aged 50 and over for any country in the world at any time in history with almost 8 out of 10 people in this age group being diagnosed with high blood pressure 111 in 10 children are already suffering from high blood pressure .

According to Bryne et al. (2018), unhealthy dietary practices are putting South Africans at an increased risk for CVD. Whereby more than half of the youngsters (51.1%) did not take a lunch box to school and over two-thirds and more than 66% of youths consume fast foods at least three times per week and 2 in 3 learners purchase sugar-sweetened beverages at least twice a week. Leeders et al. (2018) additionally elaborate that almost one out of five adults consume a diet with a high-fat score (18.3%) and a high sugar score (19.7%), and one out of four devour an eating routine with low products of the soil vegetable score (25.6%) having smoked tobacco and 1 in (17.7%) a report being exposed to second-hand smoke daily in their homes. The mean age of initiation of consuming a diet with low fruit and the vegetable score (25.6%). Having smoked tobacco and 1 in (17.7%) a report being exposed to second- hand smoke daily in their homes. The mean age of initiation of tobacco smoking was 17.4 years 131 in 5 (21%) adolescents smoke currently in South Africa, and 6.8% of adolescents smoked their first cigarette before the age of 10 years.

Fifteen years after the first democratic elections in South Africa (SA), the country is amidst a significant wellbeing transition that is described by a fourfold weight of communicable and NCD. The NCD is emerging in both the rural and urban settings, resulting in increasing pressure on acute, disease and its associate conditions are the leading cause of death in SA after HIV/AIDS. Over 78 000 South Africans die each year from heart disease, and there are no signs of a decline in the foreseeable future. The patient's understanding of cardiovascular disease, as one of South Africa's leading lifestyle diseases, should be explored as well as the understanding of CVD risk factors and the reasons for the need for lifestyle changes (WHO, 2017).

Egan and Lackland (2017) report that South Africa, like the rest of the world, SA is managing a crisis in medical health care services in that there are too many people who now live longer with many chronic conditions. These patients present for treatment at facilities and services already overburdened. A lack of knowledge about health risks, and many unhealthy messages conveyed via commercial advertising puts the population at a serious disadvantage (Hayden, 2017). Health care professionals who provide limited, confusing, or no information to patients further complicate matters. The situation would improve if the uninformed were given useful information and practical things to do and the informed be encouraged and affirmed. The increase in chronic diseases needs to be actively addressed to promote great health wellbeing and prevent illnesses in the South African population (Manual for Health Promotion, 2018).

#### **2.7.4 Risk Factors for CVDs**

Heart disease or CVD constitutes a lot of disorders related to complex interactions between multiple risk factors. The risk factors co-morbidities that lead to the possible risk of developing CVD have been perceived for a long time. CVD occurs when arteries become narrowed by a gradual build-up. Sunkhee et al. (2016) stress that communities and primary health care service providers should recognise risks and make patients aware of these risks. There should be different methods to reduce these risks, and to reduce the effects of risky behaviour before the disease develops, as well as for those patients with existing conditions to prevent further complications. Boger, Ellis and Demail (2017), have additionally connected stress to changes in the way blood clots, which raises the risk of a heart attack or stroke. High levels of stress can increase risk factors, such as cholesterol and other unhealthy eating habits, such as eating junk food, e.g. chips and too much salt and sugar (Sala et al., 2017).

It is notable that South Africa has one of the highest rates of overweight, smoking, and drinking in the world, which are altogether major contributing factors to CVDs. Another contributing factor is lifelong job stress which has a

major impact contributing on heart health and exposes the body to undesirable persistently elevated levels of stress hormones such as cortisol and adrenaline, which puts a strain on the heart (Kilkenny et al., 2016). Christopher, Donnel, and Elosula (2018) contend that not practicing physical activity is an important risk factor for CVD, and not exercising consistently increases a person's chances of being obese, having hypertension, and developing other conditions that make cardiovascular disease almost certain.

Obesity is one of the leading risk factors for CVDs. Eating an unhealthy diet and living a sedentary life are both contributing factors to being overweight, which is characterised as having a Body Mass Index (BMI) outside the normal range (Mickerson, 2015).

Barker (2018) showed that finding a way to lose weight through lifestyle and dietary changes can assist with decreasing the danger of CVD. Taking a diet that is unhealthy is a significant risk factor for CVD so to decrease the risk, a balanced and healthy diet made up of plenty of complex carbohydrates, protein, fruits, and vegetables should be consumed, and excess fats, salts, and sugars avoided. Taking liquor should also be in moderation, or not be consumed by any means. In numerous countries, this is characterized as a maximum of 14 units of alcohol each week, with some experts suggesting half that for women (Frent & Chent, 2016).

To evaluate the genuine level of risk for a heart attack in any individual, the effect of all the risk factors present in that individual needs to be assessed. Such outright risk assessment considers the multiplication effect of risk elements to distinguish those who are at the highest risk for getting a heart attack. This suggests that the risk for a heart attack in an individual with modest levels of many risk factors can be higher than that in only one individual who has only one risk factor at a high level.

Mpe (2018) outlined that albeit South Africa has demonstrated the advantage of comprehensive tobacco control policies, there are as yet significant major challenges in lessening tobacco use in the country. Implementation of the guidelines of the tobacco control laws should be improved, and those groups, such as coloured pregnant women, with high smoking rates, need specific consideration.

Schutter, Huisman, van Rooyen, Fourie, Malan, Mels, Moss, Towers, Kruger, Viljoen, and Kruger (2016) demonstrated that South Africa has been a worldwide forerunner in adopting legislation for tobacco control because since 1994 tobacco policy developments have taken place it bans smoking in public places but allows for designated smoking areas in places like bars, taverns, and restaurants provided that they do not take up more than 25% of the venue.

### **2.7.5 Public Health Service Interventions**

NDOH of SA (2013-2017) has proclaimed mandatory salt guidelines, starting, in 2016, and a total of 6 400 will be saved alive from stroke, 4 300 from non-fatal stroke, and decrease hospitalisation costs by R300 million yearly. WHO (2018) shows that similarly, a potential SA Tax on sweet beverages would cut the number of overweight individuals by 220 000 in 3 years in, industry and not government set the trend. According to Seedat (2017) the institutional and policy interventions that have the potential to harness general wellbeing as the basis of inclusive economic development and that the huge divide of health imbalance that describes our present development trajectory, addressing the NCD epidemic could not be more urgent. The food-based dietary guidelines developed in 2001 have been used for educational purposes for the prevention of chronic NCD and food labelling is currently being revised. Essential primary health care is not well programmed to provide treatment for preventative services for NCD and SA has some best approaches to provide integrated primary health care.

WHO (2017) demonstrates that ultimately to effectively decrease the premature death rate from NCDs, is to precisely monitor the burden and the outcome of interventions. Thus, to ensure that human and social development indicators in SA are not further compromised, more funding should be distributed to extend powerful health and costing data to include NCDs. “The minister of health indicated that facilitating transparency, responsibility, regular, updated quality metrics that are promptly available and comprehensible will

enable the provincial health departments to a precise plan, budget, and assess their activities. Seedat (2017) indicates that few new institutional models may be considered to promote prevention. One is a multi-partner national health commission that engages other different sectors, including agriculture, education, trade, industry, sports, arts, and culture. Governments cannot assume that NCDs are a health problem and that the health sector can manage them all alone.

Castello et al. (2018) indicate that there should be a formation of an independent-of-government Health Promotion Foundation (HPF) and such organisations have effectively affected population wellbeing in many countries from Australia to Thailand and this (HPFs) work in a joint effort with the government, research organisations, and common society by using media campaigns, raising social awareness and offering help to families. WHO (2018) indicated that we need a priority-setting agency that assesses cost-visibility, acceptability, and achievability of a range of interventions; the UK National Institute for Health and Care Excellence (NICE) and partners in South Korea and Thailand are examples.

Mpe (2017) hypothesises that focusing on patients with numerous lifestyle risk factors by secondary prevention is another strategy, yet significantly under the best conditions, efficacious behavioural or medication interventions include complex interventions challenges. Shifts are needed to counter the marketing of calorie-dense and nutrient-poor products. Information on healthy living, targeting discretionary intake of salt and sugar as well as encouraging regular physical activity, particularly for young ladies and ladies, is required. WHO (2018) shows that responsible government implementations should establish a conducive environment in which rich and poor are engaged and empowered to make healthy choices. With few sick individuals to support, our health framework could focus on providing better-quality care consideration (Tzoulaki et al., 2016).

It is important that South Africa uses its restricted resources ideally and executes a cost-effective health-promoting intervention to stop the anticipated

pandemic of lifelong disease due to lifestyle in the face of all the other health challenges in our country (Huisman et al., 2016). Mpe (2017) reported that by strengthening district-based primary health care by implementing the integrated WHO chronic disease model of care. Progress has stopped as coronary heart disease and stroke death rates have reached a plateau in recent years and now appear to be rising. Consequently, this is an excellent time for re-examining the way to deal with the prevention and treatment of CVDs (Fritz, 2018).

WHO (2018) reported that by 2030, NCDs will represent fivefold the number of many deaths in low and middle-income countries of NCDs. The World Health Assembly has consented to aim to decrease premature death rates from cardiovascular and chronic respiratory disease, cancer, and diabetes by 25% by 2025. This '25 × 25' strategy accepts six risk factors and their social determinants WHO (2018) showed that by handling tobacco use, liquor use, salt intake, high blood pressure, raised blood glucose, diabetes, and overweight, mortality in SA could be decreased by about 20%, however, more importantly, premature disability and death could be fundamentally delayed.

There is a developing basic requirement for public health and community-based programs in the effort to fundamentally lessen the weight of hypertension and related cardiovascular disease illnesses and death rate. Effective public health programs can assume a vital role in raising awareness, and more importantly, in facilitating lifestyle changes, entry and maintenance in the health care system, and compliance with non-pharmacological as well as medication therapies (Joseph et al., 2015). Leeders et al. (2014) indicate that individuals should be educated with regards to early signs and symptoms of risk factors and CVD to enable them to seek early help to diagnose their conditions, and when treatment is started early serious chronic complications can be prevented. WHO (2017) highlighted that CVD prevention legislation on increased alcohol taxes by banning advertisements and advertising of unhealthy food can also be initiated on media networks to help reduce NCDs.

The economic improvement of a country depends on the health of its population. Addressing the (NCD) epidemic is critical to a virtuous cycle of improved public health outcomes and better financial development (Rahma et al., 2017). Pract (2018) states that reducing the premature death rate from NCDs is now on the post-2015 development plan. The gathered losses to South Africa (SA)'s gross domestic product between 2006 and 2015 from diabetes, stroke, and coronary heart disease alone are estimated to cost the country US\$1.88 billion. Employers face extra expenses in the form of high staff turnover and absenteeism in light of the fact of these conditions are not only a source of death rate but a leading cause of mortality in our working-age population.

Egan et al. (2018) demonstrate that overweight workers cost their employers 49% more in paid time off than their non-obese colleagues. Workplace wellness programmes are developing and show guarantee, but the urban poor, who are especially helpless and vulnerable, have little access to them (WHO, 2017). Schwalm et al. (2017) indicate that families of the deceased experience cataclysmic expenses, with 66% of helpless families being underinsured against burial service costs and are dependent on either a regular wage earner or a grant recipient. The NCD epidemic in SA is a significantly more prominent burden since it is happening simultaneously with an aging HIV-positive population. NDOH (2013-2017) explains the fundamental objectives of any CVD programme are to (i) effective frameworks for estimation of the CVD- related burden of illness and its common trends; (ii) estimate the levels of CVD risk, e.g. smoking, raised cholesterol, or blood pressure, in representative population samples to recognise risk factors that require quick attention; (iii) evaluate arising risk factors, e.g., diabetic, fibrinolytic and homocysteine status, that could be of significance to the population studies; (iv) evaluate customary and arising risk factors in the context of each society; and (v) develop health policies that incorporate population-based measures of CVD risk modification, and cost-effective case management



strategies for people who have clinically showed CVD (or are at high risk of developing it (NDOH 2013-2017)).

For generally low- and middle-income countries, the significant obstacle to the control of blood pressure-related diseases is the absence of appropriate primary healthcare services. There is a need to create cost-effective strategies for the diagnosis of CVD, and minimal expense lifesaving measures for all related risk factors. Although tertiary care consideration is developing, the pattern should include the optimisation of resources and avoidance of aversion of substantial interest expense, low-yield technologies. Feigin et al. (2017) state that it is trusted that the rule of the Southern African Hypertension Society published in this issue achieves its primary essential goal: to teach, the medical, nursing, pharmaceutical, and pharmacy professions on the urgent need to control hypertension in South Africa (WHO, 2017). Although Hobbs (2018) narrates that data from Sub-Saharan Africa have featured the expanding significance of non-communicable diseases in this region, countries have taken steps to develop relevant policies and programmes. CVD in this region is especially ineffectively distinguished and treated in the primary health care setting.

### **2.7.6 Self-Management and Other Strategies**

Shuwalm, Martin, Mckee, Mark, Huffman, and Yusuf ,(2017) indicated that CVD prevention ought to be pointed toward decreasing risk behavior and further developing a wellbeing-supporting environment. The strategy should focus on areas and within these, it plans out activities to get changes in attitudes, health wellbeing, and environment. The national CVD prevention strategy is centered around the factors influencing the health of the population e.g. social-financial, environmental factors, living and working conditions access to services, individual health behavior and this decides the quality of life and welfare and the development of diseases (Feigin, Norrving & Mensah, 2017).

According to the SA National Department of Health (NDoH), Strategic Plan for the Prevention and Control of Non-Communicable Diseases (2013-17) a balance between population-based alongside individual-level strategies is

much perceived in the preventing and deferring NCDs is more effective and impressively less expensive than therapy of those who become sick. Worldwide, the state supports an array of levers that include regulatory, fiscal, and legislative options (Hobbs, 2018). Castellano, Narala, Castillo, and Fuster (2018) argue that this increases individual and social responsibility for health to reduce the risk factors that endangered health. Thus, to address the rising burden of NCDs in May 2000 53<sup>rd</sup> world health gathering adopted the WHO global strategy for the prevention and control of NCDs .

The most effective strategy for CVD prevention requires policy and legislative changes that are frequently not upheld by major industrializes e.g. salt decrease in processed food, a decrease in exposure to smoking, liquor, fast food therefore is difficult to carry out. Byrne, Eksteen, and Chrismore (2017) featured that current essential stroke prevention strategies are not adequately effective there are several gaps in prevention like lack of awareness in modifying health wellbeing behavior.

Rahman et al. (2017) reported that it is significant that the physical activity of the individuals be increased, dietary patterns are improved, tobacco utilisation and time spent in an environment exposing a person to tobacco smoking be decreased, and the accessibility of preventative health care services be improved. The prevalence and treatment status of common heart conditions, such as ischaemic heart disease, heart failure, rheumatic heart disease, diseases of the heart muscle, the heart valves, and heart disease caused by hypertension is unknown in South Africa.

However, the accessible information recommends that these conditions are inadequately managed. Fritz (2018) clarify that self-management has gotten a developing consideration as an effective approach for long-term management of a long-term condition. Chronic diseases are health problems that require progressing management over numerous years. Boger et al. (2017) highlighted that self-management represents an address of a philosophical shift away from patients as “passive” recipients of treatment to enable individuals who are partners in the effective management of their health. Accordingly, for patients

to lead an excellent and high-quality life and improve risk reduction, there should be a plan or strategy in place to engage in such activities, i.e. self-management strategies. Self-management strategies are centered around assisting patients to develop self-efficacy and to carry out behaviour changes necessary to reach the desired outcome.

Tzoulaki, Elliot, Kontis, and Ezzati (2016) reported that self-management strategies include parts of participating in exercises that advance physical and mental wellbeing and psychological health, sticking to treatment or recommendations, monitoring of health status, and managing the impact of the illness. Self-management is settled in the viewpoint that most individuals with the ongoing disease manage their health without direct professional input for the vast majority of the time. Numerous patients with risk factors and NCDs struggle with self-management, and as a result experience the ill effects of insufficient control, diminished quality of life, and poor psychological well-being (Ann-Luu et al., 2017).

An important objective of self-management strategies is to empower the patient with problem-solving abilities to recognise challenges in their risk factors and conditions and generate a plan to implement a solution. This is done through playing a range of exercises that they believe and accept that can improve their health and well-being. Exercises include taking drugs, wellbeing practices, and promoting psychological well-being through relaxation (Joseph et al., 2015)''''.

The provision of help to empower patients and families is to be sure and competent in managing health conditions underpins effective self-management strategies. Self-management strategies are simple patient education or skills training intended to allow people with risk factors and NCDs to take an active part in the management of their condition (D`Angelo et al., 2018). Effective strategies involve self-monitoring of disease control, and symptoms with suitable activities, for example, changing drugs and making major lifestyles changes by stopping smoking, decreasing liquor consumption, modifying diet, losing weight, increasing exercise, and adhering to treatment.

The primary goal of such interventions is to give individuals the data and abilities that enhance their capacity to deal with their health and are intended to prevent CVD (Sukhee et al., 2016). A combination of population-wide strategies and strategies targeted at high-risk individuals are expected to decrease the cardiovascular disease burden. The extent to which one strategy should be emphasised over the other relies upon achievable effectiveness, as well as cost-effectiveness and accessibility of resources.

According to WHO (2017), the legitimacy of CVD puts a critical or a significant economic burden on low- and middle-income countries the resources available for its management in these countries are restricted due to contending health priorities. Nevertheless, it is essential to recognise that the transition to lower levels of infectious diseases and more significant levels of NCDs is now in progress, inability to act will bring large increases in avoidable CVD placing genuine pressures on the national economies. In this context, it is imperative to target the limited resources on those who are most likely to benefit. Along these lines, as in the Global Strategy for the Prevention and Control of Non- communicable Diseases one of the significant tasks for WHO and its Member states is to scale up cost-effective, integrated approaches for the prevention of CVD (WHO, 2018).

There is little controversy over the advantage of cardiovascular health, however not smoking, eating a well-balanced diet, maintaining mental well-being, taking normal exercise, and keeping active, as demonstrated in large cohort studies. These wellbeing practices also play an etiological role in other non-communicable diseases, such as malignant growth, respiratory illness, diabetes, osteoporosis, and liver disease which makes interventions to promote cost-effective ways. However, there is extensive uncertainty about the most effective ways of aiding individuals at high CVD risk to modify their behaviour.

Hobbs et al.(2018) express that there is little controversy over the advantages to cardiovascular wellbeing through not smoking, eating a well-balanced diet, maintaining mental well-being, taking regular exercise, and keeping active, as exhibited in enormous cohort studies. Which makes interventions to promote

them potentially cost-effective. However, there is considerable uncertainty about the most ideal ways of aiding individuals at high CVD risk to modify their behaviour. Diminishing cigarette smoking, body weight, blood pressure, blood cholesterol, and blood glucose all have a valuable effect on major biological cardiovascular risk factors .

Pract (2018) practices, for example as stopping smoking, taking regular physical activity, and eating a healthy diet promote health and have no known harmful effects. They additionally improve the sense of well-being and are usually more affordable to the health care system than drug therapies, which may also have adverse impacts. Castellano et al. (2017) express that while effects of drug treatment cease within a short period of discontinuation of treatment the impact of lifestyle modification if they are maintained, becomes long-standing. Decreasing smoking cigarettes, body weight, blood pressure, blood cholesterol, and blood glucose all have a beneficial impact on major biological cardiovascular risk factors .

WHO (2018) proposes that while the impact of treatment stops within a short period of the end of treatment the effect of lifestyle modification if they are maintained, they are kept up with. It is clear that intensive interventions in particular the dietary ways to stop high blood pressure are equipped of reducing salt intake and lowering blood pressure, such interventions, however, a similar author showed that it would not be easy to implement in primary care on a wide-scale long-term basis because most salt is already in food as bought.

Schwalm et al. (2017) add that decreasing salt intake might permit individuals to take anti-hypertensive treatment to stop their drugs while maintaining good blood pressure control. Further work is needed to develop more successful strategies of changing dietary behavior to diminish sodium consumption in primary care settings and population prevention programmers. Alternative public health approaches, such as reducing salt in processed foods, bread, and labeling processed food are likely to be more effective and need to be taken up by the food industry on a wide scale (Ray et al., 2017).

Leeders et al. (2018) reported firstly, there is the direct cost of the increased health care attributable to a person having heart disease, and secondly, there are indirect costs because a person with heart disease cannot be optimally productive at work or is absent from work because of the illness or premature death that the cost of heart disease in a country is twofold. This includes the cost of screening people for heart disease, or its risk factors, the actual expenses of treatment, medical expenditure of the clinic or doctor's visits, and the laboratory tests done to monitor the patient, including transport money. The treatment expenses for CVD and its risk factors vary widely among different countries. These expenses are normally substantially generic drugs of commonly used are available. The most cost-effective interventions to expenses that are normally substantially decreased CVD are those which target the population as a whole and include education through the mass media to promote a healthy diet, regular physical activity, along with legislation targeting tobacco control and decrease of salt in business food items.

Byrney et al. (2017) argue that when treating individual patients, the most cost-effective approach is the absolute risk approach where the total cardiovascular risk is determined by considering the impact of all the risk factors present in a patient. There is good proof that it is cost-effective to "combine several powerful drugs into one single tablet. This thought of a 'polypill' containing low dosages of various medications has generated much interest, with proponents arguing that given the high prevalence of CVD risk factors and the effectiveness of pharmacologic interventions such a drug combination would decrease CVD mortality by 88% (WHO, 2017).

Egan et al. (2018) showed that educating and giving of information about healthy living means providing in-depth education about the advantages of a heart-healthy diet and regular exercise. A heart-healthy diet is rich in vegetables, fruits, fibre, and whole grains and is low in salt, red and processed meats, and saturated fats. As for exercise, guidelines recommend at least 2.5 hours of moderate exercise or 75 minutes of intense exercise every week. Effective counselling generally requires multiple sessions. The risk of illnesses and death rate associated with cigarette smoking falls immediately after

stopping smoking, however, it might be >20 years, if at all, before the risk associated with smoking is completely reversed (Schwalm et al., 2017).

WHO (2017) states that about 20% of patients will give up smoking after an acute stopping, which will result in a 40% reduction in deaths rates and infarct recurrences. Those under the age of 50 years and smoking are at risk of developing CHD 10 times greater than non-smokers of the same age. Current guidelines give some advice on screening and identifying individuals with no symptoms or at risk of developing CVD. The main aims of these guidelines are to decrease the incidence of first or recurrent clinical events due to CHD, ischemic stroke, and peripheral artery disease. The main idea is on the prevention of disability and early mortality. The guidelines emphasise the significance of lifestyle changes and the use of different preventative treatment therapies in the management of risks (Feigin et al., 2017). The understanding of such risk factors is critical to the prevention of cardiovascular morbidities and mortality.

## **2.8 RECOMMENDATIONS AND CONCLUSIONS**

These studies recommended a need for the patients to manage their disease and for a lifetime hence this study on self- management strategies to a patient with risks factors for them to reduce the risks behaviour before diseases develop and those patients who have existing conditions to prevent further complications. Many studies also recommended further research to aid patients to identify and mitigating their health risks either from lifestyle or existing disease conditions by ensuring consistent messages are conveyed to the patients. It is evident through this background that there is a need for researchers to develop self-management strategies for a patient with risk factors to prevent the development of CVD`s assist them in recognising and managing the wellbeing risks either due to lifestyle or chronic conditions and to ensure that patients engage in strategies that promote physical and psychological health which lead to improved risk reduction.

## **2.9 IDENTIFIED GAPS IN THE LITERATURE**

Many studies conducted have found that there is a growing number of NCDs

which are accounting for increasing morbidity and medical costs, and this was since health workers are conveying different and confusing messages to patients on how to self-manage themselves. Some studies have been done on the prevalence of chronic diseases especially hypertension, diabetes and CVD around Limpopo rural areas but there are gaps in studies related to contributing factors and risk factors of CVD development.

## **2.10 CHAPTER SUMMARY**

In this chapter the researcher outlined the methodology which was used to review the literature and all the steps followed. The following themes emerged from the reviewed literature: the prevalence of heart diseases, dietary contributory risk factors for CVDs, background related to NCDs in South Africa, risk Factors for CVDs, public health service Interventions, self-management, and other Strategies.

## **CHAPTER 3 RESEARCH METHODOLOGY**

### **3.1 INTRODUCTION**

This chapter outline the summary of the research methodology used to answer the research questions. An intensive description of the methods and steps that were applied to accomplish the objectives of the study and to answer the research question. The overview of methodology is presented in Figure 3.1.

### **3.2 RESEARCH METHOD**

The study adopted a mixed methodology which is appropriate and implemented by quantitative and qualitative methods. The use of mixed



method research assisted the researcher to get a comprehensive understanding of the phenomenon. In mixed method, data collection and analysis were done in one strand and thereafter the results of qualitative and quantitative are integrated. Moreover in these method the researcher had two data bases separately, which will be analysed,interpreted and merged together. For the purpose of this study the use of mixed method was appropriate which involved collecting, analysing and integrating qualitative and quantitative data on self-management strategies to development of CVDs from Hypertension and Diabetes Mellitus. This approach provided a better understanding of the research problem, and some benefits in the study.

### **The benefits of Mixed Method**

- Gives strengths that offset the weaknesses of both quantitative and qualitative research,  
Provides a more complete and comprehensive understanding of the research problem than either quantitative or qualitative approaches alone.
- Provides an approach for developing better, more setting explicit instruments

### **3.1 RESEARCH DESIGN**

The study adopted the mixed-method sequential exploratory design. The exploratory sequential research design involved a two-strand project in which the researcher collected qualitative data in the first strand, analyses the data, and then use the results to plan (or build on) the quantitative strand. This explanatory sequential design typically involves two phases: (1) an initial qualitative instrument phase, followed by (2) a quantitative data collection phase, in which the quantitative phase builds directly on the results from the qualitative phase. In this way, the quantitative results are explained in more detail through the qualitative data. The self-management strategies for prevention of risk factors related to the development of CVDs findings for instrument data about costs will be explored further with qualitative one-to-one interviews to better understand how the personal experiences of individuals match up to the instrument results. This kind of study illustrates the use of mixed methods to explain qualitatively how the quantitative mechanisms might work. The advantage of this design is that the steps fall into clear, separate stages. The design is easy to describe and the results easy to report.

#### **3.1.1 Research site**

The study was conducted in the Limpopo Province in the Molepo area, which falls under the Capricorn District of the Polokwane municipality.

Limpopo Province is on the Northern side of South Africa. It is named after the Limpopo River, which divides South Africa and neighboring Zimbabwe. Limpopo Province is the South African province with the highest level of poverty, with 78.9% of the population living beneath the national poverty line. In 2015, the high blood pressure prevalence was 41% which was importantly associated with age and marital status – prevalence and related risk factors amongst adults in a rural community of Limpopo province. Unemployment in Limpopo Province is predicted strongly and positively among females and is largely attributed to gender inequality. Cultural beliefs and norms still play a major role in this province and have a bearing on non-communicable disease acquisition and management

### **3.1.1.1 The Molepo area**

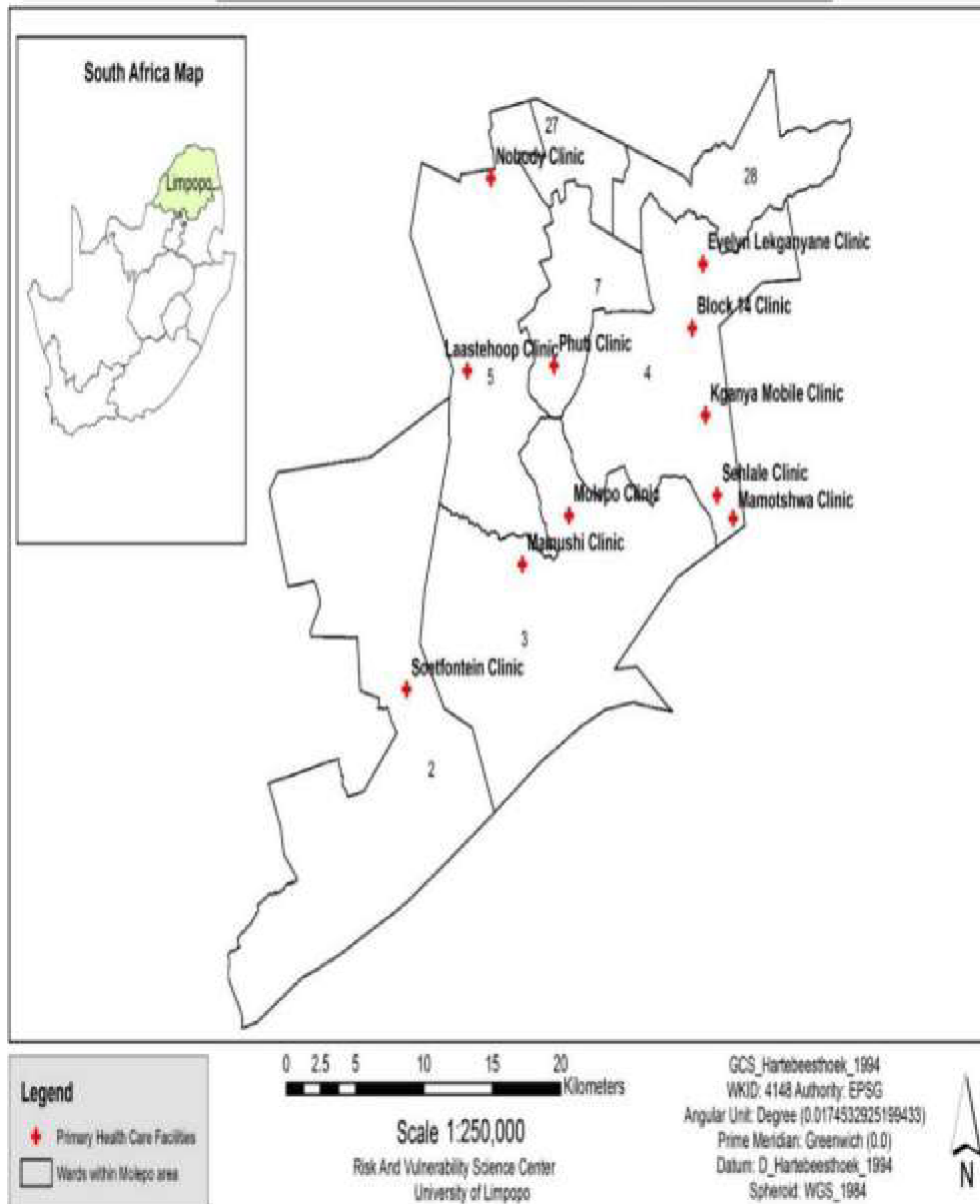
The Molepo area consists of villages and clinics. Selected clinics from the Molepo area were the Evelyn Lekganyane clinic, which is one of the busiest facilities because is situated at the head office of Zion Christian Church one of the largest churches in South Africa, so this clinic serves all the population of South Africa visiting their church consulting the facility with all conditions, the Nobody clinic, the Mamushi clinic and the Soetfontein clinic. The above facilities are primary health care facilities referring patients to Mankweng tertiary hospital (Limpopo Province) and they are providing primary health care comprising of promotion, preventive and curative services at the community level. The criteria for selecting and including the 4 facilities were the following: Clinics have the highest statistics of patients with hypertension, diabetes risk factors and CVD. The sites are close to the University of Limpopo which is conducting the study.

previous study by Ntuli et al., (2015), shows a high prevalence of CVDs in individuals who are 45 years and above in Ga-Dikgale, which is a rural area adjacent to the current study site which is also rural. The current study, therefore, seeks to provide comparative data on CVDs in rural areas .

### **3.1.1.2 University of Limpopo**

The University of Limpopo is situated about 30km east of the Polokwane city of the Limpopo Province on a farm called Turfloop along the R71 road to Tzaneen. It is also about 20 km from the Molepo area. The university was formed in 2005, on 1<sup>st</sup> January by the merger of the former University of the North and Medical University of South Africa. It has a population of about 15 000 – 19 999.

### Primary Health Facilities within Molepo Area in Limpopo Province



### 3.1.2 Population and Sampling

The population is defined as the entire collection of participants that are of interest to the researcher (Burns & Grove, 2014). Furthermore, the population is explained as people or objects known to have similar characteristics in a certain geographical area (Jacqueline, Guarte & Barrios, 2017). In this study, the study population were patients with risk factors, diagnosed with hypertension and diabetes mellitus at

the Evelyn Lekganyane clinic, the Mamushi clinic, the Nobody clinic, and the Soetfontein clinic in the Molepo local area. The average population for this study was 2610 patients with risk factors and hypertension and diabetic Mellitus.

#### *3.1.2.1 Inclusion criteria*

For both Qualitative and Quantitative research the inclusion criteria were based on the following:

Inclusion criteria are characteristics that the prospective subjects must have if they are to be included in the study (Grove, Gray & Burns, 2015) All patients with risk factors or diagnosed with hypertension and diabetic Mellitus at the Evelyn Lekganyane clinic, the Nobody clinic, the Mamushi clinic, and the Soetfontein clinic were included in this study. Only those patients on treatment for six months were included in the study given so that they can give information based on experience.

#### *3.3.2.2 Exclusion criteria*

Grove, Gray and Burns (2015) define exclusion criteria as those characteristics that disqualify prospective subjects from inclusion in the study. For the qualitative portion of this study, the exclusion criteria will include the following:

- All the patients that are legible to participate in the study but refuse to sign the consent form to participate.
- All patients who are legible to take part however are not visiting the clinic on the day of data collection.

### **3.3.3 Qualitative Strand of the Study**

The first part of this study was qualitative approach which enabled the researcher to obtain rich, in-depth data about real-life situation on self-management strategies to prevent CVD development. This is because the qualitative facts directed the quantitative portion of the study (Creswell, 2014). Due to the the dissimilar findings of the results for clarity purposes quantitative strand was followed where a non-laboratory tool which is called inter-heart was used to assess the participants that are having risk factors

for CVD development in order to get more clear picture of the findings.

### *Sampling*

Webster (2016) explains sampling as the technique of selecting a suitable sample or a representative part of a population to determine the characteristics of the whole population. Sampling is the process of choosing a portion of the population to represent the entire population (LoBiondo-Wood & Haber, 2014).

Allison (2015) defines purposive sampling as a non-probability, judgemental, selective, or subjective sample that is selected based on characteristics of a population and the objectives of the study. Homogenous purposive sampling is used when the researcher uses participants with the same characteristics (Allison, 2015). This will specify the characteristics of the population of interest and then locates individual who match these characteristics

#### *3.3.3.1.1 The sampling of the clinics*

The Molepo local area consists of 8 clinics, purposive sampling of clinics was done in the clinics with high statistics of a patient presenting risk factors, hypertension, diabetic Mellitus and other chronic diseases at their facilities. Four clinics sampled were Evelyn Lekganyane clinic, the Nobody clinic, the Mamushi clinics and the Soetfontein clinic because of their high statistics of patients with risk factors, hypertension and diabetic mellitus.

#### *3.3.3.1.2 The sampling of the patients*

Non-probability, homogenous purposive sampling was done to patients who will be visiting the clinic on that particular day and also those who have risk factors, diagnosed with hypertension and diabetic Mellitus at four clinics in the Molepo local area, which is the Evelyn Lekganyane clinic, the Nobody clinic, the Mamushi clinic and the Soetfontein clinic will be sampled depending on the population. Three hundred and forty-seven patients from four clinics will be selected to participate to make it as representative of the overall population as possible.

#### *3.3.3.1.3 Sample size*

The sample size for the qualitative strand was not be predetermined but determined by data saturation when no new information emerges.

#### 3.3.3.1.4 Inclusion criteria

Inclusion criteria are characteristics that the prospective subjects have if they are to be included in the study (Grove, Gray & Burns, 2015). All patients with risk factors, diagnosed with hypertension and diabetic Mellitus at the Evelyn Lekganyane clinic, the Nobody clinic, the Mamushi clinic and the Soetfontein clinic were included in this study. Only those patients on treatment for six months were included in the study given so that they can provide information based on experience.

#### 3.3.3.1.5 Exclusion criteria

Grove, Gray and Burns (2015) define exclusion criteria as those characteristics that disqualify prospective subjects from inclusion in the study. For the qualitative portion of this study, the exclusion criteria included the following:

- All the patients that are legible to participate in the study but refuse to sign the consent form to participate.
- All patients who are legible to participate but are not visiting the clinic that day.

#### 3.3.3.2 *Pilot Study*

A pilot study is a small-scale preliminary study conducted to evaluate the feasibility, time, costs, and adverse events and improve upon the study design before the performance of a full-scale research study (Joubert & Ehrlich, 2017). The researcher conducted a pilot study using both qualitative and quantitative methods in preparation for the main study to identify flaws and make modifications to the data collection instruments that will be utilised in the study. The advantage of a pilot study is that the full-scale study can be conducted in such that has been arranged or planned and should some components be altered. The participants and respondents involved in the pilot study were not be included in the main study.



