EXPRIENCES OF PATIENTS LIVING WITH BOTH HUMAN IMMUNODEFFICIENCY VIRUS AND DIABETES CO-MORBIDITIES IN POLOKWANE MUNICIPALITY, SOUTH AFRICA

By

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RESEARCH REPORT

Submitted in partial fulfilment of the requirements for the degree of

MASTERS OF PUBLIC HEALTH

In the

FACULTY OF HEALTH SCIENCE

At the

UNIVERSITY OF LIMPOPO

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2019

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ACKNOWLEDGEMENT

I would like to thank the mighty Jehovah for guiding and the strength He afforded me to this point. It was His mercy that I managed to reach this point. Thank you my God, I always indebted to you.

I would like to appreciate the following people who contributed enormously to my study:

- My supervisor Prof L Skaal and Hans Onya respectively. I would like to thank you for your guidance and independency you gave me in conducting this study and constant motivation and your availability whenever I needed help.
- Ms SS Masedi for encouragement support that you gave me while conducting this study.
- All the participants (patients and health care providers) for your contribution in this study.
- My language editors Ms Myra Oyedemi and Mr Wezi Gondwe for proof reading this study, thank you.
- To my lovely family for your unequivocal support, thank you.
- Department of Health for allowing me to collect data in health facilities.

DECLARATION

I, Mabetlela McClinton Gerald, hereby declare that experiences of patients with both human immunodeficiency virus and diabetes comorbidities in Polokwane municipality, South Africa for the degree of master of public health at the University of Limpopo, school of public health is my original work, and has not been submitted to any other institutions for the same purpose. I also declare that all citations, materials and sources have been categorically acknowledged by complete references.

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Mabetlela McClinton Gerald Date

DEDICATION

I would like to dedicate this mini-dissertation to my family for unequivocal support, colleagues at Mankweng Hospital for the support you showed during classes and absentia at work while conducting research, Prof L Skaal for not giving up on me, you pushed me to climb the ladder while I was about to fall, thank you. Lastly but not least, I would to appreciate the support from the Department of Health Limpopo Provincial Government and Mankweng Hospital for giving me access to the field so that I could conduct my research.

DEFINITION OF CONCEPTS

Capacity: According to Cambridge English, dictionary means the total amount that can be contained or produced (Cambridge Business Dictionary, 2016). In this study capacity means the ability of the hospital to respond to the challenges brought by HIV and diabetes co-morbidity.

Co-morbidity: (Pathology) the occurrence of more than one illness or condition at the same time (Collins English Dictionary, 2014). In the current simples patient presenting with HIV and type 2 diabetes mellitus.

Experience: Experience refers to the knowledge you get from life and from being in a lot of different situations (Macmillan Advanced Learners Dictionary, 2012). In this study experience refers to what the person has gone through as a result of being infected with HIV and Diabetes Co-morbidities.

Medication Adherence: Medication adherence is defined by the World Health Organization as "the degree to which the person's behavior corresponds with the agreed recommendations from a health care provider (Jimmy & Jones, 2011). In the current study medication adherence simple means that a patient is taking the prescribed medications as stipulated by a Doctor or nurse without defaulting even experiencing some adverse effects.

Primary Non adherence: When patients do not even fill a new prescription (Jimmy & Jose, 2011). Definition has been adopted in this current study

Secondary non-adherence: refers to cases when prescriptions are filled, but medication is not taken as prescribed (Jimmy & Jones, 2011). The definition has been adopted as it is.

Lack of persistence: refers to patients with good primary and secondary adherence who self-discontinue treatment by not refilling their prescriptions (Jimmy & Jones, 2012). Definition has been adopted as it is.

Intentional non-adherence: is defined as a process in which patients actively decide to be non-adherent with medications or with treatment recommendations (Jimmy & Jones, 2011). In this study it means that the patient decides to stop medication without recommendation from the doctor.

Non-Communicable Diseases: A non-communicable diseases, or NCD, are a medical condition or disease that can be defined as non-infectious and non-transmissible (WHO, 2014).

Non-communicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. They are long duration and generally slow progression. The 4 main types of non-communicable diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary diseases and asthma), and diabetes (WHO, 2014). In this current study diabetes is chosen as non-communicable disease.

Patient: A patient is a person who is receiving medical treatment form a doctor or hospital (Macmillan Advanced Learners Dictionary, 2012). In this study a patient refers to a person diagnosed with HIV and Type 2 diabetes Mellitus and receiving treatment at the HIV clinic.

Type 2 Diabetes Mellitus: A problem with where the body that causes blood glucose (sugar) levels to rise higher than normal. This is also called hyperglycemia. Type 2 diabetes is the most common form of diabetes. If you have type 2 diabetes Mellitus, the body fail to use insulin and this called insulin resistance. At first the pancreas makes extra insulin to make up for it, but over time it is able to keep up and cannot make enough insulin to keep your blood glucose at normal levels(American diabetes Association, 2004). Definition is adopted as it is.

Workload: the amount of nursing time, the level of nursing competency; the amount of physical exertion; and complexity of care (Mohamed, 2016). In this study the word workload refers to the demands brought by the patients, taking of multiple drugs, visiting the hospital and clinics, costs involved, having more than one conditions.

ABBREVIATIONS

ART: Antiretroviral Therapy

CCM: Cumulative Complex Model

CDC: Center for Disease Control and Prevention

DM: Diabetes Mellitus

HANA: HIV Associated Non-aids Conditions

HIV: Human Immunodeficiency Virus

NCD: Non Communicable Disease

PLWH: Persons Living with HIV

SSA: Sub Saharan Africa

UNAIDS: United Nations Programme on HIV/AIDS (UNAIDS)

WHO: World Health Organization

Abstract

Background: HIV and AIDS is the leading cause of death among adults in sub-Saharan Africa, and the burden of non- communicable diseases such as diabetes mellitus is high and growing as well. This has resulted in the increase of dual diagnosis of HIV and Diabetes Mellitus in recent years increasing disease burden and self-care challenges being experienced by these patients. This study explored patient challenges arising from this dual diagnosis, and investigated how well the Limpopo healthcare system is servicing these lived experiences, and disease burden challenges these patients have to bear.

Methods: A qualitative study approach was used and a phenomenology study design employed in this study. Patients' lived experiences and their capability to cope with the co-morbidity of HIV and Diabetes Mellitus was investigated. Sixty four (64) HIV patients with Diabetes Mellitus were identified representing 48% of HIV patients in the HIV/AIDS program at the sites of the study (Mankweng hospital POP clinic, Nobody and Dikgale Clinics) in the Polokwane municipality area of the Limpopo province in South Africa. Fifteen (15) of these patients made the sample and were interviewed. In addition, the five (5) of the seventeen (17) health care providers participated in the interviews.

Criterion purposive sampling was used whereby the subjects had to have HIV and AIDS and diabetes in order to be part of the study. The semi-structured interview was conducted. An interview schedule was created to ensure that the key research questions related to workload and capacity are adequately covered during the interviews.

Results: The evidence collected suggested that HIV and Diabetes comorbidity patients had increased workload and capacity challenges for self-care. Among the challenges was despondency. Patients found it difficult to adjust to symptoms and demands of the dual diagnosis. Counseling and education was noted as easing anxiety and lowered despondency. Poor services at the clinics worsened their experience and disease burden. Shortage of staff, poor housing of clinics, poor facilities and equipment, lack of training and occasional shortage of drugs were the reasons put forward by the health care professional for the poor services. Separate clinics for HIV and Diabetes Mellitus increased the patients time away from a productive life, increased expenses, and somewhat complicated their lives. Good compliance to treatment was observed. Most patients coped well with medication and had no side effects, the few that had side effects continued to take their medication incorporating additional instructions from the health workers who managed the side effects. Family and buddy support improved the capability to cope with the disease burden and their general attitude to life.

Conclusion and recommendations: Primary health care must be strengthened to meet the challenges disease convergence is bringing through continued education of staff and improvement of facilities and equipment, and streamlining service delivery processes. Note of significance is that despite the health care professionals being poorly prepared and under staffed, the clinic facility being poorly housed and poorly equipped, the healthcare professionals are managing to meet their service mandate through commitment and hard work.

Keywords: **Experiences; Patients; HIV; Diabetes Mellitus; Cor-morbidities**

CHAPTER 1

Overview of the study

1.1 Introduction

The co-existence of HIV and AIDS and Non-Communicable Chronic Diseases (NCDs), such as Type 2 Diabetes Mellitus, is increasing. The co-existence of two diseases each with significant disease burden affects the quality of life of people living with HIV and AIDS. Literature notes that HIV and NCD co-morbidity is increasing and that quality of life of such patients is dropping (Levitt, Steyn & Bradsaw, 2011). Levitt et al.(2011) and Oni, Youngblood, Boulle, MacGarth, Wlikison and Levitt, 2015, noted that preliminary evidence from South Africa shows that this increase in HIV and NCD co-morbidity occurs at a younger age than usual and NCD onset among people living with HIV and AIDS is increasing most rapidly in urban areas of South Africa.

The Cumulative Complex Model (CCM) puts forward as a basis of argument that as burden of disease and resulting workload increase the patient capacity to respond to it diminishes (Shippee Shah, May, Mair & Montori, 2012). According to Shippee et al, 2012, this burden is worsened by the multiplication of demands made by disease–interactions such as HIV andNCD, and by multiplication of interactions with treatment modalities and service provision. The generation of persons living with HIV is growing older and therefore is more prone to other chronic conditions, which normally develop over time, such as NCDs (Center for Disease Control and Prevention, 2008; Mack & Ory, 2003).

Coupled with the aging process, the extended exposure of these older adults to both HIV and antiretroviral drugs appears to increase their risk of illness and death from HIV Associated Non-AIDS conditions (HANA) such as cardiovascular disease, Type 2 diabetes mellitus, liver, kidney and lung disease, as well as many cancers not associated to directly with HIV infection (Fauci, Hodes & Whitescarver, 2010; Guaraldi, Orlando & Zona, 2011). Since HIV has become chronic disease with the prospect of long-term survival, the examination of burden, quality of life, social impact and the capacity to deal with the afore mentioned challenges is extremely important (Balderson, Grothaus, Harrison, McCoy & Catz, 2013). This study will give insight into the burden, quality of life, and social impact the co-existence of HIV and AIDS and NCDs has in the Polokwane Municipality for the first time.

1.2. Problem Statement

Acknowledging the dual-burden experienced by patients with both HIV/AIDS and Diabetes mellitus it is important that health care services are aligned to meet the challenges this scenario presents.

HIV/AIDS is the leading cause of death among adults in sub-Saharan Africa (SSA), but the burden of NCD is high and growing as well (WHO, 2004). The dual-burden experienced by patients affected by both HIV and Diabetes Mellitus has not been explored in Limpopo, South Africa, as a result, it is not clear what these patients' lived experiences, needs and challenges, and workload to self-care are and how well these needs and challenges are being met by the Limpopo healthcare system.

Undertaking this study will therefore serve as a platform to explore these needs and challenges, evaluate how well the Limpopo healthcare system is servicing these lived experiences, needs and challenges, and workload to self-care, and provide new data to assist health care professionals and policy makers develop appropriate services for this group of patients.

1.3. Research Question

What are the lived experiences of patients living with both HIV and Diabetes co-morbidities in Polokwane Municipality, South Africa in terms of the associated workload and their capacity to manage their condition?

1.4. Aim of the Study

The aim of the study was to explore the patient workload and capacity for managing HIV and Diabetes comorbidity among patients attending public health services in Polokwane municipality, South Africa.

1.5. Research Objectives

The research objectives of this study were:

1.5.1. To explore and describe the lived experiences in terms of workload to self-care by patients suffering from both HIV and Diabetes Mellitus comorbidity.

1.5.2. To explore and describe the experiences of health care providers in managing workload presented by the HIV and Diabetes Mellitus comorbidity.

1.5.3. To determine if the patients and the hospital have the capacity to manage both HIV and Diabetes co-morbidity from patients' and nurses perspective.

1.6. Significance of the study

HIV and AIDS is the leading cause of death among adults in South Africa, and the burden of non-communicable disease is emerging in the HIV community. The experience of co-morbidity to the patients increases the workload of self-care and as a result, quality of life is compromised. Therefore, it is important for the researcher to explore how HIV and NCD multi-morbidity impacts on capacity of individuals to manage the increased demands.

1.6.1. Patients

Among HIV-positive patients, comorbidity is common with the average of four to five comorbidities among people older than 50 years (Monroe, Rowe, Moore & Chander, 2013). Increasing comorbidities are associated with an increase in polypharmacy (taking more than five medications), which may worsen medication adherence due to increased regimen complexity or “pill fatigue”. Therefore, it is of utmost essential for the researcher to explore then burden polypharmacy can add to patients diagnosed with comorbidity.

1.6.2. Department of health in terms of policy formulation

The study will inform policy makers about management of HIV and AIDS and diabetes patients looking at the challenges that have emerged in the study.

1.6.3. Department of health in terms of provision of care

The study will assist in the improvement of service delivery among patients with both HIV and AIDS and diabetes and to be counter the problems faced with the patients while receiving treatment of the two conditions.

1.7. CHAPTER OUTLINE

Chapter 1

The chapter provides an introduction of the study, background of the study and information supporting the topic, objective, and relevancy of the study under guidance of the current literatures.

Chapter 2

This chapter reviews the literature on the status of HIV and diabetes in the world and its prevalence in Sub-Saharan and South Africa.

Chapter 3

The chapter outlines the methods used to conduct the study. The chapter was discussed in terms of research design, research settings, piloting of the study, study population, sample size, inclusion and exclusion criteria, and data collection and analysis, and ethical considerations.

Chapter 4

The chapter presents and interprets the results of the study in details.

Chapter 5

The chapter gives the focal point or summary of the study.

Chapter 6

The chapter focuses on the summary, limitations, conclusion and recommendations.

1.8. Conclusion

The chapter provided the insight of the workload and capacity of the people living with HIV and diabetes they face in daily basis. It also gives the clear indication of the burden the patients living with comorbidity face different challenges and how the government can mitigate those challenges through the policies.

CHAPTER 2

Literature Review

2.1. Introduction

This section will discuss in-depth current literature on the subject matter, dissecting studies that have been conducted on the subject of HIV and NCDs multi-morbidity. The review will discuss and delineate the subject matter under the following sub-sections.

2.2. Burden of NCDs and HIV

Non-Communicable Diseases are emerging as a burden on individuals, families and health systems worldwide. Currently, more than 60% of all deaths worldwide stem from NCDs. In the past, these diseases were considered disease of affluence or for rich countries, but now are emerging in developing countries. For example, (WHO, 2011a), indicates that in 2008 four out five deaths occurred in low-middle-income countries. Sub-Saharan Africa is experiencing a multiple disease burden.

Non-Communicable Diseases are emerging, and their risk factors are more common as lifestyle change and rates of urbanization increase. HIV and AIDS have taken hold in the region although recent data shows decrease in the new infection cases. It was estimated that the number of diabetic cases will rise between 2000 and 2010 despite the HIV and AIDS epidemic. The intervention of antiretroviral therapy is helping HIV and AIDS patients to live longer. However, as this population ages, they are, like their peers in this age group, likely to develop non-communicable diseases.

2.3. Co-existence of HIV and NCDs

There is convergence of HIV and Non-communicable Diseases (NCDs) epidemics in Southern Africa generally, and the co-existence of HIV and NCD in the same individual, poses new challenges for existing paradigms of chronic disease management in this regions. In the current literature, the description of multi-morbidity emanates largely from high income countries, focuses on NCDs only and is usually considered within the context of older persons. In contrast, the specific focus of this project is on HIV chronic infective disease –NCD multi-morbidity in low socioeconomic groups in a middle income country with significant health care resource constraints (Oni et al., 2015).

