

**FACTORS ASSOCIATED WITH NON-ADHERENCE TO ANTI-TUBERCULOSIS
TREATMENT IN THE VHEMBE DISTRICT, SOUTH AFRICA**

By

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Declaration

I, SINDISA CAROLINE BALOYI, hereby declare that thesis titled ***“Factors associated with non-adherence to anti-tuberculosis treatment in the Vhembe district, South Africa”***, for the Degree, Master of Public Health in the School of Health Sciences at the University of Venda hereby submitted by me, has not been previously submitted for degree at this institution or any other institution, and that it is my own work in design and execution. All reference materials contained herein have been indicated and duly acknowledged.

Signature



Date 07/07/2020

Dedications

I would like to dedicate this study to my husband, Lutendo Ramaru, and our children, Nduvho, Lutendo and Dzuvha for their love and support.

Abstract

Background: Failure to adhere TB patients to tuberculosis therapy is a major challenge that challenges the efforts to eradicate tuberculosis. While ground-breaking approaches have been introduced to reduce the number of people who are unable to finish their prescribed TB drugs, there is still quite a high number of TB clients around the world who do not complete their medication. This could be attributed to inadequate understanding of factors that influence TB treatment among TB clients. This study sought to explore factors that are associated with non-adherence to TB treatment.

Purpose: The objective of the study was to explore the factors associated with non-adherence to anti-tuberculosis treatment among patients in the Vhembe District, South Africa.

Methodology: In order to explore the factors that contribute to non-completion of prescribed anti-tuberculosis treatment the study used a explorative and descriptive qualitative approach design. The populations of the study were community health workers in the Vhembe district. The current study utilised a non-probability purposive sampling to select the participants. Data was collected using in-depth face to face interviews, and after interviewing 21 participants, data saturation was achieved. Ethical principles for human subjects was maintained throughout the study.

Findings: The study revealed that a number of economic, social, personal and medication related factors are responsible for failure to complete TB treatment in the Vhembe district. Economic factors, namely lack of money for transportation and food, were reported to be the cause of non-compliance with TB treatment. The study also found that personal factors such as inadequate information about TB treatment, substance abuse, and fear of stigma among TB patients contribute to non-completion of prescribed TB treatment.

Recommendations: The study recommends that TB clients should be thoroughly counselled before they get treatment. Furthermore, they should be provided with financial and social support during treatment.

Keywords: Anti-tuberculosis, Factors, Treatment, Tuberculosis, Non-adherence, Patients.

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Acronyms and Abbreviations

ADR	Acquired Drug resistance
CHBC	Community Home Based Care
DOTS	Direct Observed Treatment Short course
HIV	Human Immunodeficiency Virus
MDR-TB	Multidrug-resistant Tuberculosis
MDGs	Millennium Development Goals
NTP	National Tuberculosis Programme
PHC	Primary Health Care
PTB	Pulmonary Tuberculosis
RNTCP	Revised National Tuberculosis Control Programme
SDGs	Sustainable Development Goals
TB	Tuberculosis
WHO	World Health Organization
XDR	Extensively Drug Resistant

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CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION AND BACKGROUND

According to the World Health Organisation (WHO) (2018), tuberculosis (TB) is caused by the bacteria (*Mycobacterium tuberculosis*) that most often affects the lungs. Tuberculosis (TB) continues to cause death and disease worldwide, particularly among poor people in the developing world (Wohlleben, et al., 2017). Approximately 90% of TB cases are detected among the productive age group cohort of 15-54 years (Boru, et al., 2017). In addition, TB is ranked above HIV and AIDS as a cause of death worldwide (WHO, 2018). In low income countries about ten million people are living with TB, and they account for 87% of all new TB infections (WHO, 2018). The majority (90%) of cases of TB are concentrated in developing countries and South Africa tops the list of TB prevalence (WHO, 2018).

The majority of people who are living with TB reside in South Africa (WHO, 2018). According to TB current estimates, it is suggested that in South Africa, 567 new cases per 100 000 of the population are infected with TB (Padayatchi, et al., 2019). Furthermore, in 2017, about 322 000 people were diagnosed with TB. TB continues to kill a significant number of people as it is estimated that about 78 000 deaths were ascribed to TB in 2017 (WHO, 2018). Although the South African government has responded to TB prevention and care measures, it remains one of the top ranked countries in terms of having more people diagnosed with TB (WHO, 2018).

TB is treated with a number of antibiotic drugs for six months to ensure that the infection is suppressed. The WHO introduced a Direct Observed Short-Term Treatment (DOTS) in 1995, as the recommended TB Control Strategy (WHO, 1997). The DOTS (directly experienced diagnosis, short course) is the agreed universal TB control strategy (WHO, 1997). In 1995 the South African government ratified the DOT strategy for TB therapy care, and it was implemented in 1996. In South Africa the strategy demands that once a patient is diagnosed with TB they have to take medication under the supervision of nurses, family members or community health workers. For the patients newly diagnosed with TB, the treatment is prescribed for six months and for the defaulters, for eight months (WHO, 2004). During the initial stages of the DOTS, family members are roped in to assist the patient to take treatment for the first two months. Thereafter, the TB patient will administer their anti TB drugs for 4-6 months under supervision (WHO, 1997). The main purpose of the DOTS strategy is to ensure that TB

patients will complete their medication. According to these recommendations, “a success rate of at least 85 per cent of care must be reached in order to avoid treatment failure” (WHO, 2004).