The pilot study was conducted at the Molepo area local clinics, at the clinic that does not form part of the main study. The clinics included in the pilot study was Block 14 and Sehlale clinic. Five participants from each clinic were interviewed one on one. The feasibility of the key steps in the main study was assessed e.g., recruitment rate, retention levels and eligibility criteria. In addition, it also helped in assessing the quality of the data collection tool, whether any restructuring is needed. Assessing problems with time and resources that may occur during the main study will take time to be completed. The participants involved during the pilot study did not form part of the main study. The researcher was able to rectify the questionnaire for its faults before conducting the main study.

The findings of the pilot study were summarised as follows:

A pilot study was conducted at the two clinics which is Sehlale and Block 14 to determine the feasibility of the study. It also created an opportunity for the researcher to refine and improve the interview guide and her interviewing technique. Twelve patients, two smoking, three obese and seven on hypertension and diabetic mellitus treatment since 2018 were approached to conduct the pilot study. The clinics that participated in the pilot study were excluded in the main study to avoid bias as they would already know the questions to be asked. The results of the pilot study indicated the need for the researcher to avoid asking leading questions, as well as the need for more probing to explore the contributing factors of CVD. Twelve patients, 2 smoking, 3 obese and 7 hypertensive and diabetic Mellitus patients on treatment consented to participate in the study voluntarily.

**Table 3.1. Themes and sub-themes of the pilot study**

Themes	Sub-themes
1. Description of self-management strategies used by patients with Hypertension and diabetic	1.1 Analogous (similar) description of what must be avoided when living with hypertension and diabetic mellitus

	<p>1.2 Adherence to treatment is viewed as an important aspect of self-management when living with risk factors</p> <p>1.3 Adherence to a healthy lifestyle is viewed as an important aspect of self-management when living with risk factors</p>
<p>2. Knowledge related to self-management and other related factors when living with CVDs</p>	<p>2.1 Existence as opposed to the lack of knowledge related to the onset of the CVD by patients</p> <p>2.2 Existence of knowledge related lack of knowledge related to "self-management strategies that could be used by CVD patients</p> <p>2.3 Existence of knowledge related to the causes/contributory factors of CVDs</p> <p>2.4 Existence versus lack of knowledge related to the relationship amongst the CVDs</p> <p>2.5 Existence versus lack of "knowledge related to treatment and lifestyle to maintain when living with CVDs"</p>
<p>3. Challenges experienced by patients with hypertension and diabetic in managing the disease</p>	<p>3.1 Lack of adherence to treatment and healthy lifestyle adherence to treatment and a solid way of life by patients living with hypertension and diabetic mellitus viewed as problematic</p>

	<p>3.2 An explanation that difficulties experienced affect prognosis when living with hypertension and diabetic</p> <p>3.3 An outline of the symptoms experienced by patients with CVDs viewed as a challenge</p>
<p>4. Suggestions related to self-management strategies that could be maintained by patients living with hypertension and diabetic</p>	<p>4.1 A suggestion that adherence to treatment and a healthy lifestyle must be maintained to stabilise hypertension and diabetic</p> <p>4.2 Regular medical check-ups encouraged</p> <p>4.3 A suggestion that patients living with hypertension and diabetic must avoid being exposed to stress</p>

### 3.3.3.3 Data Collection

Data were collected using self-developed, semi-structured interviews with a guide in a private room at each clinic until data saturation is reached (Botma, Greeff, Mulaudzi & Wright, 2016). The structured questions (open-ended questions) were followed by probing questions to create a platform where patients are allowed to clarify areas not clear to the researcher during the interview sessions. In this study, data were collected from patients living with or previously treated for hypertension and diabetes mellitus. The central question asked to all participants were: **Can you briefly describe what you are doing to reduce development of CVDs?** A voice recorder was utilised to record the interview sessions and its utilisation was explained to the participants. Field notes were taken along with the recording to allow the researcher to collect rich data that is dependable. A checklist will be used during qualitative data collection to evaluate the patients' clinic documents.

#### 3.3.3.3.1 Preparation for data collection

De Vos et al. (2014) indicated that, it is important to gain permission from the relevant authority to begin research in a chosen field. Ethical clearance to conduct the study was obtained in writing from Turfloop Research Ethics Committee ethical number TREC/318/2019:PG permission to conduct the study was also granted by the permission letters to collect data from Capricorn District Office for Primary Health care and the Limpopo Provincial Department of Health Ethics number TREC/318/2019:PG.

Permission was, therefore, granted by the area managers of the Molepo local area clinics and the clinic nursing managers. The participants permitted the researcher to proceed with the arrangements for the interview sessions that were to follow the preparation phase. The researcher identified potential participants and contacted them at the clinic.

The aim and objectives of the study, the type of participants to be interviewed and how the interviews were to be conducted were explained to the nursing service manager. The nursing service manager then introduced the researcher to the clinic managers and the clinic staff and explained the purpose of the study, with the help of the manager, a well-ventilated room where there was no noise or other disturbances was identified as suitable to conduct the interview sessions. The patients who met the criteria set out for this study were identified through the clinic appointment list and files for the patients who were on treatment for the past six months and also had risk factors. The date, time, and place of the interviews were then arranged.

#### □ **Information session**

The information sessions were conducted a few days before the day of discussion with the participants in the semi-structured interviews and also on the days that the interviews took place. The researcher outlined issues related to what is expected of the participants during the interviews, clarify the aim, objectives, and importance of the study together with the central question to be asked as well as the questions in the interview guide during the information .

session. The time frame for interviews was affirmed by the researcher with the managers in each clinic.

The researcher clarified the informed consent forms to all participants who consented to partake in the study. The use of voice recorder was also clarified. The participants were guaranteed their privacy and the confidentiality of their information which included protecting their identity and accessing the provided information by unauthorised personnel. The researcher also disclosed to the participants that they can pull out from the study at any time if they wish to do so without being ill-treated, but the information they would have given at the time of withdrawal will be used for study purposes.

#### □ ***Conducting the structured interview***

At the start of each interview session, the researcher welcomed the participants with warm greetings. The researcher began by introducing themselves to the participant and guaranteed the participant that the consent to lead or conduct the interview session had been granted by the involved personnel and presented them with all the letters which were granted as proof. The aim, goals and significance of the study were clarified and the participant's anonymity was ensured, as names were not used but alphabets instead and the recording process was explained. The confidentiality of the information was also reinforced.

The interview sessions commenced after the participants had signed informed consent forms. The research environment was conducive for interviews; quiet, relaxed, and well-ventilated venue and had no disturbances, and that liaised with de Vos et al. (2014) when saying that the interview setting ought to give protection, privacy, comfortable and is non-threatening environment which is effectively available. No obstructions experienced during the interviews; the participants were able to clarify how they interpret and consume their prescriptions. The researcher avoided personal questions that would have made the participants feel uncomfortable and in this manner ruined the yielding of more information (Hennink et al., 2015). The researcher was able to assemble additional data from the semi-structured interviews on how patients

with risk factors, hypertension diabetes mellitus prevent themselves to develop CVD in Molepo clinics. All the interview sessions were recorded with the voice recorder which collected a great deal of data. The researcher additionally took field notes to supplement the voice recorder since the voice recorder could not record the non-verbal communication cues. The central question was posed to the participant at the beginning of the interview and it was followed by follow-up questions as illustrated in the interview guide. The researcher did not rush the participants while responding to the questions and therefore they were relaxed. The following communication techniques were utilized by the researcher during the interviewing sessions: listening skills (probing, clarification, summarisation, reflection) and observation.

Kabir (2017) recommend that good listening skills for researcher which help to acquire quality information during an interview. The researcher kept up good listening skills since good listening skills empower the researcher to draw additional data from participants, have more understanding of the problem studied, and encourage the participants to talk. Therefore, the researcher was able to maintain continuous, amicable communication with the participants, and obtained clarity and meaning about the problem studied.

#### □ **Probing**

As indicated by Zikmund and Babin (2014), probing is an interview technique that tries to draw deeper and more explanations from discussions. More probing was done depending on the participants' responses to obtain a greater depth of information as the participants were persuaded to give more information about their experiences on how they manage themselves to prevent CVDs and this was done in line with Rubin and Bellamy (2016) asserting that probing for greater depth is a priority in interviews. The purpose of probing was to deepen the understanding on the researcher's part by asking comprehensive questions (Flick,2016). The participants were able to elaborate more on how theyinterpret and consume prescribed medication and the researcher maintained a good atmosphere in the conversations to keep the participants relaxed while getting more information.

□ **Clarification**

According to Munden (2016), clarification is utilized to clear up confusing, unclear, or misunderstood information. The researcher used clarification whenever the provided statements by the participants were not clear with more elaboration needed. Clarification was also used to check whether the provided information is right. This was done following Cormier, Nurius, and Osborn (2013) who expressed that clarification might be utilized to make the participant's statement explicit and to affirm the accuracy of the researcher's perceptions about the statement. The clarification additionally assisted the researcher to translate what the participants have said into a more "familiar language so that it could be more understandable and also assisted the participants to restructure their perceptual field(Kadushin & Kadushin,2013).

□ **Summarisation**

Munden (2016) clarifies summarisation as restating the information given by the participants. The researcher used summarisation at various points of the interview to structure the interview, helping with the transition and guaranteeing that the data collected is accurate and complete. Participants were able to add more information where they thought the information they have given was as yet insufficient.

□ **Reflection**

This is a process of reflecting on something important that the participants have said to get them to expand on that idea (de Vos et al., 2014). Munden (2016) also defines reflection as repeating something that the participant has just said to obtain more specific information. The researcher repeated some information given by the participants to confirm what they meant about the provided statements.

□ **Observation**

Cohen, Manion and Morrison (2016) refer to observation as looking and taking note systematically of participants' behaviours. The researcher used observation to interpret and validate participants' non-verbal conduct. Some participants were feeling ashamed as they have to tell the truth

about` manipulating the way they were supposed to take the medication.

### **3.7.2 Post Interview Phase**

The semi-structured interviews were conducted by the researcher for a period of 4 months (from December 2019 to March 2020). Each interview lasted 45 minutes to 1 hour. The researcher expressed gratitude toward the participants and reminded them about returning to them should a need emerge. The participants concurred and did not have any problems. The researcher assured the participants that arrangements will be made with the clinic managers so that they could get feedback and for attending the self-management activities.

#### *3.3.3.4 Qualitative Data Analysis*

The collected data was transcribed and translated to English before being analysed. The researcher adopted the following Tesch's eight steps, which were used to analyse qualitative data (Creswell, 2014).

- The researcher got a sense of the whole study. Read all the transcriptions carefully, and perhaps jot down some ideas as they come to mind while reading.
- The researcher then chose one document (i.e. one interview, the most interesting one, the shortest, the one on the top of the pile) and go through it, asking what this is about? The researcher didn't think about the substance of the information but rather think about the meaning. Thoughts were written in the margin. Once this task has been completed for several participants, a list of all topics were compiled. Similar topics were clustered together. These topics were formed into columns, perhaps arranged as major, unique, and leftover topics.
- These topics were then be taken back to the data and the topics abbreviated as codes. The codes were written next to the appropriate segments of the text.
- This preliminary organizing scheme was used to see if new categories and codes emerge.
- The most descriptive wording for each topic was found and turned into



categories.

- Ways of reducing the total list of categories were by grouping topics that relate to each other, and lines drawn between categories to show interrelationships.
  - A final decision was made about the abbreviations for each category and the codes alphabetized.
- The data material belonging to each category was assembled in one place and the preliminary analysis.

### 3.3.3.5 *Trustworthiness of the study*

Trustworthiness refers to a demonstration of the evidence for the results reported is sound and the argument made based on the results is strong by maintaining high credibility, dependability, confirmability, and transferability (Polit & Beck, 2015).

#### ▪ ***Credibility***

Grove et al. (2015) indicate that credibility is the confidence in the truth of the data and interpretation of the data. Credibility seeks to ensure that the study measures or tests what it is intended to. In this study, the truth-value is that questioning will be conducted on the prevention of CVDs with patients who have risk factors and have been treated for hypertension and diabetes mellitus. The researcher will make sure that participants sign the consent forms after the study has been explained to them. The researcher compiled a report of the findings of the study

#### ▪ ***Confirmability***

According to Grove et al. (2015), confirmability refers to steps that ensure the research findings are the result of the experiences consequence of the encounters. As well as thought of the informant rather than the characteristics and preferences of the researcher rather than the attributes and inclinations of the analyst. The researcher will do an audit trial to ensure that the conclusions, interpretations, and recommendations can be traced to their source,

review preliminary to guarantee that the ends, understandings, and proposals can be followed to their source, which is what the participants have said.

#### □ **Transferability**

Transferability refers to the degree to which the findings can be applied in another context or with other participants (Creswell, 2014). In this study, the researcher ensures transferability through a clear description of the qualitative research methodology used, which includes research design, population, “sampling method, data collection method and analysis of data. Non-probability, purposive sampling will be used to select the public clinics and the participants for the semi-structured, one-on-one interviews using an interview guide.

#### □ **Dependability**

Creswell (2014) refers to dependability as the in-depth methodological description, which allows the study to be repeated. In this study, the supervisor did an inquiry audit by structuring the data and using utilizing supporting documents like field notes and voice recordings.

### **3.3.3.6 Summary of Qualitative findings**

Qualitative findings indicated that the patients don't have knowledge related to self- management and other related factors when living with CVDs and also they are having challenges in managing the disease like hypertension and diabetes so these findings necessitates the quantitative study to find out if the patients are not at risk of developing CVD and inter-heart tool will used to assess the risk.

### **3.3.4 Quantitative Strand of the Study**

The quantitative strand of the study is the second part of the study. In this strand data collection was guided by the qualitative results which were used to determine the data collection tool. Due to different qualitative findings that explains several defense mechanisms used as a way of preventing or

managing CVD and risk factors, in patients with chronic conditions including hypertension and diabetes- mellitus. Interheart tool was used in this phase to assess if they are at risk of developing CVD.

#### *3.3.4.1 Sampling*

Sampling is a process of selecting a portion of the designated population to represent the entire population (Grove et al, 2015). A sample comprises elements or subsets of a population for actual inclusion in the study (De Vos, Strydom, Fouche, & Delpont, 2014).

##### *3.3.4.1.1 A Sampling of the clinics*

The Molepo local area clinics were selected to participate in this study, out of 8 clinics 4 clinics were sampled to participate in the study. The clinics were sampled depending on the area which has the highest statistics for patients with risk factors, hypertension and diabetes. The clinics include the Evelyn Lekganyane, Nobody clinic, Mamushi and Soetfontein clinic. These clinics have the highest statistics and this exposes the patients to high risks of developing CVDs.

##### *3.3.4.1.2 A sampling of the patients*

Simple random sampling was utilised to select participants, attending the clinic that day diagnosed with hypertension, diabetic mellitus and with risk factors were randomly selected. Simple random sampling ensures that each individual in the population has an equal chance of being selected in the sample (Babbie & Mouton, 2017). Clinic appointment lists were used to identify patients with risk factors and diagnosed with hypertension and diabetes mellitus from the Evelyn Lekganyane clinic, the Mamushi clinic, the Nobody clinic, and the Soetfontein clinic. The patients at the clinic during the sampling period were randomly selected using a systematic technique. The researcher assigned a unique number to each participant in the population. A table of random numbers was then be used to select the participants for the sample.

##### *3.3.4.1.3 The sample size*

The sample size in all four clinics was calculated using the Taro Yamane formula outlined by the department of sociology and criminal justice Taro Yamane (2017). Simplified formula for proportion.

“(Taro Yamane)

$$n = \frac{N}{1 + Ne^2}$$

n - the sample size

N - the population size

e - the acceptable sampling error

\*95% confidence level and p=0.5 are assumed

The Yamane (1967) mathematical formula was used to calculate the sample size in the study defined.

**Table : Sample size**

Name of clinic	Population	Sample proportion
Evelyn Lekganyane clinic	1200	160
Mamushi clinic	400	53
Soetfontein clinic	360	48
Nobody clinic	650	86
Total	2610	347

#### 3.3.4.1.4 Inclusion criteria

All patients in the selected clinics with risk-related factors and on treatment for Hypertension and diabetic Mellitus for six months or more participated in the study. The selected clinics from the Molepo area are the Evelyn Lekganyane clinic, the Nobody clinic, the Mamushi clinic and the Soetfontein clinic.

#### 3.3.4.1.5 Exclusion criteria

For the quantitative portion of this study, the exclusion criteria include the following:

- Patients not diagnosed with hypertension and diabetes will not be included in the study.
- Patients who are legible to participate but sign who refuse to sign the

consent forms.

#### *3.3.4.2 Pre-test study process for quantitative study*

A pre-test study was conducted at the Molepo local area clinics as they are not part of the main study. The clinics to be included in the pre-test study were at

the Sehlale clinic and Block 14 clinics. In this pre-test study, 34 participants from each clinic were given a self-administered questionnaire to complete. The feasibility of the key steps in the main study was assessed e.g., recruitment rate, retention levels, and eligibility criteria. In addition, it assisted in assessing the quality of the data collection tool, if it somehow happened to require restructuring. Assessing problems with time and resources that may occur during the main study to be completed. The respondents involved during the pre-test study did not form part of the main study in all four clinics.

#### *3.3.4.3 Quantitative data collection*

Quantitative data collection results were guided by the outcomes of a qualitative strand in Phase 1. The quantitative data collection encompassed the gathering of numeric data with the use of questionnaires to obtain primary data from individuals (Hair, Celsi, Money, Samouel & Page, 2014). A structured questionnaire is a formal list of questions formulated in such a way that the facts were gathered in a pre-set order (Gupta & Gupta, 2014). A non-laboratory inter-heart tool questionnaire was used guided by Phase 1 the results indicate that most participants define different self-management strategies used when living with risk factors including hypertension and diabetes-mellitus described (physical activity, eating a healthy balanced diet, drinking a lot of water, interheart was adopted to assess if the participants are not at risk of developing CVDs.

#### *3.3.4.4 Data Analysis*

After the collection of data analysis was carried out. Polit and Beck (2015) outline data analysis as reduction, organizing, and giving meaning to collected data. The quantitative data were analysed using Statistical Package for the Social Sciences (SPSS), version 25 with the assistance of the university Biostatistician. Data were organised, summarised, and presented using frequency distributions, percentages, graphs, means, and standard deviations. The Chi-square and contingency table were used to measure and test if there are any relationships between variables. A correlation coefficient and contingency table, as measures of relationship, were done to determine the nature and degree of the connection between variables.

### 3.3.4.4 *Validity*

#### 3.3.4.4.1 *Internal validity*

Internal validity was considered in this study. Internal validity refers to the determination of whether a causal relationship exists between one or more independent variables or to gauge how strong the research methods are (Grove et al., 2015). The researcher made sure that precautions are used in the selection of the participants to achieve a representative sample. The independent variable as opposed to an extraneous variable, by ensuring that the researcher determined how confidently can be concluded that the change in the dependent variables was solely by the independent variable as opposed to an extraneous variable, by ensuring that precautionary measures are applied to achieve a representative sample. The researcher ensured that the participants are those with risk factors for CVD development after screening.

#### 3.3.4.4.2 *External validity*

External validity refers to the capacity of the study results to be generalized, which is particularly threatened if places or times are poorly chosen (Grove et al., 2015). The researcher generalized the population, subsequently draw a sample from that population, that the change in the dependent variables are solemnly conducted the research and finally generalize the results back to the original population. This means that after the strategies are developed, the researcher used the non-laboratory questionnaire which is called the inter-heart tool to assess the risk of developing CVDs to the patient with risk factors.

#### 3.3.4.4.3 *Face validity*

Face validity is when a particular empirical measure may or may not conform to common agreements concerning a particular concept (Polit & Beck, 2015). Face validity will be ensured by giving the questionnaire to the supervisors, peers, and biostatisticians to review before piloting with the instrument. This exercise helped the researcher to determine the readability and simplicity of the content.



#### 3.3.4.5.4 Content validity

Content validity is the degree to which the instrument has an appropriate number of items for the aspect being measured and adequately covers the aspect domain (Polit & Beck, 2015). Content validity of an instrument is concerned with the issue of whether the major subjects of the phenomena that are being measured are incorporated into the instrument. To guarantee content validity, a literature review was ensured, and supervisors and biostatisticians were given the questionnaire to determine if the instrument will cover all aspects under study.

#### 3.3.4.5 *Reliability*

Reliability is defined as the quality of measurement method that recommends that similar data would have been gathered each time in repeated observations of the same phenomenon (Polit & Beck, 2015). Reliability in this study will be maintained by ensuring that a new instrument is not designed, as the existing one from the pilot study will be used.

### **3.4 BIAS**

Polit and Beck (2015) describe bias as is any tendency that ensures that the study does not threaten the ability of the participants to reveal the truth. More importantly, the it also ensures that the researcher does not influence the results thus producing distortion or error in the study results. In this study, bias was avoided by using simple random sampling to ensure that all the participants have equal chance to participate. The researcher also used the language spoken are and understood by the patients.

### **3.5 ETHICAL CONSIDERATIONS**

The following ethical considerations will be adhered to:

#### **3.5.1 Ethical Clearance**

Ethical approval and clearance from the Turboprop Research and Ethics Committee(TREC) were obtained by the researcher before the commencement of the study.

### **3.5.2 Permission to Conduct the Study**

Permission was obtained by the researcher to access the Mole area clinics to collect data from the Department of Health Limpopo, the Health District Manager Capricon, and the nurse managers from the respective clinics.

### **3.5.3 Anonymity**

The researcher ensured anonymity by guaranteeing that the participants cannot be distinguished with names, rather the researcher used numbers as participant identifiers so that their responses cannot be linked to them (Babbie, 2013). Participants were additionally informed that their names will not show up anywhere in the study. The participants were also informed that their names will not appear anywhere in the study.

### **3.5.4 Confidentiality**

Confidentiality was maintained by the researcher by not disclosing any of the participants' information that can link the information to the participants, thus protecting the participants' privacy and dignity (Grove et al., 2015).

### **3.5.5 Informed Consent**

A full description of the study was explained by the researcher to all the participants. The purpose and benefits of the study were also laid out. The participants were allowed an opportunity to choose whether to participate in the study or not, by signing a consent form. The participants were informed that they can withdraw from participating in the study at any time, without any consequences (Polit & Beck, 2015).

### **3.5.6 Right to Privacy**

Privacy implies that participants' information, whether it be spoken, written or electronic, that can identify the participants, must be kept private (Polit & Beck, 2015). In this study, the researcher ensured privacy by making sure that the participants' information is kept private and that no unauthorised person can have access to the information and participant identifiers.

### **3.5.7 Principle of non-maleficence**

The principle of non-maleficence states that the researcher must act in a specific way to elude unnecessary harm or injury (Groves et al., 2015). According to Polit and Beck (2015), maleficence means harmful. The principle of non-maleficence refers to not harming and requires researchers not to harm the participants. The principle of non-maleficence was ensured by ensuring that no practice opposes the welfare of any research participant intentionally, through lack of knowledge or negligence. In this study, the principle of non-maleficence was ensured by ensuring that the participants are interviewed in a safe environment and that participants who need to take medication before the data collection sessions will be allowed to do so during the interview.

### **3.5.8 Principle of beneficence**

According to de Vos et al. (2014), beneficence is an obligation to maximise possible benefits while decreasing possible harm. The principle implies that participants were attended to in a way that avoids any possible harm, physically and emotionally. The researcher explained the advantages of the study and how the findings may benefit the nursing profession.

### **3.5.9 Autonomy and Confidentiality**

The researcher fully explained the participants' rights to them. Confidentiality was ensured as only the researcher and study leader had access to the data collected. Thus, to ensure fair treatment and protection from discomfort, the researcher ensured that all participants are treated fairly and equally and are not discriminated against on the grounds of race or gender, related to the diagnosis (Polit & Beck, 2015). The researcher also ensured that all participants

do not experience any discomfort, such as fatigue or emotional discomfort if they do, the interview will be stopped and patients referred for counseling by the researcher at the various research sites (Burns & Grove, 2015).

### **3.6 CHAPTER SUMMARY**

Chapter three of the study elaborates the research methodology which guided the study. The mixed-method approach with the exploratory design was applied in accomplishing the aim of the study. Research population and sampling, study site, qualitative and quantitative strand, ethical considerations, and bias are discussed .

## **CHAPTER 4**

### **PRESENTATION, INTERPRETATION, AND DISCUSSION OF FINDINGS**

#### **4.1 INTRODUCTION**

The last chapter discussed the research methodology which guided the study. As was followed in this study, the purpose of the study in both the qualitative and quantitative strands was explained to participants and respondents respectively. Before the collection of data verbal and written consent was obtained from participants and respondents. Data were collected using self-developed, interviews. The purpose of the study was to prevent risk factors among people living with chronic conditions and related to the development of CVD and implement self-management strategies. This chapter presents, interpret and discuss merged findings from both qualitative and quantitative strands. The individual semi-structured in-depth interviews were conducted with 43 participants and 347 respondents completed the questionnaires.

#### **4.2 DATA ANALYSIS**

Eight steps of Tesch's open coding of qualitative data analysis method by Creswell (2014) was used to analyse data that were collected during individual semi-structured in-depth interviews as outlined in the research methodology chapter. Data was also submitted to an independent coder who also used 8 steps of Tesch's open coding method of qualitative data analysis as described by Creswell (2014). An agreement meeting was set between the researcher and the independent coder to discuss and agree on final themes and sub- themes based on the ones which emerged when analysing independently. Data collected through questionnaires were analysed using SPSS with the assistance of a Biostatistician. Table 4.1. Depicts the final themes and sub- themes which were agreed upon by the researcher and independent coder which serves as the findings of the study.

#### **4.2 RESEARCH METHODOLOGY APPROACH**

Phase 1 of the study addressed Objective 1 and Objective 2, where the first objective was to explore the self-management strategies used by patients

with risk factors related to preventing CVD. The second objective was to describe the practices and self-management strategies used by patients with risk factors to reduce the development of CVD. The third objective was to describe the self-management strategies needed for patients with risk factors for the prevention of CVD. A qualitative strands approach was used to achieve the three objectives, then the quantitative strand was guided by the results of qualitative strands during Phase 2 of the study. The results indicated that there are different self-management strategies used when living with risk factors including hypertension and diabetes-mellitus described (physical activity, eating a healthy balanced diet, drinking a lot of water, etc.

The fourth objective was to develop self-management strategies for patients with risk factors from the selected clinics in the Molepo area to reinforce ongoing self-management support the development process was guided by Orem's theory of nursing. The researcher implemented the developed support strategies in Phase 3 for patients with risk factors to reinforce ongoing self-management support.

#### **4.3 PRESENTATION AND INTERPRETATION OF FINDINGS FOR QUALITATIVE STRAND**

The results of the participants are presented and relevant literature to support the findings is described. The findings of this study are discussed based on the themes and the sub-themes that have emerged during data analysis based on the individual semi-structured interviews conducted with 43 participants. The main objective of the chapter is to develop self-management strategies for patients with risk factors from the selected clinics in the Molepo area to reinforce ongoing self-management support.

**Table 4:1: Presentation of codes**

Risk Factor	Risk code	Total Interviewed
• Diabetes mellitus	DM#	4
• Hypertension • Depression and stress	HP &DS#	19
• Hypertension and diabetes-mellitus	H&D#	6
• Smoking	SM#	3
• Alcohol intake	AI#	6
• Obesity	OBS#	5
<b>TOTAL</b>		<b>43</b>

This table represents the coding that was used during the presentation of results to indicate the source of the quotes for Phase

**Table 4.2: Demographic profile**

Clinic	Gender	N	Age	Level of education
- Evelyn Iekganyane	- Female	9	30-85	Grade 5-Grade 8
	- Male	6	50-86	Grade 1-Grade 10
- Nobody	- Female	9	42-60	Grade 5-Grade 8
	- Male	3	37-70	Grade 7-Grade 12
- Mamushi	- Female	7	45-80	Grade 8-Grade 10
	- Male	3	52-77	Grade 4-Grade 10
- Soetfontein	- Female	4	61-80	Grade 3-Grade 8
	- Male	2	34-70	Grade 1-Grade 9
	TOTAL=	43		

“The tablet indicate the age, gender, level of education of the participants from the participating clinics

#### 4.4.1 Themes and sub-themes emerged during data analysis

“Five themes and sub-themes have emerged during the data analysis of research findings on the self-management strategies to prevent risk factors related to CVD development at Ga-Molepo area clinics in the Limpopo Province.

**Table 4.3: Themes and sub-themes reflecting the self-management strategies used for CVDs**

THEMES	SUB-THEMES
1. Description of self-management strategies used by patients with risk factors.	1.1. “Paradoxical (different) description of self-management strategies used when living with risk factors including hypertension, and diabetes described.” 1.2. “Adherence to treatment & medication instructions are mentioned as important for self-management when living with risk factors e.g., Hypertension and diabetes- mellitus” . 1.3. Adherence to medical follow-up visits at a health facility is mentioned as a self-management strategy. 1.4. “Adherence to a healthy lifestyle & lifestyle modification is viewed as a way of preventing or managing CVDs.” 1.5. “Management of emotions is mentioned as a self-management strategy.” 1.6. “Explanation of several defense mechanisms used as a way of preventing or managing CVDs” 1.7. Religious interventions are used to cope with the risk factors including hypertension and diabetes -mellitus.



<p>2. " Knowledge related to self-management and other related factors when living with risk factors" including hypertension and diabetes mellitus.</p>	<p>2.1. "Knowledge related to the onset, signs and symptoms and prognosis of the CVDs"</p> <p>2.2. Knowledge related to attitudes and practices expected to prevent and control risk factors e.g., hypertension and diabetes</p> <p>2.3. "Knowledge related to self-management strategies that could be used by hypertension and diabetes -mellitus patients"</p> <p>2.4. Knowledge related to the causes/contributory factors and preventative measures for CVDs</p> <p>2.5. "Existence versus lack of knowledge" "related to the relationship amongst the CVDs themselves</p> <p>2.6. "Knowledge related to treatment and lifestyle to maintain when living with risk factors including hypertension and diabetes</p> <p>2.7. "Existence versus lack of knowledge related" to the importance of physical activity, appropriate diet, and lifestyle modification for people living with risk factors."</p>
<p>3. "Challenges experienced by patients with risk factors in managing the disease</p>	<p>3.1 "An explanation that unforeseen painful life experiences lead to poor control or prevention of</p> <p>3.2 Fear, stress including household stressors and depression lead to poor control or prevention of risk factors including hypertension, diabetes and CVDs</p> <p>3.3 CVDs causes suffering at multiple which impedes employment of self-management strategies"</p>

	<p>3.4 "Lack of adherence to treatment and healthy lifestyle by patients living with risk factors is viewed as problematic"</p> <p>3.5 "An explanation that difficulties experienced affect prognosis when living with risk factors and CVDs"</p> <p>3.6 "An outline of the symptoms experienced by patients with risk factors e.g., Hypertension and Diabetes Mellitus is viewed as a challenge"</p> <p>3.7 "Poor eating habits is a challenge to prevent or control CVDs"</p>
<p>4. "Suggestions related to self-management "strategies that could be maintained by patients living with risk factors e.g., Hypertension and diabetes mellitus"</p>	<p>4.1. "A suggestion that adherence to treatment and a healthy lifestyle must be maintained to stabilise risk factors e.g., Hypertension and Diabetes Mellitus"</p> <p>4.2 "Regular medical check-ups encouraged"</p> <p>4.3 "A suggestion that patients living with risk factors must avoid being exposed to stress, depression and other related factors"</p> <p>4.4 "A suggestion health education related to the disease must be available to communities"</p>
<p>5. "Support related to prevention and control of risk factors"</p>	<p>5.1. "An explanation that supports received from health professionals through health education provided"</p> <p>5.2. "Support to adhere to treatment, eating appropriate diet and on how to avoid stress received from family members"</p>

## **THEME 1: DESCRIPTION OF SELF-MANAGEMENT STRATEGIES USED BY PATIENTS WITH RISK FACTORS**

This theme describes how the patients describe different types of self-management. Table 4.2 below describes the sub-themes in detail.

**Table 4.2: Theme 1 and its Sub-themes**

<b>THEMES</b>	<b>SUB-THEMES</b>
1. Description of self-management strategies used by patients with risk factors	1.1. “Paradoxical (different) description of self-management strategies used when living with risk factors including hypertension, and diabetes described.” 1.2. “Adherence to treatment & medication instructions are mentioned as important for self-management when living with risk factors e.g., Hypertension and diabetes mellitus.” 1.3. Adherence to medical follow up visits at health facility mentioned as a self-management strategy 1.4. Adherence to a healthy lifestyle & lifestyle modification is viewed as a way of preventing or managing CVDs 1.5. Management of emotions mentioned as a self-management strategy 1.6. Explanation of several defense mechanisms used as a way of preventing or managing CVDs 1.7. “Religious interventions used to cope with the risk factors including hypertension and diabetes mellitus”

**Sub-theme 1.1: Paradoxical (different) description of self-management strategies used when living with risk factors including hypertension, and diabetes described.**

The study findings revealed that there is a different description of self-management strategies used by patients when living with risk factors including hypertension and diabetes mellifluous. Although self-management is character as a process whereby people and their families maintain their wellbeing through health-promoting practices and managing illness which includes a wide variety of self-care behaviours such as controlling of weight, physical activity controlling BP, smoking cessation or avoiding smoking. Literally according to the findings patients finds it confusing to describe self-management strategies although they need to be educated to adhere to them like needed normal body weight, eating a healthy diet, regular exercise and drinking liquor in moderation and according to the studies they reduce their risk of CVD by 84%.

This is supported by the following *Participant OBS# 01:-*

*The big thing In CVDs prevention is to follow instructions given by the clinic and doctors, as you can see I'm overweight I know that I'm expected to lose weight but to tell you the truth I'm lazy to exercise because my legs are painful but I try to jog like going to the main road and also I fetch water by a wheelbarrow (laughing) daily, I just exercise from home but here is tough I just do 1234 inside the house going up and down (showing how he do it).*

*The other participants added how she manages herself HP#02:-*

*To prevent CVD, I don't take too much sugar and also I use a small amount of salt and for meat, I eat chicken only I don't eat beef as is the one that causes a problem. When I was still working I used to buy vegetables and fruits but now is bad because to buy with pension money I can't afford those things but I use traditional vegetables is very healthy. The vegetables that I use is potatoes and fish because I can afford them.*

*Participant HP#06:- I prevent CVDs by not taking fatty foods and spicy stuff even in the family they know that they are not supposed to cook foods with salt and fats, also I avoid worries like if I'm having a problem I try by all means to share with a person I trust because if you tell anyone it will hurt you most if you hear it from other people. In case of treatment, I make sure I follow all the rules by eating meals before I take treatment morning and evening.*

Therefore, it implies that there are different types of self-management strategies described by patients that they use to prevent CVDs, these many strategies are useful if used accordingly and adhered to by patients with risk factors to prevent CVD's (Yang, Johnsten, Taylor, Winslowl & Pathier, 2018). Anyway regardless of whether the way of life changes include the decrease of stress and weight, a healthy diet, and increased physical activity feature of the day by day schedule patients will in general disregard this way of life and keep on putting their life in danger of CVD (van Smoorenburg, Hertjoijs, Dekkers, Elissen & Melleo, 2019). Self-management is similar to treatment adherence, motivation for lifestyle changes in hypertension patients is often low because they anticipate that lifestyle management is like medication management as part of their self-management unaware that it has an impact on their clinical outcome (Goode 2016).

**Sub-theme 1.2: Adherence to treatment & medication instructions are mentioned as important for self-management when living with risk factors e.g., hypertension and diabetes -mellitus**

The study revealed that adherence to treatment instructions are mentioned as important for self-management when living with risk factors e.g., hypertension, diabetes-mellitus. Yang et al. (2018) define adherence to treatment as an essential determinant of treatment achievement, medical care experts such as physicians, pharmacists and nurses play a critical part in their daily practice to improve patient adhering to treatment. Even though patients value adherence as important for self-management, lifestyle management should be stressed as an important part of reducing risk factors to CVD and good clinical outcomes.