There is limited, but increasing data from South Africa on HIV/NCD co-morbidity. This data demonstrates a gradient with higher levels in urban compared to urbanizing and rural areas as well as between population-and-clinic based samples. The data show that NCD occurrence is already present in HIV infected populations under the age of 45 years but is increasing with age. The convergence of HIV and NCD epidemics South Africa, similar to elsewhere in Southern Africa, and co-existence of HIV and NCD in the same individual, poses new challenge for existing paradigm of chronic disease management (Levit et al., 2011).

Furthermore, given the nature of HIV epidemics in South Africa, the multi-morbidity population includes a much younger age group than previously researched. The proposed project will use qualitative research methods to explore both patient experiences of the ‘workload’ associated with, and the capacity required to manage the multiple demands of HIV and NCD co-morbidity.

South Africa is a developing country with a largely poor population. Taking in to account Shippee’s Cumulative Complexity Model, the lived experiences, increased disease burden and workload faced by patients need to be investigated.

2.4. Factors influencing medication adherence and non-adherence amongst HIV and Diabetes comorbidity patients

According to Jimmy B et al (2011), medication adherence is defined by the World Health organization as “the degree to which the person’s behavior corresponds with the agreed recommendations from a health care provider”. The patients are expected to be both adherent and compliant to the medications. Adherence to therapies is a primary determinant of treatment success (Jimmy & Jones, 2011). According to Jimmy and Jones (2011), failure to adherence is serious problem which not only affects the patient but also the health system. Medication non adherence in patients leads to substantial worsening of the disease.

Jimmy and Jones (2011) further stated that, barriers to adherence could be addressed as patient, provider and health system factors, with interaction among them. It is of utmost important to identify the specific barriers for each patient so that the suitable techniques to overcome and improve medication adherence can be pursued. There are several types of non-adherence of which all affect the patient negatively. The first is primary non-adherence, in which providers write prescription but the medication is never filled or initiated. This commonly called non fulfillment adherence.

The second type of non-adherence is called non persistence in which patients decide to stop taking medication after starting it, without being advised by health professional to do so. Non persistence is rarely intentional and happens when patients and providers did not communicate well about the therapeutic plan. Unintentional non adherence arises from capacity and resources limitations that prevent patients from implementing their decisions to follow treatment (Jimmy & Jones, 2011).

A third of non-adherence is known as non-conforming, this type includes a variety of ways in which medication are not taken as prescribed, this behavior can range from skipping doses, to taking medications at incorrect times or at incorrect doses, to even taking more than prescribed.

Among HIV-positive patients, comorbidity is common with average of four to five comorbidities among people older than 50 years. Increasing comorbidities are associated with an increase in polypharmacy (taking more than five medications), which may worsen medication adherence due to increased regimen complexity or pill fatigue (Manroe, Rowe, Moore & Chander, 2013). Manroe et al (2013) further stated that the majority of HIV-positive patients who are engaged in care take ART and achieve an undetectable HIV RNA level. This requires adherence to both clinic visits and medication therapy. Control of other comorbidities requires additional lifestyle changes, such as healthy diet and regular exercise, in addition to adherence to medical therapy.

According to Healthy people 2010, health literacy involves the degree to which individuals have capacity to obtain, process, and understand basic health information and services needed to make appropriate health decision. The risk of non-adherence is very high when patients cannot read and understand basic written medical instructions (Martin, Williams, Haskard & Dimatteo, 2005). Martin et al (2005) further stated that patients' health beliefs are affected by the health literacy, and these beliefs are contributor to non-adherence.

Family support has a potential important role to play in the promoting ART adherence among HIV-positive individuals. It has been found that there is a positive association between measures of family support and ART adherence (Poudel, Buchanan, Amiya & Pudel-Tandakar, 2015). Poudel et al (2015) further highlighted that familial ties play important role in health behaviors, through illness adaptation, coping, medical or health care utilization. It is also found that supportive family environment decrease related negative effect.

2.5. Prevalence of HIV, Diabetes and Non-communicable disease and socio-cultural factors

According to United Nations Programme on HIV/AIDS (UNAIDS) 2014 Report, in 2013, there were 35 million people living with HIV. Since the start of the epidemic, around 78 million people have become infected with HIV and 39 million have died of AIDS related illness. The new HIV infections have fallen by 38% since 2001.

Worldwide, 2.1 million people have become newly infected with HIV in 2013, down from 3.4 million people in 2001. According to UNAIDS report 2014, around 12.9 million people living with HIV had access to antiretroviral therapy. As results of antiretroviral therapy, the number of persons aged 50 and older living with HIV/AIDS has been increasing over the past two decades (Center for Disease Control and Prevention [CDC], 2008; Mack & Ory, 2003).

2.6. Prevalence in Sub-Saharan and South Africa

In 2013, there were 24.7 million people living with HIV in Sub-Saharan Africa (UNAIDS, 2014). There were an estimated 1.5 million new infections in Sub-Saharan Africa. In 2009, the Sub-Saharan Africa had the largest number of people living with HIV globally, 22.5 million. On the national level, South Africa is still the largest contributor to the HIV epidemic, with 5.6 million people living with HIV (Levitt et al., 2011).

According to Oni et al (2015), the high HIV-burden in South Africa, the premature ageing effect of HIV-infection, increased life expectancy, as well as the risk of dysglycaemia and cardio metabolic disease associated with some antiretroviral treatment, contribute to associative and new disease constellations in the population. Oni et al. 2015 also highlighted the point that showed the growing of comorbid non-communicable and infectious chronic disease in low and middle-income countries, also indicated different pattern of multi-morbidity in high income countries that is emerging, and becoming evident at a younger age; the latter due to younger age distribution of HIV-infected persons.

The prevalence of diabetes is growing rapidly around the world and is a major cause of morbidity and mortality (Guariguata, Whiting, Weil & Unwin, 2011). In 2010, 12.1 million people were estimated to be living within Africa and the number is projected to increase 23.9 million by 2030 (Hall, Tompson, Henroksen & Lohse, 2011). According to Hall et al (2011), diabetes is a component cause of several other and important and often lethal diseases, both non-communicable such as cardiovascular and renal diseases, and communicable diseases such as pneumonia, bacteremia and tuberculosis, which have considerable impacts on morbidity and mortality in the region.

According to Mayasi et al 2009, the South African population is exposed to quadruple burden of disease: the pre-transitional diseases associated with poverty and underdevelopment, and injuries, both intentional and unintentional, compounded by the burdens imposed by both the HIV epidemics as well as the western chronic, non-communicable diseases of lifestyle, which include obesity and diabetes, and are appropriately referred to as diabesity.

The Botswana Aids Impact Study (BAIS IV) (2013) preliminary report indicates that there are 287 611 older adults (50 years and over) (Statistics Botswana, 2013). Of those in the age group who tested for HIV and declared their results, 23.7% were HIV positive (25.5% of males, 21.5% of females) and the number is likely to increase as new entrants enter as results of use of ART. The main way of contraction of HIV is sexual activity (96.4 of them had sex in the past 12 months (Statistics Botswana, 2013). People living with HIV face negative attitudes that stem from discrimination and moral judgment (Li, Liang, Lin, Wu & Wen, 2009), leading to their being deprived of available services, including HIV testing and medical care. Negative attitudes can also affect people living with HIV if they present in health care professionals (Smith & Mathews, 2007), who are keys to implementing policies and guidelines on HIV care, treatment and support.

The community needs to be equipped with the knowledge about the two conditions as negotiating factor in order to mitigate the entrants to the statistics as recorded above. The medication adherence to the treatment and health care providers knowing their clients is very important as it helps removing the barriers towards adherence to the medication. The service providers always need to display positive attitudes towards the patients so that patients will be free to engage with them.

CHAPTER 3

Methodology

3.1. Research Design

The qualitative study approach was used and a phenomenology study design employed in this study. Patients' lived experiences and their ability to cope with the co-morbidity of HIV and Type 2 Diabetes Mellitus was explored in this study. Information relating to the constructs of patient workload and capacity was equally obtained from respondents.

3.2. Research setting

The study was conducted at Mankweng Hospital which is situated 30km away from Polokwane city center, in Capricorn District, in Limpopo Province. The HIV clinic (POP), at the Mankweng hospital, used by the local and surrounding communities for reviews and monitoring, and to collect medication, was used for this study. The nearby clinics were used to augment the number so that the required total would be achieved.

The clinic staff ensured patients were not inconvenienced by ensuring they were due for their interview on their scheduled checkup and medication collection appointment dates.

3.2.1. Pilot study

A pilot study of two HIV and NCDs patient participants were used mainly to determine the suitability and clarity of the interview structure, content and time required to work through the interview. The main reason for using only two people was to check validity of the questions, time taken to complete the interview and to determine whether the adjustment was going to be needed or not.

The results showed that participants were compliant to medications and always received the medication on time. The results were not included in the study as it was just testing of the questions. A room was allocated at the clinic for interview and it was sufficiently private and confidential. A Psychologist and counselors were on standby to assist with any case of emotional disturbance or behavior problems resulting from the interview with the aim of continuing with the interview if possible.

3.3. Study population

The population was patients with HIV and Diabetes Mellitus from communities in and around Mankweng attending the HIV/AIDS clinics at Mankweng Hospital, Nobody and Dikgale clinics, and nurses and Doctors at these centers who had a minimum of 12 months experience with patients with HIV and Diabetes Mellitus were selected for this study. There are about 132 patients who are recorded as presenting with HIV/NCDs co-morbidity, and of these, 64 from HIV and diabetes co-morbidity. The Mankweng Hospital HIV clinic has 17 nurses of varying rank and category. The health care providers were included in the study to give more information about the participants as they were dealing with them in daily basis.

3.4 Sample size

After excluding HIV patients without Diabetes Mellitus from the 132 HIV andNCDs patients on the treatment program, the population comprised 64 HIV patients with Diabetes Mellitus. The sample size was determined by resource constraints and saturation, (point where no new information appears). Finally Fifteen (15) patients diagnosed with HIV and Type 2 diabetes co-morbidity from Mankweng HIV clinic (POP) and two nearby local clinics under Polokwane municipality and five (5) health care providers within the hospital participated in the in-depth interviews in Limpopo Phela o Phedise clinic at the named centers.

Criterion purposive sampling was used to select patients presenting with HIV/Diabetes comorbidity and with a fair gender representation, with a diverse age range (i.e. ages 35-50 and 51-65). The patients qualified to be part of study due to the fact that they were diagnosed with HIV and AIDS, Type two diabetes, and falling under the recommended age. The people of above mentioned age likely to have diabetes due to lifestyle. The Doctor in charge of the clinic selected the required number of the patients guided by the dual diagnosis, gender balance and age diversity requirements.

3.5. Inclusion Criteria

All the patients participated in the study were diagnosed with both HIV and Type 2 diabetes Mellitus. The participants had age range between 35 and 65 years. The participants were attending Phela o Phedise Clinic at Mankweng hospital or either nearby clinics.

3.6. Exclusion criteria

The patients that have been diagnosed with HIV and comorbidity such as Hypertension but without diabetes were not included. The patients with the age younger than 35 years were not considered and older than 65 years were excluded.

3.7. Data Collection

The semi-structured interview was conducted with each respondent. The interviews stretched over a period of three months because we had to see the respondents on their scheduled appointments for review and collection of medication.

The purpose of the research was explained to the patients in Sepedi, a written consent was given to the participant to sign to acknowledge giving consent for the interview to take place. The interview was confidential, in depth and semi-structured questions in the private room at the physiotherapy department. The clinic staff members assisted with the bookings and appointments.

The interviews were conducted in Sepedi and English as most of the participants were comfortable to speak the two mentioned languages. The interviews were conducted by a trained interviewer with oversight from a research site supervisor, and the interviews were audiotaped. The interviewers received training before commencement of the interview. Each participant has a hundred rand voucher to buy healthy food at Shoprite supermarket as token of appreciation for their time.

An in-depth interview schedule was created to ensure that key research questions related to workload and capacity are adequately covered during the interviews.

However, the interviewer used the schedule in a flexible manner so as to allow for an in-depth, open exploration of respondents ‘personal experiences and perspectives on managing multi-morbidity within self (patients) and within institution (Nurses). Constructs explored in the interviews reflected the proposed theoretical model on cumulative complexity.

Specifically, interviews included questions on i) workload (the demands on patients time and energy, the demand of treatment, self-care, other comorbidities, access to HIV and Type 2 diabetic mellitus treatment, employment status, and family responsibilities and ii) concerns about the capacity to cope with the workload (financial and social resources, health literacy and morbidity as it affects ability to function).

The interviewer and the assistant took field notes, pertaining to body movements, facial expression, etc. during the interviews. Because this topic was likely to create emotional expressions, debriefing session was done after an interview in order to recollect and prepare for the next interviews.

The audiotaped interviews were transcribed verbatim. All transcripts were translated into English. The translation was checked by the third party to confirm accuracy.

3.8. Data Analysis

Data analysis was done after the data collected and there were no changes done. Data was analyzed verbatim. The data then was transcribed in steps, and themes and sub-themes were created in order to proceed according to discrete steps for inductive, qualitative, thematic analysis (Braun & Clarke, 2006). The Tesch’s inductive, descriptive open coding was employed as it is outlined below.

Method: Tesch’s inductive, descriptive open coding technique (in Creswell, 2009: 185-190) quoted in Botman, Greeff, Mulaudzi and Wright (2010:223) was used by following the steps below:

Step 1:

- The researcher got a sense of the whole by reading all the transcriptions and written field notes carefully which was followed by writing down some ideas as they come to mind. The researcher carefully and repeatedly read the transcripts of all the participants and understood them.

Step 2:

- The researcher rationalized the coding for the existence or frequency of concepts by listing all topics, covered by participants during the interview session. The researcher grouped similar topics, and those that did not have association were clustered separately.

Step 3:

- The researcher analysed transcriptions of the interview, and went through them asking “what is this about?” and “what is the underlying meaning?”
- The researcher abbreviated the topics as codes next to the appropriate segments of the text and differentiated them by coding the concepts from the collected data to include all meaningful instances of a specific code’s data.

Step 4:

- The researcher developed themes and categories from coded or associated texts and reduce the total list of categories by grouping topics that relate to one another.
- The researcher analysed the results by coding certain segments of the texts attached to certain meaningful key and codes.

Step 5:

- The data belonging to each theme was assembled in one column and preliminary analysis was performed, which was followed by the meeting between the researcher and co-coder to reach consensus on themes and sub-themes that each one has come up with independently.

3.9. Data Management

The participants ‘voice records were kept in safe cabinet, and it was always locked. The information downloaded to the researcher’s laptop was kept safe as the researcher was not sharing the laptop with anyone and there is existing password was installed to limit unauthorized access to the laptop.

3.10. Trustworthiness of the research

Trustworthiness is defined as the availability of the researcher's findings, i.e. all that the researcher has done is designing, carrying out and reporting the research to make the results credible. Smit (2001) says that there are competing claims as to what constitutes a good quality research in social science. According to her (i.e. Smit, 2001) validity and reliability used to be regarded as measures for quality for this type of research but she also indicates that these two terms seem not to be enjoying popularity anymore in terms of defining good and quality research.

3.10.1. Credibility

To promote credibility, the researcher allowed participants to express themselves as they understood the questions and made sure that the environment where the interview was conducted had uncompromised privacy and conducive. The participants were allowed to raise any concerns about interview

3.10.2. Dependability

The researcher allowed collected data to external reviewer and to check the quality of data by the supervisor.

3.10.3. Conformability

The researcher was neutral and ensured that the participants gave independent answers. The researcher's conduct reflected high degree of professionalism and was not be biased at all.