The DOT approach is considered to be ground-breaking in terms of treatment and care because it has reduced mortality and improved survival rates among people living with the disease (WHO, 2007). Despite the efficacy of the DOTS, most TB patients are unable to finish their TB treatment, therefore, they experience TB related complications and eventual death (Prado, et al., 2011) Failure to finish prescribed TB drugs is defined as “not coming to the clinic for treatment for more than thirty consecutive days” (Department of Health, 2016). Lost to follow up (LFTU) is a “TB patient who did not start treatment or whose treatment was interrupted for 2 consecutive months or more” (Department of Health, 2016). According to WHO guidelines, treatment success rate of at least 85% must be achieved in order to avoid treatment failure (Adane, et al., 2013). The TB treatment is effective if the patients are initiated on the correct regimen and at the right time, for example, within 2 days of diagnosis (NDOH, 2014b).

Failure to complete TB therapy is a worldwide cause of concern among healthcare providers (Ayisi, et al., 2011). Although the extent of failure to finish prescribed TB drugs is unknown, intermittent surveys conducted around the globe have shed more light on this phenomenon. Depending on the study, non-adherence levels vary. For instance, according to a study conducted among TB patients in China, about 12% of patients missed one dose within a period of one week, another 21% missed two doses within a period of two weeks, and overall, 33% of patients were non-adherent (Tang, et al., 2015). In another study conducted in Ethiopia, overall non-adherence was 12% (Tesfahuneygn, et al., 2015).

The South African government, through the Department of Health, adopted the ‘Stop TB Plan by 2035’. The main purpose of the plan is to detect and treat at least ninety percent of notified TB cases by 2035 (National Department of Health, 2015). Despite this ambitious plan, cases of TB patients who fail to finish the whole course of the treatment are increasing (Statistics South Africa, 2018). This is a cause for concern, especially in provinces like Limpopo where TB is responsible for many adults’ deaths (Statistics South Africa, 2017). The Limpopo province is challenged by poor tuberculosis treatment outcomes and TB remains the number one killer in the province despite the province having a functional DOTS programme (Mabunda, et al., 2016). The success rate of TB treatment completion was 80.6% in 2017 which is slightly below the national average of 81.7 % (Massyn, 2019). With regards to loss to LFTU which gauges the “proportion of TB clients who interrupted treatment for two consecutive months or more among

all TB clients started on treatment” shows that Vhembe sits at 3.5% in 2019 which is below the national average of 6.9 % (Massy, et al., 2019). Further analysis of the data shows that in terms of loss to follow up, the Vhembe district is still low, and it is not 100% compliant in terms of TB treatment compliance which is the ideal. To reduce the number of people who are not finishing their TB treatment, it is vital to grasp the factors responsible for non-completion of prescribed TB drugs (Kigozi, et al., 2017). Literature indicates that a number of reasons or causes, such as political, socio-economical, health-related and environmental factors, are responsible for the failure to complete TB care (Aquino, et al., 2015). Therefore, this study sought to explore factors associated with non-adherence to anti-tuberculosis treatment among patients in the Vhembe district.

1.2 Problem Statement

Despite the fact that the Vhembe district health care system has adopted DOTS as the main strategy for TB treatment and care, there is a significantly high number of patients who are unable to complete their require dosages on time. According to the Vhembe District Health Barometer for 2017-18 report, which measures the TB client treatment success rate for both cured and those who finished their medication treatment schedule, shows that the treatment success cure rate was 85,5% in 2016, which is slightly less than the set global target of 90% (Massy, et al., 2019). With regards to loss to follow up rates, data shows that Vhembe sits at 3.5% in 2016, which is below the national average of 6.9 % (Massy, et al., 2019). This shows that patients on TB treatment in the Vhembe district had interrupted treatment. Although the TB cure rate is high in the Vhembe district, TB is still responsible for deaths in the district, as illustrated in Table 1. The reasons behind patients’ failure to complete their medication have not been adequately investigated or completely addressed. In the Vhembe district and in the country, there are a team of community health workers whose job is to support TB patients on treatment. It is argued that most of the patients on TB treatment are under the supervision of these community health workers. It is argued that without known factors the community health workers find it challenging to assist the patients about treatment interruption. Therefore, this study sought to explore factors associated with non-adherence to anti-tuberculosis treatment among patients in Thohoyandou, Vhembe district, Limpopo province.

Table 1: TB Treatment outcomes in the Vhembe District.