This is added supported by the following participants:-

Participant number HP# 002 confirms by saying:-

*I drink treatment in the morning and the other treatment in the evening I don't skip treatment unless is emergency that makes me hurry and forgot treatment, and also I don't drink alcohol or take spicy foods as that behaviour can make you complicate and have serious problem in connection with your heart.*

*The findings were also supported by participant HP#04 ``who said that I manage myself by just taking treatment as instructed although I don't know whether I'm preventing heart attack, I think by taking treatment and adhering to a diet of avoiding salts and fats I think my body and heart will flow normally and prevent heart attacks.*

*Participant SM#03 explained that:- First of all I take treatment every day, even though I sometimes take food with salts but most of the times I take vegetables a lot even though I'm not a meat person but in a season like December I eat meat but not much*

The findings of the study conclude that it is essential to improve adherence to medication, patients should see it to be important or because they believe in good health, fear to die and beliefs related to long life while on drugs (Davidson, Price, Barksdala & Donahue, 2019). However, a systematic approach that could be founded in improving treatment should be accessible that includes a variety of ways in which treatments are not taken as prescribed, this behaviour can range from skipping dosages, to taking treatment at incorrect times or incorrect doses, to even taking more than prescribed (Tsai, Anh, Shih, Miao, Liao & Chuang, 2017). If the public sector can introduce the home monitoring of physiological parameters and individual goal-setting it can be successfully used to support patient self-management

**Sub-theme 1.3: Adherence to medical follow-up visits at health facility mentioned as a self-management strategy**

The findings of the study revealed that adherence to medical follow-up visits at health facilities was mentioned as a self-management strategy. This strategy includes teaching, supporting self-care and pharmacological interventions that are more effective than a lifestyle change. Although the widespread failure of patients to follow-up for treatment in our health care system is seen as a challenge. This was supported by one of the participants:-

*Participant HP#08:- I think they should follow clinic instructions by taking treatment as prescribed and take too much water to dilute high blood and also to take fruits and vegetables as they protect your body and also to avoid sleeping a lot as high blood needs an active person do house chores as high blood is not life-threatening illness is everybody's sickness we are not supposed to fear it.*

*“Another participant H&M# 01 said:-You must always go to health facilities to check your health if found out that you are ill like hypertension and diabetic please avoid alcohol and smoking please because they don't get along with tablets, like me I like nice foods like yoghurts, chips and fried meat you can have them but use low-fat diet.”*

*This is also added by another participant HP#06:-I think visiting clinic monthly to be checked by nurses is very important, and also the community health workers should visit and check us in our homes for CVD, and another thing, if they can avoid stress and eat a good diet that is recommended by the doctors like cabbage and traditional vegetables, stay away from stress and argument because it troubles, are starting and your heart will be swollen and you will be unable to live a normal life*

#### **Sub-theme 1.4. Adherence to a healthy lifestyle & lifestyle modification is viewed as a way of preventing or managing CVDs**

The findings of the study revealed that adherence to a healthy lifestyle & lifestyle modification is viewed as a way of preventing or managing hypertension and diabetes mellitus. The foundations roots of health lie in conduct, hereditary qualities, social conditions, medical care, and environmental exposure, evidence supporting specific self-care

behaviours such as unhealthy diet and a lack of exercise are barriers to self-care, and the effectiveness of self-care improves good health outcomes (Tsai et al., 2017). This is affirmed by one of the participants:-

*“Participant HP# 04:-I manage by making sure I eat a healthy meal, you see my wife died in 2015 and I’m left with 4 children all of them are taking care of me, you see I’m wearing Adidas clothes and shoes I’m well taken care of. In the case of diet, I’m taking too many vegetables and fruits because as I stay alone, but I’m having many chickens well protected in a fence I eat those chickens. They are healthy unlike the ones from the fridge because they cause painful legs.*

*“Participant HP#09 added that:- According to my knowledge I practise healthy life because I eat a low-fat diet, you know sister as a pensioner I have bought my fridge in my bedroom where I store my food like milk, cheese, butter, fish and drinks with low-sugar like tab, I also cook for myself because I need healthy diet free from salt, sugar and also spend my money wisely as I’m no longer working.*

*“Participant H&D#03:- I think taking treatment and adhering to the required diet to prevent heart disease and the most important thing is to stay active and work so that your muscles should not be stiff and the blood flow should remain normal so people like to eat and drink alcohol, which is dangerous, so avoiding alcohol when you are on treatment it helps to maintain your health.*

Insufficient or unavailable medical treatment is thought to contribute a little (around 10%) to illness and disease, whereas the predominant force is behaviour which is contributing about 40% of the overall health, other determinants of health include hereditary and stress while social conditions and environment contribute another 20% to health wellbeing (Swartwout, Deyol, El-Zein, 2019). While we consider lifestyle, changes comprise the stress-reducing and weight, a healthy diet, and increased physical activity as part of the daily routine, comparable to medication adherence, motivation for lifestyle changes in CVD patients is often low (van Smoorenburg, 2019).



### **Sub-theme 1.5: Management of emotions (anger, fear, stress) is mentioned as a self-management strategy**

The study findings revealed that management of emotions like anger, fear, and stress is mentioned as a self-management strategy, all this management improves the overall optimum health of the patients (Davidson et al ., 2019).

*“Participants HP# 010 highlighted that: - also became angry on small issues you know sometimes as a human being, people can make you angry or hurt you deeply, that it Many things that can contribute to CVD is by thinking too much and can take time to heal and forget and you unable to let it go this can also cause CVD .*

*Another Participant HP# 012 added that: I-manage myself by accepting who I'm and my situation to tell you the honest fact CVD is caused by denial of our problems so myself I'm accepting who I'm like having a disease like hypertension I tell myself that I'm sick and my sickness will stick with me for life. I have accepted that's why I can't get this heart disease.*

*Participant HP#09 confirms that by saying:-I just avoid problems by not entertaining them if you tell me problems if not solved. I ignore and forget and do not hold grudges for people, also drink a lot of water, avoiding alcohol and smoking. I was previously entertaining problems that why I ended having high blood now a days I don't listen to heart breaking news I drink a lot of water and pray.*

Thus, to prevent CVDs patients' need to seek professional help and not to forget or ignore stress, anxiety, depression, excessive worry, or bouts of anger that overwhelm your life thereby protecting your brain and your heart is important to control your worry and stress, not just because you will worry less and feel better, but because less worry means less stress for your heart (Tian & Meng, 2019).

### **Sub-theme 1.6: Explanation of several defence mechanisms used as a way of preventing or managing CVDs**

The finding of the study noted that there is an explanation of several defence mechanisms used as a way of preventing or managing CVDs. These several defence mechanisms are used as factors to prevent CVDs such as quitting tobacco smoking, physical activity, adhering to the treatment of diabetes and hypertension, reducing obesity, and consumption of daily fruit and vegetable, and these prevent people to develop serious CVD-related illness in the future (Carrera & Lamboouj, 2015).

Participant OBS# 03 confirmed by saying: - *Myself is long I have been taking treatment since 2008 but, due to exercising I'm always healthy and energetic, my day starts with cleaning the whole yard which is a very huge yard thereafter I clean the house, wash dishes and cook my meal you can undermine this but is a very serious exercise.*``

*“Another participant OBS#02 added how he uses several defence mechanisms:-`` I prevent a heart attack by drinking a lot of water and this helps me to manage several diseases. I quit alcohol a long time ago because it precipitate my condition and makes my high blood increase and I'm reducing a lot of fats by not eating meat.”*

*“Participants AI#01 :-I think we should take treatment daily. See the Doctor regularly or ask nurses at the clinic if they experience a problem. Not to take alcohol, but I think traditional alcohol is not as dangerous as white alcohol (laughing)”.To eat chicken meat and eggs, hei... actually I am not sure that is all I know”.*

This implies that it is, along these lines, vital that CVD-related causes and concerns be addressed. Given the degree and prevalence of CVDs, it is clearly that a population health approach – ‘prevention is better than cure (van Smooreburg, 2019). In case of the risk factors for CVD diseases, specifically diabetes and hypertension it is recommended that one should use self-mechanism, self-care practices which include regular self-monitoring of blood glucose or blood pressure (BP), adhering to medication regimens, lifestyle



modification, and regular visits to provide, to evaluate the treatment's success (Gelaw, Mohammed, Tegegne, Defersha & Fromsal, 2015). Adherence to these self-care recommendations is critical in achieving favourable outcomes. Studies have shown that many patients struggle to initiate and sustain these self-care practices, which ultimately impact outcomes (Martinez et al., 2019).

### **Sub-theme 1.7: Religious interventions used to cope with risk factors including hypertension and diabetes-mellitus.**

The study findings revealed that religious interventions were used to cope with risk factors including hypertension and diabetes mellitus. The practices of religious beliefs as a method of adjusting to the physical, mental, and social difficulties brought about by clinical disease (Davidson et al., 2019). This religious intervention can also be based on programs that can permit people to get the religious diabetes information important to deal with their sickness and practice the essential way of life changes inside the setting of their way of life and community (Castellano et al., 2018).

*“This is supported by participant HP#015:- I make sure I eat healthy foods and avoid smoking and alcohol like when I fast I make sure that I eat once in a day not fasting all day as I may faint and feel dizzy and praying God helps to connect you with the holy spirit that will lead you and be relieved in your body and spirit.*

*“Participants HP#012 added that: -Sister me I’m taking my treatment once daily and also ask wisdom from Almighty by praying daily and preaching the word of God, this religious connection will relieve your stress and avoid heart disease.*

*Participant:- H&D# 05 I just avoid problems by praying and not to listen to unsolved human problems I just ignore, forget and drink a lot of holy water from the church and avoiding alcohol and smoking as you know in our church such things are forbidden and pray a lot.*

In conclusion, strict adapting may include going to God for strength and comfort, wisdom and direction, health or healing, or help for loved ones (Byrne 2018). Although religious interventions may involve reading inspirational materials, such as the Holy Scriptures (Torah, Christian Bible, or Holy Qur'an).

Additionally, the practice of religious rituals related to health and healing, such as lighting candles or participating in sacraments, such as the Eucharist or Confession, or the practice of immersion in a Mikveh or wearing of Tefillin or participating in religious rituals focused on healing (Hobbs, 2017).

**THEME 2: KNOWLEDGE RELATED TO SELF-MANAGEMENT AND OTHER RELATED FACTORS WHEN LIVING WITH RISK FACTORS INCLUDING HYPERTENSION AND DIABETES MELLITUS**

Theme two indicates the knowledge that the patients have regarding risk factors for CVD development. The table below indicates the existence and lack of knowledge regarding self-management strategies

**Table 4.3: Theme 2 and its sub-themes**

THEME	SUB-THEME
2. Knowledge related to self-management and other related factors when living with risk factors including hypertension and diabetes mellitus	2.1. Knowledge related to the onset, signs and symptoms and prognosis of the CVDs 2.2. Knowledge related to attitudes and practices expected to prevent and control risk factors e.g., hypertension and diabetes 2.3. Knowledge related to self-management strategies that could be used by hypertension and diabetes -mellitus patients 2.4. Knowledge related to the causes/contributory factors and preventative measures for CVDs 2.5. Existence versus lack of knowledge related to the relationship amongst the CVDs themselves 2.6. Knowledge related to treatment and lifestyle to maintain when living with risk factors including hypertension and diabetes

	2.7. Existence versus lack of knowledge related to the importance of physical activity, appropriate diet, and lifestyle modification for people living with risk factors
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**Sub-theme 2.1: Knowledge related to the onset, signs and symptoms and prognosis of the risk factors including hypertension, diabetes- mellitus and CVDs**

The findings of the study revealed that knowledge related to the onset, signs and symptoms and prognosis of the risk factors including hypertension, diabetes and CVDs.

Public knowledge is needed to increase the awareness of the signs, symptoms, and risk factors for stroke and should be centered particularly on high-risk patients such as the elderly and patients with a history of hypertension. Educational campaigns are needed to improve the knowledge of CVDs and stroke (Tsai et al., 2017).

*“This is confirmed by Participants HP#22: -“Haai sister nothing, (shaking heads)” with regards to heart disease nothing at all.”*

*“Another participant said HP#025. Participant:- I don’t know about CVD what I know is that if you get very angry and furious (laughing) because I always get angry when at home because children will always make you angry they don’t want to clean, fetch water or cleanliness but to eat they are no 1, now tell me who is going to cook for them when they are so lazy you know is hard to live with this type of people but anywhere I take treatment as directed to prolong my life and prevent this stroke.”*

*“Participant HP#027 confirmed that:-”HEI (looking confused) I can’t tell but to tell the honest fact is that I don’t know. I don’t want to guess.”*

To conclude patients are having lacking knowledge about CVDs especially in the age group of more than 60 years of age (Yang et al., 2017). Although

advanced age can contribute to lack of knowledge, lower financial status and lower education level are related to a diminished knowledge of CVDs.

Particularly concerning stroke and risk factors, even though the elderly have a higher, particularly concerning stroke in the general population, this general population (aged  $\geq 65$  years) are significantly less knowledgeable about stroke than their younger counterpart (Davidson et al., 2019). It is critical to teach communities self-management due to the many advantages of self-management education. As they incorporate decreased medical services usage and medical services expenses and generally improved health for those suffering from diabetes and hypertension (Feigin et al., 2017).

### **Sub-theme 2.2: Knowledge related to attitudes and practices expected to prevent and control hypertension and diabetes-mellitus.**

The findings of the study revealed that knowledge related to attitudes and practices is expected to prevent and control hypertension and diabetes mellitus. The impact lacking knowledge, attitudes, and practice regarding diabetes and CVD on its prevalence has been emphasised. Age, education, and gender this influence knowledge, attitudes, and practice on lifestyle modification (Huisman et al.,).

*“This is confirmed by Participant:- H&D#4 I manage myself by just taking treatment as instructed although I don’t know whether I’m preventing heart attack. I think by taking treatment and adhering to a diet of avoiding salts and fats I think my body and heart will flow normally and prevent heart attacks.”*

*“Participant HP#13 added by saying:- I start my day by eating leftovers from yesterday. I then take my tablets then I drink a lot of water during the day to hydrate my body to prevent many diseases. Most of the time I stay at home with my grandson watching TV I not going around looking for news that why I’m so healthy.”*

Public health programs are needed to increase knowledge, attitudes, and practice on diabetes and its complications. A study on hypertension in Seychelles concluded that participants who had good knowledge, but attitudes and practices toward a healthy lifestyle, were inadequate so good

knowledge



on ill-health of respondents with secondary education may not represent better action toward prevention of CVDs and diabetes. Improving knowledge, attitudes, and practice for control and management can be a good aid (Schwalm et al., 2018). An understanding of African Americans characteristics including culture and spirituality, and the influences these have on diabetes self-management behaviors is an important step in designing accurate, relevant, and effective self-management programs . Feigin et al. (2017) the characteristics and lifestyles of African Americans are based on traditional values and religious background, which Goodle, (2018) included poor nutrition and a lack of physical activity that still exist.

### **Sub-theme 2.3: Knowledge related to self-management strategies could be used for hypertension and diabetes mellitus patients.**

The findings revealed that knowledge related to self-management strategies could be used for hypertension and diabetes mellitus. Self-management knowledge or education may include traditional patient education regarding the chronic disease as well as increase the patient's confidence in following a self- management health plan (Martinez et al., 2019). As confirmed by the following participants:

*“Participants HP#019:- I eat a lot of vegetables and fruits especially when I have money and another thing is that I make sure that I drink a lot of water especially in the morning and day”.*

*“Participant SI#02:- You know sister I’m taking vegetables daily and also exercising by walking daily to buy bread you know what (smiling )even the Indian guy who is having a shop nearby knows that I come to his shop daily, so in that way, I cross the river and is a hill from his shop to my place”.*

*“Participants HP#014:- One day when I visited the clinic a nurse told me about the heart disease, but for a long time I have forgotten everything, really I have forgotten almost all the information”.*

With chronic diseases, patients need to deal with their sickness all alone, often for a lifetime (Davidson, 2019). This self-management, or patients' ability to apply disease knowledge and participate in activities that assist to

maintain their

health has been effective in decreasing mortality and hospitalization rates. Interventions should also underscore the significance of the collaborative relationship between the medical services supplier and the patient as that may influence adherence to self-management plans (van Smoorenburg, 2019).

#### **Sub-theme 2.4: Knowledge related to the causes/contributory factors and preventative measures for hypertension, diabetes-mellitus and CVDs**

The study noted that knowledge related to the causes/contributory factors and preventative measures for hypertension, diabetes and CVD. There are numerous contributors or risk factors for heart diseases like tobacco use, physical inactivity, extreme liquor consumption, undesirable eating routine, obesity, hereditary qualities, predisposition and family history of cardiovascular disease, hypertension, raised blood sugar (diabetes-mellitus), raised blood cholesterol (hyperlipidemia), undiagnosed celiac disease, psychosocial factors, poverty and low educational status, and air contamination (Gelaw et al ., 2018).

*Participant HP#18 confirms by saying:- heart disease is when you are having a serious illness and you can't get it out of your head and you keep on thinking about it and even your heart starts to be affected and is pumping very fast and you also feel like fainting, not sure that is my input.*

*Participant OBS#04:- What I know is that people that are overweight can get this heart disease as they are having too many fats and those fats can block the blood flow and cause heart diseases but you can correct me if I'm wrong.*

*Participant HP#02:- I don't know because I don't have CVD what I know is signs and symptoms that you can have chest pains and feel dizzy and have difficulty in breathing is what I know about heart attack.*

Up to 90% of CVD may be preventable if established risk factors are known and avoided and people are given knowledge on risk factors and their prevention (Carrera & Lambooji, 2018). But currently practised measures to prevent CVD include obesity, uncontrolled hypertension and diabetes mellitus, alcohol and stress that needs to be emphasised and although

patients sometimes ignore them (Hobbs, 2017).

### **Sub-theme 2.5: Existence versus lack of knowledge related to the relationship between the risk factors, hypertension and diabetes-mellitus themselves**

The study noted that existence versus lack of knowledge related to the relationship amongst hypertension, diabetes mellitus and risk factors themselves. An important gap in self-management is the lack of information about the factors that facilitate or impede appropriate self-care among hypertension and diabetes mellitus patients with higher or lower levels of knowledge because most previous investigators examined a limited number of factors, often including levels of knowledge that showed a lack of knowledge amongst the patients who are smoking and taking alcohol (Castellano et al., 2018).

*Participant HP#07:- For CVD I don't know I just have a little knowledge on hypertension because I'm on treatment.*

*Participant AI#05: -My knowledge is that I'm not supposed to take fat food and spicy stuff even in the family they don't add salt and spices for me, the other thing I avoid worries like I'm having problems I share them with the person I trust and from there I take treatment as prescribed. I don't eat fatty food like atchaar, spices and sweet foods and I exercise every day to work as is long distance and I'm using a bicycle.*

*Participant no HP#8:- (Shaking head) I don't know about this heart diseases, I just think you must not get angry you must leave the situation if it makes you angry"*

This implies that addressing this gap of lack of knowledge will provide critical information to help clinicians identify patients who need further resources to be equipped with skills and knowledge in addition to education about CVDs and their management (Schwalm et al., 2018). Although self-management knowledge and lifestyle modifications have been directly associated with improved blood sugar control, fewer hospitalisations, and lower diabetes related medical costs, diabetes self-management education is associated with lower blood sugar averages and fewer acute emergency

complications such as

hypoglycemia [low blood sugar] and hyperglycemia (high blood sugar) (Swartwout, 2018).

### **Sub-them 2.6: Knowledge related to treatment and lifestyle to maintain when living with risk factors including hypertension and diabetes**

The findings also revealed that knowledge related to treatment and lifestyle to maintain when living with risk factors, hypertension, diabetes mellitus. Health literacy is the degree to which an individual can obtain, process, and understand basic health information and services (Tsai et al., 2017).

*“Participant DM#04:- I started taking diabetic treatment last year I eat chicken meat only, I start by peeling the skin meat for me and for others in the family they will eat with skin and for beef meat is a no-go area I don’t even attempt to eat it and I no longer buy it is also forbidden in my family. In case of treatment, I make sure that I don’t even skip a day but if I forgot I feel bad. In that way, I think I prevent myself from heart diseases”.*

*“Participant HP#06:-. I eat a lot of vegetables and fruits especially when I have money and another thing is that I make sure that I drink a lot of water especially in the morning and day because it helps me to flush toxins in my body”.*

*“Participant H&D#5:-You the know the secret of staying healthy in this conditionse specially hypertension and diabetic I use traditional vegetables (smiling) you knew NKU morogo it lowers your blood pressure and diabetic you know most of the time when I come to collect the treatment I eat vegetables and drink the fluid from it my blood pressure and blood glucose are always low if you use them you will never find your blood high”.*

This means that higher levels of knowledge were associated with better self-care among patients with low levels of education (van Smoorenburg, 2019). As we also found a strong correlation between anxiety and depression Educational interventions may not be effective in promoting self-care when patients are psychologically prepared and have resulted in improvement in patient knowledge, their effects on self-care have been consistent and improved lifestyle behaviours and increase knowledge about symptom management to prevent and treat hypoglycemia (Davidson et

al., 2018) Teaching diabetes self-management skills and knowledge about the illness can be challenging in the primary care setting, especially when health care providers are limited for time spent with patients, but multi-morbidity might have a dual role in self-management support and the coexistence of medical conditions might lead to inadequate self-management (Swartwout et al., 2018).

### **Sub-theme 2.7: Existence versus lack of knowledge related to the importance of physical activity, appropriate diet and lifestyle modification for people living with risk factors**

The study revealed the existence versus the lack of knowledge related to their importance of physical activity, appropriate diet and lifestyle modification for people living with hypertension and diabetes mellitus. Patients who had low knowledge but performed good self-care may have received more functional social support from family and friends than those with low knowledge and poor self-care. They may also have had a family caregiver helping them with self-care activities and decision-making related to self-care (Davison 2017).

*“Participant HP#18:- I exercise regularly by ploughing the field and also making sure I don’t eat spicy food and fats but above all, I drink a lot of drink and eat vegetables and fruits sometimes if I have money especially month- end”.*

*“Participant HP#12:- I make sure I eat healthy foods and avoid smoking and alcohol like when I fast I make sure that I eat once in a day not fasting all day as I may faint and feel dizzy and praying God helps to connect you with the holy spirit that will lead you and you will be relieved in your body and spirit”.*

*“ParticipantHP#17:- I make sure that I take my treatment every day I don’t skip taking them and also I follow the principles thereof of not getting angry as it will increase my blood pressure and not to take foods rich with fats and too many salts, look I’m healthy as a horse and I work every day by ploughing some vegetables at home and irrigate them daily. I don’t think I can develop CVD because I’m taking good care of myself”.*



This shows that patient education has been a key component of hypertension and diabetic management programs because patients knowledge and its management is believed to be the foundation of successful self-care (Martinez et al., 2017). Thus, intervention programs to promote self-care strategies to identify and provide proper care to hypertension and diabetic patients and their families need to be involved in communication and decision-making regarding self-care (Tian & Meng, 2017).

### **THEME 3: CHALLENGES EXPERIENCED BY PATIENTS WITH HYPERTENSION AND DIABETES- MELLITUS IN MANAGING THE DISEASE**

This theme shows the challenges experienced by patients with risk factors in managing their chronic diseases. The table below indicates the explanation of experiences.

**Table 4.4 Theme 3 and its sub-themes**

Theme	Sub-theme
3. "Challenges experienced by patients with risk factors in managing the disease"	3.1. "An explanation that unforeseen painful life experiences lead to poor control or prevention fear, stress including household stressors and depression leads to poor control or prevention of risk factors including hypertension, diabetes, and CVDs" 3.2 CVDs causes suffering at multiple which impedes employment of self-management strategies 3.3 Lack of adherence to treatment and healthy lifestyle by patients living with risk factors is viewed as problematic."

	<p>3.4 ““ An explanation that difficulties experienced affect prognosis when living with risk factors and CVDs</p> <p>3.5. An outline of the symptoms experienced by patients with risk factors e.g., Hypertension and Diabetes Mellitus is viewed as a challenge</p> <p>3.6 Poor eating habits is a challenge to prevent or control CVDs””</p>
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### **Sub-theme 3.1: An explanation that unforeseen painful life experiences lead to poor control or prevention of CVDs**

The study noted that challenges experienced by patients with risk factors, hypertension and diabetes-mellitus in managing the diseases. This is an explanation that unforeseen painful life experiences lead to poor control of hypertension/ diabetes mellitus and risk factors (Yuyun, Bonny, Antra, Sliwa & Psacal & Mocumbi, 2020). Symptoms like dyspnoea and fatigue are considered the signature symptoms of CVDs unlike other symptoms such as pain go that unnoticed.

*“Participant H&D#05:- HAAI problems, problems can cause heart disease to tell you the truth I’m having swollen legs and the doctor said to me that is heart disease because EISH nurse (shaking head) all my children are bewitched with epilepsy and they are always fighting, I can’t cope that is why I’m so sick with high blood even the social worker tried to intervene but haai... is problems”.*

*“Participant HP#14:- “Ijoo... meaning problems heart disease is a problem you see myself I’m having serious problems my wife is drinking alcohol and as you can see I’m a pastor I don’t take alcohol but she will come in the early hours and very arrogant I’m having six children with her and they are also drinking that why I’m taking treatment for hypertension and heart”*

*“Participant HP#09 :- Problems can cause heart attack like myself I’m having a daughter who always insults me and leaves the child with me the whole night*

*and take the whole Sassa money with her you know my blood pressure is always high and I think I will die of a heart attack”.*

Awareness of the burden of pain and symptoms is growing in patients with hypertension and diabetic-mellitus and this pain may be of different origins by different mechanisms such as ischemia, inflammation, and neuropathy. The experience of pain may diminish cognitive functioning and increase anxiety, sleeplessness, depression, and hopelessness. Thus, it is highly beneficial to investigate the prevalence of pain and its source and management in patients with hypertension and diabetic mellitus (Joseph, Yusuf, & Lee & Ibrahim, 2018).

Major depression and emotional distress are the most studied psychological challenges that affect self-care practice in people with diabetes, chronic obstructive pulmonary disease, and heart disease. Depression is two times more prevalent in patients with type 2 diabetes than in the general population (WHO, 2019). While high levels of distress and frustration may initially serve as the impetus for someone to seek help, it may become the barrier to achieving behavioural goals. Low self-efficacy is also a major psychological barrier to optimal self-management. Yet, some participants felt that the symptoms were so severe and debilitating that they could not manage them at all, they had no alternative but to try and endure (Herber, Atkins & Stork, 2018).

**Sub-theme 3.2: Fear, stress including household stressors and depression lead to poor control or prevention of risk factors including hypertension and diabetes-mellitus.**

The study findings indicated that fear, stress including household stressors and depression lead to poor control or prevention of hypertension and diabetes mellitus. Symptoms like fear, stress and lack of access to appropriate health care can result in poor outcomes of hypertension and diabetes -mellitus (Pandora, 2017).

*“Participant HP#012:-- Sister like myself I think I’m having heart disease because my heart is beating fast when I think of my wife is almost 10 years since she died all my children are leaving in Gauteng I’m just alone in the family*

*so sometimes I'm unable to sleep you know my problem is hard and my heart is painful"*

*"Participant A1#04:- sister the things that cause heart attack is a problem like if you were rich now you are poor like I was rich now all my business has collapsed is when the doctor said I'm having hypertension so if you are broke you are broke."*

*"Participant HP#08:-You know sister is not simple like in my case I'm living with my grandchildren they are too lazy to do home chores, you know there is a serious shortage of water you know they will never go to fetch water so you see is difficult not to be stressed but anyway I drink my medication daily and try to push them to work because if I die they will suffer".*

There are many barriers to self-care practice such as lack of self-management support, inadequate economic state. For many of these diseases, specifically diabetes and hypertension, recommended self-care practices include regular self-monitoring of blood glucose or blood pressure (BP), adhering to medication regimens, lifestyle modification, and regular visits to a provider to evaluate treatment success (Toback & Clark, 2017). Personal control and biological illness attributions were significant predictors of anxiety symptoms. Thus, patients who perceive greater control over their illness may have stronger confidence to manage their symptoms or may believe they can use their experience and skills to improve their symptoms (Scerri, Wisting, & Yang, 2019). Accessible psychiatric care, as well as regular follow-up of these patients' emotional states, have shown to be helpful. Moreover, older people with multi-morbidity often have a heavy treatment burden as a result of the several management plans and lifestyle changes prescribed for the various conditions (Jaarma & Hill, 2018).

#### **Sub-theme 3.4: Hypertension and diabetes-mellitus cause suffering at multiple which impedes the employment of self-management strategies**

The findings indicate that hypertension and diabetes-mellitus cause suffering at multiple which impedes the employment of self-management strategies. This underlying mechanism prevents self-management strategies depending on the

disease, stroke, and peripheral artery disease. This may be caused by high blood pressure, smoking, diabetes, lack of exercise, obesity, high cholesterol, poor diet, and excessive alcohol (Yang, Taylor & Winslov, 2018).

*“Participant HP#16:- I used to drink alcohol and smoke cigarettes even though we were told not to as we are diabetics and hypertensive but since my brother died of stroke they said it was heart disease because he was alcoholic and not taking hypertension treatment accordingly so since then I quit alcohol but I’m struggling with cigarette but for treatment I’m taking it on a daily basis and my diet is full of vegetables but sometimes I eat fried meat because he... is nice but I alternate to avoid too many fats”.*

*“Participant HP#14:- myself when I was still working I used to buy nice things since I’m no longer working I engage myself with home chores like ploughing cabbages and meal and treatment as told. So, people to avoid CVD they should exercise, eat lots of vegetables like traditional vegetables and not put a lot of salts in their food”.*

*“Participant OBS#3:” I think because I’m overweight I might have a heart attack because of this overweight I can’t breathe properly and have difficulty in walking so this makes it difficult for me to adhere to all the principles of self-management”.*

This shows that many existing BP control programs suffer from low adherence/ participation rates, perhaps because the intervention is not always enjoyable or rewarding or because it requires significant alterations to daily routines (Caceres et al.,2018). Activities that people already enjoy and do not need to be taught how to do, as this may lead to greater engagement and adherence over time (Egan & Bokai, 2018). Self-management support uses collaborative goal setting and self-efficacy strategies to enable patients to carry out normal roles and activities and better manage the medical and emotional effects of their illnesses in partnership with health care providers. Self-management support interventions vary and can include such components as group meetings, motivational counselling, case management, patient education, and follow-up (Ann-Luu, 2018).

### **Sub-theme 3.4. Lack of adherence to treatment and a healthy lifestyle by patients living with risk factors is viewed as problematic**

The findings show that a lack of adherence to treatment and a healthy lifestyle by patients living risk factors including hypertension, and diabetes mellitus is viewed as problematic. Poor adherence to the medication regimen is a major factor in the inadequate achievement of CVD prevention as indicated by the following participants.

*“Participant HP#18:- I think due to shortage of treatment at the clinic is what contributes to lack of adherence because sometimes I skip taking my treatment of hypertension and diabetic mellitus and this makes me to even forget to live a healthy lifestyle even though I’m even afraid of getting a stroke or heart disease”.*

*“Participant SM#02:-”Treatment, treatment is the biggest problem because even at the hospital sometimes there is a shortage of treatment, so how are we going to prevent heart diseases. Another thing is that I don’t adhere to a healthy lifestyle I like salt and alcohol a lot especially when I’m with friends”.*

*“Participant H&D#04:-Haai (taking a deep breath) I understand that adherence is a problem here and is exposing us to heart disease, having a difficult situation because many times when I come to the clinic I don’t get my treatment and I can’t you handle my condition it sometimes get out of control due to lack of treatment”.*

This confirms that adherence to therapies is a primary determinant of treatment success, adherence to therapies is a primary determinant of and nurses have a significant role in their daily practice to improve patient medication adherence by making sure that treatment is available in the facilities (Ruan, Guo & Huang, 2018). Hence, providing clear medication-related information to patients is essential to improve adherence that includes addressing the key information of what, why, when, how, and how long. Patient medication counseling can be supplemented by providing detailed written information about medications (Tian & Meng, 2019). Above information pointed out that self-management is not easy because people need to make daily decisions that are aggregated for a long

time and involve actions such as taking medicine, exercise and responding to hypertension signs and symptoms (Mothiba, 2020) .

**Sub-theme: 3.5. An explanation that difficulties experienced affects prognosis when living with hypertension, diabetes-mellitus and risk factors**

The findings noted that an explanation that difficulties experienced affect prognosis when living with hypertension, diabetes mellitus and risk factors. There has been poor self-management established between certain toxins, extreme heat and cold, exposure to tobacco smoke, alcohol and mental health concerns such as stress and depression.

*“Participant HP#09 indicated that:- Even though coffee can cause palpitations to me is very difficult to leave without coffee I like it , I really like coffee, but even if I did not drink coffee my heart still beats fast which sometimes bothers me a lot”*

*“Participant AI#04:- First of all I take treatment every day, even though I sometimes take food with salts but most of the times I take vegetables a lot even though I’m not a meat person but in a season like December I eat meat and drink alcohol to enjoy festive season although after that I experience so many difficulties like high blood pressure and headache”*

*“Participants H&D# 013:- Sister my problem is that even if I take treatment every day and avoid stress my sugar sometimes remain high and I’m this lifestyle frustrate because I don’t know what to do to help me prevent heart disease and the other thing is that even if I have moved away from the lifestyle of alcohol I still felt ill and experience dizziness, numbness in my legs is bad to have this sugar disease”.*

The study concludes that specifically the risk of stroke was also increased by exposure to risky behaviour and complications like high blood pressure and sugar. Heart disease can also develop more often in those who experience job strain and who have shift work (Zou & Wei, 2017). Furthermore, there are many factors, such as knowledge about hypertension, individual characteristics and social aspect which could have great effects upon the

blood pressure self-



management behaviour. Therefore, it is not surprising that many people had poor blood pressure control (Davison et al., 2019). However, the magnitude of poor blood pressure self-management behavior is not only the disease itself but also its related complications; therefore, having strategies to enhance blood pressure self-management behaviour among people are of great importance to prevent complications and protect healthy people from the disease of hypertension (Martinez et al., 2018).

**Sub-theme 3.6: An outline of the symptoms experienced by patients with risk factors e.g., hypertension and diabetes-mellitus viewed as a challenge.**

The findings revealed an outline of the symptoms experienced by patients with risk factors hypertension, diabetes and is viewed as a challenge. There are primary sources of information regarding signs, symptoms, and risk factors for heart disease like unilateral weakness, numbness, and speech abnormality were the most common symptoms recognised as warning signs of stroke. This is a serious challenge for diabetic patients experiencing hypoglycemia, weight gain, and other adverse effects (Tian & Meng, 2019).

*“Participant HP#016:-. I think is like losing someone that you love dearly and it causes great pain in your heart and you can’t overcome that pain it remains there in your heart every day you don’t forget about it or just to let it go this can cause heart disease. When I think of it I feel numbness in my feet and headache I think that sometimes my sugar is high”.*

*“Participant HP#03: I think working hard, I used to work under the sun especially when it is very hot, my heart started to pump fast and I started feeling like I’m fainting so working on sunny day can also contribute”.*

*“Participants H&D/OBS# 01:- My dear to tell you the straight to be overweight is not good especially when you are suffering from hypertension and diabetes because always when you walk or doing home chores your blood will start to boil and you will feel like fainting and start to sweat is bad with this illness”.*

The study concludes that healthy self-care behaviors lower the risk of incident disease, this is true, particularly of the self-management

behaviours like

smoking cessation, maintaining normal BMI, routine physical activity, reducing dietary sodium intake, decreasing alcohol use, and maintaining a healthy diet, low cholesterol, a normal BP, and a normal fasting plasma glucose (Harvin, Nori, Winter, Dorothea & Hoover, 2019). Even though self-care maintenance behaviors help reduce inflammation attributed to infection in CVD such as routine preventive dental care and annual influenza vaccination, the stress of illness frequently aggravates glycaemic control and necessitates more frequent monitoring of blood glucose and urine or blood ketones (Tsai et al., 2017). A vomiting illness accompanied by ketosis may indicate diabetic ketoacidosis. Decreases risks by encouraging physical activity and promoting foods choices that facilitate moderate weight loss or at least prevent weight gain (Toback et al., 2017).

#### **Sub-theme 4.7 : Eating habits are a challenge to prevent or control risk factors and CVDs**

The study noted that eating habits are a challenge to prevent or control risk factors and CVDs. Patients know that they are not supposed to eat high dietary intakes of fat, trans-fat and salt, and low intake of fruits, vegetables and fish because are linked to cardiovascular risk, although sometimes these associations are disputed .

*“This is indicated by “Participant HP#11: “I know that you should not take too much salt and take off fats from meat but is difficult as I’m not cooking for myself I’m staying with my sister children as she has passed away so they are the ones that are cooking, so they sometimes put too much salt in my vegetables so I get angry as I have told them not to put too much salt in my food but if I cook for myself I adhere to the principles”.*

*“Participants HP#019: Sister if you are having denial not believing that you are sick, my sister was not taking high blood pressure very well and also drinking alcohol now as I’m talking she is on a wheelchair due to stroke these diseases are dangerous we need to be alert let’s take treatment and eat accordingly”.*

*“Participant DM# 02:-. I don’t know anything about the management in the prevention of heart disease. What I do to prevent stroke is that I take treatment*

*as directed and although sometimes I have an interest in junk food to tell the truth (laughing) I used to go to Kentucky and buy all that nice fatty meat but after that I go home and drink a lot of water but I know that I'm not supposed to eat fatty meat. I just do it once per month when I have money. But I know that as hypertensive we must eat vegetables a lot like spinach and others with low salt and low fat and do buy low-fat milk and oil but I don't practice every day because I'm always busy and not cooking".*

These findings imply that frequent consumption of high-energy foods, such as processed foods that are high in fats and sugars, promotes obesity and may increase cardiovascular risk (Gelaw et al., 2017). Although it is known that replacing saturated "fat with polyunsaturated fat (plant-based oils) reduces cardiovascular disease risk (Carrera et al.,2015).

