

**HEALTHCARE WORKERS' ADHERENCE TO THE USE OF ADULT PRIMARY  
CARE GUIDELINES IN MANAGEMENT OF CARDIOVASCULAR DISEASE IN  
THE NORTH-WEST PROVINCE**



**University of Venda**

**By**

**TSHIOVHE SHONISANI: 11630066**

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**SUPERVISOR: DR MALWELA T**

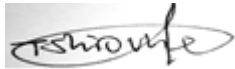
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**2022**



## DECLARATION

I, **TSHIOVHE SHONISANI**, declare that the dissertation entitled “**Healthcare workers’ adherence to the use of adult primary care guideline in management of cardiovascular disease in the North-West Province**” is my work and that all the sources used or quoted have been indicated and acknowledged using complete references and that this work has not been submitted before for any other degree at any other institution.



**22/04/2022**

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**Signature**

**Date**

## DEDICATION

I dedicate this work to God, my refuge and shelter, and my parents, Dr. Takalani Elizabeth Tshiovhe and Mr. Takalani Michael Tshiovhe, who has always loved me unconditionally and whose good examples have taught me to work hard for the things that I aspire to achieve. I also dedicate this research to my siblings, Dakalo, Makhadzi, and Phalanndwa, as well as my child, Malwandla Shilenge, for their support throughout my master's studies. You've all been my biggest supporters.

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- My gratitude extends to the University of Venda research and publication for the funding opportunity to undertake my studies at the Department of Nursing, Faculty of Health Sciences.
- The Department of Health in Dr. Ruth Segomotsi Mompati District in the North-West Province allowed me to conduct this study in their district under Naledi Sub-district.
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- In addition, I could not have completed this dissertation without the support of my colleague, Maponya Nompumelelo, who provided me with the tools that I needed to choose the right direction and successfully complete my dissertation.
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## ABSTRACT

**Introduction:** Cardiovascular Diseases (CVDs) are heart conditions characterized by diseased vessels, structural issues, and blood clots. In this country, Standard Treatment Guidelines are issued to help healthcare workers with diagnosis and management. Given the destructive effects of CVDs, the study's goal was to investigate healthcare workers' adherence to the implementation of APC guidelines in the management of cardiovascular diseases in the North-West Province.

**Method:** The quantitative design, descriptive, cross-sectional, and retrospective chart analysis were used in the study. Data were collected from patients' records of patients diagnosed with CVDs and used from January 1, 2016, to December 30, 2018, from a purposeful sample of clinics, using a checklist tool. The study was conducted in the Naledi Sub-district of Northwest Province, one of four Sub-districts in the Dr. Ruth Segomotsi Mompati District (DRSM). The study included all adult patients with CVDs but excluded any patients who had not been diagnosed with CVDs.

**Results:** SPSS version 27 was used to analyze the records of  $n=251$  patients. variables that were statistically significant at  $p < 0.05$ . and were related to the dependent variable Only one variable (CI -0.86- 0.166;  $p < 0.002$ ) ) is statistically significant when all variables are considered together. The study's findings revealed a lack of adherence to the Adult Primary Guidelines (APC) guideline in the management of CVDs by healthcare workers.

**Conclusions:** Because healthcare workers' adherence to APC guidelines in primary care is generally suboptimal, ongoing professional development in diagnosis, and drug and non-drug management is essential.

**Keywords:** Adult primary care guideline, Adherence, Cardiovascular disease, Clinical outcome, Healthcare workers, Primary health care

## LIST OF ACRONYMS AND ABBREVIATIONS

<b>AIDS</b>	:	Acquired Immunodeficiency Syndrome
<b>APC</b>	:	Adult Primary Care
<b>CVDs</b>	:	Cardiovascular diseases
<b>CPG</b>	:	Clinical Practise Guideline
<b>HIV</b>	:	Human Immunodeficiency Virus
<b>MRR</b>	:	Medical Record Review
<b>NCDs</b>	:	Non-communicable Diseases
<b>NHS</b>	:	National Health Service
<b>PACK</b>	:	Primary Adult Care Kit
<b>PALM PLUS</b>	:	Practical to Lung and Health and HIV/AIDS
<b>PHC</b>	:	Primary Health Care
<b>RCR</b>	:	Retrospective Chart Review
<b>STGs</b>	:	Standard Treatment Guidelines
<b>WHO</b>	:	World Health Organisation

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# CHAPTER 1

## OVERVIEW OF THE STUDY

### 1.1 INTRODUCTION

Guidelines can be defined as a document streamlining processes according to a regular routine (Adedeji, Tumbo & Govender, 2015). Department of Health (2020) defined guidelines as principles set forth as standards, determining a course of action. A guideline aims to provide a practical and ethical framework for decision-making and gives sense of responsibility and accountability (Woolf, Grol, Hutchinson, Eccles & Grimshaw, 2018). Panteli, Legido-Quigley, Reichebner, Ollenschlager, Schafer, and Busse (2019) argued that an organization improves its quality of care through creating guidelines for its employees on managing set tasks. Kredo, Bernhardsson, Machingaidze, Young, Louw, Ochodo, and Grimmer (2016) further reiterate that guidelines can be used in a wide range of settings to promote effective and efficient health care, for example, to guide the introduction of new procedures or services, promote effective health care in a primary or secondary care setting, encourage the adoption of cost-effective interventions and improve the timing and process of the discharge patients.

Primary Care 101(PC 101) 2016/2017, now referred to as Adult Primary Care (APC) guideline, is a symptom-based integrated clinical management of common symptoms and chronic conditions in adults (Fairall, Mahomed & Bateman, 2017). The guideline is intended for use by all healthcare practitioners working at the primary care level in South Africa. The guide is designed as a clinical decision support tool for use in each consultation and starts with screening and a symptom-based approach, guides the diagnosis of common conditions, including priority chronic conditions and facilitates the routine care of the patient with one or several chronic conditions (Picken, Hannington, Fairall, Doherty, Bateman, Richards, Wattrus & Cornick, 2018).

APC is divided into two main sections: symptoms and chronic conditions. It covers 40 common signs and 20 chronic conditions among adults attending primary health care in South Africa (Knowledge hub, 2019). It uses a symptoms-a based algorithm as its

entry point and a standard checklist format to assist health workers in assessing advising and treating patients' chronic conditions (Knowledge hub, 2019). The objective of any health care system is to provide universal access to appropriate, efficient, effective and quality health services, in order to improve and promote people's health (Petrus, 2017). The guideline prompts users opportunities to consider diagnosis of a priority condition, speeding initiation of routine care for that condition with criteria and paths for referral where appropriate (Simelane, Georgeu-Pepper, Ras, Anderson, Pascoe, Faris, Fairall, & Cornick, 2018).

## **1.2 BACKGROUND OF THE STUDY**

The past 2 years have seen substantial improvements in cardiovascular diseases (CVDs), but concerns exist about long-term cardiovascular disease risk in survivors (Strongman, Gadd, Matthews, Mansfield, Stanway, Lyon, dos-Santos-Silva, Smeeth & Bhaskaran, 2019). Evidence is scarce on the risks of specific CVDs in survivors to inform prevention and management. CVDs pose serious health, economic and social issues for individuals and society. Stroke and acute coronary syndrome have significant negative effects on overall mortality. The development and progression of disease can be considerably influenced by a proper and healthy lifestyle. The World Health Organization (WHO) created the CINDI program (Countrywide Integrated Non-Communicable Diseases Intervention Program) which is focused on the need for global intervention to reduce the impact and to prevent the spread of chronic diseases.

In the second half of the 20th century the intervention program helped manage gradual decreases in CVDs mortality rates in many developed countries (Svihrova, Barakova, Szaboova, Kamensky & Hudeckova, 2016). However, trends of mortality rates in some countries, especially Central and Eastern Europe, remained unfavourable. One of the targets of the program was to reduce mortality due to CVDs in people under the age of 65 years by at least 40% on average, particularly in countries with currently high mortality. CVDs in many countries have played a significant role in causing death for a long time. Age-standardized mortality rates for CVDs, acute myocardial infarction, and stroke were analysed (Svihrova, et al., 2016).



According to Davis, Pala, Nguyen, Robbins, Joska, Gouse, Mellins, Myer, Henry, Leu and Remien (2020), adherence to APC guidelines in managing CVDs is the most important factor in achieving patient's health outcome by health care workers. Current South African treatment guidelines recommend that healthcare workers to adhere to the use of APC guideline. Poor adherence can be more challenging, leaving greater opportunity for patients to develop CVDs complications. Understanding factors associated with early adherence problems may be critical to preventing poor adherence, as CVDs initiators may face different barriers to adherence and have different intervention needs than CVDs experienced populations (Davis et al, 2020).

### **1.2.1 PREVIOUS STUDIES OF CARDIOVASCULAR DISEASE**

There is no full evidence that healthcare workers adhere to the implementation of APC guidelines on diagnosing cardiovascular diseases in the North-West Province. This particularly shows that there is a need for researchers to conduct more studies on the about the APC guidelines on diagnosing cardiovascular diseases in North-West Province motivated this study. Rampamba, Meyer, Godman, Kurdi, and Helberg (2018), emphasised that healthcare providers should have the necessary knowledge and skills to assess adherence, and to assist patients to improve their adherence to antihypertensive treatment where this is a concern. According to Siko and van Deventer (2017), a study conducted in Potchefstroom with the goal of assessing whether HCWs in the Potchefstroom sub-district Northwest province (SA) comply with the STGs in the diagnosis and management of hypertensive patients revealed that compliance with diagnosis based on the clinical guideline was 56 percent and 75 percent by nurses and doctors, respectively. Drug management by doctors was less adherent to guidelines (56.6%) than that of nurses (63.6%). Doctors were less likely than nurses to follow guidelines when it came to drug management. Non-drug management compliance was generally low.

In the study to measure Primary Health Care physicians' knowledge of and adherence to the Saudi Hypertension Management Guidelines (SHMGs) in Southwest of Saudi Arabia by (Shnaimer & Gosadi, 2020), indicated that a total 141 physicians (45%) reported they had not attended any training sessions in the past 2 years for hypertension Management and 251 physicians (79%) reported they had received

official guidelines for Hypertension management from the Jazan Directory of Health. Hence, there is less adherence to the use of guidelines in the management of cardiovascular disease. Because of the large number of patients seen on a daily basis, the majority of participants claimed that many professionals were forced to shorten consultation times (Radwan, Rashidian, Takian, Elsous, & Abou-Dagga, 2018). Due to the large number of patients, they did not follow the guidelines when it came to the treatment of cardiovascular diseases.

### **1.3 PROBLEM STATEMENT**

The management of patients' health in relation to the adherence of the APC guidelines by health care workers has significant outcome in Naledi sub-district under Dr Ruth Segomotsi Mompoti District (DRSMS). Barth, Misra, Aakre, Langlois, Watine, Twomey and Oosterhuis (2016) argued that, when guidelines are adhered to there is improvement in clinical outcomes. Guidelines maintain consistency and ensure that everyone knows their role in order to reduce clinical errors. The researcher worked as a community service professional nurse from March 2018 to February 2019 observed with concern the increased death rate caused by CVDs in Naledi sub-district. The researcher observed that the implementation of APC guideline (National Department of Health 2016/2017) as standardized approach to clinical management was used as recommended by authorities within the district however, there was still increased number of complications in patients with CVDs. This was confirmed by National and District Profiles Health Barometer 2017/18 in 2011-2015 which recorded that Naledi Sub-district had 59, 1% of CVDs death this indicated that almost 60% of deaths were from the CVDs (knowledge hub, 2020). Deaths may lead to distress and frustration within the community as some will lose their breadwinners or support system. The use of the APC guideline was inefficient because the majority of patients were misdiagnosed and improperly managed by healthcare workers (Rossouw, 2020) . The researcher's concern was sparked by the increased statistics of complicated CVDs and CVD-related deaths, and the above context prompted the researcher to investigate healthcare care workers' adherence to the use of adult primary care guidelines in the management of cardiovascular diseases in the North-West province.

## 1.4 PURPOSE OF THE STUDY

The aim of the study was to investigate adherence on the implementation of APC guidelines in management of cardiovascular diseases by healthcare workers in the North-West Province.

The objectives were:

- To determine the implementation of the APC guideline regarding management of cardiovascular diseases.
- To investigate the practices by healthcare workers in adherence to the use of APC guideline in managing cardiovascular diseases.

## 1.5 RESEARCH QUESTIONS

- How was the APC guideline's implementation in the management of cardiovascular diseases determined?
- What were the practices of healthcare workers in terms of adhering to the APC guideline in the management of cardiovascular diseases?

## 1.6 SIGNIFICANCE OF THE STUDY

### Healthcare workers

Clinic nurses (professional nurses, community service professional nurses, staff nurses, assistance nurses) and doctors may benefit as the study will assist to identify gaps that can be utilized to improve the APC guideline for provision of quality care to reduce morbidity.

### Patients

Adult patients may benefit quality care provided by health care workers which will assist with less complications from cardiovascular diseases.

## **Policy makers**

Policy makers may identify gaps in the current guideline algorithms, recommendations may be used to modify the identified gaps. However, algorithms may be made simpler and quicker to use during consultation by healthcare worker.

## **Health system**

Facilities may benefit due to workload reduction due to burden of disease and by optimising value of money as guideline reduces cost for hospitalisation, prescription drugs, surgery and other procedure.

## **1.7 DEFINITION OF CONCEPTS**

### **1.7.1 Adult Primary Care Guideline**

Guidelines can be defined as a document that streamlines particular processes according to a regular routine (Adedeji, Tumbo & Govender, 2015). Guidelines identify, summarise and evaluate evidence of the highest quality and the most up-to-date data about prevention, diagnosis, and prognosis, therapy including dosages of medications, risk/benefit and cost-effectiveness. In this study Adult Primary Care (APC) will be the guideline. The APC clinical tool is a comprehensive approach to the primary care of the adult 18 years or older. APC has been developed using approved clinical policies and guidelines issued by the National Department of Health and is intended for use by all health care practitioners working at primary care level in South Africa as a clinical decision-making tool (APC 2019/2020).

### **1.7.2 Adherence**

Azia, Ferdinand, Mukumbang and Van Wyk (2016), define adherence as the ability to behave according to a particular rule, belief or principle. In this study adherence will be following the recommended APC guideline algorithms when conducting one on one consultations of patients in clinics by healthcare workers.