3.10.4. Transferability

To ensure the transferability, the researcher has conducted a pilot study at Phela O Phedise clinic, Mankweng hospital. The two patients were used and the supervisor was present while piloting to ensure that questions asked were suitable. The information gathered through interview was kept in a MP3 audiotape.

3.11. Ethical Considerations

The ethical approval was obtained from the University of Limpopo Research Ethics Committee. The views of all interviewees were handled in confidential manner and the consent form was given to each participant to sign before commencement of the interview. The permission to conduct the study was sought from Department of Health, Limpopo Province and from the Chief Executive Officers or the managers of the participating institutions. To deal with adverse emotional reactions, the counselors were available offer counseling to the clients at the premises where the interview was taking place.

3.11.1. Rights of participants

In order to shield the rights of participants in this research, the following key ways will be adhered to: non-maleficence, human dignity, confidentiality, beneficence and justice.

3.11.2. Non-maleficence

In this research no participant was harmed or harassed in any form either physically or verbally during the course of the research. The participants were respected and the researcher explained to the participants the way he/she wanted to be addressed so that the cultural values would be respected.

3.11.3. Human dignity

The researcher went through informed consent, using the language understood by participants so that they could understand before they could sign. They were allowed to agree or disagree to participate without prejudice.

3.11.4. Confidentiality

The names of the participants were not used in this research, and the gathered information was kept in computer and MP3 audiotape that would be accessed by the researcher and supervisor only.

3.11.5. Beneficence

The results of this research will be presented to district health in Limpopo and national department of health. The outcome of the research will assist in improving health management of patients suffering from HIV and diabetes, and helping them to deal with the challenges they face on daily basis.

3.11.6. Justice

All participants in this study were treated equally and fairly with high level of respect by the researcher. The researcher has mentioned to the participants that participating in this research was voluntary and there were no monetary gains.

3.12. Budget and its justification

The research was funded by Global health Network and all necessary costs were covered according the research need.

CHAPTER 4

RESULTS AND DISCUSSION OF THE STUDY

4.1. Introduction

This chapter presents the finding of the study. Tesch's inductive, descriptive open coding technique Creswell, 2009: 185-190) quoted in Botman, Greeff, Mulaudzi and Wright (2010:223) was used to analyze the results. The findings are systematized in terms of themes and sub-themes. This chapter illuminates the findings from the in-depth interviews that were conducted with fifteen (15) patients and five (5) health care providers from HIV clinic at Mankweng Hospital and the two clinics in Polokwane Municipality.

The results are presented in the form of tables. There are table 1 and 2, both reflecting the experiences of patients living with human immunodeficiency virus and diabetes co-morbidities in Polokwane Municipality, South Africa in the patients and Healthcare Professionals' perspective respectively.

The purpose of this study was to explore the patient workload and capacity for managing HIV/Diabetes comorbidity among patients attending public health services in Polokwane municipality, South Africa and the objectives were:

- To explore the lived experiences in terms of workload to self-care by patients suffering from both HIV and Diabetes Mellitus comorbidity.
- To explore the experiences of health care providers in managing workload presented by the HIV and Diabetes Mellitus comorbidity.
- To determine if the patients and the hospital have the capacity to manage both HIV and Diabetes co-morbidity from patients' and nurses perspective.

4.2. Presentations of the findings

Fifteen (15) patients diagnosed with HIV and diabetes co-morbidity from Mankweng HIV clinic (POP) and two nearby local clinics under Polokwane municipality and five (5) health care providers within the hospital participated in the in-depth interviews. Amongst the participants there were only one (1) male aged 63 and 14 women age ranged 38-58. There were three (3) teachers, two (2) nurses and the general workers and the some were not employed. The health professionals were four Doctors and one nurse. There were three male doctors and one female and female nurse The results were presented in Themes and sub-themes and the themes were bolded to differentiate from sub-themes. (See Table 4.2.1 and 4.2. 2).

Table 4.2.1: Themes and sub-themes reflecting the experiences of patients living with Human Immunodeficiency Virus and Diabetes co-morbidities in Polokwane Municipality, South Africa (patients' perspective)

Main themes	Sub-themes
1. Experiences related to having to adjust to coexistence of Diabetes and HIV positive status	1. Existence of feelings of fear, anger and hurt which causes suffering on multiple levels after diagnosis 1. Difficulty to adjust to symptoms and demands of the conditions 3. Acceptance versus lack of acceptance has an effect on adherence to treatment 4. Taking treatment for both disease a challenge 5. Health information received from healthcare professional during consultation visits in health facilities
2. Support experienced at different level	1. Support versus lack of support experienced from family members 2. Support versus lack of support from Health care workers and community members 3. Lack of understanding of the diseases leads to lack of support from different people 4. Support versus lack of support experienced from neighbours and health professionals
3. **Challenges of having diagnosed with Diabetes and HIV positive status**	1. Health professionals viewed as lazy to assist patients during consultation visits in health facilities 2. Taking time off for medical consultation session a challenge 3. Long waiting times experienced during

	consultation visits 4. Treatment side effects experienced 5. Difficulties experienced in disclosing the conditions to relative
4. **Factors leading to adherence to treatment**	1. Buddy system encouraged for adherence to treatment 2. Long waiting for treatment collection lead to lack of adherence to treatment 3. Existence of intolerable symptoms leads to lack of adherence to treatment 4. Availability of support at different levels improves adherence to medications 5. Unavailability of medication at healthcare institutions affect adherence
5. Knowledge related to the disease condition and co-morbidity	1. Existing versus lack of knowledge related to the disease condition 2. Existing knowledge related to the consequences of lack of adherence to treatment 3. Knowledge related to prescribed medications 4. Knowledge related to the signs and symptoms of the diseases.

Table 4.2. Themes and sub-themes reflecting the experiences of patients living with Human Immunodeficiency Virus and Diabetes co-morbidities in Polokwane Municipality, South Africa (Healthcare professionals' perspective)

Main themes	Sub-themes
1. Facts related to managing co-existence of HIV and Diabetes	1.Drug interaction experienced and problematic leading to terrible side effects during management of the conditions 2. Poor prognosis is blamed on patients' health seeking behaviours 3. Provision of quality care to these patients depends on availability of relevant resources 4. Monitoring of patients prior initiation of treatment an important aspect 5. Existing referral protocols to various healthcare professionals problematic 6. Late presentation of patients to healthcare facilities problematic
2. Experiences of health professional related to treating patients with co-morbidity	1. Existing support experienced from hospital management by offering on-the-job training for treatment updates. 2. Increased workloads due to managing

	patients with co-morbidity experienced 3. health seeking behaviour pose problems in treatment both conditions 4. Health professionals adherence to existing treatment protocols when managing the condition 5. Poor reporting of treatment side effects experienced 6. Disclosure versus lack of disclosure resulting from existence of patients being stigmatised and discriminated
3. Suggestions made by healthcare professionals regarding dealing with Diabetes and HIV co-morbidity	1. A need for guidelines to deal with co-existence of Diabetes and HIV 2. A need for catering for healthcare services at the same time in the same healthcare facility clinic 3. Multifaceted approach in managing the patients suggested 4. A need for training all healthcare professionals regarding managing both conditions. 5. A need for provision of health information related to disease condition, treatment and care.

4. Observations related to adherence to treatment	1. Lack versus adherence to treatment and healthcare instructions observed 2. Patients' adherence to treatment depends on existing symptoms 3. Buddy system supported for promotion of adherence to treatment 4.Lack of adherence to treatment experienced and the blame is on several factors

Table 4.2.1: Themes and sub-themes reflecting the experiences of patients living with Human Immunodeficiency Virus and Diabetes co-morbidities in Polokwane Municipality, South Africa (patients' perspective)

Theme 1: Experience related to having to adjust to coexistence of diabetes and HIV positive status.

Under this theme, subthemes were developed; five themes as presented in the table emerged.

Sub-theme1: Existence of feelings of fear, anger and hurt which causes suffering on multiple levels after diagnosis

The current study discovered that when the patients have the comorbidity of HIV and diabetes, they develop fear, anger and hurt which caused suffering at different levels. As result of this shock, they could not see the light; they thought life was impossible with multiple diseases to the point they thought that was the end of their lives**.**

"*Life did change because after being told that I was sick, all I could see was death. I was always looking at my kids, I didn't have any peace so I always wanted to be alone, did not know who to tell because people talk too much. Sometimes I thought I could tell my partner but I was also scared that he would leave me. I was also scared to tell my children because I was afraid of the perception they might have of me, would they think that mama was just sleeping around with everyone. It has been difficult*", (P4).

When asked about their reaction after knowing that they have the two conditions, the current study revealed that they were hurt, disturbed and angry. The prospective changes in their lives added burden to the patients and that affected them psychologically. "***Initial I was very hurt". The participant further stated that "I started asking myself, you know sometimes when things happen to person, one ends up asking why me, that's what kept on going in my head*", (P4).**

Sub-theme 2: Difficulty to adjust to symptoms and demands of the conditions

In the current study, the participants at the initial stage of their diagnosis could not deal with the fact that they had symptoms such as weakness, fatigue and dizziness. Due to changes of having two conditions, the patients had to visit the hospital not because of the planned visit but the conditions forced to see health care providers**. *“HIV and diabetes changed my life because I’m no longer living the same like before, I get tired and sometimes experience fatigue and as a result I sometimes have to report to the hospital”, (P6).***

“The diabetic medication got me feeling weak at first but it wasn’t so bad that I could not go to work. I, d usually feel weak when my sugar level was low”. “When I first tested for HIV I received counseling, with the diabetes they explained how I can live with it, how I must take medication, what the side effects could be and how I should eat to make sure it’s never too low or high”, (P13*).*

The current study is supported by the Voice of the Patient Report (2014); it has indicated that fatigue was mentioned as highly significant amongst HIV/AIDS patients. The patients had to understand that when starting ARV regimen for the first time, different symptoms will manifest as and there are side effects of the medications.

Sub-theme 3: Acceptance versus lack of acceptance has an effect on adherence to treatment.

The current study revealed that many patients accepted their conditions and they were able to disclose to their family members, and that helped them to gather unequivocal support from their families. They continued adhering to the prescribed medications regardless of their side effects they experienced. They had believed that adherence and compliance would give them hope of living longer and healthy. When asked whether they once thought of quitting medications or not, the following excerpts were recorded as their response:

“*I am so scared to do such thing because many people who are HIV positive are under the impression that they are not sick, rather it’s an ancestral calling and they have to perform rituals whereas everybody can see that this person is HIV positive*”,P16).

***I can’t take and stop taking medication as and when it pleases me. I want to live and be surrounded by my family and see my children grow”,* (P16).**

The current study revealed that accepting the conditions help the patients to comply and adhere to the medications, and that make the patients share their burden of diagnosis with close members of their families and in return they get necessary support. The current concurs with the study that was done by Poudel, Buchanan & Amiya, 2015, the study had found that **“family support has potentially important role in promoting ART adherence among HIV-positive individuals”.** It is essential for the patients to share their illnesses with their close family members so that they receive needed support to help them cope with different kind of challenges.

Sub-theme 4: Taking treatment for both disease a challenge

The current study found that majority of the patients was not coping with polypharmacy at the commencement of initiation of ARVs and diabetic medications. This is because of side effects for ARVs and diabetic medications. The patients were worried by adherence to polypharmacy and feared possibility of unintentional non-adherence. The following excerpts were recorded:

“At first when I started taking them, I used to have nausea and diarrhea; but just because I was counseled on the side effects and adherence, I kept on taking them. Now I don’t’ experience them anymore” (P19)

When I started the treatment I felt constantly tired, I would even sweat and get dizzy”. (P4)

The medication I got from my doctor gave me bad reaction. I would drink them and start vomiting”. (P15)

The frequent visits to either hospital or clinic for separate check-ups (HIV and Diabetes) and collection of medications were serious challenge to the patients**.** ***"It's challenging because I have to ask from my boss, at times I go to day, and I have to again the next day", (P17).***

The current study corresponds with the findings from Monroe et al, 2005; the study found that increasing comorbidities are associated with an increase in polypharmacy, which worsen medication adherence due to increase regimen complexity or pill fatigue. The relationship between traditional risk factors for diabetes, and HIV-and ART-induced metabolic changes is complex and latter may accelerate diabetogenesis in HIV infection in the absence of obesity (Levitt et al., 2016).

Sub-theme 5: health information received from healthcare professional during consultation visits in health facilities.

It has emerged in the current study that when the patients receive sufficient information from the health care providers during consultation and diagnostic period, that help them to deal better with the outcome and do understand their conditions. *"**Yes, they do explain. And I understand them. I was told that TB is curable. Sugar diabetes and HIV are not curable (Laughing). I don't know,**"* **(P18).**

The participants did have adequate information about the consequences of not adhering to treatment, and that information was given to them from either the clinic or hospital. The health care providers ensured that the patients get information about their conditions. ***"They don't just give you medication and say go, they explain the use of each pill".*** **(P5**).

"*If I don't take those pills, for example with insulin that will be my death, same with ARVs*". (P15)

According to Martin et al (2005), patients who feel that their physicians communicate well with them and actively encourage them to be involved in their own care tend to be more motivated to adhere to medications. Additionally, when physicians and patients agree on how involved patients should be in their care, adherence is improved (Jahng et al., 2005).

Jimmy & Jose, 2011, found that barriers to effective use of medicine specifically include poor provider-patient communication, inadequate knowledge about drug and its use, not being convinced of the need for treatment, fear of adverse effects of the drug, long-term drug regimens, complex regimens that require numerous medications with varying dosing schedules, cost and access barriers.

Theme 2: Support experienced at different level

Under this theme, 4 sub-themes were established and were listed below accordingly.

Sub-theme 1: support versus lack of support experienced from family members

It has emerged in the current study that majority of the patients did get support from their family members, and that made them be able to cope well with their two conditions. *“**Yes, my brother”. He supports me as if I was his own child”, (P15**).*

Although some of the participants did not get full support from their family members that did not make them lose faith, but they continued believing that one day their families will accept their conditions and move forward.

“Yes, although some family members are still resilient in terms of accepting people with my condition”. Yes they do. They even remind me when the collection dates have arrived and also when I have to take my medication”, (P6).

The findings in this study correspond with study done by (Poudel, Buchanan & Amiya, 2015), the study found that “family support has potentially role to play in promoting ART adherence among HIV-positive individuals. Poudel et al(2016) further stated that family ties play important role in health behaviors, through illness adaptation, coping, and medical care utilization”. The supportive family environment has been found to decrease disease related negative effect among HIV-positive individuals, particularly for those harboring fears about the prospect of isolation and rejection by family members (Poudel et al, 2015).

Sub-theme 2: support versus lack of support from Health care workers and community members.

Patients perceived community members as the people whom they could not share their statuses with; they preferred to keep their conditions to their closest members of their families whom they can trust. But those who boldly accept and disclose their conditions, they benefit a lot as they receive amazing support from various stakeholders including health care workers and their families without being stigmatized. ***"I had never forgotten. I have alarm on my phone, it rings and I know it's time and because at the clinic they have explained that we shouldn't wait for the pills to be completely finished, I wait anymore. The home Base Workers also helps us a lot by motivating us to keep taking our medication; usually they are around at the time you should be taking them". "They come every day. The one that comes to my house was allocated to me by the people at the clinic",*** **(P4).**

"***Life did change because after being told that I was sick, all I could see was death. I was always looking at my kids, I didn't have any peace so I always wanted to be alone, did not know who to tell because people talk too much. Sometimes I thought I could tell my partner but I was also scared that he would leave me. I was also scared to tell my children because I was afraid of the perception they might have of me, would they think that mama was just sleeping around with everyone. It has been difficult",*** **(P4).**

The findings in the current study shares similar sentiments with the study done by Fatoki (2016). According to Fatoki (2016), perceived and experienced stigma may negatively affect someone's HIV testing, retention care and adherence through fear that being sited or seen at an HIV clinic, missing work and having to attend appointments or being seen taking medications will expose one's HIV status. Fatoki (2016) further stated that "experienced, perceived and internalized stigma may results to mental disorders like depression, low self-esteem, isolation and feeling of hopelessness or loss of control which can ultimately results in loss of motivation to remain in care and non-adherence to treatment and even suicidal intents".