**THEME 4: SUGGESTIONS RELATED TO SELF-MANAGEMENT STRATEGIES THAT COULD BE MAINTAINED BY PATIENTS LIVING WITH RISK FACTORS E.G., HYPERTENSION AND DIABETES MELLITUS**

This theme shows the suggestions that the patients are maintaining to self-manage themselves to prevent CVD development. The table below indicates the suggestions.

**Table 4.5: Theme 4.5 and its sub-themes**

Theme	Sub-theme
4. "Suggestions related to self-management strategies that could be maintained by patients living with risk factors e.g., Hypertension and diabetes- mellitus	4.1. A suggestion that adherence to treatment and a healthy lifestyle must be maintained to stabilise risk factors e.g., Hypertension and Diabetes -Mellitus 4.2 Regular medical check-ups encouraged 4.3 A suggestion that patients living with risk factors must avoid being exposed to

	<p>stress, depression and other related factors</p> <p>4.4A suggestion health education related to the disease must be available to communities<sup>****</sup></p>
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**Sub-theme 4.1: A suggestion that adherence to treatment and a healthy lifestyle must be maintained to stabilise risk factors e.g., Hypertension and Diabetes- Mellitus**

The findings pointed out a suggestion that adherence to treatment and a healthy lifestyle must be maintained to stabilize hypertension and diabetes - mellitus. It is important to recognise that adherence to treatment and a healthy lifestyle must be maintained to stabilize hypertension and diabetes mellitus, blood pressure medication reduces CVDs in people at risk and anti-diabetic medication reduce CVDs (van Smoorenburg, 2019) .

*“Participant HP#10: I try by all means to tolerate the given rules of not eating fatty foods like atchaar, spices and sweet foods. I exercise every day because I walk distance to work. But since 2015 I’m not ok sometimes I think I will develop CVD because after the death of my husband my blood pressure is uncontrolled because I always think of him because no one is supporting me my children are still small I’m not coping and I have no one to share my problems with (tears in her eyes). I just put my trust in God hoping that one-day things will change”.*

*“Participant HP#09: I make sure that I take my treatment every day I don’t skip taking them and also I follow the principles thereof of not getting angry as it will increase my blood pressure and I not take foods rich with fats and too many salts, look I’m healthy as a horse. I work every day by ploughing some vegetables at home and irrigate them daily. I don’t think I can develop CVD because I’m taking good care of myself”.*

*“Participant H&D# 06: Like myself I have been diabetic and hypertension for 15 years I follow instructions by taking treatment daily and I don’t skip treatment like now I’m having something on my leg that I want to show nurses I don’t stay with things on my body not showing nurses”.*

The findings indicate that improved health outcomes for individuals with diabetes depend on integrating self-management into daily life. A wide variety of educational, behavioural, and affective interventions are available that individually produce modest improvements in patient adherence to treatment recommendations in diabetes and related chronic illnesses and that work somewhat better when used in combination (Tsai et al., 2017).

Living with chronic illnesses is a highly demanding task, and many of the challenges faced are shared across conditions and demographics. For instance, chronically ill people can be required to cope with symptoms, disabilities, medication regimens, lifestyle changes, or emotional consequences such as depression and fear. Managing these aspects of life with chronic illnesses is often described as self-management (Swartwout et al., 2018).

#### **Sub-theme 4.2: Regular medical check-ups encouraged**

The findings of the study indicated that regular medical check-ups were encouraged. Regular health check-ups are encouraged because they can “ identify any early signs of health issues, finding problems early means that your chances for effective treatment are increased. Many factors, such as your age, health, family history and lifestyle choices can impact how often you need check-ups (Yang et al., 2018).

*“Participant HP# 012 affirm that: They should take treatment according to instructions and attend to check-ups regularly so that at the clinic should tell when you are having a problem because they will check you with all machines available”.*

*“Participant AI#06 add that: trust in western medicine al*

*though sometimes I do use traditional to prevent many incurable diseases so we need to come to the clinic to check if we are having problems”.*

*“Participant HP#017: Hei, hei really I don’t know maybe if they can come to the clinic and listen to nurses and take their treatment very well they will be ok”.*

*“Participants HP#013:- I think visiting clinic monthly to be checked by nurses and also the community health workers should visit and check us in our homes for CVD, and another thing, if they can avoid stress and eat good diet that is recommended by the doctors like cabbage and traditional vegetables, stay away from stress and argument because it were troubles, are starting and your heart will be swollen and you will be unable to live a normal life”.*

The findings suggest that regular check-ups can help find potential health issues before they become a problem. When you see your doctor regularly, they can detect health conditions or diseases early (Bundy, Schlik, Kelly, Mills, Chen, Whelton & He, 2017). By early detection, it gives you the best chance for getting the right treatment quickly and avoiding any complications. By getting the correct health services, screenings, and treatment you are taking important steps toward living a longer, healthier life (Mothiba, 2020). Even when several factors were identified by patients to assist in overcoming the barriers associated with the doctor-patient relationship such as being able to ask doctors questions and seek answers to their health concerns. Patients wanted to be listened to and have their individual, fluctuating needs appreciated, hence tailored, written information and care plans that are mutually agreed upon and respect for the patient’s priorities and agendas were specifically identified as helpful by doing written information keeping it simple (Herber et al.,2018).

#### **Sub-theme 4. 3: A suggestion that patients living with risk factors must avoid being exposed to stress, depression, and other related factors**

The finding denotes that there is a suggestion that patients living with hypertension and diabetes mellitus should avoid being exposed to stress, depression, and another related fact. Because of several psychological states and traits, such as depression, anxiety, anger, and stress, have also been

implicated as potential risk factors for hypertension, diabetes mellitus, and risk factors (Egan & Bokai, 2018).”

*“Participant HP#019 verbalised that “: I try to manage myself with regards to prevention of heart disease but is hard, you know why, It all started after my child passed away after been stabbed then after the funeral I started experiencing painful shoulders, legs, chest pains all over the body and after I consulted they said is stress the way I was feeling I didn’t forget that pains easily although it has been 2 years now, just because it comes and go I’m afraid that I can get a heart attack”.*

*“Participant HP# 015: “I just know that if you get worried for a long time you can get a heart attack, you see after my only son died and my in-law took all my grandchildren it pains me a lot I started to worry then they say I’m having heart disease and hypertension so if you have problems report to the police station”.*

*“Participant DM#11: I think is thinking too much, not solving your problems with people and always feeling dizzy because your heart will be full of anger and problems that are heart diseases”.*

This shows that people did not complain about lack of skills to manage medical tasks such as injecting insulin or blood pressure monitoring; rather, they reported difficulties in dealing with physical and emotional symptoms, with depression, pain, and fatigue being prominent (Tian & Meng, 2019). In addition, issues related to knowledge about self-management of conditions commonly arose because of confusing and often contradictory information provided by multiple health care providers (Martinez et al., 2018). In people with multi-morbidity, the combination of physical and emotional symptoms can increase the total symptom burden, which in turn can result in a greater negative impact on daily lives, however, healthcare professionals must be part of the discussion if they are to raise questions on symptom management or discuss symptom maintenance to provide support and give advice (Swartwout, 2018).



#### **Sub-theme 4.5.: A suggestion health education related to the disease must be available to communities**

The study revealed that a suggestion health education related to the disease “must be available to communities. Health education presents information to target populations on particular health topics, including the health benefits/threats they face, and provides tools to build capacity and support behaviour change in an appropriate setting. If is not provided the communities will lack knowledge of how to live a healthy life.

*“This finding was supported by participant HP#014: I don’t know anything about heart disease but I think if you experience problems coming to the clinic will help, but I also encourage my children not to make me angry as I experience pain on my heart if I’m angry even though I don’t know if heart attack is”.*

*“Other participants confirmed that HP#013: Nurses gives health education every day in the morning about many diseases how we can prevent them especially cholera and this one caused by dogs eish what is the name I remember is rabies”.*

The findings, therefore, suggest that health education is also used in care coordination to address barriers to care. A health educator is one type of care coordinator who delivers education to individuals, families, and communities (Tsai et al., 2017). Therefore, self-management support generally consists of health educating peers or providers and guiding participants in gaining the knowledge, skills, motivation and confidence needed to manage the physical and mental health issues of living with a chronic illness. Support in such should be differentiated from traditional patient education by an emphasis on skill- building activities, such as problem-solving and acting (Davidson et al., 2018).

#### **THEME 5: SUPPORT RELATED TO PREVENTION AND CONTROL OF HYPERTENSION, DIABETES MELLITUS, AND RISK FACTORS.**

This theme identifies the support related to the prevention, and control of risk factors that the patients experienced in the health facilities. The table below shows the detail of support.



**Table 4.6: Theme 5 and its sub-themes**

Theme	Sub-theme
5. Support related to prevention and control of hypertension, diabetes mellitus and risk factors.	<p>5.1. An explanation that supports received from health professionals through health education provided</p> <p>5.2. Support to adhere to treatment, eating appropriate diet and on how to avoid stress received from family members</p> <p>5.3. Sub-theme 5.3 Support to adhere to treatment, eating appropriate diet and on how to avoid stress received from family members</p>

**Sub-theme 5.1 Support related to prevention and control of hypertension, diabetes mellitus and risk factors.**

The finding showed that all that support related to the prevention and control of hypertension, diabetes mellitus, and risk factors, and prevention and control of the cardiovascular disease. This support on prevention and control can be achieved by encouraging patients in practicing regular exercise, keeping to a balanced healthy diet, avoiding tobacco smoking, and by the maintenance of optimal blood pressure and normal LDL-cholesterol and glucose levels although major advances have been made over the past years more can be achieved (Pandora, 2017).

*“Participant HP#09 further alluded that: ” My family knows that when they cook in my foods they must not put too much salt in my meal because salt causes blood to clots and if your blood can clot you will get heart disease”.*

*“Participant SM#05: my wife makes sure that I take treatment as prescribed every day because I will be at risk of getting this heart disease because sometimes nurses give us treatment not telling us how to take treatment and also how are they working in our body because they are different types of*

*treatment but my wife will make sure she reads and understand the instructions”.*

*“Participant A1#03: My son and his family know that I don’t take too much sugar and also I use a small amount of salt and for meat, I eat chicken only I don’t eat beef as is the one that causes a problem. When I was still working I used to buy vegetables and fruits but now is bad by pension money can’t afford to buy those things but I use traditional vegetables is very healthy. Vegetables that I use is potatoes and fish because I can afford them”.*

People with multiple chronic conditions experienced a great deal of suffering from physical and emotional symptoms which they need support to overcome to prevent CVD (Toback & Clark, 2017). Thus, to manage undesirable physical, emotional symptoms and impaired physical functioning which can directly prevent patients from carrying out normal daily activities. This includes support required to self-manage appropriately and successfully (Kefala et al., 2018).

### **Sub-theme 5.2. An explanation that supports received from health professionals through health education provided**

The study recognized that an explanation that supports received from health professionals through health education provided. Moreover, to explain educational strategies focusing on self-management education as, a collaborative and ongoing process intended to facilitate the development of knowledge, skills, and abilities that are required for successful self-management (Zou & Wei, 2017).

*“The finding was confirmed by Participant H&D#04: I think by coming to the clinic to get help it might prevent a heart attack because they will give me treatment and I won’t get heart attack. To me I just come to the clinic for every medical problem to manage other diseases. What I know if I have problem nurses will help me”.*

*“Participants HP#07 added that: One day when I visited the clinic a nurse told*

*me about the heart disease but for a long time I have forgotten everything she taught me, although it was very useful information”.*

*“Participant H&D#07: shares her experience: I don’t know anything about heart disease. I think if you experience problems by coming to the clinic helps. I also encourage my children not to make me angry as the clinic sister gave me information that if I become stressed I can experience CVDs as sometimes I feel pain on my heart if I’m angry even though I don’t know if it is a heart attack”.*

The finding suggests that education and support for self-management<sup>”</sup> are fundamental when caring for people with a chronic disease like diabetic Mellitus, hence, self-management and outcomes of diabetes Mellitus are decreased through the use of self-management strategies (Davidson et al ., 2018). Even though lack of social support was described as a barrier but having appropriate social support, or at least knowing you could have it if you needed it, was very often referred to as a strong enabler to successful self-management. However, social support was also seen as a barrier to self-management when family or friends interfered with treatment plans or independence. Sometimes the intended support and help that family and friends tried to provide hindered patients’ ability to self-manage or feel confident in managing their conditions (van Smoorenburg, 2019) .

### **Sub-theme 5.3: Support adhering to treatment, eating an appropriate diet and on how to avoid stress received from family members**

“The findings revealed that support adhering to treatment, eating an appropriate diet and how to avoid stress received from family members. People with multiple chronic conditions seemed to emphasize their medical needs, resulting in a greater reliance on family members but inconvenient access incorporates healthy foods into their diet, avoiding stressors and stressful environments (Tian & Meng, 2019).

This was confirmed by *Participant 077:-“You see sister if our children are always reminding us to take treatment as prescribed and eat healthy foods not to default treatment, and encouraged us to come to the clinic to be checked, and another thing is by putting many problems in your heart this will damage*

*your heart like myself my children knows that I don't need to hear bad news always they even avoid sharing news with me as they know I don't want to hear them"*

*"Participant: Family support is very important because when you share it prevent many complications and stroke, but when you don't share problems it can eat you inside so let's try to share problems to relieve congestion in your blood veins so that cannot explode and cause heart disease".*

*"Other Participant 001 added that: The big thing In CVD prevention is to follow instructions given from the clinic and Doctors. At the clinic they always teach us to take treatment as prescribed, avoiding foods with salt but to eat too many vegetables and fruits, also the family should be involved in this because there are the ones' who cook".*

This implies that self-care related to diet and other preventative lifestyle behaviors, family support is required, and this can make dietary self-care challenging because it involves changing habitual behaviors that are embedded in culture and may have social consequences (Sala et al., 2018). Lack of social support can also be a barrier, or at least knowing you could have it if you needed it, was very often referred to as a strong enabler to successful self-management. However, social support was also seen as a barrier to self-management when family or friends interfered with treatment plans or independence (Maimela & Alberts, 2018). Sometimes the intended support and help that family and friends tried to provide hindered patients' ability to self-manage or feel confident in managing their conditions are often limited and no one was readily available to answer or clarify small questions as well as urgent concerns (Gelaw et al., 2017).

#### **4.4. SUMMARY OF QUALITATIVE RESULTS**

The findings of these qualitative strands after using in-depth interviews were eventually determined by data saturation during data collection, data obtained from the participants like risk factors e.g., hypertension, diabetes, smoking,

physical activity, diet, and obesity. These results give us the information to conduct a quantitative strand to explore more towards the use of a non-laboratory tool that will highlight us which age group is at risk, gender, demographic area, risk factor like chronic illness, diet, exercise, and their main risk factor that affect them.

#### 4.5. QUANTITATIVE STRAND

A mixed method exploratory sequential design was adopted, the researcher started by collecting qualitative data which was used to develop a questionnaire in the quantitative strand. Additionally, a non-laboratory inter-heart risk score tool to predict the risk of CVD development in the patient with risk factors was also used to collect data. The scores range from high, moderate, and low-risk scores, with high-risk scores patients were referred to the hospital for further management, moderate risk recorded and implementation plan activities planned and implemented, and low-risk scores were given health education on lifestyle modification. The main objective was to provide information and presentation of challenges, knowledge, and experiences concerning self-management to prevent risk factors related to CVD development at Ga-molepo area clinics in the Limpopo province, South Africa. The findings of this strand are presented using tables, charts, and graphs after which the description of the findings is presented.

**Table 4.7: The response rate for this study.**

<b>Descriptive information</b>	<b>Number of Questionnaires</b>	<b>Percentage</b>
<b>Number of total distributed questionnaires</b>	347	100
<b>Number of total returned questionnaires</b>	250	87.1

TOTAL	QUESTIONNAIRE	PERCENTAGE
“”The total number of usable questionnaires	248	86.4

The response rate was 87.1% of the participants who returned the questionnaires (a total of 287 questionnaires were distributed and 250 were successfully returned). However, 2 returned questionnaires were not usable due to errors.

#### 4.5.1. Demographic findings of respondent

This section indicates the demographic profile of the respondents which includes the gender, age, smoking status, exposure to other tobacco use or exposure to tobacco use, chronic illness Hypertension and Diabetic Mellitus, history of parents heart attack, quarantine of less than 0, 873, depression or stress, intake of salty food/fried foods/eating of fruit or vegetables /eating of meat, physical activity during the screening of risk factors

Table 4.1 Gender category

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	1.2	1.2	1.2
	F	203	80.9	80.9	82.1
	M	45	17.9	17.9	100.0
	“”Total	251	100.0	100.0	

The findings show that respondents were predominantly females as compared to males (82% females versus 18% males). The study shows that respondents that are attending primary health care on regular basis were predominantly females.

Table 4.2.Age Category

#### Age Category



	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	.8	.8	.8
“Are you a man 55 years or older OR a woman 65 years or older?”	134	53.4	53.4	54.2
“Are you a man younger than 55 years OR woman younger than 65 years?”	115	45.8	45.8	100.0
Total	251	100.0	100.0	

The findings of the study indicated that the majority of participants are above 55 years old (55 %) while (45%) are younger than 55 years of age. This means that majority of participants are above 55 years of age.

Table 4.3 Smoking

<b>Smoking</b>				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8	3.2	3.2	3.2
I am a current smoker	10	4.0	4.0	7.2
I am a former smoker	12	4.8	4.8	12.0
I never smoked	221	88.0	88.0	100.0
Total	251	100.0	100.0	

These findings indicate that most of the participants never smoked (78%) while former smokers (15%) and those who are current smokers (7%). These findings indicate that a small margin of participants are smoking and are putting themselves at risk of developing CVD.

Table 4.4: How many cigarettes

### How many

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	235	93.6	93.6	93.6
1-5 cigarettes per day	10	4.0	4.0	97.6
16-20 cigarettes per day	1	.4	.4	98.0
6-10 cigarettes per day	5	2.0	2.0	100.0
Total	251	100.0	100.0	

Furthermore, (62%) of participants that are current smokers smoke 1 to 5 cigarettes per day, while (8%) smoke 16-20 cigarettes per day and (30%) smoke 6 to 10 cigarettes. This implies that most of the participants that are current smokers are at risk of developing CVD as they smoke 1 to 5 cigarettes per day.

Table 4.5 Exposure to smoking

**Exposure to other people's tobacco smoke**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	2.0	2.0	2.0
Less than 1 hour or exposure per week or no exposure <sup>***</sup>	191	76.1	76.1	78.1
One or more hours of secondhand smoke exposure per week	55	21.9	21.9	100.0
Total	251	100.0	100.0	

The Majority of participants (62%) were exposed to smoking or no exposure in less than one hour per week and (38%) were exposed to second-hand smoke for one or more hours per exposure per week. This indicates that most of the participants were exposed to smoking or no exposure in less than one hour per week.

Table 4.6: History of Diabetes

		<b>Diabetes</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		9	3.6	3.6	3.6
	no or unsure	1	.4	.4	4.0
	No or unsure	215	85.7	85.7	89.6
	Yes	2	.8	.8	90.4
	Yes	24	9.6	9.6	100.0
	Total	251	100.0	100.0	

The findings revealed that the majority of the participants do not know or are unsure whether their family has diabetes or not (98%), while (2%) do not know or are unsure whether they have diabetes or not. This indicates that patients do not know of chronic diseases in their families.

Table 4.7 History of High Blood Pressure

		<b>High Blood Pressure</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		41	16.3	16.3	16.3
	No or unsure	142	56.6	56.6	72.9
	Yes	2	.8	.8	73.7
	Yes	66	26.3	26.3	100.0
	Total	251	100.0	100.0	

The majority of participants (66%) were not sure whether they have hypertension or not while (34%) were sure that they are having hypertension . This indicates that most participants did not have hypertension or were unsure if they had it.

Table 4.8 History of Parents regarding heart attack

		<b>Parents had a heart attack</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		41	16.3	16.3	16.3
	No or unsure	181	72.1	72.1	88.4
	Yes	2	.8	.8	89.2
	Yes	27	10.8	10.8	100.0
	Total	251	100.0	100.0	

The majority of Participants (95%) were not sure whether their parents had a heart attack or not while (5%) are sure of their parents' status of a heart attack. This study shows that most of the respondents do not have history of parents concerning a heart attack.

Table 4.9 Weight height and ratio quartile (WHR)

		<b>WHR</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	.8	.8	.8
	Quartile 1: Less than 0.873	119	47.4	47.4	48.2
	Quartile 2 &3: 0.873 - 0.963	84	33.5	33.5	81.7
	Quartile 4: greater than or =0.964	46	18.3	18.3	100.0
	Total	251	100.0	100.0	

The majority of participants (45%) their waist height ratio quartile are less than 0,873, while (36%) are between 0,873-963 and those who are greater than 0.964 are (19%). This indicates that the majority of participants are having a high waist-height ratio which put them at a higher risk of obesity-related CVD while a small number are having normal weight.

Table 4.10: Depressed/Stressed

		<b>Depressed/Stressed</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		27	10.8	10.8	10.8
	No	143	57.0	57.0	67.7
	yes	5	2.0	2.0	69.7
	Yes	76	30.3	30.3	100.0
	Total	251	100.0	100.0	

The majority of participants (96%) do not feel depressed /stressed, while

(4%) feel depressed or stressed, the findings indicate that most of the participants do not have psychological problems while a small margin of respondents (4%) feel depressed which pose them to be at risk of developing CVD.

Table 4.11: Salty Food

		<b>Salty food</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	.4	.4	.4
	No	82	32.7	32.7	33.1
	yes	8	3.2	3.2	36.3
	Yes	160	63.7	63.7	100.0
	Total	251	100.0	100.0	

The findings revealed that the majority of respondents (66%) are taking salty foods and only (34%) are taking foods without salt. The respondents were taking salty foods meaning that they are at risk of developing CVD.

Table 4.12: Fried Food

		<b>Fried foods</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	.8	.8	.8
	No	150	59.8	59.8	60.6
	yes	6	2.4	2.4	62.9
	Yes	93	37.1	37.1	100.0
	Total	251	100.0	100.0	

The study shows that (62%) of participants do not eat fried foods, while (38%) eat fried foods. The findings indicate that most of the participants are taking fried foods which is one of the risk factors for developing CVD.

Table 4.13: Eat Fruit

### **Eat fruit**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13	5.2	5.2	5.2
No	111	44.2	44.2	49.4
yes	7	2.8	2.8	52.2
Yes	120	47.8	47.8	100.0
Total	251	100.0	100.0	

The majority of participants (52%) agreed that they are eating fruits while (48%) indicate that they are not eating fruit most of the time. The majority of participants can eat fruit meaning they are eating a healthy diet that prevents CVD, while a small number are exposing themselves to CVD by not eating fruits.

Table 4.14: Eat Vegetables

#### **Eat vegetables**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13	5.2	5.2	5.2
No	67	26.7	26.7	31.9
yes	7	2.8	2.8	34.7
Yes	164	65.3	65.3	100.0
Total	251	100.0	100.0	

The findings also revealed that the majority of participants (52%) eat vegetables while (48%) do not eat vegetables on daily basis. This implies that the majority of respondents eat a healthy diet that prevents CVD and a small margin are at risk of developing CVD as they do not eat vegetables.

Table 4.15. Eat Meat

		<b>Eat meat</b>		
	Frequency	Percent	Valid Percent	Cumulative Percent

Valid		6	2.4	2.4	2.4
	No	110	43.8	43.8	46.2
	yes	7	2.8	2.8	49.0
	Yes	128	51.0	51.0	100.0
	Total	251	100.0	100.0	

The findings revealed that the majority of participants (54%) eat meat while (46%) do not eat meat. This indicates that the majority of respondents eat meats that contain fats. These are the ones' who are at risk of developing CVD. Small margin do not eat meat which is good for the body .



Table 4.16 Physical activity

		Physical activity		Valid	Cumulative
		Frequency	Percent	Percent	Percent
Valid		2	.8	.8	.8
	Perform mild exercise	181	72.1	72.1	72.9
	Perform moderate	68	27.1	27.1	100.0
	Total	251	100.0	100.0	

The study revealed that the majority of participants (74%) perform the mild exercise while (26%) perform moderate exercise. This means that majority of participants perform mild exercises which help to lose weight and improve their self-esteem, overall health, and prevent CVD.

Table 4.17: Status

		Status		Valid	Cumulative
		Frequency	Percent	Percent	Percent
Valid		2	.8	.8	.8
	High	44	17.5	17.5	18.3
	Low	105	41.8	41.8	60.2
	Moderate	100	39.8	39.8	100.0
	Total	251	100.0	100.0	

The results of the study indicated that (18%) of the respondents are at high risk of developing CVDs and referred to a hospital for further management while (42%) of the participants are at a low risk of developing CVDs and pamphlets on lifestyle modification and health education were given. However, about (40%) were found to be at moderate risk of developing CVD and they were registered for intervention and implementation. This finding shows that there is a need for the implementation of self-management strategies for chronic

patients to prevent developing CVD.

#### **4.6 CHAPTER SUMMARY**

Chapter 4 discussed the qualitative strand of the study. Where five themes and twenty-seven sub-themes emerged from the qualitative strand. In the qualitative strand, the findings were presented by using tables, charts, and graphs after which the description of the findings is presented. The next chapter will present the integration of the qualitative and quantitative strands.

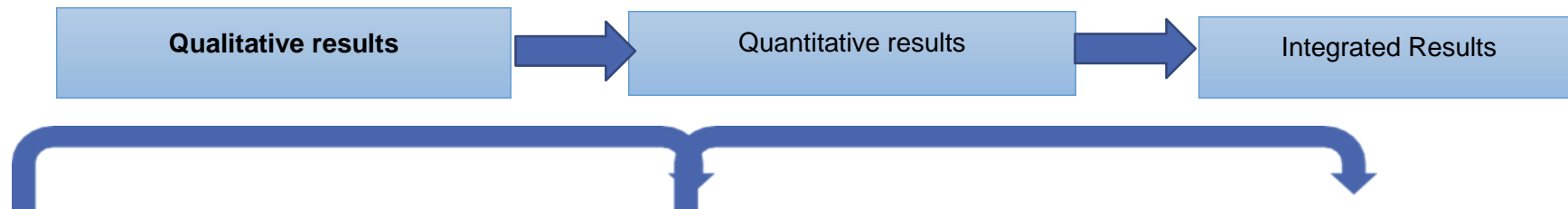
## CHAPTER 5

### INTEGRATION AND INTERPRETATION OF QUALITATIVE AND QUANTITATIVE RESULTS

#### 5.1 INTRODUCTION

The study employed a mixed method joint display to present the integration or the merging of results within a single study (Creswell, 2015). This chapter outlines the integration and interpretation of qualitative and quantitative results. The main aim of integrating qualitative and quantitative data was to bring a clearer understanding of both strands than what was given by qualitative or quantitative results alone. Integration was done through comparison where the quantitative and qualitative results were brought together to determine the extent to which the two data confirm, contradict or expand. Figure 5.1 presents an outline of the integration/merging of the qualitative and quantitative strand.

**Figure 5.1: Integration of Qualitative and Quantitative findings through displa**



<b>THEME 1 Description of self-management strategies used by patients with risk factors.</b>	<b>Respondents' Risk of developing CVDs</b>	<b>Lack of knowledge Integrated results in Non-adherence to a healthy life</b>
<ul style="list-style-type: none"> <li>✓ Different self-management strategies used when living with risk factors</li> <li>✓ Adherence to a healthy lifestyle &amp; lifestyle modification is viewed as a way of preventing or managing CVDs</li> <li>✓ Adherence to treatment &amp; medication instruction and medical follow-up visits at health facility facilities were mentioned.</li> <li>✓ Management of emotions Explanation of several defense mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The majority of participants (74%) perform mild exercise 48% indicate that they are not eating fruit.</li> <li>✓ The majority of participants (54%) eat meat (4%) feel depressed or stressed former smokers are (15%) and who are current smokers are (7%).</li> </ul>	<p>The findings of both strands indicate that the participants are exposing themselves to CVD development as they describe self-management strategies differently and incorrectly.</p> <ul style="list-style-type: none"> <li>✓ Performing mild exercise most of the times</li> <li>✓ Eating meat high in cholesterol</li> <li>✓ Feeling stressed</li> <li>✓ Smoking</li> </ul>
<b>THEME 2: Knowledge related to self-management and other related factors when living with risk factors</b>	<b>Respondents' Risk of developing CVDs</b>	<b>Knowledge related to self-management</b>
<ul style="list-style-type: none"> <li>✓ The onset, signs and symptoms and prognosis of the CVD</li> <li>✓ Attitudes and practices expected to prevent and control risk factors</li> <li>✓ Self-management strategies that could be used/ causes/ contributory factors and preventative measures for CVDs</li> <li>✓ Existence versus lack of knowledge related to the relationship amongst the CVDs themselves</li> <li>✓ Treatment and lifestyle to maintain and importance of physical activity, appropriate diet and lifestyle modification for people living with risk factors</li> </ul>	<ul style="list-style-type: none"> <li>✓ About 66% of respondents were not sure whether they have hypertension or not while 34% were sure that they are having hypertension.</li> <li>✓ Among the respondents, current smokers of 1 to 5 cigarettes per day, while (8%) smoke 16-20 cigarettes per day and (30%) smoke 6 to 10 cigarettes.</li> <li>✓ For family history, 98% do not know or are unsure whether the family has diabetes or not.</li> <li>✓ For diet, about 38% of respondents eat fried foods with 18% at high risk of developing CVD.</li> </ul>	<p>The findings of both strands indicate that there is a lack of knowledge of self-management strategies when living with risk factors.</p> <ul style="list-style-type: none"> <li>✓ Lack of knowledge about chronic diseases e.g.HPT or DM</li> <li>✓ Lack of knowledge about diet</li> <li>✓ Lack of knowledge about the dangers of smoking and healthy living</li> </ul>
<b>THEME 3:Challenges experienced by patients with risk factors in managing the disease</b>	<b>Respondents' Risk of developing CVDs</b>	<b>Challenges experienced by patients with risk factors</b>
<ul style="list-style-type: none"> <li>✓ An explanation that unforeseen painful life experiences lead to poor control or prevention.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Majority of respondents(62%) were exposed to smoking (4%) and feeling depressed or stressed,</li> <li>✓ In terms of height, 45% of their waist height ratio quartile are less than 0,873, while (36%)</li> </ul>	<p>The findings of both strands showed that people with risk factors experience challenges in managing risk factors.</p> <ul style="list-style-type: none"> <li>✓ Exposed to 2nd hand smoking</li> </ul>



## **5.2 INTERPRETATION AND DISCUSSION OF INTEGRATION FINDINGS**

In this sections, the findings are presented narratively and are the result of the integrated qualitative and quantitative findings. The findings revealed some similarities in the themes, constructs and also differences. Also in this section, the discussion focuses basically on similar findings from both the qualitative and the quantitative results. The dissimilar findings were highlighted for clarity purposes as the discussion is more focused on the integrated results.

### **5.2.1 Biographic Information**

The biographic results in both strands revealed that the majority of participants were female and also most of the patients attending clinics are females than males. The quantitative study further revealed that the majority of females (82%) participants are above 55 years old compared to 18% males attending PHC facilities. The findings conclude that a majority of patients that are attending are females above 55 years of age so there is a gap for males as a small margin are attending PHC facilities. The findings are congruent with Babwah, Baksh, Blake, and Cupid (2018) indicating that women are three times as men among clinic attendees. This suggests that essentially there is a larger number of ladies than men who attended outpatient clinics. However, the study conducted in Bangladesh by Fatema, Hossain, Natasha, Chowdhury, Akter, Khan and Ali (2017) also alluded that more females of about 11,917 compared to 10,901 males attended Bangladesh health centres.

### **5.2.2 Paradoxical (different) description of self-management strategies used when living with risk factors including hypertension and diabetes-mellitus described (physical activity, eating a healthy balanced diet, drinking a lot of water, etc.)**

The integrated findings revealed that there is a different description of self-management strategies used by patients when living with risk factors including hypertension and diabetic- Mellitus which include engaging in physical activity, eating a healthy balanced diet, drinking a lot of water, however, the quantitative findings further indicate that (74%)a majority of participants perform mild

exercises and a limited number (26%) perform moderate exercise which does not converge with qualitative findings. This exposes them to CVD development. However, the findings conducted by Odris, Oguntade, Mensah, and Kitamura (2020) distinguished that well being, promotion, self-care, and education in the community and primary care settings encourage the patients to engage towards smoking cessation, increased physical activity, and a healthy diet in the prevention of CVD in Nigeria, and this plays an important role to the prevent dominant risk factors of CVD.

### **5.2.3 Adherence to treatment & medication instructions are mentioned as important for self-management when living with hypertension and diabetes- mellitus**

The qualitative study revealed that adherence to treatment instructions are mentioned as important for self-management when living with risk factor including hypertension and diabetes -mellitus, although quantitative findings indicates that a majority of participants (66%) were not sure whether they have hypertension or not while (34%) were sure that they are having hypertension and due to these findings it puts participants at risk of CVD as they are not sure of their chronic diseases. Treatment adherence was identified as a primary determinant of treatment success. Medical services experts, for example, doctors, drug specialists and nurses play a huge part in their everyday practice to further develop patient medication adherence. The findings are congruent with that of a study conducted by Mustafa et al. (2019) revealed that CVDs is treatable with initial treatment primarily focused on diet and lifestyle intervention, blood pressure medication reduces CVDs in people at risk and anti-diabetic medications may reduce CVDs risk in people with type 2 diabetes, aspirin is the only modest benefits in those low risk of heart diseases as the risk of serious bleeding is almost equal to benefit concerning CVD problems. Jimmy and Jose (2020) concluded that the effectiveness of a treatment depends on both the efficacy of medication and patient adherence to the therapeutic regimen. Patients, health care providers, and health care systems, all have a role to improve medication adherence. A single method cannot improve medication adherence, instead, a combination of various adherence techniques

should be implemented to improve patients' adherence to their prescribed treatment.

#### **5.2.4 Adherence to medical follow up visits at health facility mentioned as a self-management strategy**

The qualitative findings of the study revealed that adhering to medical follow up visits at health facilities is mentioned as a self-management strategy, however, the quantitative findings establish that majority of respondents (66%) are taking salty foods and only (34%) are taking foods without salt even though they are adherence to medical follow up which pose them to CVD development . There is increasing recognition that chronic illness, including its prevention, treatment and management, represents public health as well as a clinical issue . Grady and Gough (2014) reported that a healthy population are the ones' adhering to strategies, interventions, and policies to combat chronic illness. Community-based self-management intervention programs are one aspect of a population-based approach addressing the larger public health problem of chronic conditions in the United States and across the globe (Odris et al., 2020).

#### **5.2.5 Adherence to a healthy lifestyle & lifestyle modification viewed as a way of preventing or managing risk factors and CVD**

The findings from both strands also revealed that the majority of participants adhere to a healthy lifestyle as a way of preventing or managing risk factors and CVD. The findings indicate that most of the participants (62%) do not eat fried foods, while (38%) eat fried foods are taking fried foods which is one of the risk factors for developing CVD. This is supported by the findings of De Backer (2017) highlighting that prevention of CVD can be achieved by practicing regular exercise, keeping to a balanced healthy diet, avoiding tobacco smoking and maintenance of optimal blood pressure and normal LDL-cholesterol and glucose levels. Bekele, Asefa, Getachew and Belete (2020) revealed that adherence to a healthy lifestyle when living with CVD has been a success story in medicine and public health. Patients' knowledge and attitudes may also present a barrier, some do not acknowledge the seriousness of the disease and some do not correlate their diet and sedentary lifestyle asexacerbating their symptoms. Misperception about the severity of the illness such as the complications associated with the disease contributes to



poor adherence

### **5.2.6 Management of emotions (anger, fear, stress) is mentioned as a self-management strategy.**

The findings from both strands also revealed that the majority of participants do not feel depressed /stressed as they know that management of emotions like anger, fear and stress is one of the self-management strategies and this indicates that most of the participants do not have psychological problems. The quantitative findings concur with qualitative showing that a majority of participants (96%) do not feel depressed / stressed, while (4%) feel depressed or stressed, the findings of this study are similar to that of a study conducted by Steyn, Mann, Bennett, Temple, Zimmet, Tuomilento, Lindstrom and Louheranta (2017) indicating that both depression and anxiety are associated with poor adherence to medical regimens, this in turn having a marked effect on patient self-management. The management of depression in cardiac patients, therefore, it is extremely important that patients are to become engaged in self-management (Jimmy & Jones, 2020).