### **1.7.3 Cardiovascular Disease**

According to Mehra, Desai, Kuy, Henry and Patel (2020), cardiovascular disease is a general term for conditions affecting the heart or blood vessels. It is usually associated with a build-up of fatty deposits inside the arteries and an increased risk of blood clot. In this study cardiovascular diseases needs to be diagnosed and managed by healthcare workers by adhering to APC document streamlining processes according to a regular routine.

### **1.7.4 Clinical Outcome**

Clinical outcomes are measurable changes in health, function or quality life that result from our care (Sun, Chen, Fan, Chang, Gao, Zhao, Sun, Wang, Gu, Tian & Wu, 2020). Clinical outcome involves a diagnosis by healthcare provider and may be recorded in a patient's medical record as part of routine care (Mou'ath, Turab & Shambour, 2017). In this study, clinical outcome will be patient's health outcome with the adherence of APC guideline by health care workers in clinics.

### **1.7.5 Healthcare Workers**

Health workers are people who deliver care and services to the sick and ailing either directly as doctors and nurses (Joseph & Joseph, 2016). In this study, healthcare workers will refer to professional nurses, community service professional nurses and doctors, who must adhere to APC guidelines for one-on-one consultations of patients in clinics.

### **1.7.6 Primary Healthcare**

According to Van Weel, Kassai, Qidwai, Kumar, Bala, Gupta, Haniffa, Hewageegana, Ranasinghe, Kid and Howe (2016), primary health care is a whole of society's approach to health and well-being centred on the needs and preferences of individuals, families and communities. It addresses the broader determinants of health and focuses on the comprehensive and interrelated aspects of physical, mental, social health and wellbeing (Binagwaho & Ghebreyesus, 2019). In this study, primary healthcare refers to public health strategy and services provided by general

practitioners and Nurses (registered professional nurses) to obtain people's basic needs in health.

## **1.8 RESEARCH DESIGN AND METHODOLOGY**

The study used quantitative design, descriptive, cross-sectional and retrospective chart analysis. Retrospective chart review (RCR), also known as a medical record review (MRR) design was adopted to investigate adherence to the implementation of APC guidelines in management of cardiovascular diseases by healthcare workers in the North-West Province. Patients' records were used from January 1, 2016 to December 30, 2018, because the researcher observed improper management of CVD patients while working as a community service professional nurse from March 2018 to February 2019 and that the National and District Profiles Health Barometer 2017/18 in 2011-2015 found that Naledi Sub-district had 59.1% of CVD deaths, indicating that nearly 60% of deaths were caused by CVDs (knowledge hub, 2020). The study setting was Naledi Sub-district of Northwest Province which is one of the 4 Sub-districts in Dr Ruth Segomotsi Mompati District (DRSM). A total of 4 PHC facilities were purposively selected and the total patients' record of CVDs from the 4 selected clinics was 502 therefore simple random sampling of 20% per clinic was used to estimate the sample size of 251 patients records. Data was collected from 251 patients' records using the developed checklist tool. The statistician's service was used for data analysis (Annexure H). The Statistical Package for the Social Sciences (SPSS) version 27 was used to analyse the data and the results were presented in bar graph, tables and pie chart. Detailed information on the design and method are outlined in Chapter 3.

## **1.9 ETHICAL CONSIDERATIONS**

Ethical clearance was obtained from the University of Venda Health, Research Ethics Committee; permission to collect data was sought from the North-West Province Department of Health, district manager of Dr Ruth Segomotsi Mompati District (DRSM), Naledi sub-district chairperson for research committee, Naledi Sub-district manager, Nursing manager of Naledi Sub-district and the operational Managers of the

selected PHC facilities in Naledi sub-district. The ethical principles adhered to are discussed in detail in Chapter 3.

## **1.10 LAYOUT OF STUDY CHAPTERS**

Chapter 1 provides an overview of the planned study, comprising of the background perspective on the healthcare workers' adherence to the use of adult primary care guideline in management of cardiovascular disease in the North-West Province. The problem statement, research questions and the aim and objectives of the research are provided. Significance of the study, definition of major concepts, research design and methodology are clearly outlined.

Chapter 2 presents the literature reviewed which focuses on adherence to adult primary guideline on cardiovascular disease, practice by healthcare workers and the challenges of adult primary guideline encountered by healthcare workers.

Chapter 3 presents the research design and methodology, indicating how the sample was selected, the steps followed to collect the data, the reasons for using a particular method of analysis, and how the data were analysed as well as ethical considerations in this study.

Chapter 4 presents the results and analysis of the findings.

Chapter 5 gives a summary of conclusion and recommendations to future researchers and remarks based on what has been achieved by conducting the research.

## **1.11 SUMMARY**

This chapter provided an overview, study background, problem statement, objectives, and research question. The study's significance was also discussed. The following chapter conducts a review of selected literature on adult primary guideline adherence on cardiovascular disease, practice by healthcare workers, and the challenges of adult primary guideline by health care workers.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 INTRODUCTION

The previous chapter presented the background of the study, the problem statement of the study, and the whole process of the research. This chapter focuses on the literature review of the study. A literature review is a search and evaluation of the available literature in a given subject or chosen topic area (Wood & Haber, 2018). However, it documents the state of the art with respect to the subject or topic the researcher is writing about. The researcher did the literature review to gain understanding of the topic under study and to present the findings within the context. The literature review assisted the researcher to build knowledge in writing report, important concepts, select appropriate research methods and to get better understanding on how to present and discuss the findings of this study (Hart, 2018). In addition, literature review helped the researcher to place each work in the context of its contribution and to understand the research problem being studied, describe the relationship of each work to the others under consideration, identify new ways to interpret prior research and reveal any gaps that exist in the literature (Polit & Beck, 2017). The following data base were accessed; Science Direct, google scholar, EBSCOhost and PubMed databases.

The literature review in this chapter was done based on the below listed topics:

- Assessment/implementation and/or adherence to the guidelines
- Practices by healthcare workers
- The challenges of adult primary care guideline by health care workers

#### 2.2 ASSESSMENT/IMPLEMENTATION

This section discusses assessment/implementation through the adherence to the use of APC guideline by healthcare workers in managing CVDs in global, African including South Africa.



### **2.2.1 Adherence to Adult Primary Guideline on Cardiovascular Disease by Global Countries**

A qualitative study conducted in Australia by Wang, Norris and Bero (2018) outlined that, the implementation of evidence-based guidelines can improve clinical and public health outcomes by helping health professionals practice in the most effective manner, as well as assisting policymakers in designing optimal programs. Jin, Li, Han, Huang, Cao, Weng, Zeng, Wang, and Shang (2019) conducted a mixed-method research study with the goal of exploring the perspectives and reasoning of medical staff from Class A tertiary hospitals about the factors hindering and facilitating the uptake and use of clinical practice guidelines (CPGs) during medical procedures, and the results show that between 1993 and 2010, a total of 269 guidelines were produced by 256 Chinese developers and published. Chinese medical societies have also released a large number of expert-based consensus statements wherein one study identified 186 expert's consensus statements but only 14 guidelines for managing cardiovascular disease journals (Chen, Wang, Shang, Yang & Norris, 2018).

When clinical practice guidelines (CPG) are adhered to, clinical outcomes improve. This is well-illustrated anecdotally by the steady increase in longevity in patients with myocardial infarction in Sweden. Much of the benefit will have come from improved diagnostics and treatments but it is well recognised that there is a slow translation of research findings into clinical practice. In Sweden and Holland, the adherence to guidelines shows steady increase in the uptake of treatment and consequent steady fall in mortality (Barth, et al., 2016). Most countries have national guidelines which are commonly used in primary care. In developed countries, such as the United States of America, United Kingdom, etc, the concept of Clinical Guidelines has been in vogue for years, but Brazil uses a clinical practice guideline in primary health care known as Primary Adult Care Kit (PACK) (Gopalakrishnan, Udayshankar & Rama, 2014). Clinical guidelines have been developed based on the clinical diagnostic criteria, therapeutic practice guidelines and guidelines for management of diseases. Guidelines consist of systematically developed statements to help decision making about appropriate health care (Tetreault, Nater, Garwood, Badhiwala, Wilson & Fehlings, 2019).

When these guidelines are used in clinical practice to treat diseases as “agreed-upon treatment practices,” they are labelled as the STGs (Standard Treatment Guidelines). According to Gopalakrishnan, Udayshankar and Rama (2014) treatment guidelines offer the advantage of standardized treatments of optimal and acceptable levels at different levels of health care. The guideline approach to manage CVDs also includes a built-in referral system for difficult and problematic cases. PACK Brasil Adulto— Versão Florianópolis was published in April 2016 and training was delivered to 160 health workers in 24 clinics in Florianopolis, Brazil (Wattrus, Zepeda, Cornick, Zonta, de Andrade, Fairall, Georgeu-Pepper, Anderson, Eastman, Bateman, & Alvaro, 2018). In some clinics, training coverage was high, with 100% of eligible health workers exposed to at least one training session, and 70% completing all training sessions. The PACK Brazil programme is being evaluated in the city of Florianopolis, Brazil is a pragmatic, parallel-group, superiority cluster randomised trial. The aim of this trial is to determine the effectiveness of PACK Brazil Adult training compared to passive dissemination of the PACK Adult guide on the process of care and clinical outcomes for people with chronic respiratory diseases, CVDs or diabetes in primary care (Bachmann, Bateman, Stelmach, Cruz, de Andrade, Zonta, Zepeda, Natal, Cornick, Wattrus & Anderson, 2018).

Health care workers in Catalonia, Spain and Italy are encouraged to use STGs as management tool for CVDs in the primary health care services for proper care and improvement of care provided to the community (Grol & Wensing, 2020). Guidelines can be used in a wide range of settings to promote effective and efficient healthcare—for example to guide the introduction of new procedures or services, promote effective healthcare in primary or secondary care settings, encourage the adoption of cost-effective interventions and improve the timing and processes of the discharge of patients (Grol & Wensing, 2020). Forman, Arena, Boxer, Dolansky, Eng, Fleg, Haykowsky, Jahangir, Kaminsky, Kitzman, and Lewis (2017) confirm that professional society guidelines, protocols, and care pathways developed in North America are used for quality improvement and cost reduction by reducing the large number of patients admitted to hospitals for CVD control. Duan, McBain, Flores, Rodriguez Garza, Nigenda and Palazuelos, Moreno Lázaro, Enríquez Ríos and Elliott (2018), indicated that Mexico adopted the STGs after it had a burden of significant change in disease for over 30 years and now there is crisis of CVDs. This means that there is a challenge

in some developed countries on adherence of clinical guideline by health care workers in managing CVDs, whereas some of those countries can encourage the adherence of clinical guideline.

### **2.2.2 Adherence of Adult Primary Guideline on Cardiovascular Disease by African Countries**

In countries like Nigeria, Ethiopian, Malawi, and Botswana APC guideline is known as PACK and Practical to Lung and Health and HIV/AIDS (PALM PLUS) (Wattrus et al., 2018). Health care workers in these countries are encouraged to use clinical practice guideline to manage CVDs in the primary health care, whereas South Africa adopted the APC guideline which the health care workers must adhere to when managing CVDs (Lalkhen & Mash, 2015).

Early in 2016 it was agreed that PACK Adult Nigeria would be localised for use in management of CVDs and that a training and implantation programme would be piloted across 36 primary health care (Awotiwon, Sword, Eastman, Ras, Ana, Cornick, Fairall, Bateman, Dube, Curran & Udoekwere, 2018). Pilot training commenced in January in 2017 with 4 master trainers per state trained to cascade training to 52 facility trainers. Awotiwon et al. (2018), find out that the National Health Policy for reforming healthcare delivery in Nigeria aims to strengthen primary healthcare (PHC), in order 'to deliver effective, efficient, equitable, accessible, affordable, acceptable and comprehensive health care services to all Nigerians. It was noticed that the PACK Nigeria guideline has boosted the health care workers' confidence in health care provision and strongly agree that it is easy to use, it is useful during consultations, and it assist as they know when to refer the patient to the hospital for further management of CVDs. Awotiwon et al. (2018) also find out that PACK reduced the concurrent use of multiple medications by a patient prescribing and the number of investigations ordered per patient as it states specific what to do on the patient.

It was noted that the quality of primary care services in many countries of sub-Saharan Africa has been found to be generally poor and highly variable and led to calls to priorities interventions to improve the quality of PHC to achieve effective coverage of

care for CVDs (Feyissa, Hanlon, Emyu, Cornick, Fairall & Gebremichael, 2019). In 2016, the Ethiopian Federal Ministry of Health introduced the PACK programme known as Ethiopian Primary Healthcare Clinical Guideline by counterparts from South Africa and Botswana as the Health Extension Programme for CVDs management (Feyissa et al., 2019). Training of national master trainers for PACK guideline was undertaken in Addis Ababa in January 2018 with health care workers in primary health care and as it was found in Nigeria, health care workers in Ethiopia indicated that the PACK guideline is easy to understand and use, also that it gives them confidence in their daily practice for health care delivery (Cornick, Wattrus, Eastman, Ras, Awotiwon & Anderson, Bateman, Zepeda, Zwarenstein, Doherty & Fairall, 2018).

A clinical tool study based on algorithm and symptom-based guidelines was adapted for the Malawian context by Sodhi, Banda, Joshua, Richardson, Mah, MacGregor, Kanike, Thompson, Fairall, and Bateman (2014) report that Malawi has begun a process of conducting workshops led by the Knowledge Translation Unit on the PALM PLUS package in 30 health centers, targeting clinical officers, medical assistants, and nurses. In Zomba district on-site training was done to clinics staff (clinical officers, nurses, and medical assistants) for improvement in the management of CVDs. The program is no longer active, according to the study conducted by Cornick et al., (2018): political instability and funding constraints prevented further implementation and scale up, but there are ongoing cluster randomised trials for patients' outcomes.

In Botswana, there is an integrated symptom-based guideline called Botswana PACK guideline (BPCG) which was developed and adapted for the use by health care workers in local primary care centers for delivery of quality care improvement in management of CVDs (Tsim, Setlhare & Nkomazana, 2016). Health care workers are guided by Botswana PACK guideline so that they do what is expected of them within their scope of practice during consultations with the patient diagnosed with CVDs. Clinic staff were enthusiastic about the training, but expressed dissatisfaction with the gap between policy and reality revealed by the guide, as well as clinic availability (Tapela, Tshisimogo, Shatera, Letsatsi, Gaborone, Madidimalo, Ovberedjo, Jibril, Tsim, Nkomazana & Dryden-Peterson, 2019).