Sub-theme 3: Lack of understanding of the diseases leads to lack of support from different people.

Majority of the patients understood that having HIV is not a death sentence, they have accepted and shared their conditions with their family members, and thence they received enormous support from their families. ***"I am staying with my nephew; he works at Paledi tops spar. He travels on a daily basis. Yes, he is aware and he understands. I was advised at the clinic to disclose to those I live with, so that in case of emergency, they know how to deal with the situation",*** **(P18).**

"They are aware, including my mother. They are all supportive", **(P16).**

Some patients confined information to themselves thinking that they are protecting members of the family and that led to limited support. "***I told my husband but I haven't told the rest of the family yet, I told one, the others don't know. I just told myself that eventually they will know, it is not like we hiding it, we are just scared to hurt them", (P13).***

The findings of this study correlates with the work of Serovich, McDowell & Grafsky (2008), indicating that rewards of disclosing are multiple and can result in the acquisition of numerous resources. These resources may be emotional, physical, and social in nature. For example, emotional benefits might include the acquisition of social support, relief from sharing a burdensome secrete, and the intrinsic reward of educating others about HIV or risks of having sex (Serovich, McDowell & Grafsky, 2008).

According to Rosenfield, Ridge, Catalan & Delpech (2016), patients saw romantic partners and close family members as the ones whom their HIV statuses were most likely to be relevant for the purpose of safety, in the case of partners, or in the case of close relatives to maintain emotional closeness or the integrity of the relationship, and to provide picture of their health need in old age.

Social support has significant effect on the quality of life of people living with HIV (Wu, Chen, Liu & Wang, 2015). People with good social support reported better mental health and quality of life and provide psychological boost for people living with HIV which in turn ensures a good mental state, a necessity for good health (Wu et al., 2015).

Sub-theme 4: Support versus lack of support experienced from neighbours and health professionals

It has emerged in the current study that health professional perceived as people who cannot completely satisfy the clients and talking too much, who do not have confidentiality and that make patients not to come to acquire the service they need. One participant perceived the health professionals as people without planning; they do not arrange the queues to suit patients. One participant perceives the health care providers non caring individuals.

*“**The other problem there is that nurses don’t know how to keep secretes; they can’t work with people. That is why people are afraid of going to the clinics because they are being ridiculed. When they see you they tell everyone your business. Where are we headed as Africans? Another thing is that getting tested for HIV is your right but I know the clinic where they refuse children services until parents take the test. People now go elsewhere. This is real thing and it is not good. They can’t keep people’s secretes. People suffer a lot. If medical professionals put their heads together may be they can help us see where we are going as Africans. This is saddening because as people we are not the same. Some go to Doctors in town without anyone knowing, just them living. What about those who don’t have the means to that”, (P13).***

The findings in this study correlates to the study done by Ama, Shaibu & Burnette, 2016, where it was shown that people living with HIV face negative attitudes that stem from discrimination and moral judgment, leading to their being deprived of available services, including HIV testing and medical care. Ama et al (2016) further stated that negative attitudes can also affect people living with HIV if they are present in health care professionals, who are keys to implementing policies and guidelines on HIV care, treatment and support. Therefore, it is important that the health care professional have credible and accurate knowledge of disease and correct attitudes towards the people living with HIV and AIDS.

HIV related stigma and discrimination have been extensively documented among health care workers ranging from HIV testing without consent, breaching of confidentiality, labeling, gossiping, verbal harassment, differential treatment and even denial of treatment, understanding the magnitude and causes of underlying HIV related stigma and discrimination amongst health care workers is necessary for developing anti-stigma strategies and programs(Fatoki, 2016)

Theme 3: Challenges experienced of having diagnosed Diabetes and HIV positive status

Under this theme, sub-themes were developed that comprised that; Health professionals viewed as lazy to assist patients during consultation visits in health facilities, Taking time off for medical consultation session a challenge, long waiting times experienced during consultation visits, treatment side effects experienced and difficulties experienced in disclosing the conditions to relative.

Sub-theme 1: Health professionals viewed as lazy to assist patients during consultation visits in health facilities.

It has emerged in the current study that patients spent long time waiting for the services at the hospital and the clinics. The patients see health professionals as a people who are dragging their feet, without proper communication or provision of reasons about the delay in the starting of their daily routine. Poor planning by health professionals made the clients perceived them as lazy ones. Below how some the participants responded:

“I would suggest that they attend to us in a speedy manner. I think they are too slow. I stay far away from the clinic and travel there on foot. It becomes a problem when one has to walk the long distance back home in the dark. Our safety is somehow compromised. There are thugs all over the place. It’s so painful to get there early, sit on the chairs and watch them make up and down movements. And

sometimes you can even see that they are not performing their professional duties. By the time they start working it is already late", (P18).

In the study done by Haskins, Phakathi , Grant & Horwood (2014), it was found that if patients or relatives complained, sometimes nurses would isolate them by providing only essential care: "So that is why you find that nurses turn to have an attitude sometimes and perhaps 'drag legs' will be reluctant to help that person. They resort in treating that particular client according to what is written on the book.

Haskins et al (2014) further stated that some nurses become angry when patients did not adhere to their prescribed diets or medications, they got annoyed, hence they showed bad attitude towards clients. A study done by Ndou, Maputle & Risenga, 2015, found that people living with HIV face challenges and usually experience symptoms like anxiety, shame with a shattered sense of hope as result of negative attitudes from the nursing staffs while attending the ARVs clinic.

Sub-theme 2: Taking time off for medical consultation session a challenge

This study also discovered that patients were not getting all medications as they prescribed during their visits at the clinics or hospitals. They were bound to reschedule another visit to the clinics or hospitals. This had affected their work schedule had to request permission from their respective supervisors. The following excerpts have been recorded to support the findings:

"At the clinic they might give you a date for example let's say 27 February, when you get there they might say they are out of medication, then they'd say return on the 14th and they would give you medication to last you until then. It's a problem because I work and going back will cost money and I would have to ask for another day off at work for another check-up", (P13).

"It is challenging because I have to ask from my boss, at time I go today, and have to go again the next day", **(P17).**

According to A guide to HIV/AIDS in the Workplace (2005), "people living with HIV/AIDS and who are working should be given full support, respected, and allowed to have access to medications". The patients are fully protected by the constitution 108 of 1996 and National health Act 61 of 2003 indicating that patients have a right to access treatment without discrimination at any facility. According to Kagee, Remien Hoffman, Campos & Swartz, 2012, employers should allow patients to attend their clinic visits as that will help patients to be healthy and productive.

The study done that by Scott, Campbell, Skovdal, Madanhire & Gregson (2014) showed that proper administration of ART can assist extending health life span of workers by 10 years or more and also found that work absenteeism decreased significantly over a worker's first year of treatment and that ART use improved productivity.

Sub-theme 3: Long waiting times experienced during consultation visits

This study discovered that majority of the patients complained about the waiting time they spent at either the clinic or hospital during their visits to collect medications. "***Not at all. Sometimes you get there around 06h45 and leave the clinic around 15h00 or 15h30. That place is always packed, especially on Mondays when doctors and pharmacists visit the clinic. I wonder if nurses are busy on the other days".*** **(P2).**

There are different factors the participants thought contributed to the delay of the queues in the health care facilities. ***"I queue twice because some people just have diabetes and others HIV",*** **(P4).**

Some patients believed the nurses just deliberately dragged their feet, and that frustrated those patients who requested permission to collect their medications with intention to report back to their respective work place within the same day. "***The treatment is okay. However, I stand in long queues for lengthy hours". There are days whereby we see the doctors and pharmacist; and days where we just collect our ARVs from clinic nurses. At times I even start to wonder if there is a shortage of nurses and doctors or are they dragging their feet". "And sometimes it's frustrating especially if you have requested some time off from your employer and only to find that you have to spend the day queuing at the clinic***", **(P17).**

The patients were not happy about the time they spent queuing for the services, they believed that it was too much and not at the acceptable level. The below excerpt emphasized the concerns of the patients. ***"The other time I got to the clinic around 08h00 and got assisted at around 18h30. I spent the whole day there. At least yesterday I got there around 10h30 and came back around 13h00. We spent the whole day there. Yes. And should you go there on an empty stomach, you won't survive. The medications require one to eat regularly. One must also carry a lunch box or at least have some money to buy food at the nearby shops". (P18).***

The above findings in the current study attributed to the study conducted by Atnafu, Merriam, Wong & Wondimeneh (2015), the study found that there are long queues at the clinics and the hospital settings, the study shown that the shortages of medical staff and laboratory supplies and lack of systemic appointment system are among the factors that contribute to long waiting time. In a poor setting with heavy workload, a doctor may examine 40-60 patients per day compared to the very low number of patients a day by American physicians; therefore, it leads to lack of time specific appointment and causes long waiting time.

Atnafu et al (2015), further stated that the majority of cases are rooted in the efficiency of the ART clinic management system, which can be manifested in lack of scheduling, inefficient registration and triage procedures, misfiling of cards, delay in consultations, and simultaneously break times. So there are many factors that contributed to the existing and that need policy makers to address.

Sub-theme 4: Treatment side effects experienced.

It has emerged in the current study that though the side effects were likely to be experienced and of course did occur, the majority of the patients did not stop continuing with the adherence and compliance to the prescribed drugs and that was attributed to the counseling that was done before initiation of the drugs and that helped to reduce the default rate. ***"When I started the treatment I felt constantly tired, I would even sweat and get dizzy". "No, I went to the clinic and they told me that it is the***

medications 'side effects and that my body will get used to them. I kept on taking them and now I am fine", (P4).

The side effects such as vomiting, dizziness, weakness, tiredness and sometimes collapsing as the results of the conditions, occurred. However, the majority of the patients viewed compliance to the prescribed medications as a necessity and the only way that could prolong their lives. The following excerpts support the findings. *"**The diabetic medication got me feeling weak at first but it wasn't so bad that I could not go to work. I'd usually feel weak when my sugar level was low". "When I first tested for HIV I received counseling, with the diabetes they explained how I can live with it, how I must take medication, what the side effects could be and how I should eat to make sure it's never too low or high", (P13).***

"There is just so much to take. Even if there are complications, I won't be able to say which medication is causing such. At times I feel weak and dizzy. One time I felt dizzy and collapsed, as I was trying to stand up. But I have not yet encountered any problems with HIV medication", (P2).

The findings in the current study correspond with the findings from the "Voice of the Patient (2013)", the report indicated that the impact of HIV and its treatment on daily basis made many patients experience side effects such as nausea, fatigue, night sweats, vomit, peripheral neuropathy and lipodystrophy in the form of muscle wasting. The Voice of Patient (2013**)** further stated that some patients may have had cavalier attitude towards adherence, but for the patients to be better and live healthy lives needed to continue with the adherence and compliance to medications rather than abandoning the prescribed them.

Sub-theme 5: Difficulties experienced in disclosing the conditions to relatives.

It has transpired that majority of the patients preferred to limit the disclosure of their status to the family members that they had an absolutely trust and completely sure that they would never judge them. The stigma attached to the HIV promoted silence to disclosure; some people consider those with HIV as people who were engaged at sexual immoralities. The following excerpts support the current study: **"*Life did***

change because after being told that I was sick, all I could see it was death. I was always looking at my kids, I did not have any peace so I always wanted to be alone, did not know who to tell because people talk too much. Sometimes I could tell my partner but I would be scared that he would leave me. I was also scared to tell my children because I was afraid of the perception they might have for me, would they think that mama was just sleeping around with everyone. It has been difficult",(P4).

On the other hand, those who had disclosed their status to their families enjoyed moral and social support and that made the burden of dealing with the disease easier.

The following excerpts have been recorded after the question "*does the family support you and understand the diagnosis"* was asked.

"*Yes they do. They even remind me when the collection dates have arrived and also when I have to take medication". (P6).*

"I found that they gave me a lot of strength because, you seen how when it happens that you get scared and you don't know what to do, but when I told my children about it, I mean the three older ones as the one born in 2000 is still young. I found that they don't have a problem. They told me that I mustn't be scared and I must just look into getting treatment". (P1).

The above findings correspond with Rotzinger, Locatelli, Rememier, Amico & Bugnon (2016) that the patients who disclose their status to the friends and family they have more social support, less depression, better coping strategies and no regrets regarding the disclosure. Rotzinger et al. (2016) further stated that positive social support and consequently disclosure are both needed to positively impact medical adherence. HIV is highly stigmatized in China while people living with it trying to cope with daily discrimination. For the public, AIDS is associated with horror, drug abuse and sexual promiscuity (Wu et al., 2015).

Wu et al (2015) further stated that public discrimination makes people living with HIV feel guilty, afraid of normal interaction with friends, lose social support, and denied job opportunities. Fatoki(2016) found that perceived and experienced stigma may negatively affects someone’s HIV testing, retention of care and adherence through fear that being seen at HIV clinic, missing work and having to attend appointments or being seen taking medication will expose one’s HIV status.

Theme: Factors leading to adherence to treatment.

Under this theme, sub-themes were developed. There are five sub-themes that emerged from the main theme, namely; buddy system encouraged for adherence to treatment, long waiting lead to lack of adherence to treatment, existence of intolerable symptoms leads to lack of adherence to treatment, availability of support at different levels improves adherence to medications and lack of availability of treatment at healthcare institutions affect adherence.

Sub-theme 1: Buddy system encouraged for adherence to treatment.

It has emerged in the current study that buddy system has been encouraged as it plays an important role in the treatment adherence. At least the patient was encouraged to disclose to one member of the family whom will assist in dealing with the daily challenges. In most cases, those patients who have disclosed their statuses either to their closest friends, children and others whom they trust are likely to enjoy social support. The two excerpts to support the study have been recorded: ***“Yes they do. They even remind me when the collection dates have arrived and also when I have to take my medication”, (P6)***

“Yes. He is aware and understands. I was advised at the clinic to disclose to those I live with, so that in case of emergency, they know how to deal with the situation”, (P18).

The close members of their families eventually do understand their conditions and they offer help whenever they need it. Majority of the patients at least they disclosed to one member of the family, and that helped them to cope well and even to promote adherence to their treatment. The following excerpt was recorded about buddy system and adherence:

“They all know, including my children. They even remind me to take my medication. They also respect my time. When I am in bed, they can’t wake me up. They that I want to rest at times”, (P19).

The findings in the current study correlate with the study conducted by Tom (2013), in that study it came out that after disclosing the status to a relative, one gets help and there is minimisation of stigma. The help patients received from their close family members ranges from accompanied from home to the hospital, being reminded to take medications and to honour the appointments. Similarly, Wu et al (2014) mentioned that social support has a significant effect on the quality of lives among people living with HIV.

Sub-theme 2: Long waiting time lead to lack of adherence to treatment.