### **5.2.7 Explanation of several defense mechanisms used as a way of preventing or managing CVD and risk factors, hypertension and diabetes- mellitus.**

The findings from both strands also revealed that the majority of participants indicated that there are several mechanisms used by patients with risk factors used in preventing or managing CVD as most participants indicated avoiding stress and eating a healthy diet as some of the mechanisms. The majority of participants (74%) perform mild exercise while (26%) perform moderate exercises. The findings are congruent with the study conducted by Tamir, Azam, Imran, Hashmi, Zeb, and Furgan (2018) that revealed that many multi-factorial strategies can reduce and prevent CVD complications in hypertension and diabetes. Diabetes individuals who are older than 35 years of age should not embark on exercise programs more vigorously than walking without

consideration of an exercise test. Cycling or swimming programs rather than walking programs should be considered in the presence of significant peripheral nephropathy or major foot deformities. Bette et al. (2020) also reported that many several strategies can be used to prevent CVD like the normalization of weight, increased consumption of fruit and vegetables, decreased intake of saturated fats (10% of calories), salt (6 g/day), and free sugars, and increased activity levels will all impact on reduced cardiovascular risk. While Tamir et al. (2018) indicated that furthermore, such diets further provide primary prevention of new-onset diabetes- mellitus .

### **5.2.8 Religious interventions used to cope with risk factors including hypertension and diabetes-mellitus**

The qualitative findings revealed that there are religious interventions used to cope with the risk factors, hypertension and diabetes mellitus like laying of hands, fasting while praying to be closer to God, and in other religions, they perform rituals like pricking blood from the nose to reduces congested blood on the head and in doing so it reduces CVD development while quantitative does not include religious interventions as a strategy for CVD development. The findings are in contrast with Barboza, Medeiros, and Souto (2018) indicating that spiritual healing is a commonly accepted practice of early Christianity whether used for curing illness or preventing disease, the primary purpose of most forms of spiritual healing was to maintain the physical, psychological and spiritual well-being of the individual and the community.

As indicated by Steyn et al. (2017) reporting that there is a link between religious influences on physical health through psychosocial and behavioral factors that have on the risk of developing CVDs. The religious community has the authority on the community trust to play a direct role in encouraging behavior changes by linking spiritual and physical health. It was reported by Fatema et al. (2017) that religious intervention is relatively easy to motivate and sustain maintenance of healthy behaviors thereby reducing CVDs .

### **5.3. Theme 2. Knowledge related to self-management and other related factors when living with risk factors including hypertension and diabetes -mellitus**

#### **Sub-theme 5.3.1 Knowledge related to the onset, signs and symptoms, and prognosis of the CVDs**

The qualitative findings revealed that there are others with knowledge of their diagnosis. While others do not know about their illness and also the knowledge related to the onset, signs and symptoms, and prognosis of their diagnoses like hypertension and diabetes- mellitus was identified as a challenge to patients living with hypertension and diabetes. As they usually ignore or do not know or do not take signs and symptoms as a sign of illness and this concurs with quantitative findings as the majority of the participants showed that do not know or are unsure whether the family have diabetes or not (98%), while (2%) do not know or unsure whether they have diabetes or not (95%). The findings are in line with that of a study by Grady and Gough (2018) reported that inadequate knowledge may be one contributing factor to poor control of blood pressure through non-adherence to medications and follow-up visits. Inadequate patient knowledge about hypertension and CVD risk is likely to be an additional contributor. Hwangi, Moser, and Dracup (2017) conducted a study that has shown that knowledge and awareness about the disease can have a positive influence on the attitude and practices of patients that could lead to better management of diabetes and eventually good quality of life. A patient when involved in self-management of disease through guidance, education, and awareness programs becomes more compliant toward lifestyle changes and drug therapy which help both the practitioner and patient to achieve the treatment goals.

However, de Silva (2017) indicated that knowledge, attitude, and practice gap exists in type 2 diabetes- mellitus and hypertension management that does not allow patients and healthcare professionals to implement lifestyle changes that could reduce the morbidity and mortality associated with diabetes.

### **5.3.2. Knowledge related to attitudes and practices expected to prevent and control hypertension and diabetes-mellitus**

The finding from both qualitative and quantitative strands revealed that patients' knowledge related to attitudes and practices expected to prevent and control hypertension and diabetes were not sufficient enough as others still indicating that there are still smoking cigarettes (62%) of participants that are current smokers smoke 1 to 5 cigarette per day, while (8%) smoke 16-20 cigarette per day and (30%) smoke 6 to 10 cigarette, drinking alcohol and still taking a diet with high fat but taking telling themselves that as long as they are taking treatment is good for them.

However, Mustafa, Sharifa, Hadi, Illzamo and Salin (2019) states that awareness about diabetes complications like CVD and consequent improvement in dietary knowledge, attitude, and practices lead to better control of the disease. The stakeholders (health-care providers, health facilities, agencies involved in diabetes care, etc.) should encourage patients to understand the importance of a diet that may help in disease management, appropriate self-care, and better quality of life. It is crucial to enhance basic diabetic and hypertension management and knowledge among the general population, especially in rural areas. National-level education and health intervention programs should be instigated and augmented.

A study conducted by Steyn et al. (2017) revealed that patients' ideas, beliefs, and experiences with diabetes and hypertension also greatly influence adherence. For example, there is a prevalent belief that exercise exacerbates the symptoms of diabetes, rather than being a protective factor, there is also an increase in the level of knowledge with age, and the urban community shows more knowledge than rural residents. People that have sufficient financial resources tend to show better attitudes toward seeking treatment. Those with fewer resources should be provided with free screening services and encouraged to attend. Education programs, and free camps; however, no such actions are taken to educate those living in rural areas.

### **5.3.3 Knowledge related to self-management strategies that could be used by patients with risk factors e.g., Hypertension and diabetes-mellitus.**

The finding for both qualitative and quantitative strands revealed that knowledge related to self-management strategies that could be used by hypertension and diabetes mellitus patients are not implemented by most of the participants because they are indicating that that are still taking foods with salt (66%) of the participants are taking salty foods and only (34%) are taking foods without salt, fats, and have never engaged in any physical exercises.

This is congruent with the study done by Griffin, Cardenas, William and Benrimo (2019) that reported that incorrect knowledge about diabetes, hypertension and risk factors needs the motivation to make lifestyle changes were significantly associated with diet modifications and exercise habits. Knowledge on lifestyle modifications and reduction in waist circumference, body mass index, and blood glucose level is much important in self-management in diabetes and hypertension it helps in overall health (Gillani, Islam, Hyat, Atif, Yang, Chang, Qu & Fang, 2018).

### **5.3.4 Knowledge related to the causes/contributory factors and preventative measures for CVD and risk factors**

The findings show that knowledge related to the causes/contributory factors and preventative measures for CVD and risk factors is insufficient as patient indicates that there are still engaged in behaviour like smoking and taking foods rich with fats (62%) of participants do not eat fried foods, while (38%) eat fried foods and not exercising and do not have knowledge that is one of the contributory factors to complication like CVD and also healthy lifestyle contributes to the prevention of complications.

Babwah, Baksh, Blake, Tuesday, Hosein, Sookhai, Poon-king and Hutchinson (2019) in their study suggested that health literacy can be linked to a patient's

ability to self-manage because low health literacy is an independent predictor of mortality and hospitalizations. Low health literacy needs to be addressed to improve knowledge and self-management skills. Given the high morbidity and mortality due to hypertension and diabetes, if a patient knows about the disease, the patient will be more careful about the management and better control can be achieved .

### **5.3.5 Existence versus lack of knowledge related to the relationship amongst the risk factors and CVDs**

“The finding for both qualitative and quantitative strands revealed that the information of existence versus lack of knowledge related to the relationship amongst the risk factors and CVDs is not adequate as some participants’ shows that they know. While others do not know anything about the relationship between risk factors and CVDs and their impact to each other (95%) were not sure whether their parents had a heart attack or not while (5%) are sure their parents’ status of a heart attack.

These findings concur with the outcome of the study by Fatema et al. (2017) which reported that despite having adequate knowledge about the disease, practices and attitude of patients towards disease management was poor. Patients suffering from chronic diseases should be counselled to embrace healthy practices and to adopt a positive attitude for effective disease management. When considering non-communicable diseases like diabetes and hypertension, specific treatment cannot be provided by medication only.

Tamir et al. (2018) revealed that to delay the advancement and magnitude of complications and adverse outcomes, proper management and control is advised for these patients. Hence, enhancing the knowledge, attitude and practices of patients concerning their illness and medication adherence would improve the curative outcomes.

### **5.3.6. Knowledge related to treatment and lifestyle to maintain when living with risk factors e.g., Hypertension and diabetes-mellitus**

The qualitative findings from both strands indicated that knowledge related to the treatment and lifestyle to maintain when living with risk factors. e.g.,

hypertension and diabetes mellitus is a challenge because others are still practising sedentary lifestyle even though they are overweight they do not exercise. They indicate that as long as they adhere to treatment they will not have any problem or experience any complications the quantitative findings agree indicating that (45%) their waist height ratio quartile are less than 0,873, while (36%) are between 0,873-963 and those who are greater than 0.964 are (19%).

This is confirmed by Rigel, Moser, Buck, Dickson, Dunbar, Lee, Lennie, Liodenfeld, Mitchell, Dianne, Jacobson and Webber (2017) indicating that lifestyle management is an important component of hypertension treatment because it lowers blood pressure, enhances the effectiveness of some anti-hypertensive medications, promotes other aspects of metabolic and vascular health, and generally leads to few adverse effects. Thus, to facilitate long-term maintenance of behavioural change, lifestyle therapy should be adapted to suit the needs of the patient and discussed as part of diabetes and hypertensive management.

Similarly, Bekele et al. (2020) alluded that a variety of strategies has been proposed to support patient self-management, such as early and targeted screening of patients to identify and resolve capacity deficits (e.g., limited literacy, cognitive and physical impairment) and psychosocial obstacles (e.g. depression and anxiety) that may undermine self-care. Lifestyle therapy consists of reducing excess body weight through caloric restriction, restricting sodium intake (<2,300 mg/day), increasing consumption of fruits and vegetables (8–10 servings per day) and low-fat dairy products (2–3 servings per day), avoiding excessive alcohol consumption (no more than 2 servings per day in men and no more than 1 serving per day in women) smoking cessation, reducing sedentary time, and increasing physical activity levels. These lifestyle strategies may also positively affect glycaemic and lipid control and should be encouraged in those with even mildly elevated

### **5.3.7. Existence versus lack of knowledge related to the importance of physical activity, appropriate diet and lifestyle modification for people living with risk factors including hypertension and diabetes-mellitus**

The findings revealed that there is an existence versus lack of knowledge related to the importance of physical activity ,appropriate diet and lifestyle modification for people living with risk factors including hypertension and diabetes-mellitus as most of the participants indicated they don't really regard physical activity ,diet and lifestyle modification are related in the prevention of hypertension and diabetes-mellitus this converge with quantitative findings as the score results of the study indicated that (18%) are at high risk of developing CVD

The findings correspond with Byrne, Eksteen and Chickmore (2018) who found out that Knowledge plays a vital role in any future disease development and its early prevention and detection. Positive knowledge, attitude, and practice are important for diabetes and hypertension patients that weight reduction should be considered in the management of blood pressure. The loss of 1 kg in body weight has been associated with a decrease in blood pressure of ~1 mmHg. Some weight-loss medications may induce increases in blood pressure levels, so these must be used with care. Feigin, Norrving, and Mensah (2017) added that elements of Knowledge, attitudes, and practices are interrelated and dependent on each other. If the level of one element is higher, the other two factors should be affected positively. Knowledge regarding diabetes and hypertension varies greatly depending on socio-economic conditions, cultural beliefs and habits. Knowledge can prevent the imminent chronic comorbidities of CVDs, which significantly impact the quality of life of diabetic and hypertensive patients. Information can help people to assess their risk of diabetes, motivate them to seek proper treatment and care, and inspire them to take charge of their disease for their lifetime.



## **5.4 Theme 3. Challenges experienced by patients with risk factors in managing the disease**

### **5.4.1. An explanation that unforeseen painful life experiences lead to poor control or prevention of risk factors e.g., Hypertension and diabetes-mellitus**

The findings indicated that there is an explanation that unforeseen painful life experiences lead to poor control or prevention of risk factors .e.g., hypertension and diabetes mellitus as most of the participants indicated that they experience challenges like not adhering to a healthy diet as they are not the ones cooking. Thus, children are always causing problems to them that causes their blood pressure and blood glucose rising so this agrees with quantitative findings as it shows that (4%) feel depressed or stressed, the findings indicate that most of the participants do not have psychological problems.

Schwalm, Markin, Mckee, Mark, Huffman, Saim, and Yusuf (2017) agree that poor control of hypertension and diabetes are under the direct influence of lifestyle factors and lack of awareness and support is the major contributor to the increase in these conditions. Medical illiteracy among patients (i.e., poor understanding of the disease process, medication effects, dosage regimens, and possible side effects) is a frequent cause of medication non”adherence.

This finding is also supported by a study by Rigel (2017) that revealed that a lack of awareness and support is not a positive for future community-based health promotion efforts. Patients’ knowledge of non-communicable diseases and choice of treatments were influenced by community lay sources.

Knowledge of treatment options and efficacy has been found to lead patients to seek care more readily. For correct information, a community health worker-led intervention was effective in promoting medication adherence, support and reinforcing basic disease education among adults .

### **5.4.2. Fear, stress including household stressors and depression lead to poor control or prevention of risk factors including hypertension and diabetes-mellitus**

The qualitative findings of the study indicated that fear, stress including household stressors and depression lead to poor control or prevention of risk

factors including hypertension and diabetes as most participants indicated they have experienced the death of their loved ones in the family as others fear for their lives as they are staying alone at home as their children are staying at work with their families so due to crime they might be attacked as the criminals may take advantage of them staying alone somehow contradicts with quantitative findings as it indicates that the majority of participants (96%) do not feel depressed/stressed, while (4%) feel depressed or stressed,

This is supported by Hwang et al. (2017) which affirms that many patients thought that the cause of hypertension and diabetes was stress, others identified genetics, and some reported a belief that the diseases affected people at random. The belief that stress influenced disease development led some patients to choose relaxation or television watching as hypertension and diabetes self-care. Feigin et al. (2017) also reported that most patients acknowledged the role of diet and physical activity in hypertension and diabetes management, as informed by their health care practitioners, but often drew on limited or incorrect information on the topic. Both depression and anxiety are associated with poor adherence to medical regimens. This in turn has a marked effect on patient self-management. The management of depression in hypertension and diabetes patients, therefore, is extremely important if patients are to become engaged in self-management.

#### **5.4.3. Hypertension and diabetes-mellitus cause suffering at multiple which impedes employment of self-management strategies**

The findings indicated that hypertension and diabetes cause suffering at multiple that impede the employment of self-management strategies. Participants indicate that due to their chronic illness they have resigned or retired from work as some of the signs and symptoms are unbearable to work with them they cannot cope at work. Quantitative findings indicate a gap in explaining chronic conditions causing suffering at multiple which impedes employment which needs to be researched further.

De Silva (2017) reported that diet and exercise are patient-focused lifestyle issues that must be professionally addressed; however, the successful execution of lifestyle interventions falls primarily on the patient. Weight loss, when sustained over the long term, is the most effective lifestyle therapy to control T2DM.

#### **5.4.4 Lack of adherence to treatment and healthy lifestyle by patients living with risk factors viewed as problematic.**

The findings indicated that a lack of adherence to treatment and healthy lifestyle by patients living with risk factors is viewed as problematic. As they elaborated that sometimes due to the lack of treatment and a shortage of finances to buy treatment it makes it hard for them to adhere to treatment. Ignorance and lack of information to healthy lifestyle leads them not to adhere to treatment, however, the quantitative findings indicate that it might be hard to adhere to treatment if you are not sure of the diagnosis (66%) of the result shows that they were not sure whether they have hypertension or not. While (34%) were sure that they are having hypertension.

This is supported by Griffin et al. (2019) by narrating that patients' frustrations about hypertension and diabetes management largely centred on patients' lack of adherence to treatment. The health care practitioners reported a lack of adherence as resulting from difficulty in educating patients or their use of alternative herbal medicines in place of modern medications. They also expressed the belief that the negative reputation of health care practitioners prevented patients from seeking health care.

The findings are congruent with that of a study conducted by Babwah et al. (2019) that health care system funds most of the health services provided in public hospitals, the hospitals and lower-level health centres frequently experience drug shortages. Given these drug shortages at the public pharmacies, patients often are required to purchase medications from private pharmacies, though this is often at a substantial cost. Thus, patients reported financial hardship as an additional barrier to accessing medications due to high

costs. As a result, some patients reported reducing their medication dosage or mixing their drugs with traditional herbal medicine.

#### **5.4.5 An explanation that difficulties experienced affect prognosis when living with hypertension and diabetes- mellitus**

The qualitative findings revealed that an explanation that difficulties experienced affects prognosis when living with hypertension and diabetes as most participants did not understand what hypertension and diabetes is. How to manage them, so at the end they default treatment and experience complications due to non-adherence, a lack of support from family and community as the community are not knowledgeable about the diseases. The results from the quantitative concur with qualitative by showing that the majority of the participants do not know or are unsure whether the family have diabetes or not (98%), while (2%) do not know or are unsure whether they have diabetes or not. The majority of participants (66%) were not sure whether they have hypertension or not while (34%) were sure that they are having hypertension so the difficulties experienced, expose the participants to CVD development.

The findings are consistent with that of a study conducted by Tamir et al. (2017) which indicates that financial constraints and physical distance appeared to be a major barriers to accessing health care. Instead of making hospital visits, many patients reported relying on advice from lay sources (family, neighbours, and community) for managing their hypertension mellitus. The fact that hypertension and diabetes were not associated with any stigma seemed to encourage communication and information sharing about the diseases within the community.

#### **5.4.6. An outline of the symptoms experienced by patients with risk factors including hypertension and diabetes- mellitus viewed as a challenge**

The findings outlined the symptoms experienced by patients with risk factors including hypertension and diabetes viewed as a challenge as they showed there were not aware of the symptoms that there are not well or can be a sign of chronic diseases because they were not given information about symptoms results from the quantitative also indicates some similarities of the challenge as

(40%) of the participant was found to be at moderate risk of developing CVD due to lack of awareness of risk factor as indicated in the findings that the majority of participants (66%) were not sure whether they have hypertension or not while (34%) were sure that they are having hypertension.

The study done by Schutte, Huisman, van Rooyeels, Smith, Faourie, Malan, Moss, Kruger, Viljoen and Vorsters (2017) indicated that lack of knowledge, poverty (economic constraints), cost of diabetes care, and a lack of access to healthcare are the main barriers to adherence to prevent and manage diabetes in Africa. Bekel et al. (2017) indicated that the strategies for the barriers include health education programs, advocacy, and capacity building and are key to overcoming the barriers to adherence to lifestyle modification that assists in the prevention and management of type 2 diabetes.

#### **5.4.7 Poor eating habits is a challenge to prevent or control risk factors and CVD**

The findings revealed that poor eating habits are a challenge to prevent or control risk factors and CVD as participants indicated that they are having difficulty in adhering to good eating habits as they are not the one buying the grocery and cooking the meals, they reported that their children are putting salts and fats in their foods even though they know that they are not supposed to put them. Other participants were worried that they do not have enough finances to buy foods that they are supposed to eat so they just eat whatever is available for survival. This converges with quantitative findings as results reported that (66%) of the participants are taking salty foods and only (34%) are taking foods without salt, (62%) of participants do not eat fried foods, while (38%) eat fried foods

A study by Rawal et al. (2018) narrated that most Africans live under the poverty line and get food for the survival of their life. They eat whatever is available and affordable. The most widely used crops in the region include rice, maize, and wheat that are high carbohydrates diets served on each meal. In addition, most urban populations consume less healthy options like prepacked foods. The findings are in contrast with Jimmy and Jose (2020) indicates that lifestyle interventions including regular physical exercise, weight management, and adhering to health care professionals' recommendations on

a healthy diet are the cornerstone of the prevention and management of diabetes. Healthy diets such as the Mediterranean diet and eating lower carbohydrates and fat and increased fruits and vegetables are important for diabetes prevention and management.

#### **5.5. THEME: 4. Suggestions related to self-management strategies that could be maintained by patients living with risk factors e.g., Hypertension and diabetes -mellitus**

The qualitative findings of the study indicated that suggestions related to self-management strategies that could be maintained by patients living with risk factors e.g., hypertension, diabetes and as most participants showed that they are using different self-management to maintain their health like avoiding stress, a diet with low salt and fats-free. However, in quantitative shows that the majority of respondents (66%) are taking salty foods and only (34%) are taking foods without salt. About (8%) smoke 16-20 cigarettes per day and (30%) smoke 6 to 10 cigarettes that shows that most of the patients do not really understand self-management and are exposing themselves to CVD.

The findings are consistent with that of a study conducted by Babwah et al. (2019) which indicates that population changes are driving forces in the rapid increase of the number of individuals with diabetes in Africa. Most Africans who previously lived in rural areas migrated into urban ones and adopted western lifestyle habits such as an unhealthy dietary patterns and inactivity.

Steyn et al. (2017) indicated that the lifestyle and dietary habits in a low-income countries are changing towards risky behaviour such as physical inactivity due to increased use of motorised transportation, and urbanisation that changed people's eating habits toward fast food.

##### **5.5.1. A suggestion that adherence to treatment and a healthy lifestyle must be maintained to stabilise risk factors e.g. hypertension and diabetes- mellitus**

The finding for both qualitative and quantitative strands revealed that a suggestion that adherence to treatment and a healthy lifestyle should be maintained to stabilise risk factors e.g., hypertension and diabetes was shown by the participant as others engage in exercises on daily basis and also adhere

to treatment while taking healthy diet of salt and fat-free and eating fruit and vegetables on daily basis. The majority of participants (74%) perform mild exercise while (26%) perform moderate exercise. This means that the majority of participants perform a mild exercise.

The findings of this study agree with that of Riegel et al. (2017) that indicated that patient's knowledge and attitudes may also present a good behaviour in adhering to treatment and adherence. The findings correspond with that of Castello (2018) that indicates that some patients do not acknowledge the seriousness of the disease, and some do not correlate their diet and sedentary lifestyle as exacerbating their symptoms. Misperception about the severity of the illness such as the complications associated with the disease contributes to poor adherence.

#### **5.5.2. Regular medical check-ups encouraged**

The qualitative findings of the study indicated that regular medical check-up is encouraged as participants indicated that they make sure that they do not miss their follow updates to be assessed for any emerging medical problems, assess your risk of future medical issues, prompt you to maintain a healthy lifestyle.

This is congruent with Byrne (2018) which reported that regular health check-ups can identify any early signs of health issues. Finding problems early means that your chances for effective treatment are increased. Having a health check is also a time to examine your lifestyle to see what improvements can be made. This may be something you regularly do yourself or discuss with a healthcare professional. Seedat (2017) has shown that it is a good idea to visit a doctor regularly, even if you feel healthy. The purpose of these visits is to check for current or, update vaccinations. Health checks are usually incorporated into routine medical care. Your doctor will often perform these checks when you are visiting for another condition, such as a cold or another problem. Your doctor will then tell you how often you need to have a health check.

#### **5.5.3. A suggestion that patients living with risk factors including hypertension and diabetes- mellitus must avoid being exposed to stress, depressions and other related factors**

The finding for both qualitative and quantitative strands revealed a suggestion that patients living with risk factors including hypertension and diabetes-mellitus should avoid being exposed to stress, depressions and other related factors as participants indicated that they are not stressed nor depressed, and others indicated that they try by all means to avoid stressors at home by either ignoring or moving away from the stressors. The majority of participants (96%) do not feel depressed/ stressed, while (4%) feel depressed or stressed which is putting them at risk of CVD development.

The findings correspond with that of Raquel and Franz (2018) revealed the stress reduction is all key modalities that both lower the risk of CVD and enhance the quality of life. It is incumbent on physicians and other health care professionals to be leaders in identifying a positive lifestyle measures as important strategies for lowering the risk of CVD or treating it if already present. Problem-focused and attention coping strategies tend to focus on the stressors and deal with the source of stress, avoidance and emotion-focused strategies are instead utilised either to avoid the stressors or to regulate the individual's emotions regarding the stress-or other related factors.

The findings are in contrast with that of a study conducted by Svensson, Inoue, Sawada, Yamagishi, Charvat, Saito, Kokubo, Iso, Kawamura, Shibuya (2018) indicating that depression is the most prevalent chronic psychological condition with a lifetime incidence of more than 31%. A major depression has a lifetime incidence of approximately 10%, it has been reported that a third of individuals may experience enough stress in their daily lives to impact their work or home



performance. In addition, these factors may impact adherence to medication and other lifestyle issues.

Fatema et al. (2017) alluded that lifestyle modalities such as regular physical activity, mindfulness and relaxation response may prove effective in terms of treating these conditions. Stress from challenging situations and events plays a significant role in cardiovascular symptoms and outcomes, particularly a heart attack risk. Depression, anxiety, anger, hostility, and social isolation also affect cardiovascular health. Each of these factors heightens your chances of developing heart problems.

#### **5.5.4 A suggestion health education related to the disease should be available to communities**

The qualitative findings of the study indicated that a suggestion of health education related to the diseases should be available to communities. As most participants show that health education related to prevention of CVD and management of hypertension and diabetes are not available in the communities except sometimes in the clinic. Although, not always this does not contradict quantitative results as they indicate that (95%) were not sure whether their parents had a heart attack or not. While (5%) are sure of their parents' status of a heart attack, (66%) were not sure whether they have hypertension or not while (34%) were sure that they are having hypertension and this is an indication that due to a lack of health education patients are not aware of their condition.

The findings are congruent with that of a study conducted by Rippe (2018) which revealed that health education should be culturally relevant. Through intensified diabetes self-management education and culturally sensitive diabetes education by community healthcare professionals and village healthcare teams the barriers to self-care . Complications and death from diabetes can be reduced. "Collaboration with the civil society being involved in the fight against diabetes, community participation, gender sensitivity and consideration of local beliefs as necessary to generate awareness on diabetes is important to overcome the barrier to prevent and manage diabetes.

The findings are in contrast with that of a study conducted by Riegel et al. (2017) that revealed that health education is any combination of learning activities that promote voluntary adaptations in health-related behaviour. Health education is important in developing a positive attitude to support behaviour change voluntarily and help people in the households in your area solve their health problems where appropriate. Health education uses a wide range of different educational methods and strategies to lead people to make the right decisions for themselves about their health .

## **5.6. Theme 5: Support related to prevention and control of risk factors e.g., hypertension and diabetes**

### **5.6.1 An explanation of the support received from health professionals through health education provided**

The findings of the study indicated that an explanation that the support received from health professionals through health education provided as the study shows that the participants do get support from professionals. Although it was adequate due to staff shortage and time constraints and for quantitative studies it still needs further research to assess the support received from health professionals especially through health education. Furthermore, Hwangi et al. (2017) indicated that this health education should reach rural areas as well as urban ones and can help the society to maintain and adopt a healthy lifestyle and dietary habits. Health service availability and support from health care providers play an important role in lifestyle modifications. Governmental bodies and stakeholders should integrate to improve healthcare service availability and accessibility.

Lambrini et al. (2019) outline that health education strategy is capacity building by indicating giving knowledge, skills, and resources about making what you have, work better by improving the human resource capacity, making the health systems more responsive to diabetes through improved infrastructure, adequate medical supplies, improved diagnostic services, and provision of necessary protocols and standards. Patients and their partners may be empowered to self-care through a supportive relationship with their healthcare professionals.

### **5.6.2 Support to adhere to treatment, eating appropriate diet and on how**

### **to avoid stress received from family members**

The findings from both qualitative and quantitative strands revealed that support to adhere to treatment, eating appropriate diet and on how to avoid stress received from family members. Participants reported that they adhere to treatment and eat appropriate diet and avoid stress if their family support although others reported that due to the lack of support from family members they do not eat an appropriate diet as there is not enough foods. They also experience stress because family members put them to have stress. The findings converge as a majority of respondents (66%) are taking salty foods and only (34%) are taking foods without salt and (62%) of participants do not eat fried foods, while (38%) eat fried foods.

The findings correspond with that of Griffin et al. (2019) which found out that the indirect influence of coping strategies by family members and health professionals on CVD risk factors, indicating that improved education on stress management and coping strategies may improve lifestyle habits, participation rates in screening programmes, and compliance with treatment.

The findings are in line with that of a study conducted by Mustafa et al. (2019) indicating that family support groups who have higher knowledge on the recommended lifestyle and dietary changes and interventions have a significant contribution to the management of the diseases. Social support from partners, family members, and friends positively predict adherence to diet and exercise recommendations. "Family and friends play both supportive and obstructive roles. Participants identified both positive and negative contributions of family and community members to their diabetes management. Women were more likely to discuss struggles finding support compared to men.

### **5.6.3. Qualitative results without quantitative correspondence**

During the integration of the results, there were some sub-themes identified in a qualitative strand which have no similarities with variables in the quantitative strand. The sub-theme on adherence to medical follow up visits at health facility mentioned as a self-management strategy did not correspond with any variable as it was indicated that when they adhere to follow-up the dates for review to be assessed for their well-being and any complications is regarded as a strategy for self-management. The other sub-theme is the one that indicates that religious interventions are used to cope with the risk factors, hypertension and diabetes -mellitus and because most of the participants revealed that most of the time they pray and read the bible to cope and prevent CVDs .

Another theme is knowledge related to the onset, signs and symptoms and prognosis of the CVDs. Knowledge related to attitudes and practices is expected to prevent and control CVDs. Most of the participants indicated they are not aware of the signs and symptoms that a person can experience when having CVD. Thus, also the attitudes and practices that they are supposed to perform and practices when you are living with hypertension and diabetes-mellitus. The other theme is that CVDs causes suffering at multiple which impedes the employment of self-management strategies as most of the participants revealed that when they are experiencing signs and symptoms like CVDs they cannot work, one even indicated he has retired from work as was unable to work due to tiredness and difficulty in breathing.

The other theme is a suggestion that health education related to the disease should be available to communities as they indicated that they are no formal health education given to them in facilities. One of the participants suggested that if the community health worker can come in their homes to check their blood pressure, sugar and give them health education regarding the prevention of CVDs. They indicated that an explanation that supports received from health professionals through health education must be provided, health professionals

should give health education on daily basis in the facilities about CVDs and their prevention and control of all risk factors. Furthermore, the quantitative findings show that there is a need for intervention concerning lifestyle modification and religious interventions used to cope with hypertension, diabetes- mellitus, and risk factors and the use of community health workers to check communities blood pressure and blood glucose at home and gives them health education on prevention and control of CVDs which was not corresponding with any findings in the qualitative strand during integration. In the future, other studies may be done to concentrate on those aspects which did not have similarities during merging.

#### **5.4 CONCLUSION**

The findings of this study concluded that:

- There is various description of self-management strategies used by patients with activities that are done by chronic patients in preventing CVDs and on implementation of self-management strategies.
- There is a knowledge gap related to self-management and other related factors when living with hypertension, diabetic Mellitus and risk factors and that raises a serious challenge when preventing CVDs .
- There are challenges experienced by patients with hypertension, diabetic mellitus and risk factors in managing the disease like an explanation that unforeseen painful life experience's led to poor prevention of CVDs and fear, stress including household stressors and depression lead to poor control or prevention of CVDs.
- Information on self-management strategies that could be maintained by patients living with CVDs e.g., suggestion that adherence to treatment and healthy lifestyle should be maintained to prevent CVDs and regular medical check-ups should be encouraged.
- Support related to prevention and control of CVDs; an explanation that supports received from health professionals through health education should be provided. Also, the supports to adhere to treatment, eating appropriate diet and on how to avoid stress received from family members.

- Above all, if they can be a tool at the primary facilities to assess every patient for the risk of developing CVDs.

## **5.5. CHAPTER SUMMARY**

Chapter 5 discussed how the qualitative and quantitative results were integrated and interpreted. More importantly the integration also it enhanced the value of adopting mixed-method research in this study. The next chapter will discuss the development of the training programme as guided by the theoretical framework.

## **CHAPTER 6**

### **DEVELOPMENT OF THE TRAINING PROGRAMME GUIDED BY THE THEORETICAL FRAMEWORK**

#### **6.1 INTRODUCTION**

This chapter focuses on the development of the training programme implementation plan based on the findings and guided by the Orem's Theory of Nursing to addresses the self-management strategies to be used for the patient with risk factors. The activities that would guide and improve the knowledge and skills of community health workers during the implementation of the self- management strategies in Molepo local area clinics are also discussed.

#### **6.2 OBJECTIVES OF THE STUDY WHICH GUIDED THE DEVELOPMENT OF A TRAINING PROGRAMME**

- Phase 1 of the study addressed objective 1 and objective 2, where the first objective was to explore the self-management strategies used by patients with risk factors related to preventing CVD.
- The second objective was to describe the practices and self-management strategies used by patients with risk factors to reduce the development of CVD.
- The third objective was to describe the self-management strategies needed for patients with risk factors for the prevention of CVD. A qualitative strands approach was used to achieve the three objectives, then the quantitative strand was guided by the results of qualitative strands during Phase 2 of the study.
- The fourth objective was to develop and implement self-management strategies for patients with risk factors from the selected clinics at Molepo local area clinics to reinforce ongoing self-management support. The development process was guided by Orem's theory of nursing. The researcher implemented the developed support strategies in Phase 3 for patients with risk factors to reinforce ongoing self-management support .

### 6.3 THEORETICAL FRAMEWORK

The researcher used a theoretical framework to formulate the pathway for achieving the study purpose. According to Norman, Lederman and Judith (2015), a conceptual framework is theories formulated to explain, predict and understand phenomena and, in many cases, to challenge and extend existing knowledge within the limits of critically bounding assumptions. The researcher assembled all the concepts used in the programme development, implementation and explain the phenomena by challenging existing knowledge within the limits of bounding assumptions.

#### 6.3.1 The methodology

The study employed Dorothea Orem's self-care theory (du Plooy-Colliers, Davis & Bezuidenhout, 2014) to describe the theoretical framework for the development of the educational programme. The components of the educational programme include self-care, self-care agency, self-care demand, nursing agency, deficit and conditioning factors.

Conceptual framework of Orem's theory



Figure 6.1 illustrate the components of the educational programme



Orem defines nursing agency as attributes of Nurses that enables them to act know, and feel in a manner that helps them meet the self-care of their patients by exercising and developing their self-care agency.

### **6.3.2 Self-care**

Self-care practice includes activities that individual's initiate and perform on their to maintain their quality of life, health, and well-being. Self-care is a participant or a patient who is the central focus of nursing care who is having risk factors. Dekkers, Elissen and Melles (2019) indicate that self-care is the practice of individuals looking after their health using the knowledge and information available to them. It is a decision-making process that empowers individuals to look after their health efficiently and conveniently, in collaboration with health and social care professionals as needed. The self-care as a participant who is having risk factor should be given information on what is a risk factor and its complications and also the importance of self-management. The outcome of the research findings shows that self-management helped the participant to maintain good health and be self-motivated.

### **6.3.3 Self-care agency**

Self-care agency is a human's ability to engage in self-care which is conditioned by developmental age status, life experiences, socio-cultural orientation, health and available resources (Riegel et al., 2019). The self-care agency is the knowledge and skill which the CHW will be having in managing risk factors which are contributed by the conditions e.g. diabetes, hypertension, smoking, overweight and unhealthy diet. For the participants to preserve their quality of life they should perform self-management actions .

### **6.3.4 Therapeutic self-care demand**

“Therapeutic self-care demand is the totality of self-care actions to be performed for a given duration to meet self-care requisites by using valid methods and related sets of operations and actions. Therapeutic self-care demand is a self-management strategy to be applied by a person or a participant who is having a risk factor e.g. exercises, adherence to treatment

and losing weight.

According to Corbin and Strauss (2019) self-management is commonly defined as strategy that individuals perform to live well with long-term conditions, including medical, life roles and emotion. Self-management has had various other definitions, one of which was managing diseases and lifestyle behaviours, referring to “the ability of the individual, in conjunction with family, community and healthcare professionals, to manage symptoms, treatments, lifestyle changes, and psychosocial, cultural, and spiritual consequences of health conditions (Idris et al., 2020) .

Based on the findings of the situational analysis in Phase 3 of this study, the implementation programme will be based on the developed support strategies for patients with risk factors to reinforce ongoing self-management support at Molepo area clinics. Participants will be taught and encouraged to apply self-management at home.

#### **6.3.5 Nursing agency**

Nursing agency- the nursing agency is the series of the relation between persons health care worker and a client to describe how a person self-care needs will be met (Younas & Antisham, 2017). The nursing agency is the several self-management strategies used by the participants according to the need or the risk factor under the advice of the nurse or community health worker .

#### **6.3.6 Nursing systems**

“This is a series of situations in which the individual can engage in self-care actions requiring self-directed and controlled manipulation movements to maintain good health (Shah & Abdullah, 2015). Nursing systems - is the number of activities to be performed by the nurse, CHW and the participants in the prevention of developing CVDs like the Procedure, Educational Programme Development. The Institutions and Implementation the nursing systems includes all the processes and steps followed in developing and implementing of the self-management strategies.