### **2.2.3. Adherence of Adult Primary Guideline on Cardiovascular Disease by South Africa**

PHC is the foundation of the South African healthcare system and has been the cornerstone of health policy for the past 25 years and majority of patients with CVDs are managed (Lalkhen & Mash, 2015). According to Lalkhen and Mash (2015), CVDs are generally poorly managed and controlled by healthcare workers which contribute to patients' morbidity and mortality. Wilkinson, Kredo, MacQuilkan, Mudara, Winch, Pillay and Hofman (2018), indicated that decisions made by healthcare professionals on the prevention and management of ill health are at the core of an effective, efficient and trusted health system. In order to reduce CVDs morbidity and mortality the South African, health system has embraced the tool for use in primary care mainly through in-service training provided to healthcare workers (Mash, Pather, Rhode & Fairal, 2017). According to Basu, Wagner, Sewpaul, Reddy and Davies (2019), South Africa's PACK programme (previously known as PC101) can improve access to care for CVDs, save government money and is cheaper than using World Health Organization NCD guidelines.

Strengthening primary health care is a national priority in South Africa, aimed to improve quality of care and health outcomes, reduce inequity and to pave the way for National Health Insurance (Masha, Malana, Von Pressentina & Blitz, 2016). The Implementation of APC guideline uses staff which is available, staff trainers, standardisation of clinical management and healthcare worker training through workshops conducted on the use of the guideline (Fairall, Mahomed & Bateman, 2018). APC guidelines enable health care workers in clinics to control 68% of patients diagnosed with CVDs like Hypertension (HPT) and this management remove the burden of 79% these patients from hospitals to the clinics (Siko & Van Deventer, 2017)

## **2.3 HEALTH CARE PROVIDERS' PRACTICES**

Cho, Kim, Park, Ko, Kim, Park, Yeon, Chung, Chung, Joo, and Hwang (2018) indicated that the use of guidelines in clinical practice may lead to a reduction in practice discrepancy and release the tension between health care cost and quality.

Hence, quality of care can be improved by reducing the variation in clinical practice and adherence to standards of good care. This means that clinical practice guidelines can be used in a wide range of conditions to provide the best possible care. Guidelines may offer a solution, by making it more likely that patients will be cared for in the same manner regardless of where or by whom they are treated (Hadorn, 2019). In NSW (New South Wales) Ambulance Service, all clinicians practice the same clinical procedures based on the evidence applied in the clinical practice guidelines (Hadorn, 2019). For example, the treatment for vomiting and nausea in NSW Ambulance Service includes the administration of metoclopramide and then treating associated symptoms if present, such as dehydration or hypovolemia. This means that guidelines can improve the consistency of care. According to Rao and Tandon (2017) in a study conducted in India reflected that clinical practice guidelines are able to provide the rapid means of providing conscientious, explicit and judicious use of current best evidence without the time normally required to gather such evidence and may overturn the beliefs of doctors accustomed to outdated practices, improve the consistency of care, and provide authoritative recommendations that reassure practitioners about the appropriateness of their treatment policies. This implies that clinical guidelines can improve clinical decision-making quality by alerting clinicians to interventions that are not supported by good science, reinforcing the importance and methods of critical appraisal, and drawing attention to ineffective, dangerous, and wasteful practices.

The first step in designing quality assessment tools, such as standing orders, reminder systems, critical care pathways, algorithms and audits, is to reach an agreement on how patients should be treated, often by developing a guideline (Jibson,2021). Guidelines are a common point of reference for prospective and retrospective audits of clinicians' or hospitals' practices: the tests, treatments, and treatment goals recommended in guidelines provide ready process measures (review criteria) for rating compliance with best care practices (Jibson,2021). This means that clinical guidelines can support quality improvement activities in the health facilities for managing patients. Adherence to guidelines lowered the risk of hospitalization in patients with chronic heart failure across several European countries (De Backer, Jankowski, Kotseva, Mirrakhimov, Reiner, Rydén, Tokgözoğlu, Wood, De Bacquer, De Backer & Jankowski, 2019). The study further indicates that patients with a new diagnosis of primary breast cancer showed that the greater the number of violations

in guideline adherence, the lower the survival. However, patients with hospital-acquired or ventilator-associated pneumonia, guideline-adherent initial intravenous antibiotic drug therapy was clinically superior, saved more lives, and was less expensive than no guideline-adherent therapy. This means that guideline-adherent lower all-cause and cardiovascular mortality.

Guidance can help patients, carers and service users to receive care that is based on the best available clinical evidence, be accountable for their care, and know they will be cared for in a consistently evidence-based way and improve their own health and prevent disease (Webster, Fishburn, Maresh, Findlay & Chappell, 2019). Clinical guidelines can help health and social care professionals to ensure the care they provide is based on the best evidence available and ensure they meet standards set by regulatory bodies and guidance when making clinical decisions (Kuznetsov, Dworzynski, Davies & Overton, 2017). This means that guidance can empower all staff dealing with patient queries to have confidence in their approach to care effectively target resources and efforts at the areas that offer the most significant health improvement.

According to Pink, O'Brien, Robinson and Longson (2018) when clinical are being used they can help organisations to meet NHS Litigation Authority (NHSLA) risk management standards and benefit from reduced claims and risk management premiums, plan for service provision and commissioning, reflecting national priorities set by NHS England and the Department of Health, benefit from any identified disinvestment opportunities, cost savings or opportunities for re-directing resources, meet government indicators and targets for health improvement and reduce health inequalities and promote the economic and social well-being of their communities.

## **2.4 THE CHALLENGES FACED BY HEALTHCARE WORKERS WITH THE USE OF ADULT PRIMARY CARE GUIDELINE**

This section discusses the challenges that are faced by health care workers in adhering to APC guideline when managing CVDs globally, African countries including South Africa.



### 2.4.1 Challenges faced by healthcare workers in Global Countries

It was indicated by Fischer, Lange, Klose, Greiner and Kraemer (2016), that in Australia and New Zealand main barrier to guideline use is lack of time to identify guidelines and lack of clinical and patient resources to implement the guidelines. Kimiaeimehr, Hosseini, Alimohammadzadeh, Bahadori, and Maher (2020) discover that the presence of contradictory guidelines, as well as environmental factors such as a lack of time, resources, and reimbursement, all have an impact on the use of clinical practice guidelines. Environmental factors such as organizational culture, infrastructure, social norms, and resources had significant influence on use of guidelines on the study of Keiffer (2015); Gené-Badiaa, Galloc, Caïsc, Sánchezd, Carrione, Arroyoc and Aymeriche (2016) and Kimiaeimehr, Hosseini, Alimohammadzadeh, Bahadori and Maher (2020), their findings supports each other that there are many factors that could influence health care workers not to use CPG. These factors include professional behaviour and attitudes, patient characteristics, the professional-patient relationship, the organizational context, the guideline itself, and the wider environmental factors. This means that health care workers are prepared to use the clinical practise guidelines but there are certain barriers which prevents them to do so.

Alnaim and Almazrou (2018), indicated that in Washington DC physician/doctors' attitude about practice guideline is another barrier to guideline adherence, lack of agreement and confidence with specific guidelines, that explain that most individual doctors may not agree with guidelines issued by their own peers for instant doctors refuse referral of the patients from nurses as indicated the clinic practise guideline. Lack of outcome expectancy, self-efficacy and motivation to implement practice guidelines in addition to habit and routines have also been found to prevent effective practice guideline implementation (Egerton, Nelligan, Setchell, Atkins & Bennell, 2018). Alnaim and Almazrou (2018), study is supported by Egerton, at el (2018), in the study of Washington DC that knowledge such as lack of familiarity and awareness, volume overload, time needed to stay informed and guideline accessibility are important in modifying doctors practice patterns. However, guidelines stand as a stumbling block between the health care workers where now other health care workers will use the clinical practise guideline and follow the algorithms and other health care



workers refuse referrals of patients as indicated the guideline, which at the end of the day it affects the patients' health care they are entitled.

In Brazil, the language difference, overcoming inter-professional, prompting health systems change and Funding, and upscale are main the challenges of the guideline use (Bachmann, et al., 2018). The impact of language difference was that localisation of guide content was performed in English using the English PACK Global Adult guide as a template and local health workers performed translation of the English version of the PACK Brazil guide into Brazilian Portuguese (Bachmann *et al.*, 2018). Professional translators were not employed to check the validity of the translation due to owing to limitations of time and funding, thus updates to the guide and training materials have been based on the Brazilian Portuguese versions.

Overcoming inter-professional challenges include increased scope of practice to health care workers by using the PACK guideline. Availability of medications, equipment and change on the scope of practice at the primary care level such as the frequency of blood pressure checks in well-controlled hypertensive and when to refer newly diagnosed diabetic patients affect the use of clinical guideline (Bachmann et al., 2018). The guideline is not updated annually as the results of the absence of designated funds which assist in an annual update of the PACK Brazil guide and training materials. Although, challenges are there in Brazil and guidelines are being used.

#### **2.4.2 Challenges by healthcare workers in African Countries**

Tsima, Setlhare and Nkomazana (2016), indicated that in Botswana there is a shortage of both human resources in primary health care and skilled health care workers (HCW) which has led to task shifting in many primary care settings to address the demands of care provision. In Malawi, the major challenge to guideline implantation was the lack of financial training allowances as it covers transportation, meals, and accommodation are often provided to HCWs when travelling off-site to attend trainings (Sodhi, Banda, Joshua, Richardson, Mah, MacGregor, Kanike, Thompson, Fairall, Bateman, Zwarenstein & Schull, 2014). Lack of financial training allowance has led to health care workers not to be trained on the use of the guideline

resulting to the PALM PLUS guideline not to be utilised during consultations as the health care workers would not be knowing how to use it and this also leads to health care workers to lose interest in the guideline. Transfer of staff between HCs was another challenge and also contributed to the low completion rate of training sessions among PALM PLUS participants in the target group, since new staff at the HC would start their educational outreach sessions midway through the implementation, where health posts are often vacant, HCWs are regularly redistributed among health facilities by the District Health Office (DHO) in an attempt to optimize deployment of the limited human resources and through a request-for-transfer system (Sodhi et al., 2014). This implies that the main barrier to use the clinical practice guideline is budget, as guidelines are there but with health care workers not being trained on its use, they will not be able to use it during consultations.

In Nigeria, limitations of budget, lack time, shortage of clinicians and a low level of skills among those working in PHC facilities are main challenges. In order to address this skills deficit, the British Medical Journal (BMJ) proposed to introduce the Practical Approach to Care Kit or PPACK programme (Awotiwon, et al., 2018). In Ethiopia, the health workers highlighted the challenge of availability of essential medications and laboratory investigations recommended in the guide, as well as the challenge of delivering care for conditions with which they had little familiarity in particular, mental healthcare (Feyissa, Hanlon, Emyu, Cornick, Fairall, Gebremichael, Teka, Shiferaw, Walelgne, Mamo & Segni, 2019). Other challenged found to be facilities not resourced to deliver the care outlined in Primary Health Care Clinical Guideline (PHCG), weak leadership at the district and PHC levels, lack of familiarity with peer-to-peer learning, unwillingness of PHC workers to consult the guideline during consultation as some health workers complained about the font that is too small and others expressed concern about what patients would think if a clinician turn to check a guideline in the middle of a consultation and high turnover of health workers (Feyissa, et al. 2019). This implies that the guideline use is being affected negatively by certain barriers which include health care workers' negative attitude towards the guideline.

### **2.4.3 Challenges by healthcare workers in South Africa**

Since 2003, the major challenge in South African health system is lack of adequate human resources such as shortage of staff which have an impact in the implementation and use of APC guideline within the primary health care facilities (Vawda & Variawa, 2012). Mahomed and Asmall (2017) argued that, a safe and well-equipped work environment is conducive to increased productivity, a healthier workforce and improved patient management. These include availability of basic services such as water and electricity, availability of and access to the necessary technology such as communication systems and availability of functional medical and non-medical equipment. Shortage of these environmental factors results in health care workers being unable to implement well the APC guideline for adequate management of patients. In the study done in East London hospital by Mahomed and Asmall (2017), it was found that 36% of respondents indicated that an increase in the workload prevents them to use the clinical practice guideline. In the North-West province, main challenges in the use of APC guideline mainly were clinic doctor refusing patient referral as per guideline, Patient waiting time and attitude of health care workers towards the guidelines. This means that APC guideline is affected by certain barriers which disturb it to be utilised in the primary health facilities where shortage of staff and work overload are the main challenges.

### **2.4 SUMMARY**

Clinical practice guidelines (PACK, PULS PLAM, and APC) are needed for effective CVD management because health care professionals can make diagnoses, make necessary referrals to hospitals, and act as a source of knowledge for healthcare workers, according to evidence from developed, developing, and South African countries. Human resources, such as a lack of staff and a lack of funds, have been identified as major barriers to the implementation of clinical practice guidelines in the majority of countries. Clinical guidelines are important because they can assist patients, caregivers, and service users in receiving care that is based on the most current clinical evidence. When making clinical decisions, guidance can assist health

and social care professionals in ensuring that the care they provide is based on the best evidence available and that they meet the standards set by regulatory bodies. Clinical guidelines can help organizations meet the National Health Service (NHS) Litigation Authority (NHSLA) risk management standards and benefit from lower claims and risk management premiums.

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 INTRODUCTION

The researcher conducted a literature review in chapter two, which was in line with the study objectives. The goal of this study was to see how the APC guideline was being implemented in the management of cardiovascular diseases, as well as to look into how healthcare workers were following the APC guideline. The overall goal of the study was to investigate adherence on the implementation of APC guidelines in management of cardiovascular diseases by healthcare workers in the North-West Province.

Chapter three focuses on the research design and how the research process was carried out. Details about the research setting, population, sampling, and sample size, data collection instrument, validity and reliability of the instrument, data collection method, and data analysis plan, ethical considerations, and data dissemination plan

#### 3.2 RESEARCH DESIGN

A researcher's research design is the framework for the methods and techniques he or she will use to conduct research (Struwig & Stead, 2015). Polit and Beck (2017) define it as a strategy for selecting subjects, research sites, and data collection procedures to answer the research question (s). The design enables researchers to focus on research methods that are appropriate for the subject matter and set their studies up for success (Woo, 2017). The type of research design used is determined by the phenomenon being studied as well as the purpose of the study (Wood & Haber, 2018). The researcher chose a research design that was best suited to and appropriate for the problem statement and the purpose of this study.