It has emerged in the current study that those patients who attended the clinic and hospital services during check-up and medicine collection they experienced the long waiting period and while they have to take medications if they do not have food they might skip the dose as some medications require a patient to have eaten. **“*The other time I got to the clinic around 08h00 and got assisted at around 18h30. I spent the whole day there. At least yesterday I got there around 10h30 and came back around 13h00. We spend the whole day there. Yes. And should you go there on an empty stomach, you won’t survive. The medications require one to eat regularly. One must also carry lunch box or at least have some money to buy food at the nearby shops*”, (P19**). The queues during their hospital visits were unbearable and sometimes they had to come back the following days. Nevertheless, they never stop coming for their medications as they believe taking medication is the only way to keep them living. The two excerpts are recorded to support the findings: *“**I queue twice because some people just have diabetes and others HIV”. They explained that I should keep on taking them too and not stop. They said diabetes might be more dangerous than HIV because it is a silent killer. I must just take my medication and look back***”, (P4).**

“The treatment is okay. However, I stand in long queues for lengthy hours”. “Should I default in taking my medication, I understand my health will deteriorate. I feel much better now that I am taking my medication”, **(P17).**

The current study corresponds with the study conducted by Monroe et al (2013) indicating that understanding of health conditions reinforces adherence. The patients in this study regardless that they had to queue longer period and sometimes had to come early and go back home late, their point was to get medications instead of going back without them.

In Monroe study it was found that subjects understood that missing medications may lead to resistance and that could lead to change of regimen. According to Atnafu et al (2015), long waiting time is associated with the shortages of medical staff and medical the laboratory supplies and lack of systematic appointment system are the factors that contribute to long waiting time.

Atnafu et al (2015) further stated that “too much work load where one doctor sees more than enough number of patients, it leads to lack of time specific appointment and causes long waiting time”.

Sub-theme 3: Existence of intolerable symptoms leads to lack of adherence to treatment.

It has transpired in the current study that most of the patients endured various forms of intolerable symptoms while taking drugs. The majority of the patients after have started with drugs; they had symptoms such as diarrhoea, weight loss, nausea, vomiting, headaches, muscles pains and dizziness. However, no single participant dared to stop taking medications. Regardless of the challenges they experienced or encountered, they kept their adherence level at utmost best. The following excerpts were recorded:

“The HIV virus doesn’t want skipping of medication because that would weaken your immune system causing the pills to no longer work as they should”, (P13).

“The thing is, I can’t take and stop taking medication as and when it pleases me. I want to live and be surrounded by family and see my children grow. This is my life. Yes. That’s what matters. Although some people talk bad about people who are HIV positive, it matters not. Many people are HIV positive. One must just keep taking medication, they will see the difference”, (P16).

The patients who have good knowledge and positive attitudes they have high level of compliance (Olowookere, Fatiregun & Adewole, 2012). Olowookere et al(2012) found that majority of patients with good knowledge of the disease believe that people living with HIV and Aids can live normal life such extent that they can get married and have children. According to Monroe et al (2013) found that patients with good knowledge about comorbidity understand that stopping medication could lead to resistance in future and that could contribute to polypharmacy with more side effects.

Sub-theme 4: Availability of support at different levels improves adherence to medications.

It has emerged in the current study that family support plays important role to the patients who have been diagnosed with comorbidity of HIV and diabetes in terms of compliance and adherence. The families gave them support instead of stigmatising them, and supported them during the clinic visits and that improved the self-care of the patients. The following excerpts have been recorded: **"*They all know, including my children. They even remind me to take my medication. They also respect my time. When I am in bed, they can't wake me up. They know that I need to rest at times",* (P6).**

***"They even remind me when the collect dates have arrived and also when to take my medications*", (P19).**

The above findings correspond with the study done by Poudel et al (2015), it was found that familial support has important role to play in promoting ART adherence among HIV-positive individuals. In the study it was found that a positive association between measures of family support and ART adherence. Rotzinger et al (2016) indicated that positive social support and consequently disclosure are both needed to positively impact medical adherence. Studies in American women have shown that patients who choose to disclose have more social support, less depression, better coping strategies and no regrets regarding to disclosure (Rotzinger et al., 2016).

Sub-theme 5: Lack of availability of treatment at healthcare institutions affect adherence.

It has transpired that sometimes the health care facilities do not have certain drugs to provide to the patients, and that put a question pertaining capacity of the institutions in taking care of patients with comorbidities such as HIV and diabetes. The lack of drugs availability can lead to temporary involuntary desertion of medications and that may cause complications to those poor patients without alternatives. "***The hospital has the capacity, but sometimes you find that diabetic treatment is not available, for instance with diabetes if you can be scratched and have a wound, then you find that there is no medication for that at the hospital and we sometimes forced to buy at pharmacy stores*",(P6).**

Most of the participants demonstrated high level of compliance by visiting private facilities to get medications government institutions cannot provide.

The following excerpts were recorded:

***"Always available, but some time last year, some were not available, I had to buy them at Kalapeng pharmacy", (*P2).**

The above findings correspond with the study done in Ethiopia by Tsega, Srikanth & Shewamene, 2015; it was found the lack of medications at medical facilities was amongst other factors that contributed to non-adherence.

Theme: Knowledge related to the disease condition and co-morbidity

Under this theme the sub-themes were developed, namely; existing versus lack knowledge related to the disease condition, existing knowledge related to the consequences of lack of adherence to treatment, knowledge related to prescribed medications and knowledge related to the signs and symptoms of the diseases.

Sub-theme 1: Existing versus lack of knowledge related to the disease condition

It has appeared in the current study that the patients with good knowledge about their conditions, they have a good medication adherence, self-care, less stress and do accept their conditions. **"*At first when I started taking them, I used to have nausea and diarrhoea, but just because I was counselled on the side effects and adherence, I kept on taking them. Now I don't experience them anymore". "I think it is so important to take medication regularly because if I default, this means that I will get sicker and it will be difficult for me to be treated as they will have to start afresh".* (P19).**

They are likely to disclose their conditions to the family and continue enjoying family support. "***Yes they explained everything to me and the importance of taking***

medication”. It was explained that my immune system is weak and as I mentioned, I take treatment and that helps me”. “ Since now I am in the hospital, when my daughter came I gave her instruction on what to do and she had to go get my medication and bring it to me” **(P1).**

The findings in this current study is supported by the study conducted by Olowookere et al (2012), it was found that the knowledge about HIV/AIDS has been identified as a powerful tool to prevent the transmission of the disease. The understanding of the condition also helps the affected patients' live positive lives and disclose to their families and that help them receive relevant support and facilitation of medical adherence (Tom, 2013).

Monroe et al (2013) found that patients who understand their conditions would adhere to the prescribed medications as they have knowledge that if they skip or do not take their drugs accordingly their conditions will worsen, and those patients have high level of adherence.

Sub-theme 2: Existing knowledge related to the consequences of lack of adherence to treatment.

It has transpired in this current study that the patients did not have notion of stopping to take medications, and they viewed adherence to prescribed drugs as the only way they could make them live longer. To ensure that they do not default, they make sure that if some drugs are not available at the clinic or hospital, they visit private facilities so that they do not miss their doses. The following excerpts were recorded:

“I wouldn’t make mistake of stopping taking medications. I look and feel much better with my medications. I used to be walking skeleton before being attended to by home based carers and taking my medication. I wouldn’t put on short sleeve-shirt before. My arms were like that of small kid. I was scary”. (P18).

“Always available, but some time last year, some were not available; I had to buy them at Kalapeng**”, (P2).**

The current study corresponds with study done in USA about the challenges of adherence. It has been found that the fact that patients have enough knowledge about the importance of drugs they are taking, and the belief that they will be healthy if they stick to prescribed medications that it will enhance the level of adherence and will also assist in eliminating the complications of non-adherence(Martin , Williams, Haskard, & DiMatteo, 2005)

Sub-theme 3: Knowledge related to prescribed medications.

It has emerged in the current study that health literacy plays important role in the management of comorbidity. The patients were aware and understood that they had to stick to their medications as they were prescribed because if they fail they may be worsened. They participants believed that adhering to the prescribed medications will help them live longer. The following excerpts have been recorded to support the findings: ***"At first when I started taking them, I used to have nausea and diarrhoea; but just because I was counselled on the side effects and adherence, I kept on taking them. Now I don't experience them anymore".*** **(P19)**

"When asked about importance of adhering to medication, the client respondent; "should I default in taking medication, I understand my health will deteriorate. I feel much better now that I am taking medication", **(P17).**

The patients who have an adequate knowledge about the drugs side effects that might occur while taking medication have high level of adherence to medication (Jimmy & Jose, 2011). According to Martin et al (2005), when the instructions are clear and the language used not complicated, the adherence level is good.

So it is important, that patients have a good understanding of their drugs, also potential side effects that may come up so that patients would not be abandoning their treatment.

Sub-theme 4: Knowledge related to the signs and symptoms of the diseases.

It has emerged that the patients when they were initiated to HIV and Diabetes treatment they experienced side effects such as dizziness, weakness, nausea, diarrhoea, weight lost, sweating, hallucinations, lethargic and irritability. The majority of those patients did visit either clinics or hospital to report. Some had knowledge to those signs and symptoms as they were counselled before the initiation of the treatment. The two excerpts were recorded to support the findings:

“*When I started the treatment and I felt constantly tired, I would even sweat and get dizzy”. “No, I went to the clinic and they told me that it is the medications’ side effects and that my body will get used to them. I kept taking them and now I am fine”, (P4).*

“No. the only problem I encounter is that I easily irritable and as a person on treatment and as a person on treatment, I am not supposed to”. “At first when I started taking them, I used to have nausea and diarrhoea; but just because I was counselled on the side effects and adherence, I kept on taking them. Now I don’t experience them anymore”, (P19).

According to the Voice of Patient Report (2013), it has been found that many patients experienced different symptoms while taking drugs but they could not articulate whether those symptoms were contributed by the drugs or diseases. The drugs such as metformin in the type two diabetic patients, they can cause weight loss, and can often worsen lipoatrophic areas, resulting in a deterioration of various metabolic parameters (Malin & Kashyap, 2014). So it is advisable that patients report any side effects to the doctors or visit health facilities so that they would ascertain the degree of those side effects and treat them accordingly.

4.3. Healthcare’s perspectives

Main themes	Sub-themes
4.3.1. Facts related to managing co-existence of HIV and Diabetes	1. Drug interaction experienced and problematic leading to terrible side effects during management of the conditions 2. Poor prognosis is blamed on patients’ health seeking behaviours 3. Provision of quality care to these patients depends on availability of relevant resources 4. Monitoring of patients prior initiation of treatment an important aspect 5. Existing referral protocols to various healthcare professionals problematic 6. Late presentation of patients to healthcare facilities problematic
4.3.2. Experiences of health professional related to treating patients with co-morbidity	1. Existing support experienced from hospital management by offering on-the-job training for treatment updates. 2. Increased workloads due to managing patients with co-morbidity experienced 3. Patients’ health seeking behaviour pose problems in treatment both conditions

	4. Health professionals adherence to existing treatment protocols when managing the condition 5. Poor reporting of treatment side effects experienced 6. Disclosure versus lack of disclosure resulting from existence of patients being stigmatised and discriminated
4.3.3. Suggestions made by healthcare professionals regarding dealing with Diabetes and HIV co-morbidity	1. A need for guidelines to deal with co-existence of Diabetes and HIV 2. A need for catering for healthcare services at the same time in the same healthcare facility clinic 3. Multifaceted approach in managing the patients suggested 4. A need for training all healthcare professionals regarding managing both conditions. 5. A need for provision of health information related to disease condition, treatment and care.
4.3.4. Observations related to adherence to treatment	1. Lack versus adherence to treatment and healthcare instructions observed

	2. Patients’ adherence to treatment depends on existing symptoms 3. Buddy system supported for promotion of adherence to treatment 4. Lack of adherence to treatment experienced and the blame is on several factors

Theme 1: Facts related to managing co-existence of HIV and Diabetes.

Under this theme, the sub-themes were developed, namely; drug interaction experienced and problematic leading to terrible side effects during management of the conditions, poor prognosis is blamed on patients’ health seeking behaviours, provision of quality care to these patients depends on availability of relevant resources, monitoring of patients prior initiation of treatment an important aspect, existing referral protocols to various healthcare professionals problematic and late presentation of patients to healthcare facilities problematic.

Sub-theme 1: drug interaction experienced and problematic leading to terrible side effects during management of the conditions.

It has emerged in the current study that the patients did experience multiple side effects and the health professionals acknowledged that as results of the medication that they were administering to the patients. The main challenge that they had highlighted was that the patients failed to report those side effects on time unless they were adverse. If it is minor side effects, they just sit with the problem until it becomes worse. The following excerpts were recorded: ***“They do complain about a particular side effect the time we were using stavudin, but now that we are no longer use it, the side effects complaints have decreased”,*** **(P11).**

"Yes most of the time they report but the challenge is that they don't report earlier. If the side effects are minor they don't report. They only report when the side effects are major and you find that treating them is also a challenge because they are going to stay for a longer period**", (P10)**

The above findings correspond with the study done by Khan, Sulainman, Soo & Aftab, (2014), the study found that the recent development of HAART has highly improved the life expectancy of HIV/AIDS patients but long term use of novel, potent antiviral agents has led to new problems and complications. When the patients fail to report the side effects on time, there would be a problem with early investigations of those potential side effects and the problem may get worsened. The clinicians in order to optimize adherence and efficacy, focus should be directed in the prevention of adverse effects, and distinguishing ones that are self-limited from those that are potentially serious (Khan et al., 2014).

The gastrointestinal side effects of metformin had increased in those with HIV enteropathy and the risk of lactic acidosis had also increased when co-prescribed with stavudine and didanosine. The risk of lactic acidosis may also be increased in several ill patients with comorbid infections such as tuberculosis and in patients with cachexia, such patients need to be monitored closely on metformin therapy (Reid, Tsima & Kirk, 2012).

It is important for the patients to report any adverse effects so that they could either be prevented or minimised. The clinicians should always investigate the adverse effects, and it will be very important if the patients visit the professionals on time before the complications worsened.

Sub-theme 2: Poor prognosis is blamed on patients' health seeking behaviours.

It has transpired in the current study that the patients sometimes took the decisions of consulting with the religious healers, traditional healers or herbalists before seeking western medication. The decision was made for proper diagnoses for early intervention. The following two excerpts have been recorded: ***"We see that often, what I've realised here it's like we are the last resort. And also depend on the education of***

the patient…the level of education. But for majority they will start may be from local healer. Some may go as far as prophets or church related consultations. Then where those people fail, they come here so that we can try and sort out what ever issues they had before". (P7).

"Each and every patient that comes to this is institution; you find that she or he has first consulted either a traditional or religious healer. Most of the time they believe that it's not a medical problem. It's challenge because they go there first. When they come here, it's only when they see that they see that they are not getting better. That's when they seek medical help. It is only 1% of people who come here straight but 99% of the patients, it being HIV or diabetes they will go first and consult because most of the time they believe that they have been bewitched', (P10).

The findings in the current study correspond with the study done by Moshabelo, Bukeya, Wamoyi, Darong & McLean, 2016; it was found that many patients seek traditional interventions before western medicine. Many people believed that the symptoms of HIV and diabetes are witchcraft; hence before they consult at the clinics or hospital, they visit Sangomas for help.

Some they were instructed to drink holy water with believe that after completing the sessions they will test negative with HIV (Moshabelo et al., 2016).The whole processes delay them to engage in the initiation of Haart, and that results with the virus advanced the time they visit the health facilities. Some they only come to the hospital when they are critical ill.

Sub-theme 3*:* Provision of quality care to these patients depends on availability of relevant resources.