### 6.3.7 Knowledge deficit

“Knowledge deficit - Is a lack of cognitive information or psychomotor ability needed for health restoration, preservation, or health promotion is identified as a knowledge deficit (Master, 2015). Knowledge deficit - The gap needed to help the patient to live healthier or the lack of health education of patient on their treatment and side effects, nutritional needs, diseases prevention activities.

#### ✓ **Conditioning factors**

Conditioning factors - Orem describes basic conditioning factors as factors internal or external e.g. age, gender, developmental state, health state, health care system, sociocultural/ spiritual orientation, family systems, patterns of living, environment, and available resources to individuals that affect their abilities to engage in self-care or affect the kind and amount of self-care required (Bean, 2018). Conditioning factors - This will be gathered information from a participant and assessed conditional factors experienced by participants using Inter heart- tool by a nurse or CHW to identify risk factors from the participants e.g., overweight, stress, diabetes and hypertension and smoking.

#### ✓ **Universal self-care requisites**

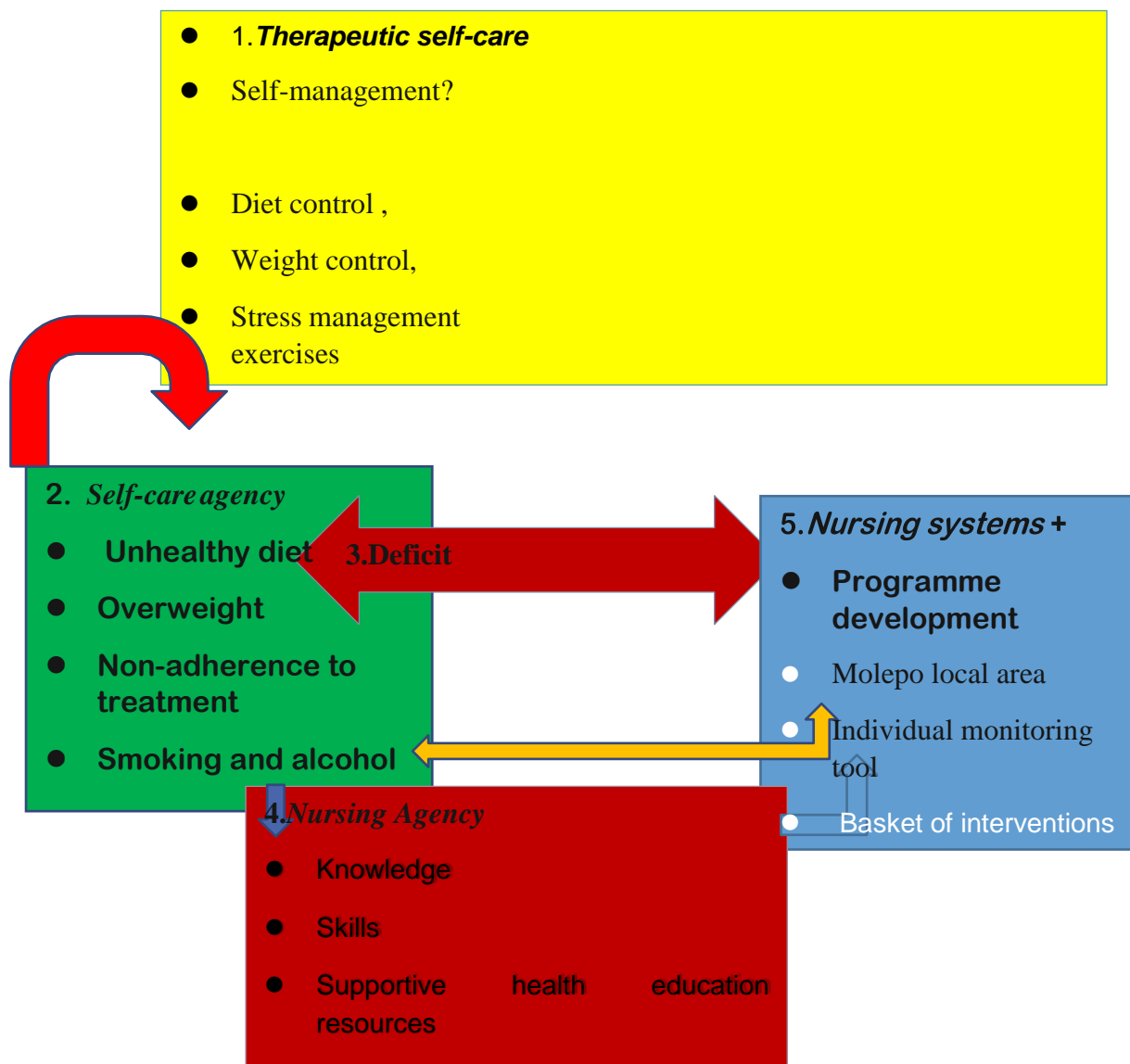
Orem describes universal self-care requisites as life processes, as well as the maintenance of the integrity of human structure and functioning. Orem identifies these requisites, also called activities of daily living as:

- The maintenance of sufficient intake of air, food, and water
- Provision of care associated with the elimination process
- A balance between activities and rest, as well as between solitude and social interaction
- The prevention of hazards to human life and well-being
- The promotion of human functioning.

Developmental self-care requisites are associated with developmental processes. They are generally derived from a condition or associated with an event. Health deviation self-care is required in conditions of illness, injury, or disease. These include:

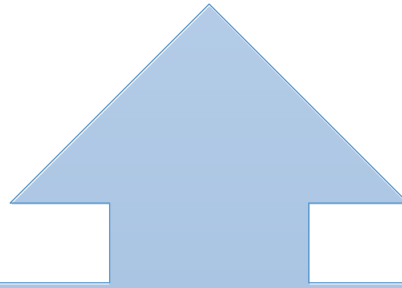
- Seeking and securing appropriate medical assistance especially the hypertensive and diabetic mellitus
  - Being aware of and attending to the effects and results of pathologic conditions patients with chronic conditions
  - Effectively carrying out medically prescribed measures those who are overweight to adhere to diet and lifestyle modification
  - Modifying self-concepts to accept oneself as being in a particular state of health and in specific forms of health care those who smoking to accept the conditions and adhere to steps of quitting smoking
  - Learning to live with the effects of pathologic conditions e.g To live with effects of stress and depression and adhere to medication and their effects.
-

**Figure 6.2 illustrate the agencies of self-care**



**Figure 6.3. illustrate Therapeutic self-car**

- Therapeutic self-care is patient-centric because the patient takes the lead in managing their illness to improve the outcomes through activities that individual's initiate and perform on their to maintain their quality of life, health, and well-being. The self-care in this study is the participant who is unable to perform activities due to risk factor, however, once implementation programme started the self-care who is a patient would perform all activities due to him or her to maintain optimal health. In this study for the self-management strategies to be applied, the participant should be screened for a risk factor through the use of inter-heart tool.



#### **6.4. *Therapeutic self-care***

- Self-management
- Diet control
- Weight control
- Stress management exercises

- INTER-HEART Risk score tool is a screening non-laboratory tool, the inter- heart Risk Score is a validated tool that includes data on age; sex; status concerning direct and indirect cigarette smoking, diabetes, high blood pressure, and family history of heart disease; waist-to-hip ratio; psycho social factors, diet, stress or depression and physical activity. Each item is allocated a score and in the end, a total score is obtained. The total score is 49. The score of each client signifies the level of risk for developing CVD. The scores are classified as follows: A total score of 0 to 9 indicates a low risk, a score of 10 to 15 is medium risk and 16 to 49 and above is a high risk for developing CVD. THE INTER HEART tool was described in details in ANNEXURE F page 226.

**Figure 6.5. Illustrate the risk factors**



- Self-care agency is the human's ability to engage in self-care, which is conditioned by developmental age status, life experiences, horticulturalist orientation, health and available resources. In this study, risk factors is a particular habits, behaviours, circumstances or conditions that increase a person's risk of developing cardiovascular disease, including a lack of exercise, unhealthy eating, smoking, diabetes, age and family history. Younas and Antisham (2017) reported that although there are several risk factors they play an important role in determining whether or not you are likely to develop a heart disease. Possessing one or more risk factor increases a person's risk of developing CVDs. The self-care agency as a risk factors which are contributed by the circumstances or conditions that include obesity, insulin resistance or diabetes, high cholesterol, blood pressure family history of heart disease, being physically inactive, smoking eating an unhealthy diet, clinical depression. Therefore, the above risk factors were used to ensure that all patients with risk factors participating in the programme were having risk factors and are collecting treatment at Molepo local area and their training will improve their quality of life. This help clients to change unhealthy lifestyle. Engaging in self-management strategies will improve the health status of clients and improve the outcomes of diseases.



Risk factors that a nursing agency should know and be able to educate the participants that are having risk factor and give health education deficits about the risk factors, the following are risk factors for CVDs:-

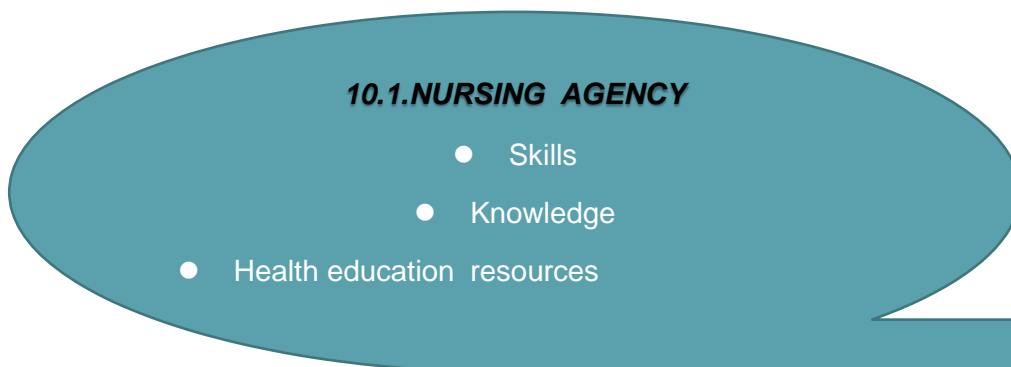
Non-modifiable risk factors for CVD are:

- Age
- Heredity

Behavioural / modifiable Risk factors include the following:

- Smoking
- Physical inactivity
- Unhealthy diet (low fruit and vegetable consumption, high salt)
- Harmful alcohol use
- Some infections (e.g., throat infections causing rheumatic heart disease, HIV)
- Stress

**Figure 6.6. illustrate the Nursing Agency**



Nursing agency refers to the skills, knowledge, skills and support health education resources to maintain one's life, health, and well-being (Orem, 2001 and Taylor et al.,2000). In this study, the nursing agency refers to the skills, knowledge and support health education resources that a Nurse and CHW should possess to give to the participants to engage in self-management activities to maintain one's life, health and wellbeing. Skills that a nurse as a nurse educator, facilitator, researcher and community nurse should have included knowledge and skills to educate the participants for the self-management strategies.

Skills needed to manage and maintain health-promoting behaviour as well as manage the disease. Patients should be empowered to manage their disease through the formation of a partnership with Nurse and CHW. The following skills are needed to achieve self-management.

### **Problem-solving:**

- Identify the problem e.g., Obesity
- Setting a goal of e.g., losing weight by when, how much
- Generating possible solutions e.g., reducing the amount of food, animal fat, increases vegetables, fruits, exercise
- Drawing a plans and implementing them.

### **Self-monitoring**

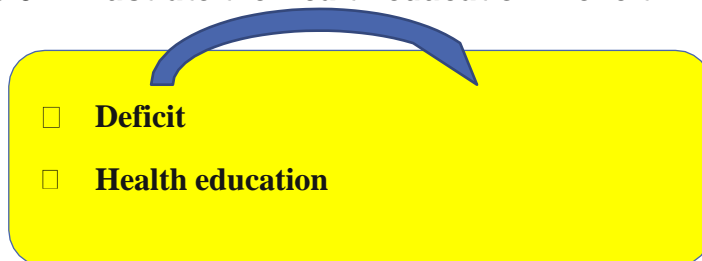
- It will help track the progress
- Have a record for example: what one eats or drink in a day, how many minutes of exercise, running, how many km,
- Getting weight at the beginning then weighing every week to track loss or gaining

### **Stress management and emotional regulation**

- Stress and depression can impede successful self-management because a person who is stressed may not focus or have an interest in self-improvement or development, so it may be difficult to communicate and motivate the person.
- Help the patient to deal with stressful situations such as tragic news and grief reassuring the client that it will pass and time heals, financial difficulties teach about budgeting, buying the basics and leaving the luxuries, use of cheaper proteins such as beans .
- The ability to determine what one wants to achieve in a clear and well-defined manner. Goal setting: e.g.,
- To lower blood pressure by drawing a plan towards achieving the goal.
- Being able to choose what's important and to create an action plan that will help in achieving goals.
- This skill is necessary to maintain productivity in the workplace because it enables one to manage one's time and actions.

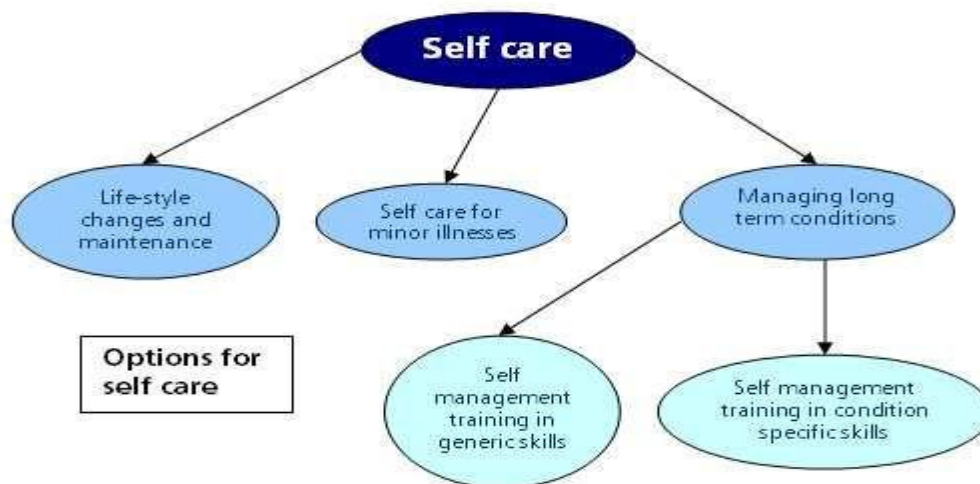
- It is the ability to determine what one wants to achieve in a clear and well- defined manner.
- Goal setting in the workplace helps one to decide what is important/valuable (Priority setting) and to create an action plan that will help one to achieve goals that align with those values.
- Goal setting also enables one to manage time and actions and to have direction and purpose
- In the prevention of Cardiovascular disease, the main goal could be to move from Medium risk to Low risk or from High risk to Moderate risk then ultimately to Low risk.
- “ How can a goal be achieved?
- What is the priority e.g., it could be that the client is obese, does not exercise?
- Priority will be to lose weight because exercise may be difficult if the patient/client is overweight.

**Figure 6.7. illustrate the Health education Deficit**



- Health education refers to the communication of information, but also with fostering the motivation, skills and confidence (self-efficacy) necessary to take action to improve *health*, social, economic and environmental conditions impacting on *health*, as well as individual risk factors and risk behaviour, and use of the health care system. A self-care deficit is an inability to perform certain daily functions related to health and well-being, such as dressing or bathing. Self-care deficits can arise from physical or mental impairments, such as surgery recovery, depression, or age-related mobility issues. In this study, health education deficit refers to the inability of participants to perform certain daily functions related to well-being and improve health. Knowledge refers to evidence-based information and skills

acquired through experience or education (Jain, 2020). Knowledge is concerned with the theoretical or practical understanding of a subject, and being competent in it (Jain, 2020; Tichnor, Wagner, Parkhouse, Glazier & Cain, 2019). Scuderi (2020) refers to a combination of facts and ideas that are acquired through study, research, investigation, observation. In this study, the researcher or CHWs to fill the gap of deficit should encourage “ healthy behaviours among community members including e.g. encouraging them to avoid alcohol and tobacco, eat fruits, vegetables, regular physical exercise, low salt diet, drink about 2L of water daily and treat infections and participate in vaccination campaigns .



**Figure 6.8.** illustrate the Nursing systems

- **Training Programme development**

The nursing systems refers to a series of actions a nurse undertakes to aid in meeting a person’s self-care needs and describes nursing responsibilities, roles of the nurse and patient. In this study, nursing systems refers to the available programme, institutions and available resources to fill the gap based on the extent of the self-care deficit of the patient. In this study, for a participant to prevent CVDs the nurse as a nursing agency should have knowledge, skills and resources to perform self-management strategies.

### □ **The Procedure**

De hog, Bolman, Bemolt, Mudder, De Vries and Lechner (2018) define a procedure as a series of actions conducted in a certain order or manner. While (Rippen, 2018) describe a procedure as an established method of accomplishing a task, usually with steps that are performed in a prescribed order. The procedure of developing the programme with the ultimate aim is to train all the health care workers in the use of inter-heart Risk Score when assessing clients and application of self-management strategies in the prevention of (CVD). For educational programme development more focus will be put on identified health risks identified and captured during inter-heart Screening.

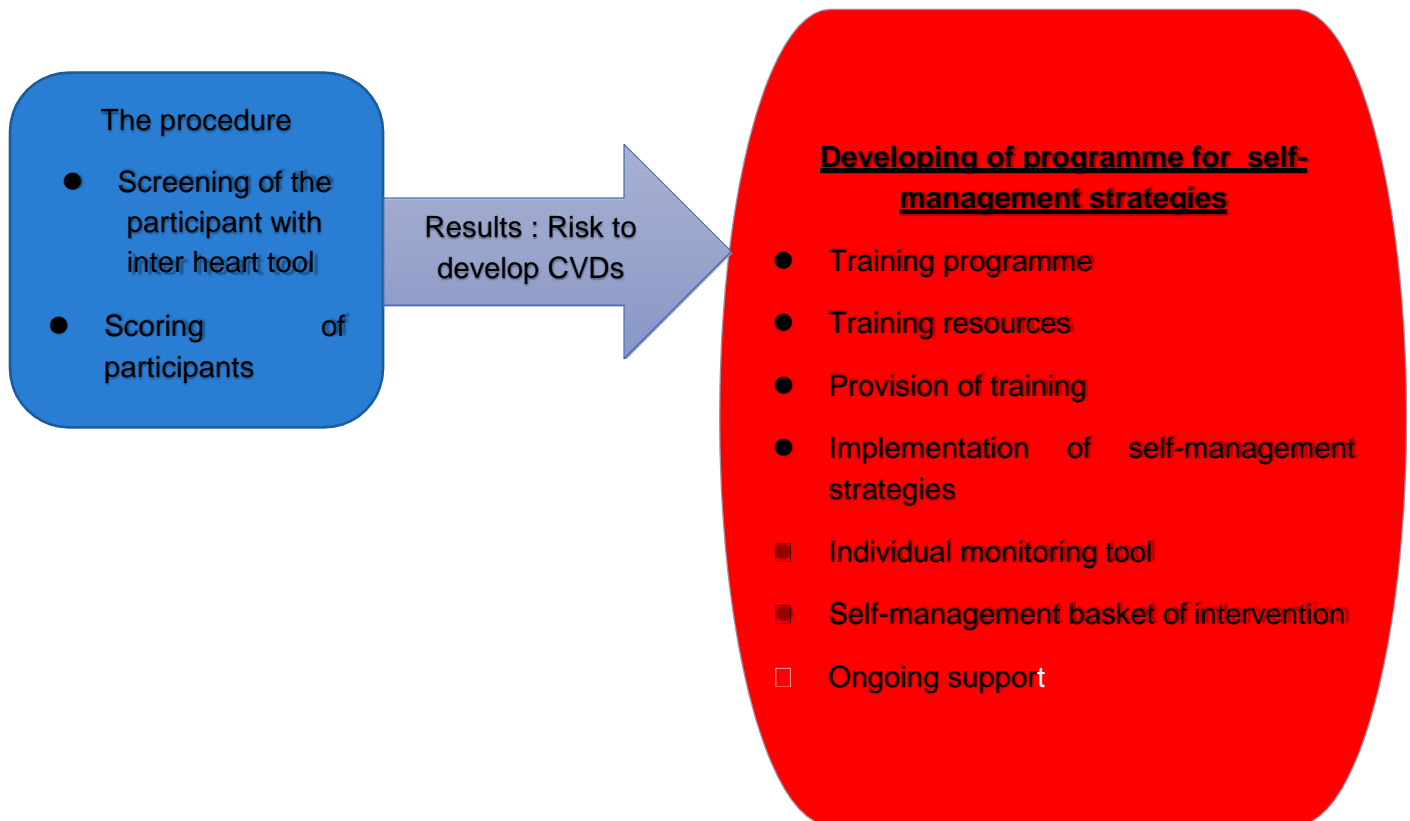
### □ **Education Program**

Education program” is defined as any program principally engaged in the provision of education, including, but not limited to, early childhood education, elementary and secondary education, post-secondary education, special education, job training, career and technical education, and adult education, and any program that is administered by an educational agency or institution (Seedat, 2017). The strategies will be developed using the analysed data from the qualitative and quantitative strands of the study.

### □ ***Educational Programme development***

Developing self-care educational initiatives has been found to have a positive effect and improve the quality of life. Nurse-led interventions can have a positive effect on patients with CVDs. Nurses take an educated and holistic approach to care delivery and get involved in all aspects of care (Cohen & Cesta, 2015). This concept encompasses learning, nursing theory, evidence-based practice, “and understanding the environment and culture. The interventions can empower the patient with risk factors to develop better self-management strategies that can result in an improved quality of life and decrease strain on the healthcare system by decreasing re admissions.

**Figure 6.9. Illustrate the process of developing the programme**



- **The Training programme**

Researchers have used Orem's theory as a basis for the development of training programme. The Orem's theory has served as a conceptual framework in associate degree programs in many nursing schools. Orem's theory can be applied to the three levels of prevention: primary, secondary, and tertiary:

- Primary – when nursing care is aimed at developmental or universal self-care and when they are therapeutic.
- Secondary or tertiary – when nursing care is aimed at health-deviation self-care.
- It has a broad scope in clinical practice but has a lesser extent in research, education and administration.

The processes and steps followed in developing the educational programme for

the self-management strategies. The processes include the training programme, training program is defined as an activity or activities that include undertaking one or a series of courses to boost performance, productivity, skills, and knowledge (Jimmy & Jose, 2018). The training is a non-credit course for CHW to train them for self-management patients with risk factors. The training will be spearheaded by a researcher who is a facilitator, nurse educator, moderator, assessor, professional nurse and community nurse and will utilise participatory approaches to engage CHWs in appreciating key aspects of CVD prevention and control. Case studies and role- plays were used to enhance learning and CHWs shared their community experiences with others. Group and individual exercises were provided to allow increased interaction, learning and problem solving among CHWs. The training was delivered face to face with CHWs and training manuals, handouts, fliers and other educational materials was provided.

#### □ **Training modules**

The manual was developed to train Community Health Workers with the approval of supervisors and health care workers at the four public primary health care clinics selected for the study. However, the ultimate aim was to train the health care workers in the use of inter-heart Risk Score when assessing clients and application of self-management strategies in the prevention of CVD. The modules will be preceded by a comprehensive pre-training evaluation and a post-evaluation training will be attempted at the end of the training.

Module 1: The roles of the Community Health Worker

Module 2: Introduction to Non-Communicable diseases (NCDs).

Module 3: Cardiovascular disease

Module 4: High blood pressure

Module 5: Diabetes Mellitus

Module 6: Prevention of

NCDs

**Figure 6.10: TRAINING TOOL FOR COMMUNITY HEALTH WORKER**

Date :2019/12/02  
Facilitator : M. N. Kgatla

Date / Time	Module	Facilitator
Day one- 2019/12/02 08h-10h00  10h30-13h00	<ul style="list-style-type: none"> <li>● “Roles and responsibilities of CHW in health promotion within the community.”</li> <li>● Introduction to Non-Communicable diseases (NCDs)</li> </ul>	<ul style="list-style-type: none"> <li>● Researcher</li> </ul>
Day two -2019/12/03  08h00-10h30  10h00-13h00	<ul style="list-style-type: none"> <li><input type="checkbox"/> Risk factors for NCDs</li> <li><input type="checkbox"/> The role of CHWs in the prevention and control of NCDs.</li> <li><input type="checkbox"/> “Cardiovascular Disease (CVD) (heart disease)</li> <li><input type="checkbox"/> inter-heart screening tool for CVD risk</li> </ul>	<ul style="list-style-type: none"> <li>● Researcher</li> </ul>
Day Three-2019/12/04  08h00-10h00	<ul style="list-style-type: none"> <li><input type="checkbox"/> High blood pressure</li> <li><input type="checkbox"/> <b>What do blood</b></li> </ul>	earcher



10h30-13h00	<p>pressure numbers mean.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Measurement and recording of blood pressure.</li> <li><input type="checkbox"/> Measuring blood pressure using an automatic monitor</li> <li><input type="checkbox"/> Diabetes- Mellitus</li> </ul>	
Day four - 2019/12/05 08h00-10h00	<ul style="list-style-type: none"> <li>● Prevention of NCDs</li> <li>● Nutrition, diet and self-management strategies</li> </ul>	<ul style="list-style-type: none"> <li>● Researcher</li> </ul>

**Training resources**

The processes and steps followed in developing the training resources for training the CHW. To develop an effective, productive employee workforce, consistent training, learning programs, and skill development are necessary (Steyn, 2017) .

Material resources for training were developed in advance. Training manuals include training manuals for CHW and implementation of prevention of cardiovascular disease applying self-management strategies during the development phase of the phase and implementation phase of the study. The training needs identified which were during training were included in the list of topics to be covered in the training programme. The training material was on the knowledge and skills necessary for the prevention of CVDs and the application of self-management strategies. Writing material and a laptop were arranged for the training sessions and all training materials were

printed .

The developed training materials were also checked for quality by supervisors before the training commences and inputs were considered. The simulation skill was prepared before training using manuals, blood pressure machine and tape to be able to assess them for the pre and post-training practical skills and success was achieved. The training materials were given to participants on the first day including the pre-training assessment materials overall explanation of aspects of the training programme.

#### **The provision of training**

The facilitator who is a knowledgeable professional nurse, master trainer, assessor, educator and moderator arranged for training dates and arrangements to were made with CHW and the whole process were thoroughly explained to them given the COVID 19 epidemic and they consented to participate. A total of eight CHW was trained because two declined to participate. The training was conducted at the facilities where they are working. The introduction of the training was briefed on the first day followed by a demonstration of the skills and also some activities and the post-training assessments were done on the last 4<sup>th</sup> day.

#### **On-going and re-enforcing of support of the participants**

A series of ongoing and re-enforcing support have been inbuilt within the training to check the learning of CHWs and obtain areas of the training that require more emphasis to improve understanding of the content. These include evaluations at the beginning, end of the training and other module-specific evaluations. CHWs are required to obtain a pass mark of 60% at the end of the training to qualify to participate in the intervention.

## **6.4 CHAPTER SUMMARY**

Chapter 6 outlines the theoretical framework that guided the study, Orem's self-care theory was applied which consists of self-care, self-care agency, self-care demand, nursing agency, deficit, and conditioning factors. The theoretical framework helped in planning and implementation of an educational programme, implementation plan, training programme development, the procedure, educational programme development, the training programme,

training tool for community health workers. The theoretical framework helped to address the self-management strategies used for the patient with risk factors.

## CHAPTER 7

### IMPLEMENTATION OF THE SELF-MANAGEMENT STRATEGIES

#### 7.1 INTRODUCTION

Chapter 6 described the development of self-management strategies through a theoretical framework in the Molepo local area of Limpopo Province, South Africa. This chapter focuses on the implementation of self-management strategies to prevent risk factors related to CVD development. The implementation of self-management was guided by the objectives, study findings, Orem's self-care theory, a health promotion tool for health professionals guidelines. The study findings by Ntuli, Maimela, Alberts, Choma and Dikotope (2015) showed that there is a high prevalence rate of chronic diseases in Limpopo rural areas and recommended that more research should be done on the knowledge regarding self-management related to behavioural risk factors like physical inactivity, obesity, an unhealthy diet rich in salt, fat, tobacco and alcohol.

The summary of the whole study, the recommendations, limitations and conclusions of the study.

- The third objective was to describe the self-management strategies needed for patients with risk factors for the prevention of CVD. A qualitative strands approach was used to achieve the three objectives, then the quantitative strand was guided by the results of qualitative strands during Phase 2 of the study.
- The fourth objective was to develop self-management strategies for patients with risk factors from the selected clinics from the Molepo area to reinforce ongoing self-management support the development process was guided by Orem's theory of nursing. The researcher implemented the developed support strategies in Phase 3 for patients with risk factors to reinforce ongoing self-management support.

## 7.2 IMPLEMENTATION OF THE SELF-MANAGEMENT STRATEGIES NEEDED FOR PATIENTS WITH RISK FACTORS FOR THE PREVENTION OF CVD.

### 7.2.1 The implementation process

After inter-heart tool used for assessing the participant for the risk of developing CVD, the participants were contacted to come to the clinic for the results, those who are unable to come to the clinic were visited in their homes. The results of those who are at Moderate risk have been captured in a booklet for each client. The basket for intervention booklet was used to record the interventions conducted and the progress of the clients in May, June and July 2021. The results of those who are at Moderate risk have been captured in a booklet for each client. The booklet was also be used to record the interventions conducted and progress of the clients and the ongoing support in August 2021.

**Figure 7.1: BASKET OF INTERVENTION TOOL**

SELF-MANAGEMENT STRATEGIES INTERVENTION USED FOR MODERATE INDIVIDUAL				
			management: changes, interventions:	self-lifestyle medical
<b>A. Health promotion:</b>				
• Health education on prevention of CVD				
• Dangers of smoking and importance of smoking cessation				
• Importance of healthy eating				
- Healthy proteins				
- Fewer health proteins				
- Taking of vegetables and fruits				

<ul style="list-style-type: none"> <li>- Recommended serving quantities</li> <li>- Name foods that lowers the risk of CVD</li> <li>- Reduction of unhealthy fats (Cholesterol)</li> <li>- Reduction fast foods</li> <li>• Importance of taking enough water per day</li> <li>• The recommended healthy drinks</li> </ul>				
<ul style="list-style-type: none"> <li>• Importance salt reduction</li> <li>• Recommended amount of salt</li> </ul>				
<ul style="list-style-type: none"> <li>• Importance of reduction in alcohol consumption</li> </ul>				
<ul style="list-style-type: none"> <li>• Importance of physical activity</li> </ul>				
<ul style="list-style-type: none"> <li>• Causes of Stress and depression</li> <li>• Prevention and management of stress and depression</li> </ul>				
<ul style="list-style-type: none"> <li>• Importance of maintaining good mental health</li> </ul>				
<ul style="list-style-type: none"> <li>• Importance of consulting mental health professionals</li> </ul>				
<ul style="list-style-type: none"> <li>• Other (please specify)</li> </ul>				
<b>B. Self-management: Lifestyle changes</b>				
<ul style="list-style-type: none"> <li>• Control weight</li> <li>• Eating a healthy diet</li> <li>• Goes to Gym</li> </ul>				
<ul style="list-style-type: none"> <li>• Started Jogging</li> </ul>				
<ul style="list-style-type: none"> <li>• Started Running</li> </ul>				
<ul style="list-style-type: none"> <li>• Brisk Walking</li> </ul>				
<ul style="list-style-type: none"> <li>• Exercising at home</li> </ul>				
<ul style="list-style-type: none"> <li>• Stopped smoking</li> </ul>				
<ul style="list-style-type: none"> <li>• Reduced smoking</li> </ul>				
<ul style="list-style-type: none"> <li>• Joined local football club</li> </ul>				
<ul style="list-style-type: none"> <li>• Other (please specify)</li> </ul>				
<b>C. Medical interventions:</b>				
<ul style="list-style-type: none"> <li>• Consulted at the clinic/hospital</li> </ul>				
<ul style="list-style-type: none"> <li>• Started on hypertension treatment</li> </ul>				

• Adherence to treatment	X			
• Other (please specify)				
<b>D. Psychosocial interventions</b>				
• Offered basic counselling on stress				
• Referred to social worker				
• Referred to a psychologist				
• Referred to a Prophet/Pastor/Reverend				
• Other (please specify)				
<b>E. Treatment side effects experienced</b>				
• Name side effects experienced	X			
• Dangers of self-prescribed/ Over the counter medication taken	X			
• Other (please specify)				
<b>E. Treatment side effects experienced</b>				
• Name side effects experienced				
• Dangers of self-prescribed/ Over the counter medication taken				

**During implementation the researcher and the CHW followed the procedure approach to the participants to win them and see the need to engage in self-management strategies:-**

- Greetings to a client
- Disclosure of previous inter-heart results
- Repeat to confirm previous results then repeat to determine progress
- Give recent results
- Ask what the client thinks needs to be done
- Identify problem

**During the introduction of implementation to succeed the following should be observed:-**

- Time management
- Communicate assertively
- Seek support from family, friends and health care providers e.g., supply of treatment
- Do self-monitoring



Do not be discouraged by the results instead be positive and re-start

**The researcher and the CHW motivate for self-management by educating the participants about how to initiate self-management:-**

- Being able to live with a chronic problem (disease) or risk factor
- Taking the responsibility to change
- Set goals based on the identified problem with deadlines and stick to them
- Generating possible solutions based on the identified problem
- Drawing a plan with details on the program to be followed
- Implementing the plan

**7.2.2 Conducting of the implementation of self-management strategie**

Before the implementation of activities, arrangements were made with the operational nurse, outreach team leader and CHW about the whole basket of interventions were explained to them on how to implement the strategies and which patients were having risk factors.

The implementation process activities were conducted in the facilities or their homes for those who are unable to come to the clinic. Each participant was assigned to the CHW depending on the catchment area of their household. CHW was educated to ensure and adhere to covid 19 regulations when visiting homes or in the clinic for implementation to prevent transmission by wearing masks, sanitising and social distancing. The activities of implementation were conducted once a week assisted by trained CHW working at the facilities as are the ones who knows the community and also as it is their job description to prevent diseases .

**7.2.3 Purpose or objectives**

The purpose of implementation was to:-

- To prevent and reduce the primary and secondary burden of CVD by modifying risk factors to better the situation of individuals who have risk factors.

- To encourage and support the individuals to manage their long-term conditions by living well and having the confidence to engage in self-care activities.
- To improve patient quality of life self-care by controlling.

### **7.3 IMPLEMENTATION OF THE SELF-MANAGEMENT STRATEGIES**

□ The researcher and the trained CHW explore the list of patients with risk factors in four clinics with the ultimate aim of application of self-management strategies in the prevention of cardiovascular disease (CVD). The results of those who are at Moderate risk have been captured in a booklet for each client. The booklet will also be used to record the interventions conducted and progress of the clients in May, June, July and then impact in and ongoing support in August 2021.

#### **(Self-management strategies health advice pamphlets)**

In June and July clients were screened for blood pressure X 3 times at 5 minutes' intervals and Waist/Hip ratio to screen for overweight and high blood. Health education on prevention of CVD and applying of the Self-Management strategies were given to individual clients and family members on the importance of behavioural changes regarding healthy dietary factors; dangers of smoking including secondhand smoke; control of hypertension and diabetes; dangers of elevated W/H ratio; control of psychological factors; and the importance of exercise during leisure time. More focus is put on identified health risks identified and captured during inter-heart and qualitative findings, Screening conducted in April and May. Health advice pamphlets were distributed to the clients and their family members. Thus, to determine the impact of the intervention in August 2021, clients were screened using inter-heart tool to assess if the participants has reduced to low risk and whether the mutually planned goals are met or not. The self -management strategies health advice pamphlets was outlined in detail in ANNEXURE H page 227 .

### **7.3.1 Implementation introduction**

During implementation, the strategy was to help the 43 participants with risk factors to prevent the development of CVD. The individual monitoring tool and the booklet with a basket of interventions were used by the CHW and the researcher to capture the start date of the intervention, patient name, blood pressure, waist and weight, risk factor and the monthly intervention to be done. To monitor the progress of the participants the CHW and the researcher used an individual monitoring tools, the CHW visited the participant and indicate the use of self-management strategies on for prevention of CVD and to record the interventions conducted and the progress of the clients. The booklet used was having a basket of intervention depending on the risk factor and the intervention. Health education pamphlets with self-management strategies on prevention of CVD application was given to individual clients and family member.

More focus was put on identified health risk factors identified and captured during inter- heart tool. Group Health Education on prevention of CVD sessions was arranged by the researcher conducted by CHWs who are having clients with risk factors. The dates was discussed targeting specific days on which clients on chronic medication visit the clinic and those who are unable to come to the clinic the researcher and the CHW was followed upon them at their homes. Health advice pamphlets was distributed to the clients and their family members.

The implementation was done based on the study results which emerged in the following themes.