This study's research design consisted of a quantitative, descriptive, cross-sectional, and retrospective chart review. The current design provided the most information for this study and brought all the study's major components together to address the research problem and fit the research purpose (Woo, 2017). The researcher was able

to describe the phenomenon of interest in this context thanks to the interactive research design chosen.

### **3.2.1 Quantitative design**

Quantitative approach was adopted for this study. According to Polit and Beck (2017); LoBiondo-Wood and Haber (2021), quantitative research is the process of gathering observable data to answer a research question using statistical, computational, or mathematical techniques. It is often seen as more accurate or valuable than qualitative research, which focuses on gathering non-numerical data. Quantitative approach can be tested and checked, requiring careful experimental design and the ability for anyone to replicate both the test and the results (Woo,2017). However, this makes the data you gather more reliable and less open to argument. Quantitative approach is straightforward analysis, during data collection the type of results leads to which statistical tests are appropriate to use (Suresh, 2018). It was used to answer questions about healthcare workers' adherence to implementation of APC guidelines on diagnosing cardiovascular diseases in the North-West Province. The researcher chose this approach because it is based on objective facts, statistics, and numerical data. Thus, in this study, quantifiable information that provides summary of data which can be used for inferences was gathered from patients' Patients' records. The objectives of this study were to determine the implementation of the APC guideline regarding management of cardiovascular diseases; investigate the practices by healthcare workers in adherence to the use of APC guideline in managing cardiovascular diseases.

### **3.2.2 Descriptive design**

Descriptive research is a type of study that is used to describe a population's characteristics (Wood & Haber, 2018). It gathers information that is used to answer a variety of what, when, and how questions about a specific population or group. The quantitative researcher in this study focused on adherence on the implementation of APC guidelines in management of cardiovascular diseases by healthcare workers in the North-West Province. The study was carried out on patients with CVDs in order to

observe how the APC guideline is used by health care workers in the primary health care setting. Patients with CVDs were chosen because the APC guideline includes a CVDs algorithm. These patient records are obtained from the primary health care setting's shelves. The researcher obtained permission to collect data from the North-West Province Department of Health, district manager of Dr Ruth Segomotsi Mompati District (DRSM), Naledi sub-district chairperson for research committee, Naledi Sub-district manager, Nursing manager of Naledi Sub-district and the operational Managers of the selected PHC facilities in Naledi sub-district.

Operational managers were always notified on days when the researcher was visiting the selected PHCs. The E-tool register book, which is an official list of or record of people, to find out the patients' health records of patients with CVDs was used. Data capturers were asked to assist with retrieving of files from the shelves with records of 2016-2018. Data were collected during the day in a free room. Using a descriptive design enabled the researcher to obtain complete and accurate information on healthcare workers' adherence to the implementation of APC guidelines in the management of cardiovascular diseases.

### **3.2.3 Cross sectional**

Cross-sectional study is a type of observational research that examines data of variables collected at a single point in time across a sample population or a pre-defined subset of the population (Polit & Beck, 2017). Participants are chosen for this type of study based on specific variables of interest, and it is relatively quick to carry out because researchers can collect all variables at once and investigate multiple outcomes at the same time (Wood & Haber, 2018). Data for this study was collected at four different PHCs in the Naledi Sub-district of the DRMS in the Northwest Province. Data was obtained at a certain period which was over 3 months in weeks when the researcher was 7 days off and during annual leave of 10 days. In this 3 months, 1 week was allocated to 1<sup>st</sup> PHC (Vrybug gateway clinic), 1 week and 2 days for 2<sup>nd</sup> PHC (Huhudi Health Center), 5 days for 3<sup>rd</sup> PHC (Colrigde clinic) and 8 days for 4<sup>th</sup> PHC (Stella clinic). The researcher examined patient records From January 1, 2016 to December 31, 2018, checking notes written by healthcare workers to see if the

APC's guidelines were followed during consultation within the four PHCs. Data was collected only from patients with CVDs

### 3.2.4 Retrospective chart review

The retrospective chart review (RCR), also known as a medical record review (MRR), is a type of research design in which pre-recorded, patient-centred data are utilised to answer one or more research questions was used (Saifee, Bardhan, Lahiri & Zheng, 2019). The medical record review method was used because it was a useful method as the researcher had used data that had been recorded (SarKar & SeShadri, 2014). The design was relevant because it was a “quick and dirty” option because the clinical data already existed and data was abstracted from the medical charts, it included the relatively low cost when compared to prospective trials and in addition, medical charts are generally accessible to researchers, and can be a source of clinical richness and accuracy (Suresh, 2018). The nine steps of this methods were followed as depicted in the picture below (Buxton, 2021).

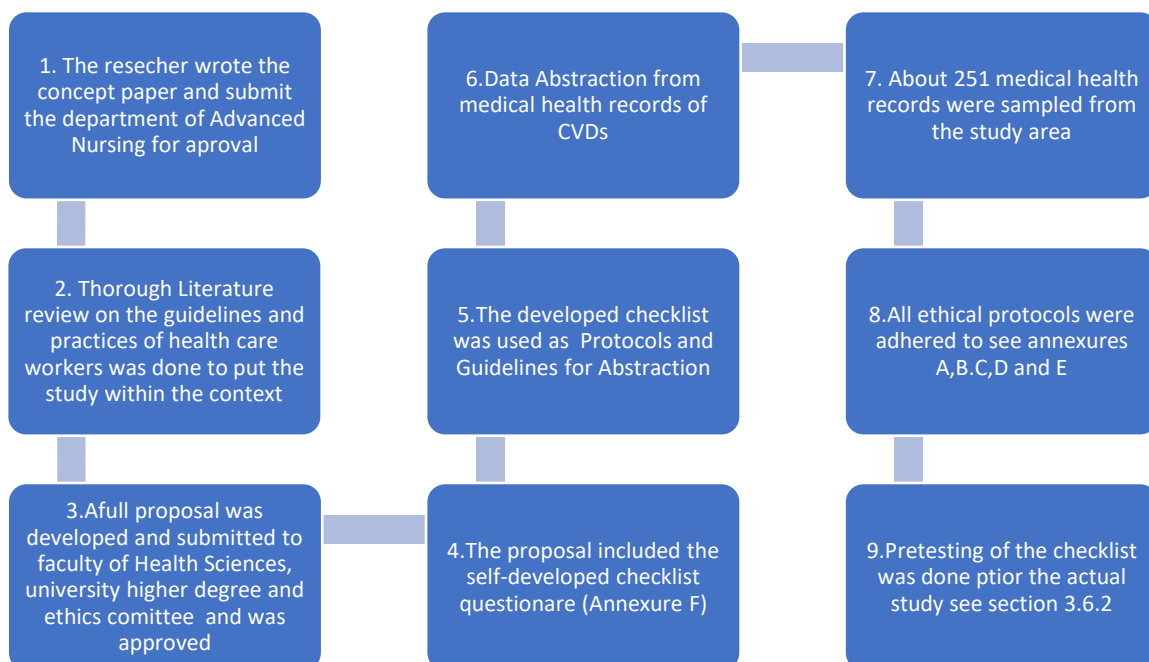


Figure 3.1: Nine step method for the design of a Retrospective Chart Review



### 3.3 STUDY SETTING

Research setting is the environment in which research is carried out (Struwig & Stead, 2015). This study was conducted at Naledi Sub-district of North West Province which is one of the 4 Sub-districts in Dr Ruth Segomotsi Mompati District (DRSM). It is the second largest of the five municipalities that make up the district, accounting for 16% of its geographical area. It is known as the Texas of South Africa because of the cattle breeding and agricultural activities that take place there. The Naledi sub-district has 4 PHCs named Gateway clinic, Huhudi Health Center, Colridge Clinic and Stella Clinic. Majority of people in the district use these clinics based on proximity or distance from where they stay for consultations and follow up care. The most common chronic conditions within the area are HIV & AIDS, Diabetes mellitus, Hypertension and arthritis. There is high rate of unemployment resulting to poverty within the area. From this study, adult patients may benefit quality care provided by health care workers which will assist with less complications from cardiovascular diseases. Stella Clinic is at Stella providing services Afrikaans and Tswana speaking people. Gateway Clinic is at Vryburg catering for Tswana speaking people from colour block area, Coloured and Afrikaans speaking people from Vryburg. Huhudi Health Center located at Vryburg catering for Tswana speaking people within Huhudi and colour block area. Colridge Clinic is located at the township dominant by coloured people speaking Afrikaans and Tswana. These clinics uses Joe Morolong Memorial Hospital for referral which is 2km away from town. Gateway and Colridge Clinic and Huhudi Health Center they are located 2km away from each other, whereas Stella Clinic is 50 km away from Vryburg. The study was conducted in the PHCs of Naledi Sub-district of Northwest Province.

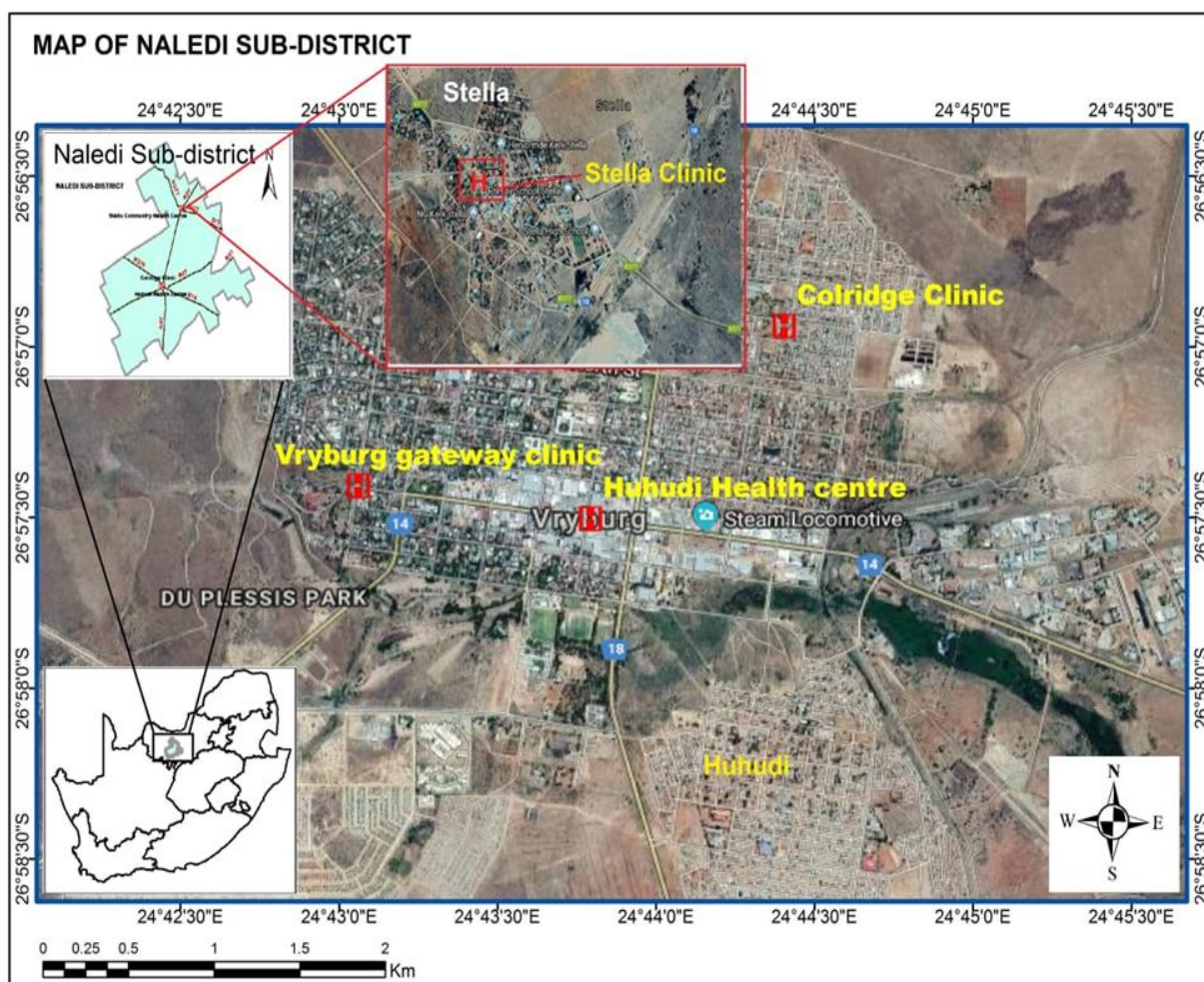


Figure 3.2: A map showing Naledi Sub-district with Stella, Huhudi, Colridge and Vryburg gateway clinic

### 3.4 TARGET GROUP

#### 3.4.1 Population

Population is the combined total of all the persons or objects that the researcher is interested in studying (Polit & Beck, 2017). The population of the study comprised of all Patients' records of patients with CVDs from 1<sup>st</sup> January 2016 to 30<sup>th</sup> December 2018 in Naledi Sub-district, Northwest Province.

#### 3.4.2 Target group

The target population is the entire population, or group, that a researcher is interested in researching and analysing (Suresh, 2018). Because the researcher used previously recorded data, a retrospective chart review was used in this study. The study's target

group was adult patients diagnosed with CVDs between January 1st, 2016, and December 30th, 2018 in the Naledi sub-district of Northwest Province.

### **3.5 SAMPLING AND SAMPLE**

A sample is a part or fraction of a whole or a sub-set of a larger set selected by the researcher to participate in a research project (Gray & Grove, 2021). Wood LoBiondo LoBiondo-Wood and Haber (2021) state that a sample is a set of elements that makes up the population. In this study, Patients' records of patients who were diagnosed with CVDs in Naledi sub-district from 1<sup>st</sup> January 2016 to 30<sup>th</sup> December 2018 were used.

#### **3.5.1 Eligible criteria**

Polit and Beck (2017) define "eligible criteria" as those who are included in population, while Gray and Grove (2021) indicate that eligible criteria include a list of required characteristics, while exclusion criteria refer to those characteristics that can cause a population element to be excluded from a target population. Eligible criteria included all Patients' records from 1<sup>st</sup> January 2016 to 30<sup>th</sup> December 2018 of patients with the diagnoses of CVDs in Naledi sub-district.