It has emerged in the current study that the provisions of quality care services to patients depend on the availability of the resources. The health care providers believed that the quality services should not constitutes the provision of drugs but also working environment, and that could emanate from treatment room, staffing, medical equipment, waiting period and consumables that enabled smooth working arena. The system in place in the running of the institution also contributes to the quality of the services that is being rendered**. The following excerpts were extracted to support above sub-theme:**

***"Management of any condition is more than just provision of medication. You need trained or skilled staffs; you need space where we are going to treat them, you need time allocated for the treatment, then lastly you need the resourced treatment itself, then a break in the chain by lack of one cannot give you success. No it can't. It can't, and in this case you too understand the phases are not there alright, in other words, you do not have separate clinic. Let's combine the clinics and see how this is failing. So most of the patients will be seen either in a ARVs clinic and others will be seen in the diabetic clinic. And the diabetic there is no day system. So you see, once you separate them like that, it becomes very difficult to say what I am gonna achieve. A patient will get management of HIV separate clinic and diabetes on the separate clinic, that's where the problem is",* (P8).**

"The shortage of the staff is also a major problem. We sometimes go an extra mile like we have to do extra hours. You find that there is stipulated amount of hours that we are supposed to do every month but we tend to go beyond those hours in an attempt to cover up the days that are missing, so we tend to go extra mile try and help community. But that's a big challenge", (P12).

The findings in this study correspond with the World Health Report -2006. The workload becomes a burden to health professionals and they struggled to cope with the multiple challenges they face in daily basis and become less motivated to perform their duties. The report further indicated that the doctor and nurses have to deal with the lot of patients who are very sick, waiting areas always packed and there are no benches; people are very weak, no enough staffs, and that impact on the system performance.

Regular screening for diabetes is essential for all patients with HIV, especially those who are on Haart. South African guidelines suggest screening HIV-positive patients with risk factors every six months. It becomes a serious challenge when resources are not available to meet the demand or workload in the management of HIV and diabetes (Reid, Tsima & Kirk, 2012).

Sub-theme 4: Monitoring of patients prior initiation of treatment an important aspect.

It has emerged in this study that after initiation of the drugs, monitoring the patients is very important as there are many serious challenges that may arise thereafter, hence the patients who are diagnosed with the comorbidity such as diabetes and HIV needs a closer monitoring. It has emerged from the study that some patients may abandon their treatment as results of adverse side effects, hence keeping the patients monitored could help prevent defaulting. The following excerpts were recorded to support the study:

"Yes there are some honest patients but most of them will tell you after something have gone wrong and that's when they come out because they need help by then. It's rare, may be one in thousand, will tell you that 'this is what happening and I feel I want to leave this medication and what do you have to say? This is also boils down to the issue of patient education. So it does happen and that's how we face it and deal with it", (P7).

"Ideally that's how it is supposed to be done and mostly that's how we do it because that's according to guidelines and protocol. So we have to talk to them. If we think something is wrong with the patient or their mental status then we involve the family. Counselling must be done with a family member or a relative or whoever is closer to them who can monitor so that if the patient did not understand at least they'll be able to help the patient. So yes, almost every time we do that", (P7).

The results of this study concur with the study done by Kalra, Agrawal & Unnikrishnan, 2011, the study highlight the main reason of continuous monitoring amongst people diagnosed with comorbidity of diabetes and HIV/AIDS. Kalra et al (2011) found that patients with diabetes and HIV usually developed the complications such as altered glucose metabolisms, dyslipidaemia and lipodystrophy. Those conditions without proper intervention by physicians can be worsened or cause more complications.

Kalra et al (2011) highlighted that life style modifications, psychological support, oral anti diabetic drugs are very much important in the management of diabetes and HIV.AIDS. Diet, physical activity/exercise and cessation of smoking are as important in HIV-infected as in non-infected persons.

Sub-theme 5: Existing referral protocols to various healthcare professional problematic.

It has emerged in the current study that the health care providers in the referral institutions feel that referring institutions are not doing enough to ensure that patients are seen at the proper centres or start at the primary health care level. The primary health care does not cater the patients that they are supposed to be seen or diagnosed at that level. The tertiary institutions have concern that the burden of patients become too much as they have to see the conditions that they were supposed to be seen at the primary health care level. The following extracts have been recorded to support the findings:

"Definitely. Primary Health Care is more like the guardian of the community. Isn't it that they say 'prevention is better than cure' and Primary health Care is there so that it can educate, it can prevent and manage. If they can't then refer for further management so that we can cut that chain or that cycle. So Primary Health Care is of significance. If we get our Primary Health Care system right then hospitals should never be burdened with these things because these are primary health care issues", (P7).

"I say that because if at the specialist level you are diagnosing TB, that must been diagnosed at primary health care level, then that's not existing. In fact the specialist level you are dealing with complication side effects of treatment of diabetes, then primary health care does not exist, where the patient should have been taught, advised and warned of possible side effects. If you are seeing that for the first time at the specialist level then primary health care level does not exist. That's why I say that does not exist, which is exactly what is happening". " and strengthening their primary health care system because these are actual

messing up their plan. If a patient can come straight to specialist with flu or diarrhoea, and this is self-referral, it will tell you that the accessibility to service provision does not necessary guarantee quality of services; therefore, people do not think they can get help at the nearest or accessible service provider", (P8).

According to Le Roux, Ingrid le Roux & Davis, 2015, the reasons that lead to failure in the referral system are multifaceted, Le Roux et al.(2015) agreed with the findings of this study that primary health care should be improved to lessen the burden in the referral institutions or to avoid walk ins by the patients. In order to improve Primary health care, district hospitals should be strengthened and fully integrated to district health system.

Sub-theme 6: Late presentation of patients to healthcare facilities problematic.

It has emerged in the current study that most of the patients presented with severe complications the time they decided to visit health facilities. The main reason that emerged was that before they consult professional nurses and doctors, they looked for help somewhere; they visited traditional doctors or herbalists, consulting religious beliefs as some thought that their problems are not HIV/Diabetic but they have been bewitched. The time they decided to visits health facilities and get diagnosed, it was found that some already presented with serious complications that are sometimes irreversible of difficult to treat. The following excerpts have been recorded to support the current study:

"We see them often, what I've realised here it's like we are the last resort. And it also depends on the education of the patient…the level of education. But for majority they will start may be from a local healer. Some may go as far as Prophets or church related consultations. Then when those people fail, they come here so that we can try to sort out whatever issues they had before. But for those whose level of education is quite reasonable and they understand, they may start with private doctors and they may get their funds exhausted and then come here. Some just come directly to us and then we tend to help them. Some

just come directly to us and then we tend to help them. Those are scenarios", (P7).

"I think that one is a norm here. Each and every patient that comes to this institution, you find that she ort he has first consulted either a traditional healer or religious healer. Most of the time they believe that it's not a medical problem. It is a challenge because they go there first. When they come here, it's only when they see that they are not getting better. That's when they seek medical help. It is only 1% of people who come here straight but 99% of the patients, it being HIV or diabetes they'll go there first and consult because most of the time they believe that they have been bewitched", (P10).

The findings of this study correspond with the study done by Moshabela et al (2017), in the study it was found that in many African countries the patients either they first use traditional medicine as they believed that conditions like HIV/Diabetes are results of witchcraft, and the western medicine only taken if they are not getting better, or contact religious healers or they mix the medicine given in the hospital with the traditional belief.

Moshabela et al (2017) further stated that the patients used traditional herbal medicines as a supplement to what the medicine given in the hospital. The time they come to the hospital the side effects might be too much, and the doctors now they have to deal with multiple side effects.

According to Tamuno (2011), the high usage of traditional medicines may be due to accessibility, affordability, availability and acceptability of traditional herbal medicines by majority of the populations in the developing countries. Majority of the traditional herbal medicines are provided by practitioners who lived within their communities, have been trusted over time, shared similar cultural and spiritual beliefs and were always willing to assist the patients with knowledge and skills sometimes at minimal cost.

Theme 2: Experiences of health professional related to treating patients with comorbidity.

Under this theme, each sub-themes as reflected in the table above will be described and discussed separately.

Sub-theme 1: Existing support experienced from hospital management by offering on-the-job training for treatment updates.

It has transpired in this study that the management does not provide necessary support to health care providers to equip them be able to manage patients with comorbidity such as HIV and diabetes while other thought that the workshops provided in the provincial level are adequate enough to help them manage the comorbidity of HIV and Diabetes. The following two excerpts were recorded: ***"It used to happen in the past where they would organise these things-workshops- and you go for free until recently where you have to pop money. Mind you, you empower yourself to help government, so it does not make sense. If may be I were at my own practice yes, then it would make sense because it's for me and my own patients but here I pay money to help government related problems. It does not make sense and so that's why I say it's political. I can't really say much but I think the government and hospitals can do better and they must always sponsor those things. I think it will benefit them not necessarily us. It's for the patients. We are working for government…they were supposed to do that for us", (P7).***

"There are workshops I have attended and that I will still attend, when any changes are regarding HIV related matters, the government conducts workshop to inform us or disclose such changes to us", (P11).

The findings in this study correspond with the WHO report 2006 about the impact of HIV/AIDS on the health workforce in the developing countries. The report acknowledges the enormous challenges faced by the public sector such as poor incentives, misuse of existing staffs and poor career development and highly centralized and fragmented human resource management. The report also recommended that the incentives for entry into health service training programmes should eliminate the freezes on employment of health workers and fill all vacant posts.

Sub-theme 2: Increased workloads due to managing patients with co-morbidity experienced.

It has transpired in the study that health care workers as results of comorbidity, they have to deal with the challenges that needed more knowledge or expertise, instead of managing single disease; they have to manage multiple conditions, which amplify the burden of treating side effects as results polypharmacy. The three excerpts have been recorded: "***As health workers we do come across people who are both diabetic and HIV, sometimes difficult. You find that if a patient is on a regimen that requires them to take the pre-drug may be twice a day and they still have to take the diabetic medication, so it is sort of some burden for some patients to take medication. So it is quite difficult to manage them", (P12***).

The main challenge now is that you have two diseases that are causing immunosuppression and the drugs as well that we are giving that the patients, the ARVs tend to interact with a lot of drugs so before you prescribe drugs you end up having to keep on checking which one is having the interaction with the other one. The other thing is the side effects of the drugs as well; some of them share the same side effects or the disease itself for example diabetes, cause peripheral neuropathy", (P11).

"Truly speaking, it's too much. The workload is too much because we don't have enough staff. One might think there is too many of us but in actual facts, when you look at the distribution of Doctor-to-Patient Ration we're still struggling so the workload is too much. It's just you adapt and tend to overlook yourself but the workload is just too much", (P7).

According to Mammbona (2017), there are a lot of challenges in the management of HIV and diabetes comorbidity. In the study it was found that lack of training, emotional support, staff shortages, physical exhaustion add burden to health care workers. In the most cases, the shift workers staff usually they take sick leave as results of exhaustion, and that add workload to the remaining staff members (Mammbona, 2017). As a result of treating patients with diabetes and HIV/AIDS, the health facilities are grappling with challenge of large numbers requiring follow-up, and that lead to staff burn out, and contribute to absenteeism (Khabala, Edwards, Baruani, Sirengo & Musembi, 2015).

Sub-theme 3: Patients' health seeking behaviour poses problems in treatment both conditions.

It has emerged in this study the patients failed to prioritise the health care facilities when they were sick, instead they decided visit traditional healers for help as they believed that they have been bewitched or they had trust in them, and when they visit the health facility the diseases have already progressed and they presented with severe side effects which are very difficult to manage. The following extracts have been recorded in support of the findings: ***"let say the moderate number that remains have a problem of coming to you straight, when they develop side effects they may resort to traditional medicine. And when they come, now it is a problem of side effects of treatment, plus the problem caused by traditional medicine or herbs. So you are not quite sure what the initial problem of the patient was because now you see actual… let's say is an additive effect of the problem patient develops and now with something on top, the patient is just flat",*** **(P12).**

In the study done in Cameroon by Labhardt, Aboa, Manga, Bensing & Langewitz, 2010, supports the current study. Labhardt et al (2010) found that the majority of the patients prefer to consult the traditional healers first before they consider western medicine. The patients would rather travel longer distance to seek help from traditional healers, and that it is a common practice in Sub-Saharan Africa (Lambardt et al., 2010).

Audet, Blevins, Rosenberg, Salato & Fernandez, 2014 cited the main reasons of the patients why they visit religious and traditional healers instead of going to allopathic health facilities. According to Audet et al (2014), unlike allopathic physicians, traditional and religious healers are considered by their clients to be able to diagnose ailments from spiritual sources such as spirits, sorcery, and social transgressions.

So the time taken to visit the religious healers, and the herbs given to cure the ailments, someone with HIV and diabetes, it would have been late to ascertain proper diagnosis and investigating CD4 counts to initiate treatment. According to Rabkin, Melaku, Bruce, Reja & Koler, 2012, some of the patients who were diagnosed with diabetes opted to abandon medication in favour of holly water, and their conditions got worsened.

Sub-theme 4: Health professionals' adherence to existing treatment protocols when managing the conditions.

In this theme it has transpired that health professional as they managed comorbidity, they had to be more vigilant and take extra care for the patients. As the burden of treatment piled up the health professionals had to take into considerations the side effects that occur as a results of treatment. They had to take blood all the time to check kidneys, CD4 counts, sugar level and the toxicity that might have arose as results of polypharmacy. The following excerpt has been recorded:

"The main challenge now is that you have two diseases that are causing immune suppression and the drugs as well that we are giving to the patients; ARVs tend to interact with a lot of drugs so before you prescribe drugs you end up having to keep on checking which one is having the interaction with the other one. The other thing is the side effects of the drugs as well, some of them might share the same side effects, or the disease itself for example diabetes, cause peripheral neuropathy", (P11).

The findings in this study correspond with the study that was conducted in Kenya in Nairobi. The study that was done by Khabala et al (2015) found that the model was implemented to promote adherence whereby the patients who were diagnosed with hypertension, diabetes and HIV met quarterly to secure their clinical stability, have short health talk, and receive pre-packed medication. Kalra et al (2011) in the diabetic and HIV management study found that lifestyle modification such as diet, physical activity and cessation of smoking are as important in HIV-infected as in in non-infected persons.

For the health professionals having clear protocols in the management of HIV and Diabetes, do help patients to know when to come for check-up and how to adhere to medications. Regular screening for diabetes is essential for all patients with HIV, especially those who are on HAART. South African guidelines suggest screening HIV-positive patients with risk factors every six months (Reid, Tsima & Kirk, 2012).

Sub-theme 5: Poor reporting of treatment side effects experienced.

It has emerged in the current that the health professionals experienced poor reporting of the patients ‘side effects to the health facilities. The patients dealt with the side effects that are minor at home; they did not see the essentiality of visiting health care facility, and that led to complications that progressed to serious stage that either impossible or difficult to reverse. The following extracts have been recorded to support the findings:

“Yes most of the time they report but the challenge is that they don’t report earlier. If the side effects are minor they don’t. They only report when the side effects are major and you find that treating them is also a challenge because they are going they are going to stay for a longer period. Even when on discharge we explain to them that should they experience any side effects they must report, most of the time they wait until the side effects are severe. It’s only when the side effects are severe that they come and report and then you find that the management takes long”, (P10).

According to Reid, Tsima & Kirk, 2012, most of the drugs have adverse side effects more special combined with the other drugs. For most people PLWHA diagnosed with diabetes, metformin is considered the first-line therapy. The gastrointestinal side effects of metformin are increased in those with HIV enteropathy. The most serious side effect of metformin is lactic acidosis. The risk of lactic acidosis is increased when metformin is co-prescribed with stavudine and didanosine (Reid, Tsima & Kirk, 2012).

According Monroe et al 2013 found that increasing comorbidities are associated with polypharmacy, which may worsen medication adherence due to increased regimen complexity or pill fatigue. So the patients are required to have adherence to both clinic visits for regular check-up and medication therapy. Control of other comorbidities requires additional lifestyle changes, such as healthy diet and regular exercise, in addition to adherence to medication (Monroe et al., 2013).