#### **Theme 1: Description of self-management strategies used by patients with risk factors**

##### **RISK FACTOR**

##### **Unhealthy lifestyle including smoking, alcohol and non-adherence to treatment**

The integrated findings revealed that there is a different description of self-management strategies used by patients when living with risk factors including

hypertension and diabetic mellitus which include engaging in unhealthy lifestyles which include smoking, non-adherence to treatment, eating unhealthy balanced dieting chips and spicy foods, smoking drinking of alcohol. The findings further indicated that most of the participants who are smokers and are at risk of developing CVD as they smoke 1 to 6 cigarettes per day.

**Implementation of self-management strategies to prevent CVD**

CHW and the researcher gave the results of the inter-heart tool and record them in the individual monitoring tool and basket of interventions to monitor the progress of the participant. The CHW encouraged the importance of engaging in self-management strategies to prevent CVD. Health education on the prevention of CVD applying the self-management strategies was given to individual clients and family members on the importance of behavioural changes regarding dangers of smoking and non-adherence to treatment. The CHW and researcher encouraged taking the responsibility to change bad behaviours and habits such as smoking, alcohol intake and non-adherence treatment. Health education of healthy lifestyle was given to the participants about smoking, alcohol and adherence to treatment include the following:-

**SMOKING: SELF-MANAGEMENT STRATEGIES CONTENTS** What makes tobacco smoke so harmful?

- How does smoking harm, the heart?
- The effects of smoking
- Benefits of quitting smoking
- Steps of quitting
- Self-management strategies to help smokers quit and stay smoke-free

What CHWs / researchers can do to help smokers quit and stay smoke-free?

- APPENDIX J page 242 outline the smoking: self-management strategies

**NON- ADHERENCE TO TREATMENT (APPENDIX I)**

- Adherence to treatment
- Importance of taking treatment
- Common side effects of treatment
- Motivational interviewing for behaviour change
- Examples of contrasting styles

□ **Implementation self-management support strategies**

To monitor the progress of the participants the CHW visited the participants on two weeks intervals and the researcher came on a monthly basis to assess and monitor for the progress regarding the intervention. During implementation the participants were assessed for BP, non-adherence to prescribed medication and referral to the clinic in case of emergency or those with elevated BP will be referred to the clinic. Intensification of health education was given to the participant and the progress on quitting smoking was recorded in the monitoring tool and encouraged on non-adherence to treatment by doing pill-counting to check if the participant is taking treatment well. This information was recorded together with Bp, weight, mental score next appointment given. Health education pamphlets was given to the participants and the family and the next appointment date and time were set and the participant were encouraged to continue with self-management.

□ **Implementation of reinforcing and ongoing self-management strategies**

On reinforcing and ongoing self-management strategies the progress of the participant was recorded in the monitoring tool and the basket of intervention. Information to be recorded was steps taken to quit alcohol and the self-management strategy applied. Supportive relationships by family and friends were explored because this is important for maintaining and promoting healthy behaviour. Pill count and exploring steps of quitting smoking was done Bp, blood and glucose were monitored and recorded.

□ **The impact of self-management strategies**

The researcher and the CHWs visited the participants who are enrolled in the intervention programme for support and guidance. On completion of two months, the progress and problems identified were recorded and attended. Health education based on their different needs attended and self-management strategies were stressed and encouraged. Those who managed to quit smoking were congratulated and recorded in the monitoring tool. Health education pamphlets were distributed and encouraged to continue adhering to the self- management strategies. In the third month, inter heart tool was repeated to assess if the participants have moved from the moderate risk

score to low-risk

score. If the participant has scored low-risk the participant will be congratulated and encouraged to continue with a healthy lifestyle.

## **Theme 2 : Knowledge related to self-management and other related factors when living with risk factors including hypertension and diabetes- mellitus**

### **RISK FACTOR**

#### **◆ Lack of knowledge about diabetes and hypertension, heart attack and other risk factors**

The findings indicate that patients do not have knowledge of chronic diseases and risk factors for their families and themselves. The finding from both qualitative and quantitative strands revealed that patients' knowledge related to attitudes and practices expected to prevent CVD and control risk factors, hypertension and diabetes were not sufficient enough as others still indicate that there are still taking a diet with high fat but taking telling themselves that as long as they are taking treatment is good for them.

### **7.5.5 Implementation of interventions and monitoring tools on self- management strategies**

The CHW and the researcher visited the participants to disclose the inter heart result and the risk factor that was identified. The CHW and the researcher explored the knowledge of chronic diseases participants' practices and attitudes towards prevention of CVD and how to control hypertension and diabetes. Information collected was recorded in an individual monitoring tool and the basket of intervention about the knowledge related to attitudes and practices to prevent risks factors, CVD and control hypertension and diabetes mellitus. After identification of the risk factor CHW visited the participant on two weekly basis and the researcher on monthly basis to monitor the progress and the health advice given about the risk factor was the following:-

### **SELF MANAGEMENT STRATEGIES KNOWLEDGE ON RISK FACTORS CONTENT**

- Summary of risk factors for CVD development
- Unmodifiable factors
- modifiable factors
- Healthy living

APPENDIX H page 234 outline the self management strategies knowledge on risk factors content

## **7.6 IMPLEMENTATION ON REINFORCING ONGOING SELF-MANAGEMENT SUPPORT**

On reinforcing and ongoing support the CHW encouraged the participants to practice healthy living according to the information given and to have knowledge about the practices and good attitudes to adhere to in order to prevent CVD development and control hypertension and diabetes. Progress of the participants was recorded in the individual monitoring tool ,information assessed were Bp, weight , diet and exercises. The progress was recorded in the patient monitoring tool and basket of interventions and the health advice intensified next appointment date was set and participant encouraged to continue with self-management strategies.

### **Impact**

On the third month of intervention the CHW and the researcher visited the participants and the inter- heart tool was repeated if the participants scored from moderate risk to low risk. Information was recorded in the participant individual monitoring tool and the basket of interventions. If the participant scored from moderate risk to low risk is going to be congratulated and discharged from the program and encouraged to continue with self-management strategies in order to prevent development of CVD.

## **THEME 3**

**Suggestions related to self-management strategies that could be maintained by patients living with risk factors including hypertension and diabetes- mellitus**



## **RISK FACTOR**

### **◆ Stress, fear and depression**

The findings indicated that there is an explanation that unforeseen painful life experiences lead to poor control or prevention of risk factors including hypertension and diabetes- mellitus as most of the participants indicated that they experience challenges like not adhering to a healthy diet due to fear, stress including household stressors and depression which lead to poor control or prevention of risk factors causes their blood pressure and blood glucose to rise.

## **IMPLEMENTATION OF SELF-MANAGEMENT STRATEGIES AND PREVENTION OF CVD**

The CHW and researcher implemented the self-management strategies according to the inter- heart tools results. The participants' |was given the results and information on the need for self-management and the danger about the disease. The CHW visited the participants on two weekly basis and the researcher on monthly basis to help the participant to deal with stressful situations such as tragic news and grief reassuring the client that it will pass and time heals. The signs and symptoms of the conditions were given, and the complications so that they can apply them or recognised if something is wrong. Information about the participant and the risk factors was recorded in the monitoring tool and the basket of interventions, health education was given according to the risk factors and the pamphlets for self-management were explained to the participant and the family for them for daily reference of self-management. Below is the self-management strategies given to the participants and the family.

### **SELF-MANAGEMENT STRATEGIES ON STRESS CONTENTS**

#### **(APPENDIX F )**

What is stress?

Signs and symptoms of stress

Types of stress

CVD and stress

How stress can cause CVD

Prevention of stress and self-management strategies

## **SELF-MANAGEMENT STRATEGIES CONTENTS**

What is depression?

General warning signs and symptoms

Risk factors of CVD which are modifiable/ can be controlled

Risk factors that are non-modifiable/ cannot be controlled

The relationship between depression and CVD

Prevention/ self-management strategies

## **IMPLEMENTATION ON REINFORCING ONGOING SELF-MANAGEMENT SUPPORT**

The CHW and the researcher on the after 2<sup>nd</sup> months of intervention the CHW and researcher visited participant for the ongoing support and to check if there are adhering and practising self-management strategies. The results were recorded in the participants monitoring tool and basket of intervention booklet. The researcher assessed the participant`s progress by taking BP, weight, and emotional status of the participants and recording, the monitoring tool and basket of intervention booklets. After assessment the researcher intensified and encouraged the participant to continue with self-management strategies, helping the participant to deal with stressful situations such as tragic news and grief reassuring the client. After assessment date and time for the next visits was given and recorded.

### **The impact**

In the 3<sup>rd</sup> month, the CHW and the researcher visited the participant to assess the progress of the intervention. The inter heart- tool was repeated to assess if the participant has scored from moderate risk to low-risk. The progress was recorded in the participant individual monitoring tool and the basket of intervention. The Bp, weight and the hip and waist ratio measurement were taken. If the participant scored low-risk was congratulated and encouraged to continue with self-management strategies .

**Theme: 4 Suggestions related to self-management strategies that could be maintained by patients living with risk factors e.g. hypertension and diabetes -mellitus**

## **RISK FACTOR**

### **◆ Unhealthy diet**

The findings of the study indicated that suggested that health education and support from the health professionals should be adequate and available related to the diseases be available to communities as most participants show that health education related to prevention of CVD and management of hypertension and diabetes is not that available in the communities except sometimes in the clinics were is been given sometimes but not always that why they are engaging in unhealthy diet. The diet has high cholesterol, spicy foods, no vegetables and fruits intake. The following skills are needed to achieve self-management:-

### **◆ SELF-MANAGEMENT STRATEGIES FOR A HEALTHY DIET (APPENDIX I)**

Health education on prevention of CVD

Definition of nutrition

Classification / Type of nutrients

Recommended serving quantities

Recommended foods which lowers the risk of CVD

Foods that are not recommended

Other lifestyle changes and control measures

## **IMPLEMENTATION OF SELF-MANAGEMENT STRATEGIES**

The CHW and the researcher disclosed the results of the inter-heart tool to the participants and recorded them in the monitoring booklet and basket of intervention booklet. The participants was educated about the self-management strategies and how to apply them to keep their blood pressure and glucose level. The participants and their family explained that some skills are needed to manage and maintain health-promoting behaviour as well as manage the disease. The participant and their families can be empowered to manage their disease through the formation of a partnership with health care

workers. All the information will be recorded in the monitoring and interventions booklet on the progress made.

## **IMPLEMENTATION ON REINFORCING ONGOING SELF-MANAGEMENT SUPPORT**

After 3 months of intervention, the researcher and the CHW visited the participant to monitor and assess the progress of the participant. Inter heart tool repeated to assess if the participant has moved from moderate risk to lower risk. Bp, weight, hip and waist can measure and the progress of self-management strategies intervention. All information was recorded in the monitoring tools and the basket of intervention tool to assess the progress. If the participant moved from moderate risk to low-risk was encouraged and congratulated to maintain the status.

## **THEME 5: Support related to prevention and control of hypertension, diabetes mellitus and risk factors**

### **RISK FACTOR**

#### **◆ Physical inactivity and overweight**

The finding showed that there is a lack of support related to prevention and control of hypertension, diabetes mellitus and risk factors, prevention and control of the cardiovascular disease. This support on prevention and control include support of losing weight and health education on exercise and the benefits of losing weight.

## **IMPLEMENTATION OF SELF-MANAGEMENT STRATEGIES SUPPORT**

CHWs and the researcher informed the participants about the inter-heart tool results and the risk factors identified and the interpretation thereof. The information was recorded in the monitoring and basket of intervention tool. The researcher advised participants and their family about the importance and the need of engaging in health-promoting behaviour, especially physical activity. Information about losing weight and the application of regular exercise for the patients diagnosed with diabetes should know and feel when the sugar is high or low. The participants were given the value of health and longevity than gratification with current lifestyle pleasures such as sedentary life. But other

things can also put you at risk of being overweight. The following health education and the exercises will be given and demonstrated to the participants and the family-:

## **SELF-MANAGEMENT STRATEGIES HEALTHY LIVING CONTENTS (APPENDIX K)**

What is to be overweight or obese?

Why is it unhealthy to be overweight?

How can I lose weight?

Healthy hundredweight

Physical exercise

Importance of physical activity

What are the other reasons why being physically active is important?

Types of physical activity

Demonstrations of physical activities

### **IMPLEMENTATION ON REINFORCING ONGOING SELF-MANAGEMENT SUPPORT**

The researcher and the CHW on the 3<sup>rd</sup> month of intervention visited the participant to monitor the progress of the intervention. inter-heart tool was repeated to assess the self-management strategies intervention B, weight, waist and hip measurement was repeated and recorded in the monitoring tool. If the participant moved from moderate risk to lower-risk was congratulated and encouraged to maintain the optimal.

### **FINDINGS OF SELF MANAGEMENT**

- Findings on implementation and the impact of self-management strategies showed that 38 clients received group health education on prevention of CVD and health advice pamphlets at the clinic and homes.
- 38 participants of those who were on moderate risk moved to low risk and were congratulated and health education were given to proceed living a healthy lifestyle to prevent CVD. Those who remained on moderate were encouraged to continue living a healthy life

- CHW were orientated at their respective clinics about the SPICES program and profiling of patients using the INTERHEART Risk Score tool and to continue using them in case they suspect

#### POST-INTERVENTION RESULTS

- Majority were prevented from developing CVD
- Those who remained on ,moderate were given health education and referred to CHW to continue with self-management
- CHW were incapacitated with knowledge and skills on prevention of CVD

### **7.7 CONCLUSION**

This chapter indicates that for the patients and the community at large there is insufficient knowledge on self-management strategies. CVD is a non-communicable disease with a high mortality rate most of the participants were not aware of the relationship between unhealthy lifestyles like smoking, overweight, diet high with cholesterol, and non-adherence to treatment as one of the contributing factors of CVD development.

Although the application of self-management strategies has shown as one of the effectiveness in the prevention of CVD development. The researcher has shown that with inconsistent intervention, follow-up, and awareness of the risk factors the communities will be aware of the dangers of unhealthy lifestyles and modify their behavior and live a healthy life.

## **CHAPTER 8**

### **SUMMARY, RECOMMENDATIONS, LIMITATIONS AND CONCLUSION**

#### **8.1 INTRODUCTION**

This chapter presents the summary of the study, the limitations and the recommendations. The background of the study and its intended purpose is summarize in this chapter. The limitations of the study also outline the challenges faced when conducting the study. The study recommendations were generated based on the study findings.

#### **8.2 SUMMARY**

The summary details the sequence in conducting the whole study from the beginning to its final stage as outlined below.

##### **8.2.1 Purpose of the study**

The main of the study was to develop and implement patient self-management strategies to prevent risk factors related to the development of CVD in Molepo local area clinics Limpopo Province, South Africa. This purpose was accomplished by profiling the patients with risk factors and based on the generated information and a realistic picture of the CVD burden informed interventions. By exploring the self-management strategies used by patients with risk factors and describing the practices and the needed self-management strategies to reduce the development of CVD it helps to improve the effectiveness of CVD prevention in a patient with risk factors.

An exploratory sequential design was used wherein the qualitative strand was first done whereby data collection was done through the one-to-one semi-structured interviews. Quantitative strands came later whereby a structured close-ended questionnaire was used to collect data. The description of the conceptual framework for the programme was grounded on the integration findings of the study. The self-management strategies and the guidelines for implementing the self-management strategies were developed to reduce the burden of CVD. All phases of the study were carried out successfully.

### **8.2.2 Limitations of the study**

The study was conducted in the selected Mole local area clinics of Limpopo Province, the findings were only limited to selected clinics of the Mole local area and therefore the findings of this study cannot be generalissimo to all public clinics in Limpopo Province and other provinces in South Africa. The intervention phase for self-management strategies was planned to roll out for 6 months from January to June but due to Covid-19 pandemic and the restrictions of travelling it was reduced to 3 months and also the planned numbers of participants were not according to the profiled participants as some of the participants died due to the Covid-19 and other relocated to other provinces. The provision of basic screening equipment such as BP machine without glucometers to CHW to screen patients for hypertension as one of the risk factors it prevented them to screen for diabetes- mellitus .

### **8.5 RECOMMENDATIONS**

The study recommends the following based on the themes that emerged:

#### **Theme 1: Description of self-management strategies used by patients with risk factors**

- The findings indicate that there are many descriptions of self-management strategies used by patients with risk factors. Hence, it is important for the government to appoint CHW permanently and be educated and strengthened with guidelines on prevention of CVD and also the risk factors that put the communities at risk of developing CVD.
- The government, especially at the local level to organise the world diabetics and hypertension day to raise awareness about the risk factors and self-management strategies.
- The government should have guidelines on management of risk factors in CVD prevention and to train health workers
- Empowerment of communities in developing personal skills in prevention of CVDs with the complete involvement of traditional and religious leaders to understand and describe the practices and cultures.



## **Theme 2: Knowledge related to self-management and other related factors when living with hypertension and diabetes mellitus**

- The study findings revealed that there is lack of knowledge related to self- management when living with risk factors including hypertension and diabetes- mellitus. Hence, it is important to train CHW as are they are working in the communities and one of their job descriptions involves the promotion and prevention of diseases. Thus, they need to be trained to screen for risk factors at the household and also blood pressure screening, especially at homes.
- To have non-laboratory screening tool e.g. heart- tool and strengthening of non-physicians (nurses and allied health professionals) at PHC levels to screen for all risk factors.
- PHC levels to have guidelines for CVD prevention, care and management of risk factors and their specific management.
- Build the capacity of the existing workforce to manage CVDs.
- The institutionalisation of the peer model for care and management of chronic conditions .

## **Theme 3: Challenges experienced by patients with risk factors in managing the disease**

- The findings showed that there are challenges experienced by patients with risk factors in managing the diseases. Therefore, there is a need for training for behavioural counsellors e.g. CHW, health trainers, volunteer multi- behaviour change interventions so that they should know all the challenges and management of risk factors to live like a change agent.
- To target groups and involve peer educators (those who were on moderate risk then moved to low-risk) and family members to be ambassadors of self-management strategies.
- Emancipate and enfranchise vulnerable groups including those with risky lifestyles to modify their lifestyle.

#### **Theme 4: Suggestions related to self-management strategies that could be maintained by patients living with Hypertension and diabetes mellitus**

- The study showed that they are suggestions related to self-management strategies that could be maintained by patients living risk factors that means that strengthening the follow-up care through home visits by CHW to encourage self-management that need to be maintained including adherence support, defaulter tracing, education and counselling.
- Appointments of professional health promotion practitioners with competencies in designing relevant CVD health promotion and prevention programmes at the local facility level.

#### **Theme 5: Support related to prevention and control of risk factors**

- The study finding indicates that there is a lack of support related to the prevention and control of risk factors that means there is a need for utilisation of CHW, multi-disciplinary team and volunteers in screening for CVD using non-laboratory means and management of risk factors through self-management strategies.
- Provision of basic screening equipment needed for CVD screening, monitoring, and management e.g. BP machine for the CHW to screen the community at the household.
- Institutional screening for CVD risk factors at local health facilities.
- Task share management of risk factors for CVDs involving medically trained professionals.

#### **Recommendations to Department of Health**

- The Department of Health in Limpopo Province should consolidate the guidelines for self-management strategies for those with risk factors.
- A non-laboratory tool e.g. inter heart tool should be available in the diagnostic room especially at the PHC level to screen for the risk factors of CVD development.
- Professional nurses should be in-serviced in implementing self-

management strategies for patients at risk.

- The department can also assist in the organising of awareness campaigns in the communities concerning risk factors, where communities who are smoking, overweight, alcohol intake and unhealthy diet will be invited to be aware of their risky behaviour.
- The department may negotiate slots in the media platforms to talk about risk factors in our communities and how to manage them using self-management.
- The government together with the non-government organisation to implement clubs where people can exercise.

### **Recommendations for Health research**

- Other studies regarding the prevention of CVD development and how to manage risky behaviour through non-medical methods can be further supported should be conducted in the future.
- The use of non-laboratory methods in screening for CVDs can further be researched to assist in the prevention of CVDs development.
- This study can be further be broken in two where the researchers could explore the experiences of patients with risk factors that have managed to use self-management strategies to prevent CVDs.
- This study can further be expanded to urban areas to assist the urban population to be aware of the risky behaviour like smoking, sedentary life and eating of junk foods, there, that they should engage in lifestyle modification.
- The study was conducted into the selected Molepo local area in Limpopo Province, the future research can be conducted in several public clinics, especially in urban areas. Therefore, communities could be aware of the prevention of CVD development and the use of self-management strategies.
- Researchers to explore more on the risk factors, especially in rural areas where rural people are engaging in smoking and alcohol. Therefore, further research is needed to explore more on self-management strategies to be used to prevent rural people from substance use to prevent CVD development and for future research reference.

## **8.3 CONTRIBUTION ACCORDING TO KNOWLEDGE DEVELOPMENT**

The contribution to the body of knowledge is aligned to the South African Qualifications Authority (SAQA) NQF level 10 (2012)

**Criteria 1: Conceptualisation of new research initiatives and building of new knowledge and practice**

The research results demonstrated the expertise and critical knowledge during the implementation of the research by identifying patients at risk, screening them for CVD development through inter heart tool by profiling all patients to screen them for risk factors, then developing self-management strategies from the findings of qualitative and quantitative, and the health promotion tool was used to develop strategies and implemented to reduce risk of CVD development.

**Criteria 2: Demonstration of scholarly debates around theories of knowledge production and practice**

After data collection and analysis of the qualitative and quantitative results together guided by Orem's theory of nursing, this was used to develop a training programme and implementation phase of activities for self-management to be used by the participants to prevent cardiovascular development. This was done according to fourth objective and implementation phase in chapter 6 of the study.

**Criteria 3: Development of new methods, techniques, processes, systems, or technologies in original, creative, and innovative ways appropriate to specialised and complex contexts**

After the participants were screened for risk factors, those who were at a moderate risk to develop CVD were registered in the intervention booklet and the individual booklet to engage in activities for self-management strategies. Different methods of self-management strategies activities were developed with the help from Orem's theory of nursing, research findings, health promotion manual and depending on the risk factor, and the participants were trained in specific strategies to implement those activities to monitor the progress of reducing risk factors to develop CVD. During implementation patients were monitored for progress as well as complications and recorded in the

intervention booklet. Finally, this inter heart tool was used to screen those at risk can be useful to the department of health, especially in primary health settings to screen all patients for CVD development.

**Criteria 4: Application of the specialist knowledge and theory to address complex practical and theoretical problems.**

The researcher is a clinical nurse practitioner in primary health care, researcher and lecturer and has observed that there is a rise in the number of patients presenting with chronic diseases in the primary health facilities during the situational analysis which was conducted in February 2018 for the SPICES Project. In January 2017 Evelyn Lekganyane clinic documented 100 patients presenting with chronic diseases such as hypertension and diabetes mellitus of which 50% of them has complicated to CVD.

The researcher was able to identify risk factors from the participants, they were counselled about the dangers of being at moderate risk of developing CVD and the importance of engaging in self-management strategies activities. These findings indicated that there is a lack of knowledge on self-management strategies, especially on people with risk factors. This study will help the

individuals to be aware of their risky lives and try to live a healthy life and prevent developing CVD by practising self-management strategies.

#### **8.4 CONCLUSIONS**

Self-management strategies have proved that can reduce the development of non-communicable diseases including hypertension, diabetes and CVD. The department of health to achieve the millennium development goal of reducing or combating HIV/AIDS and non-communicable diseases communities need to be educated on risk factors that can expose them to develop CVD and the use of non-medical methods like lifestyle modification by engaging in self-management strategies of eating a healthy diet free from spice and cholesterol, engaging in exercises, avoidance of stress and adherence to treatment.

The Department of Health to reduce the morbidity and mortality rate of non-communicable there should consolidate and standardise the non-laboratory tool to screen for risk factors of CVD development and guidelines for self-management strategies methods at the PHC level. Nurse managers should be in-serviced on risk factors and train nurses on screening of risk factors to give them knowledge on the application of self-management strategies to the patient with risk factors. Communities should be equipped with knowledge and skills on self-management strategies through an awareness campaigns and health education in the facilities.

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## **ANNEXURES**

### **Annexure A -Interview guide**

#### **Introduction**

- The researcher introduced herself,
- Explain her purpose of coming to the institution,
- Outline the purpose, duration, ethical considerations and the significance of the study to the participant and what is expected of the participant during the interview.
- The purpose of the voice recorder will also be explained to the participant,
- The participant will be given a chance to sign a consent form if s/he agrees to participate in the study.

#### **Central question:**

1. Risk factors are problems that causes heart failure, Can you please share with me how you manage yourself with regards to prevention of CVD?Mekgwa e mengwe ya mapehelelo a rena ke bothata bjo bo ka hlola bolwetsi bja pelo, ka kgopelo o ka bolela ka mokgwa woo o ke hlokomelago go thibela bolwetsi bja pelo?

#### **Probing questions**

- 2 .What do you understand about heart diseases?o kwisitsa eng ka bolwetsi bja pelo?
3. What do you know about the things that can contribute to CVD? O tsebang ka dilo tse di ka hlolang bolwetsi bja pelo?

4. How long have you been taking hypertension or diabetic mellitus treatment?  
ke lebaka le ka kang o somisa dihlare tsa bolwetsi bja madi a makgolo goba tswikiri?

5. Describe your practices and knowledge about adherence to hypertension and diabetic mellitus treatment in prevention of CVD's? What are the patient's knowledge and practices with risk factors and NCD related to development of CVD on prevention of CVD?

Ke mekgwa efe le tsebo ye o e somisago, somisong ya dihlare tsa gago tsa bolwetsi bja madi a makgolo le swikiri go thibela bolwetsi bja pelo ?

6. What self-strategies do you think can be used by patients who have risk factors and suffering from hypertension and diabetic mellitus to prevent CVD's?  
O nagana gore ke mekgwa efe ye e ka somiswago ke balwetsi ba madi a makgolo le swikiri go thibela go se tsenwe ke bolwetsi bja pelo

## **Annexure B: University Of Limpopo Consent Form A**

Name of Project: (SPICES) Scaling-up Packages of Interventions for Cardiovascular Disease Prevention in selected sites in Europe and Sub-Saharan - An implementation Research Project

Topic: Patients' self-management strategies to prevent risk factors related to the development of CVD

### **Purpose of the study**

My name is Nancy Kgatla, a researcher from the University of Limpopo. The purpose of the study is to develop a prevention and control program for patients at high risk of developing CVD at the Evelyn Lekganyane clinic, Capricorn District, Limpopo Province.

### **Procedure and potential risks and discomfort**

The study consists of questions about the experiences of taking treatment and whether you finish your treatment regime. We will request to record the interview to ease the transcription process later and inform report writing for this study. You are free to agree to this or not and this will not affect your participation in the study. If you do not wish to participate in this interview, you can ask to be excused. You can also refuse to answer any question or stop the interview at any time.

### **Confidentiality**

The information collected from this interview will be kept confidential and will only be used to write a report without identifying you.





## Compensation

No compensation will be provided to you for your participation in this study.

Any queries or concerns contact: Mrs. M.N. Kgatla 0823571456 or Prof T.M.

Mothiba on 0832565676

Signature ----- Date -----

### Preamble

This survey is anonymous. Please answer or complete each question. The questions tell us about you. Some of the questions are about issues that you know; others about your views about congestive cardiac failure

Some of the questions are sensitive because they ask you about the medical conditions you suffered from. These kinds of questions are straight to the point and perhaps they are kind of questions you were never asked for before. The majority of questions are relatively easy. If a certain question makes you feel hurt to such an extent that you do not like answering it, feel free to pass through and answer other questions.

Please answer the entire questionnaire honestly. Your answers are confidential. You may withdraw at any stage without prejudice. Please answer the questions yourself do not ask other people for answers.

Date: \_\_\_\_\_

Name of the Village: \_\_\_\_\_

Place conducted: \_\_\_\_\_

Time Started: \_\_\_\_\_

Time Finished: \_\_\_\_\_

## **Annexure C: University Of Limpopo Consent Form B**

Statement concerning participation in a clinical research project\*.

### **Name of project/study**

**Patient`s self-management strategies to prevent risk factors related to the development of CVD at Molepo local area clinics in the Capricorn District, Limpopo Province**

#### **Information box:**

Thank you for agreeing to participate in this study. My name is Nancy Kgatla, I am a researcher from the University of Limpopo. The aim of this study is to investigate self-management strategies to prevent risk factors related to the development of CVD in Molepo local area clinics, Capricorn District, Limpopo Province. The study is non-invasive, and does not involve any anticipated manner of harm. The objectives are to explore factors that contribute to the development of CVDs and to describe the practices of patients and how they adhere to treatment in prevention of CVDs. Participation in this study is completely voluntary and you may withdraw from it at any time and without victimisation.

Should you have any queries, kindly contact:

M.N.Kgatla (0823571456)

I have read the information and heard the aims and the objectives of the proposed study and was provided the opportunity to ask questions and given adequate time to rethink the issue. The aim and the objectives of the study are clear to me. I have not been pressurised to participate in any way.

I understand that participation in this clinical trial/study/project is completely voluntary and that I may withdraw from it at any time and without supplying reasons. I know that this study/project has been approved by the Research and Ethics Committee, University of Limpopo and the Limpopo Department of Health. I am fully aware that the results of this study/project will be used for scientific purposes and may be published. I agree to this, provided my privacy is guaranteed.



**Annexure D: Letter to Request Permission from the Department Of Health**

P.O. BOX 434  
Polokwane  
0700  
22/02/2017

Limpopo Department of Health  
Private Bag X908  
POLOKWANE  
0700

**REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN MANKWENG LOCAL AREA CLINICS, CAPRICORN DISTRICT, LIMPOPO PROVINCE**

Dear Sir/Madam

I am Mamoeng Nancy Kgatla, a PhD student in the Department of Nursing Science at the University of Limpopo, under the SPICES project, participating in research at the Evelyn Lekganyane, Nobody, Mamushi and Soetfontein clinics. The study is part of the SPICES project - Scaling-up Packages of Interventions for Cardiovascular disease prevention in selected sites in Europe and Sub-Saharan: an implementation research project - which is based at the University of Limpopo. I hereby request permission to conduct my study at the selected clinics mentioned above. The research I wish to conduct for my Doctoral thesis involves: Self-management Strategies to Prevent Risk Factors Related to the Development of cardiovascular Disease in the Molepo local area clinics in the Limpopo Province, South Africa. This Study will be conducted under the supervision of Prof TM Mothiba and co-supervisor, Prof N Malema (University of Limpopo).

All information received from respondents will be treated confidentially and will be used solely for purpose of the research. Attached receive a copy of my thesis proposal which includes a copy of the consent form to be used in the research process.

If you require any further information, please do not hesitate to contact me on:

Contact number: 0823571456

Email address: [nancy.kgatla@gmail.com](mailto:nancy.kgatla@gmail.com)

I hope that my request will reach your sincere consideration.

Yours sincerely

Mamoeng Nancy Kgatla (University of Limpopo)

## **Annexure E: Letter Requesting Permission from the Ga-Molepo Clinic**

University of Limpopo (Faculty of Health Care sciences)

Department of Nursing

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The Operational Nurse Manager

Evelyn Lekganyane clinic

Boyne

Permission to conduct research

The University of Limpopo, along with SPICES (Scaling-up Packages of Interventions for Cardio-vascular disease prevention in selected sites in Europe and Sub-Saharan Africa) is requesting permission to conduct research with the objective of implementing a prevention and control program in patients at high risk of cardiovascular disease in your facility.

The aim of the research is focused on self-management strategies to prevent risk factors related to the development CVD in your clinic. The research is part of my doctoral degree thesis.

My email is [nancy.kgatla@gmail.com](mailto:nancy.kgatla@gmail.com)

Hoping that our request will reach your sincere consideration.

Yours sincerely

Mamoeng Nancy Kgatla (0823571456).

**ANNEXURE F : SEPEDI VERSION: CONSENT FORM**

**UNIVERSITY OF LIMPOPO SEPEDI CONSENT FORM**

Statemente mabapi le go tšea karolo ka go Protšeke ya Dinyakišišo tša Teko ya Klinikhale \*.

**Leina la Protšeke / Dinyakišišo / Teko**

**Go tswelletsa dinhla tsa go kgona go ihlokomela ga balwetsi go thibela go tsenwa ke bolwetsi bja pelo mo dicliniking tsa karolong ya Mankweng tikologong ya Kheprikone .porobeseng ya Limpopo.**

Ke badile/ke kwele ka ga tshedimošo mabapi le maikemišetšo le morero wa dinyakišišo tšeo di šišintšwego gomme ka fiwa nako yeo e lekanego gore ke naganišiše ka ga taba ye. Ke tloga ke kwešiša maikemišetšo le morero wa dinyakišišo tše gabotse. Ga se ka gapeletšwa go kgatha tema ka tsela efe goba efe. Ke a kwešiša gore go kgatha tema Protšekeng/Dinyakišišong tše ke ga boithaopo gomme nka tlogela go kgatha tema nakong efe goba efe ntle le gore ke fiwe tshwaro empe.

Se ka se be le khuetšo efe goba efe go kalafo yaka ya ka mehla ya maemo a ka. Ke a tseba gore Teko/Protšeke/Dinyakišišo tše di dumeletšwe ke Turfloop Research and Ethics Committee (TCREC), Kgoro ya tša maphelo ya Limpopo, moetapele wa kgoro ya maphelo tikologong ya kheprikone. Ke tseba gabotse gore dipelo tša Teko/Dinyakišišo/ Protšeke tše di tla dirišetšwa merero ya saense gomme di ka phatlalatšwa. Ke dumelelana le se, ge fela bosephiri bja ka bo ka tiišetšwa.

Mo ke fa tumelelo ya go kgatha tema Tekong/Dinyakišišong/ Protšekeng

.....

Leina la molwetši/ moithaopi Mosaeno wa molwetši goba mohlokamedi.

.....

Lefelo.

Letšatšikgwedi.

Tlhatse

---

\_\_\_\_\_Setatamente ka Monyakišiši

Ke fana ka tshedimošo ka molomo le/goba yeo e ngwadilwego mabapi le Teko/Dinyakišišo/ Protšeke ye.

Ke dumela go araba dipotšišo dife goba dife tša ka moso mabapi le Teko/Dinyakišišo/ / Protšeke ka bokgoni ka moo nka kgonago ka gona.

Ke tla latela melao yeo e dumeletšwego.

.....

.....

Leina la Monyakišiši Mosaeno Letšatšikgwedi Le



**Annexure G: Questionnaire for Participants Treated for any Risk Factors Including Hypertension And Diabetic Mellitus**

Preamble

This survey is anonymous. Please answer or complete each question. The questions tell us about you. Some of the questions are about issues that you know; others about your views, risk factors and hypertension and diabetic mellitus.

Some of the questions are sensitive because they ask you about medical conditions you have suffered from. These kind of questions are straight to the point and perhaps they are the kind of questions you have never been asked for before. The majority of questions are relatively easy. If a certain question makes you feel hurt to such an extent that you do not like answering it, feel free to pass through and answer other questions.

Please answer the entire questionnaire honestly. Your answers are confidential. You may withdraw at any stage without prejudice. Please answer the questions yourself, do not ask other people for answers.

Date: \_\_\_\_\_

Name of the Village: \_\_\_\_\_

Place conducted: \_\_\_\_\_

Time Started: \_\_\_\_\_

Time Finished: \_\_\_\_\_

**Annexure H : 16 “Non-Laboratory” Based inter-heart Modifiable Risk Score**

<b>Risk factor</b>	<b>Question</b>	<b>Points for the answer</b>	<b>Points for each</b>
Age	Are you a man 55 years or older OR woman 65 years or older?	2	
Smoking. Pick the description which matches you best:	Are you a man younger than 55 years or woman 0 younger than 65 years?	0	
	I never smoked		0
	OR I am a former smoker (last smoked more than 12 months ago)		2
	OR I am a current smoker or I	1-5 cigarettes per day	2
		6-10 cigarettes per day	4
		11-15 cigarettes per day	6
16-20 cigarettes per day		7	
More than 20 cigarettes per day	11		
Second hand smoke	Over the past 12 months, what has been your typical exposure to other people’s tobacco smoke?	Less than 1 hour or exposure per week or no exposure	0
		OR One or more hours of secondhand smoke exposure per week	2
Diabetes	Do you have diabetes mellitus?	Yes	6
		No or unsure	0
High Blood Pressure	Do you have high blood pressure	Yes	5
		No or unsure	0
Family history	Have either or both of your biological parents had a heart attack?	Yes	4
		No or unsure	0

Waist to hip ratio	(Pick one only)	Quartile 1: Less than 0.873	0
		Quartile 2 &3: 0.873 - 0.963	2
		Quartile 4: greater than or =0.964	4
Psychosocial factors (Pick one only)	How often have you felt work or home life stress in the last year?	Never or some periods	0
		OR Several periods of stress or permanent stress	3
	During the past 12 months, was there ever a time when you felt sad, blue, or depressed for two weeks or more in a row?	Yes	3
		No	0
Dietary factors. Pick one answer for each food group mentioned	Do you eat salty food or snacks one or more times a day	Yes	1
		No	0
	Do you eat deep fried foods or snacks or fast foods 3 or more times a week?	Yes	1
		No	0
	Do you eat fruit one or more times daily?	Yes	1
		No	0
	Do you eat vegetables one or more times daily?	Yes	1
		No	0
Do you eat meat and/ or poultry 2 or more times daily?	Yes	2	
	No	0	
Physical activity	How active are you during your leisure time?	I am mainly sedentary or perform mild exercise (requiring minimal effort)	2

		OR I perform moderate or strenuous physical activity in my leisure time	0
--	--	---	---

## **Annexure I : Inter-heart tool and self-management strategies**

### **Summary of Health advice**

#### **Inter-heart tool and self-management strategies**

**Age:** The older someone gets the greater one's chance of developing CVD. Although the process of aging can't be changed, leading a generally healthy lifestyle is recommended to help reduce the likelihood of developing CVD.