##### **3.5.1.1 Inclusion criteria**

The key characteristics of the target population that the investigators will use to answer their research question are referred to as inclusion criteria (Polit & Beck, 2017). Inclusion criteria are used to identify the study population in a consistent, dependable, uniform, and objective manner (Gray & Grove, 2021). Patients' records diagnosed with CVDs from January 1st, 2016, to December 30th, 2018 will be included in this study

### **3.5.1.2 Exclusion criteria**

Exclusion criteria are characteristics of potential study participants who meet the inclusion criteria but have additional characteristics that may interfere with the study's success or increase their risk of an unfavorable outcome (Gray, Grove, & Sutherland, 2016). Exclusion criteria are characteristics or factors that make the recruited population ineligible for the study (Polit & Beck, 2017). Patients whose records were not indicated or diagnosed with CVDs between January 1st, 2016, and December 30th, 2018, will be excluded from the study.

### **3.5.2 Sampling of health facilities**

Sampling is the process of selecting cases to represent an entire population, to permit inferences about the population (Gray & Grove, 2021; Polit & Beck, 2017). Total or census sampling was used to select all 4 PHCs. Purposive sampling (also known as judgment, selective, or subjective sampling) is a sampling technique in which the researcher chooses members of the population to participate in the study based on his or her own judgment (Polit & Beck, 2017). Purposive sampling is also used in both quantitative and qualitative research (Gray & Grove, 2021). The records of CVDs from all chronic conditions from all PHCs were chosen using purposeful sampling. The main data sources were patient health records in the form of notes from January 1, 2016, to December 30, 2018. The researcher used the E-tool register book for patient records, which serves as a register for all chronic and acute patients who visit primary care facilities. The researcher was then assisted by data capturers in retrieving patients' files with notes from the shelves from January 1st, 2016, to December 30th, 2018. A simple random sample is a subset of a statistical population in which each member has an equal chance of being chosen (Gray & Grove, 2021). Simple random sampling was used in this study to select the desired sample size from all CVDs in order to reduce the sample size from the existing large population.

### 3.5.3 Sampling size

Researchers such as Suresh (2018), and Polit and Beck (2017) argued that the larger the sample the more representation of the population it is likely to be, the smaller the sample the more the error may be. Gray, Grove, and Sutherland (2016) argued that there is no hard and fast rule for determining the sample size and it is generally stated that the larger the population the smaller will be the percentage, the smaller the sample the larger the percentage. They further gave an example to say for a population of 100 or less total sampling is advised if the population is 500 about 50% is advised.

Probability sampling was used as a sampling method in this study. This quantitative study employs probability sampling and a simple random sample. Probability sampling implies that every member of the population has a chance of being chosen (Creswell & Creswell, 2017). This type of sample allows the researcher to estimate the likelihood that each element of the population will be included in the sample (Wood & Haber, 2018). A simple random sample is a subset of a statistical population in which each member has an equal chance of being chosen (Gray & Grove, 2021). Simple random sampling is a type of probability sampling in which a subset of participants is chosen at random from a population (Wood & Haber, 2018). The total patients' record of CVDs from the 4 selected PHCs was 502, therefore simple random sampling of 20% per clinic was used to sample 251 patients' records as depicted in the table below (Gray, et al., 2016).

**Table 1: Represent the Sample and suggested % of the sample size for selected per clinic**

Name of the clinics	Total sample	Percentage of 20 % per clinic
Clinic A	144	72
Clinic B	200	100
Clinic C	104	52
Clinic D	54	27

<b>Total</b>	<b>502</b>	<b>251</b>
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### **3.6 DATA COLLECTION**

#### **3.6.1 Process to develop the data collection instrument**

This study's data was collected using a checklist tool. A checklist is a list of all the things you need to do, information you need to find out, or items you need to bring somewhere that you make to ensure you don't forget anything (Creswell, 2017) (Annexure F). In quantitative research, a checklist is a type of survey that uses predetermined questions to describe or explain characteristics of a large group or groups (Gray & Grove, 2021). In terms of the assess, advise, and treat framework, a checklist was created in accordance with the APC guideline. The checklist included the chronic section for CVDs from the APC guideline for CVD assessment, advice, and treatment framework.

#### **3.6.2 Pre-testing of the instrument**

Pre-testing simply refers to determining the tool's validity, dependability, practicability, and sensitivity prior to using it for actual data collection (Polit & Beck, 2017). Before final commitment to the design, the research instrument was pre-tested to ensure its effectiveness (Struwig & Stead, 2015). According to Creswell and Creswell (2017), in order to test the efficacy of a developed clinically oriented data collection tool as the instrument to be used, a pre-test should be performed to determine whether there is ambiguity in the instruments to be used and whether it yields the type of data expected.

The researcher made an appointment with the district manager, ethical clearance and approval from the province to conduct the study was provided for pre-testing approval with COVID 19 measures observed on the meeting. The district manager took responsibility to inform the facility manager on the pre-testing study to be conducted.



The researcher conducted pre-test in March 2021 2<sup>nd</sup> week, when on 7 days off for 5 days. Developed checklist was pretested. Pre-testing was done in a private room for confidentiality. Data captures assisted in retrieving of files from shelves. Pre-testing was performed on patients' health records that were not included in the study at another sub-district within the province, Tlhabane health centre in Bojanala district, and only 10% of the total population, or 25 patients' health records with CVDs, was used for pretesting. Pre-testing was carried out at the Tlhabane health centre in the Bojanala district because there are patients attending the clinic who have been diagnosed with CVDs, and the facility has been equipped with the APC guideline with CVDs algorithms. After pretesting, minor errors were discovered, and it took more than 10 minutes to complete the checklist, so the checklist had to be adjusted with the help of the supervisor and co-supervisor so that data from patients' records could be collected more quickly. During the pretesting, the researcher ensured that a mask was worn, that a sanitizer was always present, and that the distance was always maintained in accordance with COVID-19 measurements. Data capture required the use of masks when transporting files to the private room where pre-testing was performed in order to avoid crowding the records area in accordance with COVID-19 measures.

### **3.6.3 Data collection process**

Creswell and Creswell (2017), define data collection as the process of importance to the success of the study. The researcher was the main data collector and used the checklist for data collection to assess the adherence of APC guidelines from patients' health records (Annexure F). Permission to collect data was sought from the North-West Province Department of Health (Annexure D), district manager of Dr Ruth Segomotsi Mompati District (DRSM) (Annexure E), Naledi sub-district chairperson for research committee, Naledi Sub-district manager, Nursing manager of Naledi Sub-district and the operational Managers (Annexure C) of the selected PHC facilities in Naledi sub-district. Operational managers were always notified on days when the researcher was visiting the selected PHCs. The researcher followed COVID-19 rules by always wearing masks when entering the facilities, sanitizing hands, and

maintaining social distance. Before beginning data collection, the researcher meets with the facility manager to ensure that the researcher is available for data collection. The facility manager would notify data captures and request their assistance in retrieving files from the shelves. In each of the four PHCs, the filing system was different; in two PHCs, patients' records were filed in chronological order of date of birth as chronic and acute conditions, whereas in the other two PHCs, patients' records were filed separately, chronic and acute conditions apart. Furthermore, within the chronic files, patients' records would be filed according to chronic condition type, for example, CVDs, making it easier to access. Consultation days for chronic patients varied across the four PHCs, and patients' records were returned to records at 5 p.m. every day after consultations across all four PHCs. Facility managers made arrangements with data captures. The researcher would also access the facility at 14h00 for data collection before files can be taken back to the registry for filing in two PHCs where patients' records were filed in chronological order of date of birth as chronic and acute conditions. The reason for this was to make it easier to obtain patient records in the consultation room in order to save time and obtain multiple files at once, as patients had been using the facility since the morning. Data capturers used the E-tool register book, which is an official list of or record of people, to find out the patients' health records of patients with CVDs before retrieving the files from the shelves with records from January 1, 2016 to December 30, 2018. Data was collected in a private room using a checklist developed to see if health care workers followed the APC algorithms during consultations for the assess, advise, and treat framework. The researcher went through patients records and check the notes written by the health care worker who assisted the patient during consultation, to check if algorithms in APC guidelines were followed. The checklist took the researcher ten minutes to complete. Data was obtained at a certain period which was over 3 months in weeks when the researcher was 7 days off and during annual leave of 10 days. In this 3 month, 1 week was allocated to 1st PHC (Vrybug gateway clinic), 1 week and 2 days for 2nd PHC (Huhudi Health Center), 5 days for 3rd PHC (Colrigde clinic) and 8 days for 4th PHC (Stella clinic).



### **3.6.4 Validity and reliability**

#### **3.6.4.1 Validity**

According to Creswell and Creswell (2017), validity means that the researcher's conclusion is correct that it corresponds to the actual state. Validity demonstrates that an instrument measures what it intends to measure. The researcher randomly selected 25 files from the sub-district and pretesting the developed clinically orientated data collection tool. This enabled the researcher to check if 10 minutes was feasible to review one file. The literature review and results from the pretesting analysis were used in the modification of the instrument to make sure that it adequately measures the study variables. Supervisors as well as the statistician assisted with the modification of instrument. After modification, the instrument was used to collect data from the selected Patients' records.

##### **3.6.4.1.1 Content validity**

Content validity refers to how well a test measures the behaviour for which it is intended (Polit & Beck, 2017). Checklist was constructed after extensive literature review on all aspects associated with the APC guideline within and outside South Africa. This was done to make sure that variables (terminology) used in the checklist for data collection resemble the actual variable used in the APC guideline. Panel of experts, including supervisors and panel members of the school higher degree committee was used as consultants throughout the study.

##### **3.6.4.2 Reliability**

Reliability refers to the consistency of measurements, or the extent which the scores are similar over different forms of the same instrument or occasions of data collection (Polit & Beck, 2017). To ensure reliability, the developed clinically orientated data collection tool was tested in Tlhabane Health Center in Bojanala District and only 10% of the total population which is 25 patients' health records with CVDs were used to similar records that were not be part of the study. Test-retest reliability measured the consistency of results when you repeat the same test on the same sample at a different point in time. The guidance of the supervisor was used to ensure reliability of the instrument.

### **3.7 DATA ANALYSIS**

According to Creswell and Creswell (2017), data analysis is an ongoing, cyclical process that is integrated into all phases of research. This is the process of bringing order, structure and meaning to the mass of collected data. Statistician was used for data analysis (Annexure H). The completed checklists were subjected to auditing and coding for input into the current SPSS version 27 in addition to computing the frequencies and percentages on each statement in the checklist. Current version of SPSS was used because it is quicker, easier to administer and produces high quality data. Descriptive data were presented in form of bar graph, tables, and pie chart.

### **3.8 ETHICAL CONSIDERATIONS**

Ethical consideration is defined as a set of moral principle which is suggestion by an individual or group (Creswell & Creswell, 2017). Ethical clearance was obtained from the University of Venda Health (Annexure B), Research Ethics Committee; permission to collect data was sought from the North West Province Department of Health (Annexure D), District manager of Dr Ruth Segomotsi Mompati District (DRSM) (Annexure E), Naledi sub-district chairperson for research committee, Naledi Sub-district manager (Annexure E), Nursing manager of Naledi Sub-district and the operational Managers of the selected PHC (Annexure C) facilities in Naledi sub-district. Great effort was made to adhere to the following ethical: Informed consent, Autonomy, Confidentiality, Non-maleficence.

#### **3.8.1 Informed Consent**

Informed consent means that participants have adequate information about the research, comprehend that information, and can consent to or decline participation voluntary (Polit & Beck, 2017). Application for an ethical clearance from the review board was made (Annexure B). After the receipt of the ethical approval of the study the application to gain access to the selected PHCs was made online with Department of Health in the Northwest province (Annexure D). Upon approval to access PHCs, informed consent was obtained from district Manager, sub-district research committee chairperson, nursing manager and who related information to the quality assurance

committee and risk manager of Naledi Sub-district (annexure E). Thereafter the researcher visited the selected PHCs with all formal documents required for conducting a study. The researcher requested permission from the operational managers to access patients' records; because there are minimal risks, patients' health records were not taken outside of the institution.

### **3.8.2 Anonymity**

Anonymity means protection of participants' confidentiality such that even the researcher cannot link individuals with the data they provided ( Pilot & Beck, 2017). In this study the researcher used codes to label the selected patients records, no names or any information that disclose identity was divulged, information obtained was anonymous.

### **3.8.3 POPIA compliance**

POPIA (Protection of Personal Information Act) is legislation that sets conditions for the lawful processing of people's personal information (Malherbe, 2021). Its far-reaching nature applies to any person or organisation storing any type of records relating to the personal information of any person. POPIA aims to keep people's personal information secure, and protect them against identity, theft, fraud, and similar breaches of their private information (Staunton, Adams, Anderson, Croxton, Kamuya, Munene & Swanepoel, 2020). However, the Act defines personal information as any information that can be used to identify someone, such as full names, addresses, sex-life details, religious and political views, criminal records, private correspondence, photos, voice recordings, video footage, and more. According to Ntusi (2021), the Act points out that personal information requires 'unique identifiers' and therefore it is only when the information is combined that it becomes significant (e.g., someone's name combined with their phone number, and not just their phone number on its own). Though it is difficult to maintain anonymity in patient records, the researcher ensured that the data from the records/files was not linked to them, that no names were used to identify the records, that codes were used to identify the records, and that names on the records were blocked, for example: NW Gw1, NW Hud 1. The researcher made sure that the supervisors from the university and the researcher are the only ones with access to the information obtained from the patient's records.

### **3.8.4 Confidentiality**

Confidentiality means that no one or no institution should be identifiable from research report (unless, of course, there is a good reason for revealing institutional origins and permission is secured) (Gray & Grove, 2021). The information obtained by the researcher from patients' health records was kept confidential, it was not revealed to other unauthorized persons. Patients' health records were not taken out of the PHCs during data collection.

### **3.8.5 Non-maleficence**

Non-maleficence is the obligation of a physician not to harm the patient (Woo, 2017). Principle supports several moral rules – do not kill, do not cause pain or suffering, do not incapacitate, do not cause offense, and do not deprive others of the goods of life. Information obtained was not used in any malicious form. The information was only shared with the supervisor.

## **3. 9 SUMMARY**

In conclusion, the researcher outlined the introduction, definition of quantitative methodology, as well as information on the study's approach, design, population, and ethical considerations.

## CHAPTER 4

### DATA PRESENTATION, INTERPRETATION AND ANALYSIS OF ADHERENCE ON THE IMPLEMENTATION OF APC GUIDELINES IN MANAGEMENT OF CARDIOVASCULAR DISEASES BY HEALTHCARE WORKERS IN THE NORTH- WEST PROVINCE.