Sub-theme 6: Disclosure versus lack of disclosure resulting from existence of patients being stigmatised and discriminated.

It has emerged in the current study that the issue of disclosing the status to the family is considered beneficial to patients. It is believed that for the family knowing and aware about the family member's condition help assisting the patient to comply, remind, and to give support as well as to encourage adherence and compliance. The following precept has been recorded:

"***Ideally that's how it supposed to be done and mostly that's how we do it because that's according to guidelines and protocol. So we have to talk to them. If we think there is something wrong with the patient or their mental status then we involve the family. Counselling must be done with a family or relative or whoever closer to them who can monitor so that if the patient did not understand at least they will be able to help the patient. So yes, almost every time we do that", (P7).***

In the study done by Madiba & Mokgatle 2016 correspond with the current study, in their study it was found that people who have disclosed their status receive good support from their families and tend to have good adherence to medication. The study also highlighted that most patients who have disclosed their status accept their conditions and understand that they have to be in the medication the rest of their lives.

According to Rotzinger et al 2016 positive social support and consequently disclosure are both needed to positively impact medical adherence. Studies in American women have shown that patients who choose to disclose have more social support, less depression, better coping strategies and no regret regarding disclosure (Rotzinger et al., 2016).

4.3.3. Theme 3: Suggestions made by healthcare professionals regarding dealing with Diabetes and HIV co-morbidity.

Under this theme, the sub-themes have been established, namely; a need for guidelines to deal with co-existence of Diabetes and HIV**,** a need for catering for healthcare services at the same time in the same healthcare facility clinic**,** Multifaceted approach in managing the patients suggested**,** a need for training all healthcare professionals regarding managing both conditions, a need for provision of health information related to disease condition, treatment and care **.**

Sub-theme 1: A need for guidelines to deal with co-existence of Diabetes and HIV.

It has come out in the current study that as the two conditions are engrained, it is necessary for the health professionals to have clear guidelines and protocol so that the management of the two conditions are not in isolation, but rather well directed and detailed. To support the findings the following excerpt has been noted:

"*I think I cannot really change the entire system. It's just a few basic things that just need to concentrate on. It's like when you build a house and the foundation is poor, the house will fall one day or collapse. So it's a matter of strengthening the basics. We must sure that the medicines are there, we must have human resource, and then this our contingency plans when 'this and that' happens unexpectedly. So I guess everything is there in place but if we can adhere to guidelines and protocols and do all the basics then everything should just run smoothly", (P7).*

In the study that was conducted in Ethiopia and Swaziland by Rabkin, Melaku, Bruce, Reja & Koler, 2012, concur with current study, it was found in the study that there is a need to expand the coverage, quality and equity of services for diabetes mellitus and other non-communicable disease in sub-Saharan Africa. Rabkin et al (2012) further mentioned that both diabetes and HIV require laboratory diagnosis, daily medication, and life-long self-management, including behavioural changes. For the management of com comorbidity, it was found that in order to succeed in the program; the basic needs should be available all the times. The basics should be maintained (Rabkin et al., 2012).

Sub-theme 2: A need for catering for healthcare services at the same time in the same healthcare facility clinic.

It has transpired in the current study that there is a greater need to service both HIV and diabetic patients at the same centre or within one visit to the hospital or the clinic. It has also come out that will not only help patients to minimise the time off from work to the clinic, but the patients will also get the packaged service such as diabetic and HIV specialists and all emerging complications will be dealt with at the same time. To support the findings, the following two excerpts have been recorded:

"We will go back to my initial answer when you say that, the impact it has, as long as we continue having separation of the two conditions when it comes to management, current facility and the resources will never be enough to recognise the impact that's why, the reason I am saying it is not enough is because we have a separate clinic of wellness and its own sense is doing well, you have generalised OPD, and eh medical OPD, both of them have diabetes within their consultation, which means may be having co-morbidity of HIV making a follow up in another clinic, and you send both of them to dietician consult for advise, the advice is the same. So we could cut off by taking both patients from both and say, and putting them in their own clinic with their own everything including pharmacy and say where you get medication at centralised clinic and it is run from here, and then we can only see, and start seeing impact, because now we are loading the general OPD and medical OPD, and the wellness clinic separated and we give the impression that, that is the problem that is not exist", (P8).

"We are trying to minimise the issue of confusing patients by sending them at many different people in different departments. So if a patient is diabetic, I know I will give them their medicine from here as well as if patient is HIV positive. In a case whereby any other disease is involved which is not part of diabetes or HIV, then the patients will therefore be sent to other doctors", (P11).

In the study that was conducted in Kibera, South Western part of Nairobi by Sobry, Kizito, Van den Bergh, Tyler-Smith & Isaakidis, 2014, the findings concur with the current study. The integration implied that, regardless of the reason for the consultation, the patient was seen by single clinician managing chronic conditions (NCD and/or HIV and/or TB) and any acute infections. It was one stop service, which avoided patients attending separate clinics (NCD clinic, HIV clinic, TB clinic, primary health care clinic). It allowed a holistic management of the patients, including treatment adherence counselling and management of possible drug interactions.

Sub-theme 3: Multifaceted approach in managing the patients suggested.

In this sub-theme it has transpired that managing HIV and Diabetes should not be limited to provision of the medication to specified diagnosis, but rather be multifaceted, whereby all other illness or side effects that could worsen the two conditions should be screened and dealt with to avoid or minimise the complications to the specified comorbidity. To support the findings the following excerpt has been recorded:

"Number one I would like as I already said, I would start by recruiting patients with the same, HIV and Diabetes comorbidities for their own clinic. Number two, I would start emphasizing screening of those same patients for other comorbidities so that I am not obscured and blinded that by thinking they have only diabetes and HIV because they may be other comorbidities that are worsening two conditions put together, the other thing I would also do for the clinic, because the clinics are already running well. The general OPD is catering for patients who need to be catered for; the wellness clinic is catering those who need ARVs and continuous advice. Because if it becomes new on the market, and we open it, then we need expert advice and proper management and resourcing". **(P8)**

According to study done by Edwards, Bygrave, Van den Bergh, Kizito & Cheti, 2015, concurs with the suggestions given by health care providers in the current study. The patients who are diagnosed with HIV and NCDs who are on treatment, they are likely to develop complications that need to be screened and detected and addressed accordingly (Edwards et al., 2015). The study has noted the need to recognise the increasing of chronic disease burden in sub-Saharan Africa. Edwards et al (2015) further stated that PLWHIV are at high risk of developing concurrent NCDs and would benefit from routine screening and treatment.

Sub-theme 4: A need for training all healthcare professionals regarding managing both conditions.

It has emerged in this sub-theme that though health care service providers were equipped at universities and training colleges, but due to the nature of the conditions and the complications they come across in their daily routine, they believe that it is significant to advance their knowledge, improving the diseases management skills, and that government should provide the financial support. The following two excerpts have been recorded:

"According to me this will be my recommendations, every doctor in a government should at least have a minimum, in addition to qualifications, must have a minimum of diploma in HIV management according to me. Why? Because we are already managing diabetes, but now the impact of HIV is throwing itself on our horizons like as if is a new challenge, so I think it will also better the management if for training and as additional, we all be training in HIV/AIDS management", (P8).

"I think staff is adequately trained but of course there is still a need for people to further their studies and update themselves with the current literatures and current forms of treatment for these patients because there's always studies being done every day so there's always new things and new ways of improving care and treatment", (P12).

According to Kalra et al (2011) in the study titled understanding HIV and diabetes, highlighted the importance of acquiring more knowledge about the two conditions. For people with both HIV and diabetes, many risk factors contribute to metabolic syndrome in such patients. Impaired glucose tolerance, and insulin resistance are noted to precede weight loss in patients with HIV infection, low CD4 count, high viral burden, high body mass index, greater weight circumference, lower socio economic class, and certain ethnic backgrounds or culture (Kalra et al., 2011).

Rigodon, Joseph, Keshavjee, Cancedda, Haidar & Lesia, 2012, mentioned that trainings not only provided on-going education material but served to keep health facilities staffs informed, update the staffs on information related to patients, diseases and program developments. Ridogon et al (2016) further stated that regular training reinforced professionalization of the staffs.

Sub-theme 5: A need for provision of health information related to disease

It has emerged from this sub-theme that the patients sometimes failed to make informed decisions due to the lack of adequate knowledge regarding to their conditions and that led to defaulting of the medications, late reporting of side effects to the health care facilities, and visiting the traditional healers before rather than the hospital for intervention, or even mixing herbs with western medicines. The two excerpts have been recorded: ***"Many of them, and remember with patients, when the patients are sick, they can seek any help anywhere they will get it. So I don't want to use the word blame…let us use it. The blame can be put on the patient himself or herself for the choice made. Number two, the blame could be put on the service provider" "for not advising patient accordingly. So when we put all those two together, you will have a patient who is going to present to you with disease progression that is either difficult to reverse or impossible to remove, that's where the problem is", (P8).***

"We see that often, what I have realised here it's like we are the last resort. And it is also depends on the education of the patient…the level of education. But for majority they will start may be from local healer. Some may go as far as to prophets or church related consultations. Then where those people fail, they come here so that we can try and sort out whatever issues they had before", (P7).

So it is important for the health professionals to educate patients about the importance of medical adherence, regular visits and check-up so that they do not stay at their home with untreated complications. To support this finding, the following extract has been noted: ***"Yes most of the time they report but the challenge is that they don't report earlier. If the side effects are minor they don't report. They only report when the side effects are major and you find that treating them is also a challenge because they are going to stay for longer period. Most of the times they wait until the side effects are severe", (P10).***

In the study done by Monroe et al (2013) found out that understanding of health condition reinforces adherence. Patients who are taking drugs and having a good knowledge know that missing their medications can lead to resistance and their drugs level in their body will go down and fail to serve their purpose (Monroe et al., 2013).

According to the study done by Martin et al(2005), health literacy is very important, it involves the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions. The patients need believe health literacy, and the health care providers should esteem themselves to teach all the patients visiting the health care facilities.

Theme 3: Observations related to adherence to treatment.

Under this theme, the sub-themes were described and discussed as reflected in the health care professionals ‘perspective table listed above.

Sub-theme 1: Lack of adherence versus adherence to treatment and healthcare instructions observed.

It has emerged in the current study that some of the patients’ failed to adhere to the medications or follow up their treatment as prescribed by the health care providers. The patients resorted on visiting the hospital when they were serious ill, and of which the diseases that time would have been progressed and difficult to be reversed. It has also emerged that some patients failed to follow instructions because they had opted to prioritise traditional herbs than western medicines. The two excerpts were recorded:

“The reports that we get are that the patients come to the hospital only when they worse. We find that there is no follow up. The communication is not two-way. You find that the patient is initiated here and then get discharged to the community clinic. We are only going to see the patient for a year or three years later when the patient is very ill”. “The compliance becomes poor especially because now the patients have a lot of medications to take so they sometimes tell you that they forgot, sometimes if they don’t have other medication they will not come, they

***wait for other medication to be finished and they come and collect medication for everything so compliance is quite a challenge*", (P12).**

The findings in the current study correspond with study done by Jimmy & Jose, 2011. It was found that most of the patients failed to adhere to medications regimen due to administration of numerous medications at frequent or unusual times during the day. Positive family support in the form of perceived emotional support was associated with higher levels of ART adherence, whereas negative family interactions in the form of family-inflicted physical harm and higher levels of felt emotional distance from family were associated with increased risk of ART non adherence among HIV-positive individuals in Kathmandu Valley, in Nepal (Poudel, Buchanan & Amiya, 2015)

Sub-theme 2: Patients' adherence to treatment depends on existing symptoms.

It has emerged in this study that the patients have ignored reporting the minor side effects, they report to the health facilities when they are serious sick. They became serious to medication adherence when they were serious ill, and the symptoms are obvious. The following excerpt has been recorded: ***"Adherence to medication for these patients is a problem. They focus more on the illness that is symptomatic. Like for example, if she's a diabetic and it is controlled, and now we ART initiated, you find that the patient is complying more on the ARV then less on diabetic medication*",*(P10).***

The current study corresponds with the study done by Monroe et al 2013; it was found that medication adherence was linked to physical manifestations. The patients who had experienced physical manifestations of their elevated blood pressure expressed strong motivation to continue with their antihypertensive medications. It was reported that when the participants did not feel symptoms of their comorbid illness, less regular adherence happened (Monroe et al., 2013).

Sub-theme 3: Buddy system supported for promotion of adherence to treatment.

It has emerged in the current study that for those patients who were likely to miss instructions, or forgetting to take medications, it has been encouraged for them to have someone who would accompany them so that could assist in listening those instructions and that it helped in the promotion of adherence. The following extract has been noted:

"There will be a time you feel that most patients are just defaulting. Also depending on the kinds of patients whom you're dealing with because people get information from different sources and look at it in a political way and some look at it from a religious point of view. So I would say those numbers do fluctuate. There will be a time when your patients are doing the right thing and there will be a time period where you feel like people are not doing what they are supposed to be doing. So it also boils down the information and beliefs, religious or non – religious and what the family are telling them. Remember we tend to listen more to our family members. If a family member recommends Doctor X whether medical or non-medical, religious or not, they take it. That's why it is important for us as well even in the wards or wherever we see patients we also want to see family members so that we give this information to the family members to help us motivate the patients", (P7).

Social support from among family members, colleagues at work and neighbours was stated as being beneficial for participants' adherence to recommend medical regimens. Support was in the form of moral support of adherence behaviour, reminding to take medications, availing medications, covering work to avoid falls because of hypoglycaemia and preventing medication-taking when glucose levels were low (Habte, Kebede, Fenta & Boon, 2017).

Sub-theme 4: Lack of adherence to treatment experienced and the blame is on several factors.

It has emerged in the present study that several factors such consulting traditional or religious healer, witchcraft, forgetfulness, missing appointments, poor communication within the health facilities, migrating to the other provinces after treatment initiation contributed to lack of adherence to the medication. To support the findings, the following excerpts have been recorded:

“Sometimes patients cooperate but there are those ones who will continue using their traditional medications. But overall I think most patients do stop using their traditional medicine and use the medication that we gave them here in the hospital”, (P12).

“Each and every patient that comes to this institution, you find that she or he has first consulted either a traditional or religious healer. Most of the time they believe that it’s not a medical problem. It’s a challenge because they go there first. When they come here, it’s only when they see that they are not getting better. That’s when they seek medical help. It’s only 1% of people who come here straight but 99% of the patients, being HIV or diabetes they will go there first and consult because most of the time they believe that they have been bewitched”, **(P10).**

In the study done by Moshabela et al (2017), found that traditional and religious beliefs contributed vastly to the lack of adherence and potential delaying of drugs initiations. Some patients were given holy water and instructed that if they take it for five days, they should go for testing, and they will see that they will be negative(Moshabela et al., 2013).

Moshabela et al 2013 further stated that some patients started with the medications, they thought they were not getting better, and then they abandon medications thinking it was witchcraft and then continue visiting traditional healers.

5.0. SUMMARY OF THE CHAPTER

This chapter analyzed the explorative research findings from patients diagnosed with both HIV and Type 2 Diabetes Mellitus at Mankweng hospital’s POP, Nobody and Dikgale clinics in the Polokwane Municipality of the Limpopo province in South Africa. The findings also gave insight in to problems and challenges faced by the health professionals attending to these patients. The evidence suggests that HIV/Diabetes comorbidity patients have increased workload and very difficult to observe this from patients perspective. Data also suggested that most patients experienced psychological challenges such as stress emanating from the fear of early death due to dual diagnosis of HIV and Diabetes Mellitus.

However it was observed that patients acceptance of the dual diagnosis and disclosure to family or friends led to understanding and support which alleviated the stress. Counseling and education further eased anxiety and lowered despondency.