**Sex:** Men have a higher risk of CVD like heart attack at younger ages compared to women. However, women have a similar risk as men once they are over the age of 65 years.

**Family history/Genetic predisposition:** Family history of heart disease places people at a greater risk of having a heart attack. Family history nearly doubles one's risk of experiencing a future heart attack. The conditions could be carried on genetically from parents. However, the history of disease could be observed among grandparents, parents and other relatives.

#### **MODIFIABLE FACTORS**

**Body Weight/ Metabolic Waist Syndrome:** People, who have excess body weight or fat especially if a lot of it at the waist, are more likely to develop heart disease and stroke even if they have no other risk factors. Excess weight increases the heart's work, raises blood pressure and blood cholesterol, and makes diabetes more likely to develop. **High blood pressure/hypertension:** High blood pressure (BP 140/90 and above) is another contributing factor to cardiovascular disease, including heart failure, stroke and heart attack. High blood pressure is often symptomless, but can be easily diagnosed by a health worker using a routine test. High blood pressure is often linked to being overweight, physical inactivity, a high Intake of salt or alcohol or a family History of the disorder, but in some cases may have no apparent cause. Lifestyle changes may help to reduce high blood pressure and, in severe cases, medication may be prescribed.

**Diabetes:** Having diabetes, is a risk factor for developing cardiovascular disease. High glucose levels can damage the artery walls and make the build-up of fatty deposits (atheroma) more likely. If these fatty deposits occur in the

coronary arteries, they can lead to possible coronary heart disease and heart attack.

**Stress:** Stress refers to the situation in which a person is facing a hard time with no choice or with conflicting choices/alternatives. Stress is not a direct risk factor for heart diseases but it is possible that it may contribute to your risk level. It all depends on your coping. Some people cope with stress with risky behaviour such as smoking, drinking too much alcohol and over eating. All these increase your risk of CVD.

**Tobacco smoking:** Smoking harms nearly every organ of the body, causing many diseases. This damage can lead to a poor quality of life and earlier deaths. Smoking damages your heart and your blood circulation, increasing the risk of conditions such as coronary heart disease, heart attack, stroke, damaged blood vessels that supply blood to the brain and other body parts.

**Physical inactivity:** Being physically active helps to keep a person's weight and blood pressure down to healthy levels; whereas, remaining physically inactive, increases the risk for developing heart disease and stroke. People are encouraged to be involved in doing physical activities such as brisk walking, skipping rope, jogging, digging and riding a bicycle among others for at least 30 minutes per day.

**Unhealthy diet:** Unhealthy diet is a risk factor for CVDs. Healthy diet refers to eating a meal that has got all food nutrients needed by the body in their right proportion. So, individuals are advised to eat healthily at least 5 portions of a variety of fruit and vegetables a day, starchy foods like porridge, potatoes and samp, proteins such as beans, fish, eggs, meat and other proteins, choose unsaturated oils and spreads, eaten in small amounts. Drink plenty fluids at least 8 glasses of water per day.

## **Annexure J : Stress and depression**

## Introduction

Differentiating between stress and depression was problematic during the screening of communities using the inter-heart Risk Score tool hence the decision to discuss these two conditions.



## What is stress?

Stress occurs in response to a person's difficulty to interact and adapt in their environment and it perceived as straining or exceeding their adaptive capacities. It is life-threatening to their well-being. For example, the loss of a loved one, losing a job, divorce, chronic illness or injury, or traumatic event such as rape, etc.

## Signs and Symptoms of Stress

### ➤ Emotional symptoms of stress

- Becoming easily agitated, frustrated, and moody
- Feeling overwhelmed
- Feeling bad about yourself (low self-esteem), lonely, worthless, and depressed

### ➤ Cognitive symptoms of stress

- Constant worrying
- Forgetfulness and disorganization
- Inability to focus
- Poor judgment
- Being pessimistic or seeing only the negative side


### ➤ Physical symptoms of stress

- Low energy
- Headaches, aches, pains, and tense muscles
- Chest pain and rapid heartbeat
- Insomnia

- Loss of sexual desire and/or ability
- Nervousness and shaking, ringing in the ear, cold or sweaty hands and feet
- Dry mouth and difficulty in swallowing

### 5.3 3.4. Types of stress

**TYPES OF STRESS**

<p><b>Eustress</b> – <b>positive stress</b></p>	<p>• An example of eustress would be stress experienced during a wedding.</p>	 <p><b>"STRESS"</b></p> <p>THE CONFUSION CREATED WHEN ONE'S MIND OVERRIDES THE BODY'S BASIC DESIRE TO CHOKER THE LIVING DAYLIGHTS OUT OF SOMEBODY WHO DESPERATELY NEEDS IT!</p>
<p><b>Distress</b> – <b>negative stress</b></p>	<p>• An example of distress would be stress experienced during a funeral.</p>	

### CVD and stress

CVD is a condition that affects the functioning of the structure of your heart such as a blockage of blood flow to the heart so it does not get enough oxygen and that leads to heart failure, blockage of blood supply to the brain leads to stroke.





## ➤ Stress & CVD

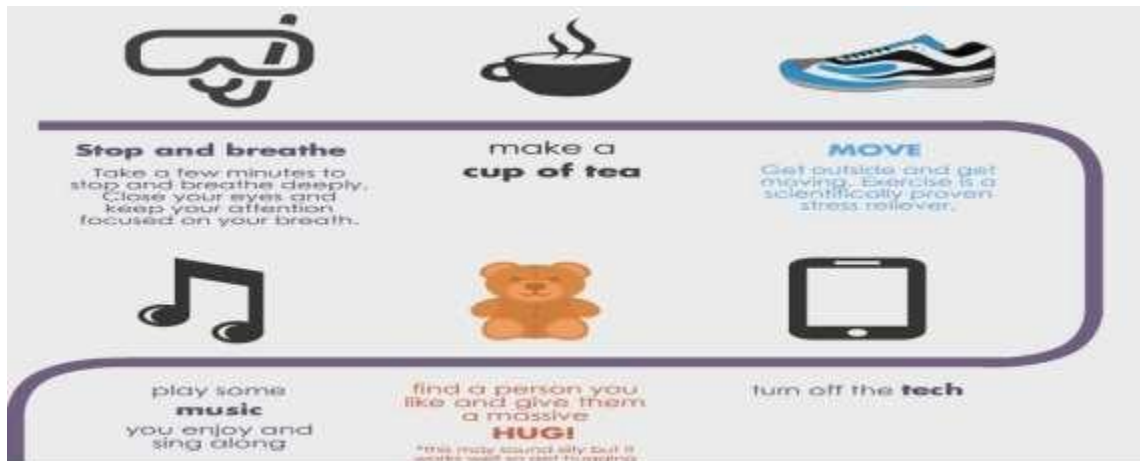
- Stress is a normal part of life. But if left unmanaged, stress can lead to emotional, psychological, and even physical problems.
- Stress is often referred to as “the silent killer” it triggers inflammation, a known instigator of CVD-heart disease- heart attack, stroke, heart failure, chest pains, early deaths and high blood pressure.

## ➤ How stress can cause CVD



- Stress raises blood pressure, and it's not good for the body to constantly be exposed to stress hormones.
- Stress changes in the way blood clots, which makes a heart attack more likely.
- The way one handles stress is important. If one responds to it in unhealthy ways such as smoking, overeating, or not exercising that makes matters worse because these high-fat, high-cholesterol foods contribute to the artery damage that causes heart attacks, high blood pressure, chest pain, or irregular heartbeats and strokes.

## Prevention of Stress and Self-Management Strategies



➤ **What is Stress Control and Self-Management**

Stress management is a wide spectrum of techniques and psychotherapies aimed at controlling a person's level of stress, it is about finding the self-control and mastery needed to take control of one's life (e.g., to manage one's time, workflow, and communication).

➤ **Why practice stress management?**

Some stress can be beneficial and may lead to actual problem-solving, but a lot of stress is unnecessary and even harmful. Research is clear that stressed brains do not operate the same way as non-stressed brains.

If one is living with high levels of stress, that puts one's entire well-being at risk!

➤ **Preventing negative stress**

Recognize the problem and the source of negative stress.

➤ Use the ABC strategy

Awareness

- What causes your stress? How do you react?

Balance

- How much can you cope with it before it becomes negative?

Control

- What can you do to combat or cope with the negative effects of stress?
  - Change your thinking (Reframing/ Positive thinking)
  - Change your behavior (Be assertive, be organized, Ventilation, Humour)
  - Change your lifestyle (Diet, Smoking/alcohol, Exercise, Sleep, Leisure, Relaxation)

➤ **Other Alternatives**

- Seek medical help, Psychotherapy, counselling, listening to relaxing music, Aromatherapy, Yoga, Massage

## **Conclusion**

Stress is a manageable aspect of life, however, if left unchecked it might become chronic and disruptive. Keep your stress levels low and be happy!

## **Annexure K: Risk factors for NCDs**

Non-modifiable risk factors for NCDs are:

- Age

- Heredity

Behavioural / modifiable Risk factors for NCDs include the following:

- Smoking
- Physical inactivity
- Unhealthy diet (low fruit and vegetable consumption, high salt)
- Harmful alcohol use
- Some infections (e.g., throat infections causing rheumatic heart disease, HIV)
- Stress

### **High blood pressure.**

- High blood pressure is one of the risk factors for heart disease. In fact, it is a major risk factor for most of the heart diseases .Now we are going to try to understand it better and what we can do to prevent and control it.
  
- Blood pressure is the force of blood pushing against the walls of your arteries as the heart pumps blood through these blood vessels. If this pressure goes up and stays high over time, it can harm the body in many ways.

### **What causes high blood pressure?**

As we had seen earlier, a risk factor is a condition or habit that makes a person more likely to have a disease or condition.

A number of factors can lead to high blood pressure. Sometimes, high blood pressure is caused by other medical problems, such as kidney disease. But for many people unhealthy lifestyle habits can lead to high blood pressure.

The risk factors for high blood pressure include the following.

- Too much sodium in the diet – This can make your body hold on to fluids, and that can increase blood pressure. It is recommended that you should not take more than 1 teaspoon of sodium in a day. The intake is lower for those with high blood pressure.
- Being overweight or obese. People who are overweight or obese are more likely to have high blood pressure than are those who have a normal.

weight. The more you weigh, the more blood your body needs, and this leads to more pressure on the walls of your arteries.

- Lack of physical activity. People who are not very active tend to become overweight. Being active will help you get to a healthy weight, look and feel better, get around more easily, and can even help you prevent diabetes and other diseases. An adult should have at least 150 minutes of moderate-to-vigorous physical activity a week. Being active at a moderate level means that you can talk to others easily during the activity. If you become too out of breath to talk to others, your level of activity is vigorous, not moderate.
- Being sedentary. Even if you are active in other ways, sitting for a long time puts you at risk for high blood pressure. If you are sitting for an hour or more, walk around for at least 5 minutes every hour.
- Drinking too much alcohol. Drinking alcohol damages the artery walls, and so if you drink alcohol, you must drink wisely. For men, that means two drinks a day at most, and for women, one drink a day at most.
- Smoking or chewing tobacco. Both of these behaviors damage the walls of your arteries. If you don't smoke, don't start. If you do smoke or chew tobacco, stop as soon as you can.
- Having diabetes or kidney disease. People who have these diseases are more likely to have high blood pressure than those who don't have these problems. This means people who have diabetes or uncontrolled high blood pressure should have a test for kidney function every year.
- Being older. Usually, the older you get, the greater your chance of developing high blood pressure. Though in our settings BP has started affecting people at an early age.
- Having a family history of conditions that increases your risk. If your parents or other close relatives have high blood pressure, heart disease, or diabetes, you are more likely to develop it yourself. Beyond family history, if you have poor lifestyle habits you are more likely to develop high blood pressure.
- Being under too much stress. People who are under too much stress often find that their blood pressure goes up.

- Not taking your BP prescription medicines as your doctor advises. If you stop taking your medicines, your blood pressure will no longer be under control, and you put yourself in danger.
  - Not changing unhealthy habits. Changing your unhealthy habits is key for people who have the risk factors for high blood pressure, for high blood cholesterol, or for diabetes.
- 
- Follow up to see if she or he has actually gone to see the health worker.

### **Symptoms of hypertension**

People who have hypertension normally will not experience symptoms. However, people experiencing a hypertensive crisis may exhibit symptoms such as:

- Severe headache
- Nosebleeds
- Changes in vision Nausea or vomiting.
- Shortness of breath.
- Confusion
- Chest pain

### **Treatment of blood pressure**

Some people may be able to manage their blood pressure without using medicines. To do this, they use healthy lifestyle behaviors like being active on a regular basis, eating healthier food that has less sodium, losing weight, and quitting smoking. As a CHW, you can encourage people to make these kinds of changes.

Treating high blood pressure can save your life. If people are not able to lower their blood pressure by making lifestyle changes, their doctor may have them take medicines to help. Several different types of medicine are helpful for high blood pressure.

You can encourage people to do the following

- Take their medicines exactly the way their doctor advises. It is important that they do not skip a dose or take too much of the medicine.
- Consult the health workers if they have any questions or issues with their medicines.
- Check their blood pressure as often as their doctor advises.
- Always ask the health provider if other medicines are safe to take with medicines that lower their blood pressure.

### **Roles of CHWs in CVD prevention and control.**

Now that we know about heart disease and what we can do to reduce our chances of getting it. Let's discuss what we can do as CHWs to contribute to prevention and control of heart disease and its risk factors such as high blood pressure in our communities.

*As a CHW, what can you do to support community members in preventing and controlling heart disease and high blood pressure?*

A few ideas are as below:

- Educate people about making lifestyle choices that are healthy for their heart. Some examples are to eat more fruits and vegetables, eat fewer salty and fatty foods, exercise regularly, reach a healthy weight and then maintain it, stop smoking, and limit the intake of alcohol.
- Make sure to let adults know that they should be screened for high blood pressure. This is important because many people who have high blood pressure do not know it.
- Urge people to feel comfortable asking a health worker for a copy of their blood pressure numbers. Likewise, when you take someone's blood pressure, you should write down the numbers for that person and explain to them what their blood pressure values mean.
- Explain to your community members how important it is for them to keep their blood pressure at a healthy level. Tell them that controlling their blood pressure can make them less likely to have a heart attack or stroke. Also,

constant high blood pressure can cause damage to many parts of their body, including their heart, brain, kidneys, and eyes.

- Where you have the blood pressure machine, you can help in screening community members following the steps we earlier discussed. When you take someone's blood pressure, you should write down the numbers for them and explain what their blood pressure values mean.
- Where you meet community members whose blood pressure numbers are higher than recommended, advise them on where they can get help and refer them to the nearest health facility.
- Remind people with diabetes that monitoring this condition by controlling their blood glucose and taking their medications is very important. Because diabetes and high blood pressure are both big risk factors for heart disease, people who have both problems need to make especially healthy choices in their lives.

## **Annexure K: Diabetis Mellitus self management**

### **Introduction**

This module will briefly introduce CHWs to diabetes. The module will describe risk factors, signs and coping measures for diabetes.



## Learning objectives

By the end of the module, participants should be in position to:

- To describe what diabetes is.
- Mention the risk factors of diabetes.
- List the signs of diabetes.
- Describe the diagnosis of diabetes.
- Discuss ways of coping with diabetes.
- Describe the importance of checking blood glucose regularly.

### **Session overview**

- A. Diabetes.
- B. Risk factors of diabetes.
- C. Signs of diabetes.
- D. Diagnosis of diabetes.
- E. Importance of checking blood glucose regularly.

## Diabetes

- Is a disease in which too much glucose, or sugar, is in the blood. Diabetes is also called high blood sugar. Most of the food we eat is turned into glucose, or sugar, for our bodies to use for energy.
- Insulin is made by the pancreas to help glucose get into our cells. The pancreas is an organ near the stomach.**
- When a person has diabetes, his or her body either doesn't make enough insulin or can't use its own insulin as it should. This problem keeps glucose from getting into the cells, and causes glucose to build up in the blood.

## Risk Factors for diabetes

You may wonder who is most likely to get type 2 diabetes.

Certain risk factors make people more likely to get this type of diabetes. A risk factor for diabetes is a behavior or condition that makes a person more likely to

develop diabetes. People who do not have these risk factors can also get diabetes. Reducing your risk for diabetes will also reduce your risk for heart disease and stroke.

Some of these risk factors are

- A family history of diabetes.
- Age, especially after 45 years of age.
- Not being physically active.
- Being overweight.
- Being a woman who had gestational diabetes or who delivered a baby weighing 4kg or more.

People who have these risk factors may also have high blood pressure and cholesterol levels that are high.

### **Signs of diabetes**

The signs of diabetes are

- Being very thirsty.
- Being very hungry.
- Needing to pass urine a lot—often at night.
- Having blurry vision from time to time.
- Feeling very tired much of the time.
- Losing weight without really trying.
- Having very dry skin.
- Having sores that are slow to heal.
- Getting more infections than usual.
- Losing feeling or getting a tingling feeling in the feet.

People who have just developed diabetes may not have any of these signs. A person who has one or more of these signs should see a health worker very soon. When people take care of themselves and their diabetes they will feel better and have fewer health problems now and in the future.

### **Diagnosis of diabetes**

The most common and simple blood test for finding out if you have diabetes is the fasting blood glucose test. A person should have the test in the morning before he or she has anything to eat for at least eight hours before the blood test.

Test results are given as a number that tells you the amount of glucose in a sample of blood. If the glucose level is high—more than 126 milligrams per deciliter (mg/dl)—the person’s doctor may order extra blood tests that will show if he or she has diabetes.

<p><b>If the fasting glucose level is</b></p> <ul style="list-style-type: none"><li>• <b>Less than 100 (mg/dl), the blood glucose level is normal.</b></li><li>• <b>100 to 125, a person has prediabetes.</b></li><li>• <b>126 or more, on two different days, a person has diabetes.</b></li></ul>
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### **Importance of checking blood glucose regularly**

- It is very important to control your blood glucose levels if you have diabetes.
- By keeping your blood glucose level close to normal, you can prevent or delay health problems caused by diabetes, such as eye disease, kidney disease, and nerve damage.
- To control your blood glucose levels, you will need to keep track of it. Two ways can be helpful:
  - Testing your blood glucose, a number of times each day. Many people with diabetes test their blood sugar two to four times a day.
  - Getting an A1C test from the health facility twice a year. The A1C test—short for hemoglobin A-1-C—is a simple blood test that measures your average blood glucose over the last three months.
- These tests tell you if you are keeping your blood glucose levels within normal limits.
- Blood sugar testing can help you understand how food, being active, and diabetes medicine affect your glucose levels. Testing can help you make choices every day about how to balance these three things. It can also tell you when your glucose is either too low or too high so that you can treat the problem.
- You can do the test using a glucose meter. Glucose meters usually need a drop of blood that you get by pricking your finger or a place on your arm. You place the drop of blood on a small, coated strip and put it in the meter. The meter then gives you a reading of your blood glucose

### **What CHWs can do to help diabetics**

In addition to what CHWs can do to help hypertensive, they can:

- Help people set goals to control their diabetes.
- Help those with diabetes understand what they need to do to take care of themselves, including checking their blood glucose daily.
- Help people with diabetes understand the importance of regularly taking their diabetes and other medicines. They should not stop taking their medicines even if they feel better.
- Help people learn how to keep track of the medicines they are taking.
- Encourage people with diabetes to have an eye exam once each year.
- Encourage people with diabetes to see their dentists once a year.
- Encourage people to take A1C (blood glucose test) at least twice a year.
- Encourage people with diabetes to see their doctor regularly to get their blood pressure, cholesterol, and weight checked.

## **Annexure L: Nutrition, diet and self-management strategies**

### **Definition of Nutrition**

The process of providing or obtaining the food necessary for health and growth. Nutrients are molecules in food that organisms need to grow

### Classification / Type of nutrients

Type	Function	Source
<b>Protein</b>	<ul style="list-style-type: none"> <li>• Bodybuilding</li> <li>• Help human bodies grow</li> </ul>	Meat, chicken, fish, beans, peas, milk, soy products, Mopani worms, peanuts, groundnuts
<b>Carbohydrates, fats</b>	<ul style="list-style-type: none"> <li>• Energy giving foods</li> <li>• Protect us from getting diseases by boosting our immune system</li> </ul>	Porridge, rice, samp, wheat, flour, potatoes, bananas, oils, sorghum
<b>Vitamins A, B, C, D, E, K &amp; mineral salts</b>	<ul style="list-style-type: none"> <li>• Protective foods</li> <li>• Protect us from getting diseases by boosting our immune system</li> </ul>	Fruits: pawpaw's, pineapples, watermelon, oranges, passion fruits Veggies: cabbage, lattice, tomatoes, animal products, milk, meat, liver, eggs, fish

#### ➤ Recommended Serving quantities

- Starch: the amount of a closed fist.
- Meat: the amount of an open palm.
- Veggies: the amount of a cupped hand/ half a cup.
- Cheese: the end of the thumb (low/medium fat cheese).
- If not satisfied after eating, don't add starch/protein food but rather veggies.

#### ➤ Recommended Foods which lowers the risk of CVD

- Unsaturated fats: **Source:** Olive oils, avocados, fish, nuts, peanuts, canola. Help lower your bad cholesterol levels (check labels).
- Leafy green veggies: **Source** Spinach, cabbage, morogo, they are well known for their wealth of vitamins, minerals and antioxidants.
- Low-fat dairy products: **Source** lean meat, fish, chicken.
- Starch: **Source** Brown rice, whole oats, oats meal, mabele.

#### ➤ Foods that are not recommended

- Saturated fats-unhealthy: **Source:** Red meat, full cream dairy products, cheese, ice-cream.
- Fat most often used at fast food, restaurants, fried food.

- Cakes, cookies, snacks.
  - Cholesterol fat: found in animal foods, Egg yolk, liver, bacon.
  - Sugar: weight gain, type 2 diabetes.
  - Salt:
- ❖ **Other lifestyle changes and control measures**
- **Eating a healthy diet**
- Stick to the recommended diet listed above and recommended foods to improve your health condition.
  - If over-eating, advise them to reduce the amount gradually.
  - Must be disciplined and ready to control diet.

**Annexure M: Tobacco contro Annexure M: Tobacco control**

- Smoking damages virtually every organ of the body, causing numerous infections. This harm can prompt a low quality of life and prior death. By and large, grown-ups who smoke cigarettes kick the bucket 10 years sooner than nonsmokers do.
- On normal, smokers bite the dust 10 years sooner than non-smokers. You have harmed the coating of the veins, making it simpler for plaque to develop or cause blood coagulation. This is the main source of coronary episode and stroke in light of harm to your corridors and blood clumps that square bloodstream, cause cardiovascular failures and stroke
- Smoking causes more than 8 out of 10 (87%) of cellular breakdown in the lungs passings in men and 7 out of 10 (70%) in ladies.
- You have expanded tobacco byproducts in your blood that make the blood bound to clump.
- Smoking can influence bones. More established ladies who smoke have a lower bone thickness (more fragile bones) than ladies who never smoked and are in more danger for broken bones. Smoking can cause gum sickness and tooth misfortune. Smokeless tobacco might cause tooth rot in uncovered tooth roots. It can likewise make your gums pull away from your teeth. Assuming this occurs, your gums won't develop back. Likewise, rugged white patches and red bruises are normal in scoops and chewers. Those patches and bruises can transform into malignant growth. Smoking can build your danger for waterfalls, which is a blurring of the eye's focal point that makes it difficult so that you might be able to see. It additionally causes macular degeneration, which is harm to the retina, the piece of the eye required for focal vision. This condition can prompt visual deficiency. Smoking is a reason for type 2 diabetes and can make it harder to control your diabetes. Smokers have a 30-40% higher danger of creating diabetes than non-smokers.

## **Benefits of smoking**

The drawn-up benefits are outlining the dangers of sicknesses brought about by smoking and working on your wellbeing overall. Advantages of stopped smoking include:

- Within 20 minutes: your pulse drops.
- Within 12 hours: Levels of carbon monoxide and nicotine in the body decline. The heart and lungs start to fix the harm brought about by cigarettes.
- Within three months: Blood flow gets to the next level. Breathing becomes simpler. Strolling becomes simpler. The voice turns out to be less rough.
- Within one year: The danger of cardiovascular failure is sliced down the middle. Hacking, sinus clog, weariness, and windedness decline.
- Within 2 to 5 years: Your danger for stroke could tumble to about equivalent to a nonsmoker's
- Within a few (5 to 15) years: Risks of coronary illness and stroke are diminished nearly to that of a nonsmoker. Your cellular breakdown in the lungs hazard is a large portion of that of a nonsmoker. Your danger of diseases of the mouth, throat, throat, bladder, kidney, and pancreas drops considerably.

### **At the point when you quit smoking, you will**

- Live longer and live better.
- Lower your possibility of having respiratory failure, a stroke, malignant growth, and breathing issues.
- Improve your possibilities of having a sound child on the off chance that you are pregnant.
- Improve the strength of individuals you live with, particularly youngsters and more seasoned individuals.
- Have additional cash to spend on things other than cigarettes.
- The best outcome might be that you simply feel much improved.

### **Helping People to Quit Smoking**



- CHWs assume a key part in assisting individuals with embracing better propensities, like not smoking. CHWs actually must see how to share data about the risks of smoking positively and strongly.
- At the point when you converse with smokers and local gatherings about the risks of smoking and the advantages of not smoking, recall that you ought to
  - Understand that individuals smoke, and quit smoking, for various reasons.
  - Be non-critical, regardless of whether your clients decide not to stop smoking.
  - Be a companion and proposition support. Make it OK for smokers to reach you sometime in the not too distant future when they had the opportunity to contemplate your ideas to stop smoking. By being non-critical, you welcome individuals to request help from you when they are prepared to stop smoking or when they need other wellbeing data.
  - For individuals dependent on nicotine, stopping smoking is extremely hard.
  - Quitting is difficult, yet it is conceivable. Actual withdrawal indications are impermanent, enduring just half a month. At the point when you quit smoking, your body needs to acclimate to not having nicotine in its framework. For a great many people, withdrawal manifestations just last a couple of days to half a month. Be that as it may, yearnings for cigarettes can endure longer. Not every person has side effects of withdrawal, but rather it assists with being arranged Withdrawal is different for everybody. These indications including longings will blur consistently that an individual stays smoke-free
- Feeling down or dismal.
- Having inconvenience resting.
- Feeling crabby, nervous, testy.
- Having inconvenience thinking obviously and concentrating.

- Slower pulse.
- Headache.
- Feeling hungrier or putting on weight.
- At the point when individuals attempt to stop smoking, generally return to smoking inside the main week after stopping, when the body is as yet subject to nicotine.
- Many return to smoking inside the initial three months after stopping, during distressing times.
- At the point when individuals attempt to stop smoking, they generally quite a few times before they can stop for great.
- Share this data with the smokers you are working with when all is good and well.
- As an initial phase in assisting somebody with halting smoking, pose 3 inquiries.
- Do you need to quit smoking?
- Are you able to roll out certain improvements in your everyday schedule that will assist you with halting smoking?'
- Are you ready to manage some inconvenience while attempting to quit smoking?
- If the individual responds "yes" to each of the three inquiries, the person is prepared to find ways to quit smoking.
- It tends to be difficult to get certain individuals to stop smoking basically because you let them know how perilous smoking is for the body. Assuming an individual feels OK at that point, it is not difficult to put off stopping.

- Cash is frequently a more grounded inspiration than medical problems are. Assuming somebody you are attempting to assist with halting smoking doesn't appear to be made a fuss over the wellbeing impacts, take a stab at focusing on how much smoking expenses. Straightforward approximations can be made.
- The subsequent stage may be to get some information about the reasons the person in question smokes.
- Tell smokers that realizing what drives them to smoke and keeps them smoking can assist them with changing their smoking propensities. Have the smoker make a rundown of the reasons that the person smokes.
- Ask the individual to take a gander at their responses and consider ways of staying away from an opportunity to smoke or to accomplish something different when the person needs a cigarette. By knowing the exercises that trigger smoking (e.g., driving, chatting on the telephone, completing a feast), they can start to consider different activities during those times.
- Encourage smokers to keep a journal of the times when they smoke. This will assist them with recognizing the times when they smoke or the exercises that lead to smoking.
- One more method for assisting individuals with stopping smoking is to make a rundown of the relative multitude of motivations to stop. At the point when they want to smoke request that they read the rundown regularly before they quit and keep in mind that they are attempting to stop.
- They can keep the rundown where they will see it regularly, similar to their vehicle or where they keep their cigarettes. The rundown can motivate them to quit smoking for great. Anything that their reasons, they will be astonished at every one of the manners in which their lives will further develop when they become smoke-free.

- Assuming individuals are struggling to think about the positive advantages of not smoking, you may help by training them about motivations to stop.

- 

## **Steps to stopping smoking**

Before an individual stops, they need to START by making these 5 strides:

### **1. Set a Quit Date**

Smokers should pick a date inside the following fourteen days to stop smoking. This will give them sufficient opportunity to plan. They ought to contemplate their quit date. They ought to try not to set a quit date they realize will be difficult to stop (like a night out with companions, or an upsetting occasion).

### **2. Advise Family and Friends You Plan to Quit**

Stopping smoking is simpler when individuals in your day-to-day existence support you. Smokers need to tell others when they are intending to stop. Clarify how they can assist you with stopping. We as a whole need various things, so make certain to tell loved ones precisely how they can help.

### **3. Expect and Plan for Challenges While Quitting**

In the initial not many weeks in the wake of stopping, many individuals might feel awkward and will hunger for a cigarette. This is a direct result of withdrawal. Withdrawal is the point at which the body becomes acclimated to not having nicotine from cigarettes. A portion of the more normal sentiments that accompany withdrawal are

- o Feeling somewhat discouraged.
- o Not having the option to rest.
- o Getting grumpy, baffled, or distraught.
- o Feeling restless, apprehensive, or fretful.
- o Having inconvenience thinking obviously.

Individuals might be enticed to smoke to soothe these sentiments. Simply recollect that they are brief, regardless of how strong they feel at that point.

Individuals can be set off by explicit people, spots, or exercises that cause them to want to smoke. Individuals should know their smoking triggers so they can figure out how to manage them.

#### **4. Eliminate Cigarettes and Other Tobacco from Your Home, Car, and Work**

Individuals will be enticed to smoke during their quit. Advise them to remain solid; they can get it done! Eliminating things that help them to remember smoking will help. These are tips they can utilize

- Throw away the entirety of your cigarettes and matches. Give or discard lighters and ashtrays. Recall the ashtray and lighter in your vehicle!
- Don't save one bunch of cigarettes "for good measure." Keeping one pack simply makes it more straightforward to begin smoking once more.
- Remove the smell of cigarettes from your life. Make things spotless and new at work, in your car, and at home. Clean your draperies and garments. Cleanser your vehicle. You will be less enticed to illuminate in the event that you don't smell smoke.
- Have your dental specialist clean your teeth to dispose of smoking stains. Your teeth will look astounding. Whenever you quit smoking, they will constantly look that way.
- Converse with your wellbeing laborer about quit choices
- It is difficult to stop smoking all alone, however stopping "pure and simple" isn't your main decision. Urge individuals to converse with their PCP or drug specialist about other help choices. Most specialists and drug specialists can respond to their inquiries, offer guidance, and let them know where to get stopped smoking assistance.
- Quit smoking medications are likewise a viable stopped choice. Many quit smoking medications, particularly Nicotine Replacement Therapy (NRT), are accessible without a remedy. This incorporates the nicotine fix, nicotine

gum, or nicotine tablet. Peruse the directions before utilizing any prescriptions. If you have inquiries concerning a medication

- Teach people group individuals about the risks of tobacco use and handed-down cigarette smoke.
- Help smokers quit smoking, yet they ought to understand that individuals choose to stop smoking for various reasons. There is no "one size fits all" answer for stopping smoking.
- Encourage and support smokers who need to stop smoking. Also, you can empower the individuals who don't prevail on the primary, second, or even third attempt to continue to attempt until they do succeed.
- May be the ones in particular who urge an individual to stop smoking.
- Teach smokers the abilities that will put forth their attempts to stop smoking effectively.
- Encourage individuals to request without smoke daycare, schools, working environments, cafés, organizations, and other local area structures

### **Actual exercise**

- Being latent puts individuals in danger of coronary illness and stroke. Idle grown-ups have a higher danger for an early demise, coronary illness, stroke, type 2 diabetes, wretchedness, and a few diseases.
- Everyone is less dynamic now than before. Fewer grown-ups get the suggested measure of actual work no less than 150 minutes per week.
- Normal active work is significant at all ages. Moderately aged and more established individuals benefit from standard actual work similarly as much as youngsters.

### **Significance of active work**

- Bring down the danger of creating coronary illness and the danger of kicking the bucket from coronary illness.
- Bring down the danger of having a subsequent cardiovascular failure in individuals who have effectively had one coronary episode.
- Lower pulse.

- Bring down the danger of stroke.
- Bring down the danger of growing hypertension.

### **Sorts of actual work**

Two sorts of actual work are significant for remaining sound and fit:

#### **Muscle reinforcing.**

- This type fabricates muscle and builds digestion and assists with holding individuals' weight and glucose in line.
- Models incorporate lifting loads, working with opposition groups, doing practices that utilization bodyweight for obstruction. (Push-ups, sit-ups)

#### **High-impact.**

- Nearly anything counts, as long as it's done at a moderate-or fiery force for somewhere around 10 minutes all at once.
- Models incorporate strolling, running, cultivating, moving, swimming, and playing effectively with kids.

***Table 4: Exam ples of vigorous and mo derate activities***

**Annexure N : Language Editing Letter**





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5 December 2021

### **TO WHOM IT MAY CONCERN**

This editing certificate verifies that this thesis was professionally edited for Mamoeng Nancy Kgatla. Thus, it is meant to acknowledge that I, Mrs. K.L Malatji a professional Editor under a registered company RightMove Multimedia, have meticulously edited this thesis from the University of Limpopo.

Title of the thesis: "SELF MANAGEMENT STRATEGIES TO PREVENT RISK FACTORS RELATED TO CVD DEVELOPMENT AT GA-MOLEPO AREA CLINICS IN THE LIMPOPO PROVINCE, SOUTH AFRICA".

**Sincerely,**

Mrs. K. L Malatji

## Annexure O: Ethical Clearance certificate



University of Limpopo  
Department of Research Administration and Development  
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**TURFLOOP RESEARCH ETHICS COMMITTEE**  
**ETHICS CLEARANCE CERTIFICATE**

**MEETING:** 02 October 2019  
**PROJECT NUMBER:** TREC/318/2019: PG

**PROJECT:**

**Title:** Self-Management Strategies to Prevent Risk Factors Related to Cardiovascular Diseases Development at Ga-Molepo Area Clinics in The Limpopo Province, South Africa.

**Researcher:** MN Kgatla  
**Supervisor:** Prof TM Mothiba  
**Co-Supervisor/s:** Prof L Skaal  
**School:** Health Care Sciences  
**Degree:** PhD in Nursing

**PROF P MASOKO**  
**CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE**

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0310111-031

**Note:**

- i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.
- ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.
- iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

**Annexure P: Department of health approval letter**



**LIMPOPO**  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

**DEPARTMENT OF HEALTH**

Enquiries: Stols M.L (015 293 6169)

Ref:4/2/2

**Professor Douglas M (LP\_2017 11 018)**  
Department of Psychology  
University of Limpopo  
Private Bag X1106  
Sovenga  
0727

Greetings,

**RE: Scaling-up Packages of Interventions for Cardiovascular Disease Prevention in selected sites in Europe and Sub-Saharan Africa: An Implementation Research**

The above matter refers.

1. Permission to conduct the above mentioned study is hereby granted.
2. Kindly be informed that:-
  - Research must be loaded on the NHRD site (<http://nhrd.hst.org.za>) by the researcher.
  - Further arrangement should be made with the targeted institutions, after consultation with the District Executive Manager.
  - In the course of your study there should be no action that disrupts the services.
  - After completion of the study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
  - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
  - The above approval is valid for a 3 year period.
  - If the proposal has been amended, a new approval should be sought from the Department of Health.
  - Kindly note, that the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated.

  
Head of Department

24/01/2018  
Date

**Appendix Q: Permission Letter from the district**