#### 4.1 INTRODUCTION

The previous chapter discussed the research methods employed for this study. The data analysis and results of the study are discussed in this chapter. The main purpose of this study was to investigate adherence on the implementation of APC guidelines in management of cardiovascular diseases by healthcare workers in the North-West Province. The objectives were to:

- To determine the implementation of the APC guideline regarding management of cardiovascular diseases.
- To investigate the practices by healthcare workers in adherence to the use of APC guideline in managing cardiovascular diseases.

Statistician was used for data analysis (Annexure H). Descriptive statistics for quantitative variables are presented as mean, standard deviation (SD) and  $n$  (%) for categorical variables. Independent  $t$ -test was used in univariate analysis to compare quantitative variables, while multiple linear regression analysis was used to determine the variables associated with the practices by healthcare workers in adherence to the use of APC guideline in managing cardiovascular diseases. Then we will examine some questions with the Chi-square test. Significance was determined at  $p \leq 0.05$ , and statistical analysis was done using SPSS version 27.

## 4.2 DEMOGRAPHIC DATA FOR PATIENTS DIAGNOSED WITH CVDS

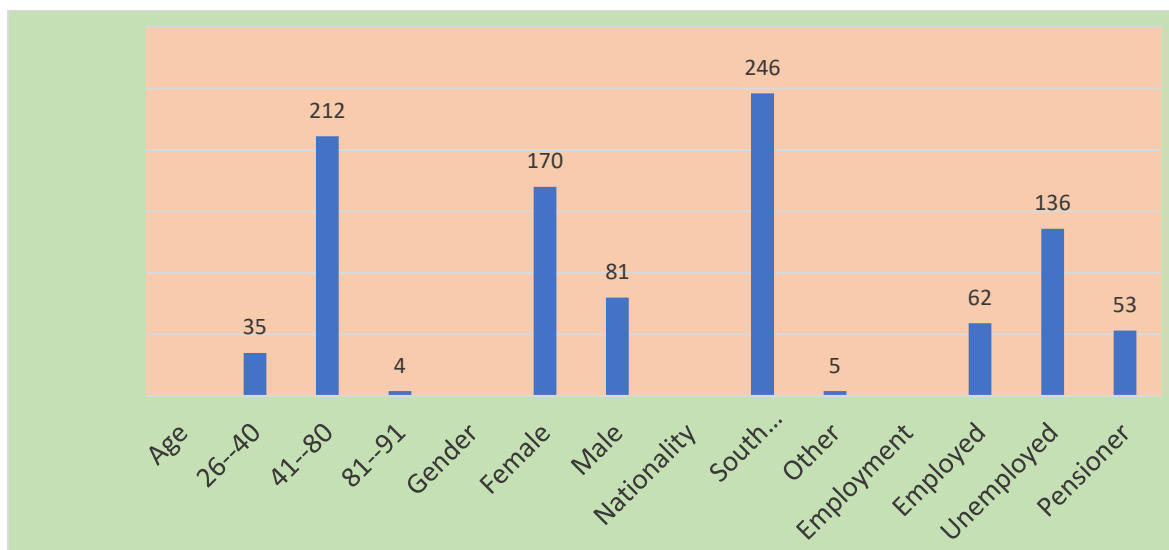


Figure 4.1: Demographic data of the patient with a cardiovascular disease (N=251)

Figure 4.1 depicts a total of n=251 patient records for patients with cardiovascular disease. The patients' mean (standard deviation) age was n=56.6 years SD n=12.8. The majority of these n=251 patients (83.6 %) were between the ages of 41 and 80, followed by (14.0%) between the ages of 26 and 40, and (2.0 %) between the ages of 81 and 91. The majority, n=170 (65.5%), were female, while n=81 (34.5%) were male (see figure 4.1 above). The above graph also depicts a percentage breakdown of the patient's employment status. The majority of the patients, n=136 (54.2%), were unemployed, followed by employed n=62 (23.5%) and pensioners n=53 (22.3 %). The majority of the patients were South Africans (n=246 (98.0%) with n=5 (2%) from other countries not specified.

## 4.3 ASSESSMENT/IMPLEMENTATION

The table below (4.1) shows that in this study, n=232 (92.4 %) of the patients' symptoms of chest pain, difficulty breathing, leg pain, and stroke were recorded at every visit, whereas n=19 (7.6 %) of the patients' symptoms were not recorded. Risk factors such as smoking, diet, exercise, and daily living activities were not asked of approximately n=222(88.4 %) of the patients at each visit, and only n= 29(11.6 %) were recorded. The results also show that the goal of 25 BMI was only calculated and

categorized in n=10 (4.0 %) of the patients, while nothing was done in n=241 (96 %). Two hundred and twenty-three (96.8 %) patients had their waist circumference measured at diagnosis once a year or every three months if they were trying to lose weight. In n=244 (97.2 %) patients, blood pressure was measured at each visit as part of routine hypertension care. In this study, n=233 (92.8 %) patients' glucose levels at diagnosis were measured, and routine diabetes care was provided based on their risk of developing CVD. Total cholesterol at diagnosis if CDV > 20%: If 7.5, no need to repeat patient to be referred to specialist were n=166 (66.1%) patients were done were only= 85 (33.9%) patients were done.

**Table 4.1: ASSESSMENT/IMPLEMENTATION (N=251)**

<b>Variables</b>	
Symptoms at every visit: were symptoms of chest pain, difficulty breathing, leg pain and managed accordingly?	
Yes	232 (92.4%)
No	19 (7.6%)
Risk factors at every visit: Was smoking, diet, exercise and activities of daily living asked about?	
Yes	29 (11.6%)
No	222(88.4%)
BMI at every visit: Aim is <25 BMI, was it calculated and categorized?	
Yes	10 (4.0%)
No	241(96.0%)
Waist circumference at diagnosis, yearly or 3 months if trying to lose weight	
Yes	8 (3.2%)

No	243 (96.8%)
BP at every visit: Was routine hypertension care done?	
Yes	244 (97.2%)
No	7 (2.8%)
Glucose at diagnosis and depending on the risk of developing CVDs: Was routine diabetes care done?	
Yes	233 (92.8%)
No	18 (7.2%)
Total cholesterol at diagnosis if CDV > 20 %: If $\geq 7.5$ , no need to repeat patient to be referred to specialist	
Yes	85 (33.9%)
No	166 (66.1%)

#### 4.4 PRACTISES BY HEALTHCARE WORKERS

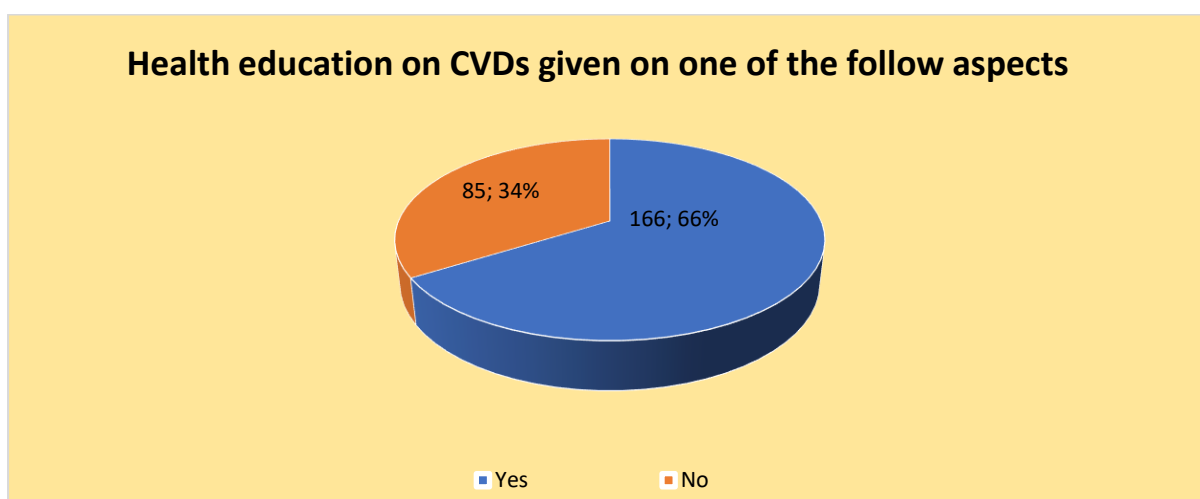


Figure 4.2: Practises by healthcare (N=251)

Figure 4.2 above shows that data was collected using a checklist on patients' records, and n=166 (66 %) received CVD health education on physical activity, weight management, diet, smoking, stress management, and alcohol and substance misuse.



According to patient records, n=85 (34 %) of patients did not receive health education during follow-up visits.

#### 4.5 TREATMENT FRAMEWORK

**Table 4.2: TREATMENT FRAMEWORK (N=251)**

Variables	
Was patient diagnosed with one of CVDs?	
Yes	240 (95.6%)
No	11 (4.4%)
Was treatment given following the APC guideline algorithms?	
Yes	206 (82.1%)
No	45 (17.9%)
Was treatment adjusted or stopped according to APC guideline?	
Yes	101 (40.2%)
No	150 (59.8%)
When necessary for referral, was patient referred?	
Yes	111 (44.2%)
No	140 (55.8%)

According to Table 4.2, only n=240 (95.6 %) patients were diagnosed with one of the CVDs, while n=11 (4.4 %) was not diagnosed. The results show that treatment given by healthcare workers following the APC guideline algorithms was n=206(82.1 %) and n=45(17.9 %) of which were not following the APC guideline algorithms. However, n=101 (40.2 %) of the treatment was adjusted or stopped in accordance with the APC guidelines, while n=150 (59.8 %) was not adjusted or stopped. The vast majority of patients, n=140 (55.8 %), were not referred to a doctor, dietician, or hospital. This suggests that the APC guideline was not strictly followed in the management of CVDs

during follow-up or consultations by healthcare workers.

#### 4.6 ASSOCIATIONS BETWEEN QUANTITATIVE VARIABLES OF IMPLEMENTATION AND HEALTHCARE AND TREATMENT FRAMEWORK PRACTICES (N=251)

Variables	Mean	SD	Std. Error	95% Confidence Interval		P-Value
				Lower Bound	Upper	
Pain and stroke	.08	.265	.036	-.088	.054	.352
Risk factors	.88	.320	.044	-.091	.081	.813
BMI	.96	.196	.027	-.093	.012	.802
Yearly or 3	.97	.176	.024	-.021	.074	.028
No need	.66	.474	.014	-.053	.081	.909
Health education	.34	.474	-.004	-.131	.124	.192
Patient diagnosed	.04	.205	.040	-.086	.166	.002
APC guideline	.18	.386	.028	-.021	.076	.084
Treatment adjusted	.60	.492	.045	-.056	.145	.212

Analyses was conducted to compare the use of adult primary care guideline in management of cardiovascular disease across the geographical groups using T-test statistics. variables associated with the dependent variable that were statistically significant at  $p < 0.05$ . Taken together, only one variable with (CI -0.86- 0.166;  $p < 0.002$ ) is statistically significant. Both methods, the multivariate model was the same. No statistically significant association was found in pain and stroke with (CI -0.088- 0.054) As the P – value was greater than 0.05 and other variables except for patient diagnosed which is statistically significant.

#### 4.7 SUMMARY

Data from patients' records were presented in this chapter using a bar graph, a pie chart, and tables. The data is based on the North-West Province's adherence to the

use of adult primary care guidelines in the management of cardiovascular disease. The majority of the patients are South African females aged 41 to 80 who have been diagnosed with CVDs. According to the findings, the majority of patients are unemployed. In the assessment/implementation section, most patients were asked about their symptoms at each visit and were managed accordingly. There is no significant difference in risk factors at each visit, BMI at each visit, waist circumference at diagnosis, yearly or every three months if trying to lose weight, total cholesterol at diagnosis if CVD>20 percent: if  $\geq 7.5$ , adjustment and referral of patients as needed. This suggests that healthcare workers are not following the APC guideline in the management of CVDs during consultation.

## **CHAPTER 5**

### **DISCUSSION, SUMMARY, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION**

#### **5.1 INTRODUCTION**

This chapter presents the data on the extent to which Healthcare workers adhere to the use of adult primary care (APC) guideline in the management of cardiovascular disease in the North-West Province. This chapter presents quantitative data gathered from patient's records. This chapter provides a summary of the findings, recommendations, and conclusion

#### **5.2 DISCUSSION OF THE RESULTS**

The study sought to investigate adherence on the implementation of APC guidelines in management of cardiovascular diseases by healthcare workers in the North-West Province.

The objectives of this study were to:

- To determine the implementation of the APC guideline regarding management of cardiovascular diseases.
- To investigate the practices by healthcare workers in adherence to the use of APC guideline in managing cardiovascular diseases.

To achieve the above objectives the researcher did the following:

The researcher collected data from the patients' records diagnosed with CVDs and check notes written by healthcare workers from 1<sup>st</sup> January 2016- 30<sup>th</sup> December 2018, through a developed checklist questionnaire in PHCs under Naledi sub-district, Northwest province. A total of n=251 Patients records were audited after consent was granted by Department of Health Northwest province, District manager of DRMS, chairperson of Naledi Sub-district research committee, Nursing manager and

operational managers. The collected raw data were cleaned and then analysed with the assistance of a statistician. The following sub-topics were identified and described:

### **Demographic data for patients diagnosed with CVDs**

According to a study conducted by Carey, Muntner, Bosworth, and Whelton (2018), socioeconomic status encompasses wealth and income, education, employment/occupation status, access to health care, and other factors. Almost everyone's cardiovascular health is influenced by social factors. According to the study findings, the majority of CVD patients (n=170, 65.5 %) are females. Patients who are aged between 40-80 are mostly the ones diagnosed with CVDs. The findings confirm that the vast majority of patients (n=246, 98.0 %) are South African. Piotie, Webb, and Rheeder (2021) discovered that patients with type 2 diabetes were predominantly African and female, with a reported mean age of 53.0-59.4 years. The majority of patients (54.2 %) were unemployed, followed by 23.5 % who were employed and 22.3 % who were pensioners. Unemployment is the most difficult factor, as the majority of CVD patients in South Africa are unemployed between the ages of 40 and 80.

### **Assessment and implementation**

According to the findings, the majority of the patients n= 232 (92.4 %) were asked about their symptoms at each visit as part of the assessment during follow up/consultation and whether they were managed appropriately. For example, if a patient presented to the clinic with a headache and was given the appropriate medication in accordance with the guidelines, healthcare workers were following the APC guidelines. Clinical outcomes improve when CPG is followed, as evidenced anecdotally by the steady increase in longevity in patients with myocardial infarction in Sweden (Barthet al., 2016).