The slow pace of service at clinics was noted as one of the agonizing aspects of care. Patients come to the clinics early in the morning and finished with review and medication in the late afternoon spending all the days’ productive hours at the clinic. And at many occasions the patients would at the end of the day get a new appointment and go home without medicine or review. The health care providers bemoaned shortage of staffing, poor housing of clinic, poor facilities and equipment, a lack of training and occasional shortage of drugs as reasons for patients getting seriously a compromised service.

The health professionals also suggested that the diabetes clinic be incorporated in to the POP clinic for the convenience of the patients because currently they attend both clinics on different dates. This increases their time away from a productive life, increase expenses, and somewhat complicates their lives.

It was noted that most patients managed well with medication and had no side effects, the few that had side effects continued taking the medication on the advice of the health workers who managed the side effects. The challenge experienced by the health care providers was that the patients only reported serious side effects and not minor ones. This meant they could not manage patient’s reaction to medication well enough.

CHAPTER 6

SUMMARY, LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

This chapter presents the summary of the finding of the study, limitation of the study, conclusions and recommendations based on the data that were analysed in the previous chapter.

6.2. Summary of the study

The purpose of the study was to explore the patient workload and capacity for managing HIV/Diabetes comorbidity among patients attending public health services in Polokwane municipality, South Africa. The objectives of this study were as follows:

- To explore the lived experiences in terms of workload to self-care by patients suffering from both HIV and Diabetes Mellitus comorbidity.
- To explore the experiences of health care providers in managing workload presented by the HIV and Diabetes Mellitus comorbidity.
- To determine if the patients and the hospital have the capacity to manage both HIV and Diabetes co-morbidity from patients' and nurses perspective.

The qualitative study approach was used and a phenomenology study design employed in this study. Patients' lived experiences and their ability to cope with the co-morbidity of HIV and Diabetes Mellitus was explored. The population was the patients attending HIV/AIDS clinic at Mankweng Hospital who present with HIV and diabetes mellitus co-morbidity. These patients were identified through the respective local HIV treatment and care programme.

The selected site in Polokwane, Mankweng hospital had been backed by the local clinics nobody and Dikgale so that the required number HIV and Type 2 diabetes mellitus comorbid is achieved. The nurses and doctors from HIV and Diabetic clinics as service providers were carefully chosen to participate in the study. it was only Doctors who had experience of dealing with diabetes and HIV patients were selected. Semi-structured interviews were used to collect data from participants and data was analyzed verbatim. The data then was transcribed in steps, and themes and sub-themes were created in order to proceed according to discrete steps for inductive, qualitative, thematic analysis.

6.3. Limitation of the study

The study population was limited to HIV and diabetic patients attending Mankweng hospital, Dikgale and Nobody clinic. And as this study was qualitative, its results cannot be easily generalized to the general study population.

6.4. Conclusion

The patients who were diagnosed with comorbidity of HIV and diabetes had experienced stress, anxiety and despair. The fact that they had to live with medications the rest of their lives also added a burden such as anxiety of failing to adhere to treatment due to different reasons. The patients experienced side effects to the point that some threatened to stop, but they continued with the treatment. For the fact that patients received counseling, education about the conditions, and having knowledge about what was going to happened as they continued taking drugs, the whole process helped them to cope well with all the challenges that came with medications.

The patients failed to comply with medications involuntarily, due to occasional shortage of drugs at the hospitals and the clinics. Despite experiencing the challenges of drug shortages, patients did not give up on seeking their drugs, thus demonstrating a desire to comply and adhere to their treatment. The patients also experienced long waiting hours due to poor resourcing of the clinics and other logistics, but their commitment to their treatment and their health gave them the strength to endure the long wait for their medication.

In as far as disclosure was concerned, patients practiced selective disclosure, only disclosing their status to a few whom they felt they could trust. It was evident that majority of the patients who shared their conditions with family members, spouses and friends, received both emotional and physical support. The family members, spouses and friends, accompanied them to the hospital to collect medications, reminded them of times to take pills and encouraged them to comply with the treatment program. This support invariably increased capacity of the patients to deal with the two conditions. Patients collected medications for each condition on different days increasing the number of visits to the hospital, the travel cost and time away from work and other responsibilities. They expressed displeasure and discomfort with having to frequently ask their supervisors for permission to leave or stay away from work.

When the health care providers were asked about their capacity to deal with patients with the two conditions, they indicated that they were overwhelmed with the number of patients with multiple conditions that need more attention and time while they are short staffed. They also informed the interviewer that they are not getting the necessary on-going training, lack of adequate work space, and ineffective and inefficient primary health care system. They are worried about the referral system because clinical functions expected at primary health level are still sort for at secondary or tertiary levels. For instance diagnosis is still done at specialized clinics at the hospital.

The health professionals suggested that to deal with HIV/NCDs patients required further training to equip them with knowledge and skills necessary to meet the complexities that arises.

It was also observed by health care workers that HIV/NCDs patients do not seek medical help early. They reported that patients consulted traditional and religious healers first and only came to the hospital as a last resort. As a result most of the patients they receive are in advanced stages that are more demanding to care for. Health care providers noted that patients who paired or teamed up and assumed responsibility for one another’s welfare, had good compliance and adhered to treatment well. Thus the buddy system is seen as a good way to keep patients motivated and encouraged. The buddy system has been seen to ensure that the new or lonely patients have someone like them, to talk to, which is important in the first stages of treatment.

The health workers suggest that the POP clinics should be capacitated to manage diabetics as well to ease the burden experienced by patient with both HIV and Diabetes Mellitus who attend two different clinics on different dates.

Primary health care must be strengthened to meet the challenges disease convergence is bringing through continued education of staff and improvement of facilities and equipment, and streamlining service delivery processes.

Note of significance is that despite the health care professionals being poorly prepared and under staffed, the clinic facility being poorly housed and poorly equipped, the healthcare professionals are managing to meet their service mandate through commitment and hard work.

The health care professionals advocate for timely counseling and education of all HIV/NCD patients to assist them cope better with or change their negative thoughts and feelings or indifferent behaviours to their illness.

6.5. Recommendations

Refer to the findings and conclusions of this study, it is recommended that the policy makers (Department of Health) should draft policy that would strengthen the patients who are diagnosed with HIV and diabetes to have full session about their conditions, side effects expected, and the importance of patients adhering to medications. It is recommended that the department should combine the ARVs and diabetic clinic in order to easy burden of costs and taking time off by the patients. The department should also consider strengthening the two clinics by getting more staffs to reduce the burden from health care workers and time waiting by the patients.

For Mankweng hospital, it is recommended to strengthen the skills development policy and provide necessary support to the workers through training and short courses to capacitate the health care providers dealing with patients diagnosed with comorbidity (HIV and diabetes). It is recommended that patients should appoint someone who will accompany them and provide necessary support when diagnosed with HIV and diabetes and that patient be taught about the conditions.

The future researchers should investigate the viability of combination of HIV and diabetic clinic in Limpopo province.

The study was summarized according to the aim and objective of the study, limitation of the study and recommendations. The case to future researchers has been provided.

7. Reference

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APPENDIX 1: English INTERVIEW GUIDE FOR PATIENTS

Biographical data

Age:

Gender:

Marital status:

Employment status:

Educational status:

Question guide

1. **Given the fact that you are diagnosed with both HIV and type 2 diabetes, what do you understand about your condition?**

   Probes:
   - Impact on quality of life
   - Self-care,
   - Possibility of complications that you can encounter while taking these medications concurrently.
2. **How do you cope with the workload presented by HIV/Diabetes comorbidity?**

   Probes
   - Transport challenges when you visit hospital for different medications on different dates.
   - The challenges you face while taking HIV and Diabetes medication concurrently.
   - Defaulting on any medication,
   - Adverse effects experienced while taking both medications.
   - Does the family understand and support you now that you present with both HIV and Diabetes.
3. **Does the hospital have the capacity to cope with HIV and Diabetes comorbidity?**

Probes

- Do you always get both medications when presenting yourself at the clinic?
- Time management in terms of queuing twice for different medications on different.
- Did health workers explain about your condition, now that you are diagnosed with both conditions?
- Do you understand the importance of adhering to both medications?
- How would you like the system to change in order to work efficiently?

APPENDIX 2: INTERVIEW GUIDE FOR NURSES

Biographical data

Age: [ ]

Gender: Male [ ] Female [ ]

Marital status: Married [ ] not married [ ]

Educational status: matric [ ] diploma [ ] degree [ ]

Current position: nursing assistant [ ] professional nurse [ ] nursing manager [ ] other ------------

Question guide

1. **Given the fact that some patients present with both HIV and type 2 diabetes comorbidity, how do you cope with the workload presented by HIV/Diabetes comorbidity?**

   Probe:

   - how has that changed how you manage patients who present with HIV/Diabetes comorbidity?
   - Do patients report adverse drug effects experienced while taking both medications?
   - Is there an increase in defaulting on any medication by your patients?

2. **Does the hospital have the capacity to cope with HIV and Diabetes comorbidity?**

   Probes

   - Do patients always get both medications when presenting at the clinic?
   - Time it takes to manage the patient presenting with HIV/Diabetes comorbidity?
   - Do you understand the impact of managing the patients presenting with HIV/Diabetes comorbidity?
   - Have you attended training on management of HIV/NCDs multi-morbidities?

- Do you think the current system of managing these diseases separately is effective?
- Do you think the hospital or POP clinic has the capacity to deal with HIV/NCDs multi-morbidities?
- How would you like the system to change in order to work efficiently in managing HIV/NCDs multi-morbidities?

APPENDIX 3: DIPOTSISO TSA SEPEDI

Dipotsiso ka seemo sa gago.

Seemo sa botona goba botshadi:

Seemo sa lenyalo:

Seemo sa moshomo:

Seemo sa tsa thuto:

DIPOTSISO

1. K age o swaeditswe ka malwetsi a mabedi HIV le swikiri, o kwesisa eng ka malwetsi ao?
    - E fetositse bophelo bja gago bjang?
    - O kgona go ihlokomela bjang?
    - O na le kgonagalo ya go kopakopana ge o enwamereana ya malwetsi a mabedi ka nako e tee?
2. O kgona bjang go phela ka malwetsi a mabedi?
    - E ka ba o na le mathata a go la mereana ya gago ka matsatsi a fapaneng?
    - Mathata a o kopanang le ona ge o tsea mereana e mebedi?
    - E ka ba o tshela nako ya go tsea mereana ya gago?
    - E k aba o na le diphetogo mmeleng wag ago ge o tsea mereana ye mebedi?
    - E k aba lapa la gago ba kwesisa le go gofa thekgo go malwetsi a gago a mabedi?
3. E k aba sepetlele se kgona go hlokomela balwetsi bao ban ago le malwetsi ao a mabedi?
    - E ka ba o phela o humana mereana ya gago ge o fihla kliniking?
    - E ka ba o kgona go tswara nako gabedi ge o tsea mereana ya gago?
    - E ka ba bashomi ba tsa maphelo ba ile ba go hlalosetsa ka seemo sa malwetsi a mabedi?
    - E ka ba o kwesisa bohlokwa ba go nwa mereana ya gago e mebedi ka tswanelo?

- E ka ba o rata gore sepetlela se ka fetola tshomiso ya go bereka ka balwetsi?

APPENDIX 4: ENGLISH CONSENT FORM

NAME OF THE STUDY

Experiences of Patients living with both HIV and Diabetes Co-morbidities in Polokwane, South Africa

I …………………………………………………………………………., voluntarily agreed to participate to the study mentioned above and no one pressurized me to partake on it. I was given an opportunity to ask questions, and I do understand the aim and objectives of this research. I understand that participation in this Study is completely voluntary and that I may withdraw from it at any time and without prejudice. I am aware that there will be no material or monetary gain in participating in this study.

I know that this Study has been approved by the Medunsa Campus Research and Ethics Committee (MCREC), University of Limpopo (Turfloop Campus) / Department of Health.

I am fully aware that the results of this Study will be used for scientific purposes and may be published. I agree to this, provided my privacy is guaranteed.

I hereby give consent to participate in this Study.

I agree to answer any future questions concerning the study to the best of my ability and I will adhere to the approved protocol.

Name of Participant Signature

…………………………………. …………………………..

Date……………………………

………………..... ....

Place. Date Witness

Mabetlela MG …................… ………………… ………………

Name of Researcher Signature Date Place

Appendix 5: Letter requesting permission from provincial Department of Health

P O Box 509
SOVENGA
0727
27 April 2015

The Manager
Private bag x9302
POLOKWANE
0700

Dear Provincial office Manager

I am writing this letter to request your permission to conduct research at Mankweng Hospital with possibility to extend Nobody and Dikgale clinics for a study entitled **'Experiences of Patients living with both HIV and Diabetes Co-morbidities in Polokwane, South Africa.** Have been given ethical clearance", this research will be conducted by Mabetlela MG from University of Limpopo as part of degree in masters of public health. The study has been approved by University of Limpopo research Ethics Committee and as part of that approved process; I am required to obtain gatekeeper permission from sites where I will be recruiting the participants.

The aim of this study is to explore the workload and capacity issues and their inter-relationships with multiple morbidities from patient perspective in Polokwane South Africa. The overall goal of the study is to explore the ways the workload associated with HIV/NCD multi-morbidity impacts on capacity of individuals to manage the demands of both the burdens of illness and burdens of managing illness. The outcome will also benefit the field of public health (service provider s, policy makers and patients) with the knowledge to assist dealing with HIV and diabetes co-morbidities challenges. The findings will provide basis for establishing new ways to tackle the challenges of dealing with both HIV and diabetes.

The project will consist of not more than an hour interview questions and the researcher humbly request the office to grant a permission to conduct this study as it was outlined above. Attached is the clearance certificate from University of Limpopo Turfloop Ethic Committee.

The researcher will be very appreciative if this requisition may give positive response

Yours faithfully

Mabetlela McClinton Gerald (Researcher)

…………………………………………………….

Signature

Appendix 6: **Letter requesting permission to conduct research at Mankweng hospital**

P O Box 509
SOVENGA
0727
27 April 2015

The Chief Executive Officer
MANKWENG HOSPITAL
Private bag X1117
SOVENGA
0727

Dear sir/Madam

APPLICATION FOR PERMISSION TO CONDUCT RESEARCH

I am writing this letter to request your permission to conduct research at Mankweng Hospital for a study entitled **'Experiences of Patients living with both HIV and Diabetes Co-morbidities in Polokwane, South Africa.** Have been given ethical clearance", this research will be conducted by Mabetlela MG from University of Limpopo as part of degree in masters of public health. The study has been approved by University of Limpopo research Ethics Committee and as part of that approved process; I am required to obtain gatekeeper permission from sites where I will be recruiting the participants.

The aim of this study is to explore the workload and capacity issues and their inter-relationships with multiple morbidities from patient perspective in Polokwane South Africa. The overall goal of the study is to explore the ways the workload associated with HIV/NCD multi-morbidity impacts on capacity of individuals to manage the demands of both the burdens of illness and burdens of managing illness. The outcome will also benefit the field of public health (service provider s, policy makers and patients) with the knowledge to assist dealing with HIV and diabetes co-morbidities challenges. The findings will provide basis for establishing new ways to tackle the challenges of dealing with both HIV and diabetes.

The project will consist of not more than an hour interview questions and the researcher humbly request the office to grant a permission to conduct this study as it was outlined above.
The researcher will be very appreciative if this requisition may give positive response

Yours faithfully

Mabetlela McClinton Gerald (Researcher)

Appendix 7: Letters for approval to conduct research from University of Limpopo research Ethics Committee (TREC), Department of Health, Mankweng hospital and Coding certificate.