Only n=19 (7.6%) patients were not asked about their symptoms at every visit; patients would have sent relatives for treatment collection and full assessment; and risks such as smoking, chest pains, and difficulty breathing were not assessed at every visit. According to a research study conducted by Barth et al., (2016) in Europe, noncompliance with CPG is as high as 70% and occurs across most disciplines and

countries. Some information was not recorded, for example, a patient will raise a complaint, and a healthcare worker will only write complaint raised without indicating the nature of the complaint and the treatment given.

The results further indicates that there was no compliance to BMI it was not done at every visit in all selected PHCs whereas according to the APC guideline there is a need to calculate BMI at every visit as it allows healthcare workers to notice how risky is the patient for CVDs. There was no significance  $n=243(96,8\%)$  on waist circumference at diagnosis, yearly or 3 months if trying to lose weight. This is supported by what the researcher's observation at the service point when they were doing vitals. Studies in various populations demonstrate a direct, nearly linear association of body mass index (BMI) with BP and the risk of hypertension increases continuously with increasing anthropomorphic measurements (waist circumference, waist-to-hip ratio, and waist-to height ratio) in parallel with BMI (Carey et al., 2018). This means that there is a need to adhere to APC guideline for BMI during vitals at follow up visit.

Blood pressure at every visit was done as hypertensive routine care 244(97.2%) and glucose for diabetes routine care was done  $n=233(92.8\%)$ . Yan, Chirwa, Chi, Bosomprah, Sindano, Mwanza, Musatwe, Mulenga & Chilengi, (2017), conducted in-depth interviews in Zambia and found that, healthcare providers demonstrated strong knowledge of screening guidelines (BP taken at every visit as routine vital sign). This means that guidelines are adhered on the issue of checking BPs at every visits.

If glucose was not checked, it was because glucose sticks were out of stock, and this will be noted on the notes. A study by Mokoena (2017) revealed that there was lack of material resources, equipment and supplies (for example: glucometers for monitoring blood glucose and needles for lumbar puncture in investigating or diagnosing meningitis), resulting in prolonged for a patient to stay in the hospital.

Patients had blood drawn for 6 monthly reviews because the majority of them had already been diagnosed with CVDs; thus, the researcher did not obtain total cholesterol at diagnosis because the notes audited ranged from 1<sup>st</sup> January 2016 to 30<sup>th</sup> December 2018, and the majority of the patients were for follow-up visits.

According to chronic guidelines, every patient must have 6 monthly review bloods. However, it was discovered that some patients with uncontrolled BPs and uncontrolled Glucose would be switched to CCMDD (Central Chronic Medicine Dispensing and Distribution), causing patients to skip the 6 monthly review bloods. CCMDD is a program that distributes and dispenses medication from a central location to patients with chronic conditions who are on stable medication (Maharaj, 2018). Patients who participated in the CCMDD program had less contact. Patients in the CCMDD program had less contact with healthcare providers, which may have contributed to the lower-than-expected rate of control (Piotie, Webb, & Rheeder, 2021).

### **Practice by healthcare workers**

According to the study findings, only  $n=85$  (34%) of patients received health education, while  $n=166$  (66%) did not. This demonstrates that healthcare workers are not adhering to best practices. There was no evidence of health education for the majority of patients at every visit/follow up care; for those who were given health education notes were unclear on which health education was provided; healthcare workers were not specific if given health education on diet, smoking, managing stress, alcohol, weight management, or physical activity. Carey, Muntner, Bosworth, and Whelton (2018) conducted a study on the prevention and control of hypertension in the United States of America (USA), and discovered that controlling blood pressure to non-hypertensive levels through nonpharmacological and pharmacological treatment reduces the risk of CVD events and all-cause mortality by 20% to 40% in adults with hypertension. Another study conducted in the United States by Oliveros, Patel, Kyung, Fugar Madan, Goldberg, Madan, and Williams (2020) support the notion that regular physical activity, healthy diet, weight control, smoking cessation, stress reduction, and avoidance of excessive alcohol intake are highly recommended as health education for patients with CVDs because they help control BP and DM. According to the WHO Clinical Guidelines for the Management of Hypertension (2020), lifestyle modification should be used as an adjunctive therapy for all patients who have been prescribed pharmacologic therapy. Wagialla and Elnimeiri (2016) find, in a study of primary health care providers in Khartoum, Sudan, similar results to Lee, Shin, Kim, Park, Ihm, Kim, Kim, Lee, Park, and Pyun (2019), that lifestyle modification is an important measure for preventing or delaying the onset of hypertension and its complications. They were

aware of all the risk factors for developing hypertension (obesity/overweight, physical inactivity, unhealthy diet, tobacco use, dyslipidaemia, and alcohol use), as well as the risky groups.

The researcher observed and noted that no APC guideline in-service trainings were conducted in any of the four selected PHCs. The APC guidelines were in the consulting rooms, but healthcare workers were not using them, citing reasons such as having a large number of patients and the fact that the APC guidelines take time to implement. According to Shnaimer and Gosadi (2020) in a cross-sectional study to measure Primary Health Care physicians' knowledge of and adherence to the Saudi Hypertension Management Guidelines (SHMGs) in Southwest Saudi Arabia, 141 physicians (45%) reported they had not attended any training sessions for hypertension management in the previous two years, and 96 percent of respondents were willing to attend training activities on a regular basis. According to a study conducted in Palestinian primary healthcare clinics by Radwan, Sari Rashidian, Takian, Elsous, and Abou-Dagga (2018), the majority of participants claimed that many professionals were forced to shorten consultation times due to the large number of daily patients seen.

### **Treatment framework**

Healthcare workers followed the APC guideline when diagnosing patients with one of the CVDs. According to the study's findings, 95.6 % were diagnosed with one of the CVDs.

After being diagnosed with one of the CVDs, 82.1 % of the patients were treated using the APC guideline algorithms. This implies that the majority of patients are started on the correct medications after being diagnosed with one of the CVDs. Some of the patients who were started on treatment defaulted, resulting in elevated BPs or glucose levels on the follow-up date.

A critical review of Maphumulo and Bhengu's (2019) Challenges of quality improvement in South African healthcare post-apartheid revealed that, sometimes, patients' folders are missing or lost, and instead of explaining this to the patient, healthcare workers simply let the patient wait. For other patients, the file would be



missing, and there would be no information on what treatment was initiated for the patient or which treatment was used. In the worst-case scenario, the patient's medical history is lost, which can lead to further complications, including incorrect diagnosis and, in some cases, death (Maphumulo & Bhengu, 2019).

From the n=251 audited patient records, healthcare workers were able to adjust or stop treatment based on the APC guideline for n=101 (40.2%), while the remaining n=150 (59.8%) were not adjusted or stopped. This indicates that there is still a gap in health care workers' adherence to the APC guideline during consultation or follow-up treatment. On the review date, the doctor is usually the one who adjusts or discontinues a patient's treatment. Patients with uncontrolled blood pressure or glucose levels who had been receiving treatment for two or three months were switched to the CCMDD program without any changes to their treatment. According to Piotiel, Webb, and Rheeder (2021) at the City of Tshwane, South Africa on Suboptimal control for patients with type 2 diabetes in the Central Chronic Medicine Dispensing programme in South Africa, they are concerned with enrolment in the CCMDD programme because patients are enrolled with uncontrolled BPs and glucose. Their findings also confirmed poor glycemic control among type 2 diabetes patients in South Africa, with only 29.2 % achieving control.

Some medications that the patient was supposed to receive were out of stock, resulting in the patient going home without some of the necessary medications, according to the notes of healthcare workers. As a qualitative study for factors hindering the adherence to clinical practice guidelines for diabetes mellitus in Palestinian primary healthcare clinics, Radwan, Sari Rashidian, Takian, Elsous, and Abou-Dagga (2018) argued that participants identified inadequacy of resources as the primary barrier to the implementation of diabetes guidelines. According to Yan, et al. (2017), challenges to CVD management from the provider side included drug stock outs and a lack of equipment in Zambian rural primary health care.

It was noticed that some patients would show up for follow-up visits with elevated blood pressures of 170/110, and there was little information on the notes, which did not show any intervention by the healthcare worker who attended the patient. There are only a few cases in which healthcare workers were able to adjust or stop medication.

According to the findings of the study, the majority of n=140 patients (55.8%) were not referred when necessary. According to what the researcher saw in the patients' records, there were a lot of patients who were referred to the doctor late for review, some after being on treatment for 2 years with uncontrolled BPs or glucose. Only n=111 patients (44.2%) were referred to a doctor, dietician, or hospital. Healthcare workers' notes on some patients' records indicated that the patient should be seen by the doctor for review on the next visit, but the patient would fail to consult the doctor citing work-related issues, or the patient would miss an appointment due to financial difficulties, or the patient would go to clinic on the wrong date. Poor visit attendance was mentioned as a common challenge in all interviews (Yan, et al., 2017).

### **5.3 LIMITATION OF THE STUDY**

This research was carried out in the Naledi Sub-district of Northwest Province. Several limitations were encountered by the researcher during the course of the study, which are as follows:

- As study leave had not yet been approved, the researcher traveled from Rustenburg to Vryburg to collect data for 7 days off only.
- PHCs have different consultation days for patients with chronic conditions, and chronic patients are only seen until 16h00.
- Because PHCs use different filing systems for patients' records, the researcher was unable to access files and was forced to visit the facility on the day chronic patients were seen in order to access files.
- On weekends, none of the four selected PHCs provide follow-up care for chronic patients.

### **5.4 RECOMMENDATIONS**

#### **Practise**

- Mentorship programs for continuing in-service training in PHCs should be launched.

- Expand online platforms like knowledge hub and zoom classes to reach a broader audience of nurses.
- Hold integrative workshops on a quarterly basis based on cardiovascular APC guidelines.
- Conduct a review of patients' files that have missed opportunities to use APC guidelines as a learning opportunity for professionals.

### **Policy makers**

- Policymakers must ensure that the APC guideline is available digitally, allowing the APC guideline to be accessed via mobile devices.
- They must also ensure that must ensure the roll out of the APC guideline is well interpreted by the nursing profession through continues professional development (CPD).

### **Education**

- Ongoing training on the application of the APC guidelines, particularly for young incoming healthcare workers who are permanently employed in PHCs.
- Trainers who facilitate APC guidelines should be based at Regional Training Centres rather than facilities, as this adds to the shortage of staff in PHCs, and they should be compensated as facilitators.
- Regional trainers must be chosen based on their educational background in order to be legible and competent.
- Regional trainers must monitor mentees and complete cases for competency on a regular basis.
- Incorporation of the APC guidelines into the undergraduate nursing program to facilitate theory and practice familiarization.

## **5.5 SUGGESTIONS FOR FURTHER STUDY**

More research should be done on the adherence of APC guidelines for CVDs management within the province, according to the researcher, in order to prevent and, to some extent, lessen the impact of CVD complications through timely appropriate management. Due to a lack of research on the impact of adherence to the APC

guidelines by health care workers, it is unclear whether or not non-adherence is a factor. More research on this phenomenon is required to add to the body of knowledge.

## 5.6 CONCLUSION

Finally, a guideline is a statement that is used to determine a course of action and aims to streamline processes in accordance with a predetermined routine practice. APC used the guideline used in clinical settings by health care workers during consultations with patients diagnosed with CVDs in this study. It employs a symptom-based algorithm as its entry point, as well as a standard checklist format, to assist health workers in assessing, advising, and treating patients with chronic conditions. The study's background was outlined in accordance with health care workers' adherence to guidelines. Previous research has emphasized the importance of health care providers having the necessary knowledge and skills to assess adherence and assist patients in improving their adherence to antihypertensive treatment where this is a concern. The study found significant gaps in the use of the APC guideline by healthcare workers in the management of CVDs in PHCs. The goals of this study were to investigate the practices of healthcare workers in adhering to the APC guideline in managing cardiovascular diseases and to implement the APC guideline in managing cardiovascular diseases. In Chapter 3, the study detailed assessment/implementation, practice by healthcare workers, and treatment framework in the management of CVDs. The study included the records of n=251 patients, representing the total population of the selected facilities. The study's findings revealed a lack of adherence to the APC guideline by healthcare workers in the management of CVDs. Based on the findings and suggestions for future research, valuable recommendations for healthcare workers to follow the APC guideline were made.

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Zhou, D., Xi, B., Zhao, M., Wang, L. & Veeranki, S.P. 2018. Uncontrolled Hypertension Increases Risk of All-cause and Cardiovascular Disease Mortality in US Adults: The NHANES III Linked Mortality Study. *Scientific Reports*, 8(1): 1-7.



## ANNEXURES

### ANNEXURE A: INFORMED CONSENT

#### RESEARCH ETHICS COMMITTEE

#### LETTER OF INFORMATION

**Title of the Research Study: HEALTHCARE WORKERS' ADHERENCE TO THE USE OF ADULT PRIMARY CARE GUIDELINE IN MANAGEMENT OF CARDIOVASCULAR DISEASES IN THE NORTH-WEST PROVINCE**

**Principal Investigator/s/ researcher:** (*Tshiovhe Shonisani, Bachelor of Nursing*).

**Co-Investigator/s/supervisor/s:** (*Dr Malwela T and Dr Ndou ND, Doctoral in Philosophy, Health*).

**Brief Introduction and Purpose of the Study:** Guidelines are principles set forth as standards, determining a particular course of action (Department of Health 2020). The aim of a guideline is to provide a practical and ethical framework for decision making and gives sense of responsibility and accountability (Woolf, Grol, Hutchinson, Eccles, Grimshaw, 2018). Primary Care 101 2016/2017, commonly known as PC101, and now referred to as Adult Primary Care (APC) guideline is a symptom-based integrated clinical management of common symptoms and chronic conditions in adults (Fairall, Mahomed, & Bateman, 2017). The guide is designed as a clinical decision support tool for use in each consultation and starts with screening and a symptom-based approach, guides the diagnosis of common conditions, including priority chronic conditions and facilitates the routine care of the patient with one or several chronic conditions (Fairall, et al, 2017). It uses symptoms-based algorithm as its entry point and a standard checklist format to assist health workers (nurses and doctors) to assess, advice and treat patient's chronic conditions. The objective of any health care



system is to provide universal access to appropriate, efficient, effective and quality health services, in order to improve and promote people's health (Petrus, 2017).

### **Purpose of the study**

The aim of the study is to investigate adherence on implementation of APC guidelines on diagnosing cardiovascular diseases by healthcare workers in the North West province.

**Outline of the Procedures:** *(The researcher will be main data collector and will use developed clinically orientated data collection tool for assessment of adherence to the use of adult primary care guideline in management of cardiovascular disease in the Northwest. The researcher will spend approximately 10 minutes to complete the developed clinically orientated data collection tool. Data will be collected during the day in a free room within the clinic to avoid taking patients record outside the facility which will be unethical. The data will be descriptive, and a period of three months will be allocated for data collection)*

**Risks or Discomforts to the Participant:** (NA)

**Benefits:** *(Clinic nurses and doctors will benefit as the study will assist to identify gaps that can be utilized to improve the APC guideline for provision of quality care to reduce morbidity. Patients will benefit by receiving quality care provided by health care workers. Policy makers will get new information on the available guideline. Facilities will benefit through workload reduction due to burden of disease and by optimising value of money as guideline reduces cost for hospitalisation, prescription drugs, surgery and other procedure).*

**Reason/s why the Participant May Be Withdrawn from the Study:** *(Only bed letters after 2018 will not be included).*

**Remuneration** : (No payment)

**Costs of the Study** : (NA)

**Confidentiality** : *(The names and biographical details of the patients will be hidden, by using codes only known to the researcher in order to identify them and the*

*information obtained by the researcher from the patients' records will be treated with confidence, meaning that it will not be revealed to other unauthorized).*

**Research-related Injury:** *(No injury as the researcher will be using patients' records)*

Persons to Contact in the Event of Any Problems or Queries:

(Dr Malwela T) Please contact the researcher (072 458 6899), my supervisor (082 757 2013) or the University Research Ethics Committee Secretariat on 015 962 9058. Complaints can be reported to the Director: Research and Innovation, Prof GE Ekosse on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za

General:

Participation is voluntary, refusal to participate will not involve any penalty and withdrawal from participation by participant can be made anytime without risk to the wellbeing of the participants or the profession.

## CONSENT

- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

I, (TSHIOVHE SHONISANI) Herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full name of researcher: TSHIOVHE SHONISANI Date..... Signature.....

Full name of Witness (if applicable):..... Date.....Signature.....

Full name of legal guardian(if applicable):.....Date.....Signature.....

## ANNEXURE B: ETHICAL CONSIDERATION

ETHICS APPROVAL CERTIFICATE

RESEARCH AND INNOVATION  
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:

**Ms MS Tshiovhe**

STUDENT NO:

11630066

PROJECT TITLE: Healthcare Workers Adherence to the use of Adult Primary Care Guideline in Management of Cardiovascular Disease in the North-West Province.

ETHICAL CLEARANCE NO: SHS/20/PDC/58/2701

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Dr T Malwela	University of Venda	Supervisor
Dr ND Ndou	University of Venda	Co-Supervisor
Ms. MS Tshiovhe	University of Venda	Investigator – Student

Type: **Masters Research**

Risk: **Minimal risk to humans, animals or environment**

Approval Period: **January 2021 – January 2023**

The Human and Clinical Trials Research Ethics Committee (HCTREC) hereby approves your project as indicated above.

**General Conditions**

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following.

- The project leader (principal investigator) must report in the prescribed format to the REC:
  - Annually (or as otherwise requested) on the progress of the project, and upon completion of the project
  - Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
  - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the REC. Would there be deviation from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date; a new application must be made to the REC and new approval received before or on the expiry date.
- In the interest of ethical responsibility, the REC retains the right to:
  - Request access to any information or data at any time during the course or after completion of the project,
  - To ask further questions; Seek additional information; Require further modification or monitor the conduct of your research or the informed consent process.
  - withdraw or postpone approval if:
    - Any unethical principles or practices of the project are revealed or suspected.
    - It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.
    - The required annual report and reporting of adverse events was not done timely and accurately,
    - New institutional rules, national legislation or international conventions deem it necessary

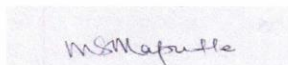
ISSUED BY:

UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE

Date Considered: November 2020

Name of the HCTREC Chairperson of the Committee: Prof MS Maputle

Signature: \_\_\_\_\_



UNIVERSITY OF VENDA OFFICE OF THE DIRECTOR RESEARCH AND INNOVATION  2021-01-27  Private Bag X5050 Thohoyandou 0950
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## **ANNEXURE C: REQUEST FOR PERMISSION TO CONDUCT RESEARCH**

### **PERMISSION LETTER TO CONDUCT A STUDY**

P.O. Box 212  
Fondwe  
0969

To the Head of Department (HOD) Health Northwest Province

Dear Sir/Madam

### **REQUEST FOR PERMISSION TO CONDUCT A STUDY**

I am a master's in nursing student at the University of Venda in the School of Health Sciences. The topic of my research is: "Healthcare workers' adherence to the use of adult primary care guideline in management of cardiovascular diseases in the Northwest Province"

I hereby request for permission to conduct a study in your department. The study will be conducted among all clinics in Naledi Sub-District. The researcher will be the main data collector. Data will be collected from all patients' health records diagnosed with cardiovascular disease. The purpose of the study is to investigate adherence on implementation of APC guidelines on diagnosing cardiovascular diseases by healthcare workers in the Northwest Province.

I hope that the results of the study will assist in improving the management of patients by healthcare workers and help in the reduction of morbidity and mortality in the Northwest Province.

Thank you

---

Ms Tshiovhe

# ANNEXURE D: PERMISSION TO CONDUCT RESEARCH FROM NORTHWEST DEPARTMENT OF HEALTH



**health**  
Department of Health  
North West Province  
REPUBLIC OF SOUTH AFRICA

Sekame & First Street  
New Office Park  
Mafheng, 2745  
Private Bag X2058  
MMABATHO, 2735

Eng. Ms. Tshiamo Mokate  
Tel: 018 391 4501  
T.Mokate@nwpg.gov.za  
www.nwhealth.gov.za



## RESEARCH, MONITORING AND EVALUATION DIRECTORATE

**Name of researcher:** Ms. S. Tshiovhe  
University of Venda

**Physical Address (Work/ Institution):** 09 Ribbock Street  
JOB SHAMANKWA  
TSEANE HOSPITAL

**Subject:** Research Approval Letter – Healthcare workers adherence to the use of adult primary care guideline in management of cardiovascular disease in the North West province.

2021-04-14

NORTH WEST DEPARTMENT OF HEALTH  
PRIVATE BAG X 2058, MMABATHO, 2735

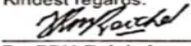
This letter serves to inform the Researcher that permission to undertake the above mentioned study has been granted by the North West Department of Health. The Researcher must arrange in advance a meeting with the District Chief Director and District Director to introduce their research team/members on the proposed research to be undertaken. Further to the above the researcher must produce this letter to the District and chosen facilities as proof that the research was approved by the NWDDoH.


This letter of permission should be signed and a copy returned to the department. By signing, the Researcher agrees, binds him/herself and undertakes to furnish the Department with an electronic copy of the final research report. Alternatively, the Researcher can also provide the Department with electronic summary highlighting recommendations that will assist the Department in its planning to improve some of its services where possible. Through this the Researcher will not only contribute to the academic body of knowledge but also contributes towards the bettering of health care services and thus the overall health of citizens in the North West Province.

Below are the contact details of Office of the Chief Director and District Director for Dr. Ruth Segomotsi Mompoti District.

Office of the Chief Director	Office of the District Director
Mr. Ruben Matsepe	Ms. Kelebogile Kenosi
rmatsepe@nwpg.gov.za	KAKenosi@nwpg.gov.za
053 928 0506/7	053 928 0502

Kindest regards,

  
Dr. FRM Relchel  
Director: RM&E

  
Researcher

14/4/2021  
Date

15/4/2021  
Date

**HEAD OF DEPARTMENT**


2021-04-14

**NORTH WEST DEPARTMENT OF HEALTH**  
PRIVATE BAG X 2058, MMABATHO, 2735

  
Healthy Living for All




## ANNEXURE E: PERMISSION TO CONDUCT RESEARCH FROM DISTRICT

 **health**  
Department of Health  
North West Province  
REPUBLIC OF SOUTH AFRICA

32 Market Street  
VRYBURG, 8601  
Private Bag X24  
VRYBURG, 8600

Tel : 0539270456  
Fax: 0539270456  
sabizu@nwpp.gov.za



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**DR RUTH S. MOMPATI DISTRICT- HAST**

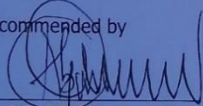
**TO: MR R. MATSEPE  
CHIEF DIRECTOR  
DR RUTH S. MOMPATI DISTRICT**

**FROM: Dr. S. ABIZU  
HEAD OF CLINICAL SERVICES  
DR RSM DISTRICT**


**DATE: 11 June 2021**

**SUBJECT: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH IN NALEDI SUB-DISTRICT  
BY MS TSHIOVHE SHONISANI**


1. I have received a letter from Ms Tshiovhe Shohisani requesting a permission to conduct a research in Naledi Sub-district included in the letter is a copy of protocol, ethical approval from University of Venda and also approval from the provincial Research Committee.
2. The topic of interest is **Health care workers adherence to the use of adult primary care guideline in the management of cardiovascular disease in the Northwest Province**. We have gone through all the documents and protocol the topic of Research is in line with departmental priorities and the protocol in accordance with basic research procedure in South Africa.
3. I therefore recommend that permission be granted for the research to be conducted in Naledi Sub-district. The Sub-district and facility Managers of Naledi Sub-district should take note and assist the investigator where possible.

Recommended by  
  
**DR S.E. ABIZU  
HEAD OF CLINICAL SERVICES AND  
CHAIRPERSON OF RESEARCH COMMITTEE  
Dr RSM DISTRICT**

Date: 11/June 2021

~~Approval Granted/Approval Not Granted~~  
  
**MR/R. MATSEPE  
CHIEF DIRECTOR  
Dr RSM DISTRICT**

Date: 11/06/2021

  
Healthy Living for All

**DEPARTMENT OF HEALTH  
DR. RUTH S. MOMPATI  
DISTRICT OFFICE  
11 JUN 2021  
PRIVATE BAG X24  
VRYBURG - 8600  
NORTH WEST PROVINCE**

## ANNEXURE F: CHECKLIST QUESTIONNAIRE

An approach to the diagnosis and routine care of the patient with a cardiovascular disease

Demographic information from the Patients' records records

Patient age in years: -----

Gender

Male	
Female	

Nationality:

South African	
Other	

Employment status

Employed	
Unemployed	
Pensioner	

	YES	NO
<b>SECTION 1</b>		
<b>ASSESSMENT/IMPLEMENTATION</b>		
Symptoms at every visit: where symptoms of chest pain, difficulty breathing, leg pain and stroke symptoms of stroke asked about and managed accordingly?		
Risk factors at every visit:		



Was smoking, diet, exercise and activities of daily living asked about?		
BMI at every visit: Aim is <25 BMI, was it calculated and categorized?		
Waist circumference at diagnosis, yearly or 3 months if trying to lose weight		
BP at every visit: Was routine hypertension care done?		
Glucose at diagnosis and depending on the risk of developing CVDs: Was routine diabetes care done?		
Total cholesterol at diagnosis if CDV > 20 %: If $\geq 7.5$ , no need to repeat patient to be referred to specialist		
<b>SECTION 2</b>		
<b>PRACTISES BY HEALTHCARE</b>		
Was health education on CVDs given on one of the follow aspects? <ul style="list-style-type: none"> <li>• Physical activity</li> <li>• Weight management</li> <li>• Diet</li> </ul>		

<ul style="list-style-type: none"> <li>• Smoking</li> <li>• Manage stress</li> <li>• Alcohol/ Substance misuse</li> </ul>		
<b>SECTION 3</b>		
<b>TREATMENT FRAMEWORK</b>		
<b>RECOMMENDATIONS</b>		
Was patient diagnosed with one of CVDs?		
Was treatment given following the APC guideline algorithms?		
Was treatment adjusted or stopped according to APC guideline?		
When necessary for referral, was patient referred?		

## ANNEXURE G: PROOF OF LANGUAGE EDITING

### FACULTY OF HUMANITIES, SOCIAL SCIENCES AND EDUCATION

### DEPARTMENT OF ENGLISH, MEDIA STUDIES AND LINGUISTICS

14 February 2022

To whom it may concern

This serves to certify that I have been requested by Tshiovhe Shonisani (Student Number 11630066) to proof-read her final dissertation for Master of Nursing. She is a student attached to the Department of Advanced Nursing Sciences in the Faculty Health Sciences.

The title of her study is: Healthcare workers' adherence to the use of adult primary care guideline in management of cardiovascular disease in the North-West Province. I have read the whole document and made suggestions reflected through track changes software and highlighting general errors.

Yours Sincerely



Mzamani J. Maluleke



University of Venda

## ANNEXURE H: PROOF OF STATISTICIAN

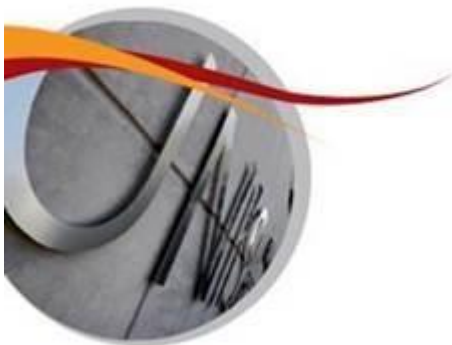
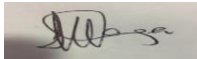


Dear Sir/ Madam

I Ms. M.A Managa at UNISA did Statistical Analysis of Shonisani Tshiovhe using SPSS Vision 27 on the topic: HEALTHCARE WORKERS'ADHERENCE TO THE USE OF ADULT PRIMARY CARE GUIDELINES IN MANAGEMENT OF CARDIOVASCULAR DISEASE IN THE NORTHWEST PROVINCE'. Master of Nursing Science.

I sincerely hope I answered all the research questions and the objectives needed for her dissertation.

Regards



**Ms MA Managa**

Lecturer

School of Science Department of Statistics Florida Science  
Campus Gerwel Building Block C Room 618

Tel: 011 670 9252 Cell: +27 79 492 4078 Email:

[mnagma@unisa.ac.za](mailto:mnagma@unisa.ac.za)

h http htt htt  
**Unisa Coronavirus (COVID-19) update:**

[www.unisa.ac.za/coronavirus](http://www.unisa.ac.za/coronavirus)