TB treatment outcomes	2013	2015	2016
TB client loss to follow up rate	4.7	8.0	3.5
TB cure rate	47.9	79.7	85.4
TB death rate	6.8	8.0	7.4

Source: District Health Barometer, 2017/18

1.3 Rationale of the study

Although there are studies (Mabunda, et al., 2016; Maswanganyi, et al., 2014) that have used in-depth methods to explore various contributing factors toward failure to complete TB treatment among people living with TB, in the Vhembe District, these studies' results are particularly from the beneficiary or patients' point of view. However, studies from community-based providers' points of view are very few, therefore, this qualitative research was undertaken to explore factors contributing to non-adherence to anti-tuberculosis treatment from community health workers' perspectives.

1.4 Significance of the study

Insights gained from this in-depth study might provide a comprehensive understanding of factors associated with non-adherence to TB treatment which may assist policymakers to develop effective strategies to improve adherence. Furthermore, the findings may assist the Department of Health to improve treatment outcomes pertaining to tuberculosis. The study could contribute to the body of knowledge on factors and compliance with TB treatment.

1.5 Purpose of the Study

The purpose of the study is to explore and describe factors associated with non-adherence to anti-tuberculosis treatment in the Vhembe district.

1.6 Study Objectives

The objectives of this study are as follows, to:

- Explore the views of community health workers regarding factors associated with non-adherence to tuberculosis treatment.
- Describe the views of community health workers regarding factors associated with non-adherence to tuberculosis treatment.

1.7 Definition of Concepts

1.7.1 Anti-tuberculosis treatment

Anti-tuberculosis treatment refers to “medicine used to treat Tuberculosis, an infectious disease that can affect the lungs and other organs” (Wohlleben, et al., 2017). In this study, it refers to treatment to fight tuberculosis.

1.7.2 Factors

Factors refers to “things that helps produce or influence a result or one of the things that cause something to happen” (Anderson and Anderson, 1990). The current study, considers them as the forces that influence the use of treatment.

1.7.3 Non-Adherence

Non-adherence is “defined as not approaching to the clinic for treatment for more than thirty consecutive days” (Blesson Mathew, et al, .2015).

1.7.4 Tuberculosis

Tuberculosis refers to “a potentially fatal contagious disease that affects almost any part of the body but mainly an infection of the lungs” (Last, et al., 2001).

1.8. Structure of the Mini-Dissertation

The study consists of five chapters and they are structured as follows:

Chapter 1: Introduction and Background of the study

Chapter 1 presented the background of the study on factors associated with non-adherence to TB treatment. Further the chapter elaborated in detail on the TB situation in Limpopo, citing relevant statistics. It outlined the objectives, rationale and statement of the problem.

Chapter 2: Literature Review

Chapter 2 presents the prevalence and treatment of TB in South Africa and beyond. In addition, the factors responsible for failure to finish TB treatment are discussed under the lens of the WHO conceptual framework.

Chapter 3: Research Design and Methodology

Chapter 3 presents the research design and method. The research design, study setting, population of the study, sampling, data collection methods are elaborated in detail. In addition, the data analysis, criteria for data quality, and ethical considerations are discussed

Chapter 4: Results and discussion of findings

In chapter 4, the findings obtained from this study are presented in relation to the literature. Some of the findings presented confirm what is known about factors responsible for non-completion to treatment. However, other factors are new and differ from known literature.

Chapter 5: Summary, Limitations, Conclusions and Recommendations

Chapter 5 presents a summary, conclusions, limitations of the study and recommendations as a result.

1.9. Summary of the chapter

This chapter articulated the context of the TB problem in the Vhembe district. A detailed background elaborating the problem is presented. Furthermore, the problem statement, objectives, and significance of the study, research questions and definition of concepts. The section ends with a description of the structure of this study. The following chapter discusses the literature.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The first part of this literature review elaborates on the prevalence of TB at a global level. The DOTS strategy is explored in detail and factors responsible for non-completion of the TB therapy are discussed using the WHO conceptual framework for adherence in chronic patients (Sabate, 2003). Lastly, the strategies that are being used to improve adherence among chronic patients in South Africa is explored.

2.2 Prevalence of Tuberculosis

According to WHO (1997), TB is an infectious disease caused by the bacillus *Mycobacterium tuberculosis* which affects the lungs (pulmonary TB) but can also affect other organs (extrapulmonary TB). TB is a contagious disease which transmitted through the air, when people who are infected cough (Ntoumi, et al., 2016). The mycobacterium tuberculosis strain is responsible for about 25 % of the TB infections around the globe, which translates to 1.7 billion people (WHO, 2018). The majority of tuberculosis cases are recorded in sub Saharan Africa (WHO, 2018). Most of the people who are suffering from TB are economically active, although it affects all age groups (WHO, 2018). At the end of 2017, about ten million people were suffering from TB, and out of these, 1.6 million died due to failure to complete treatment and to lack of access to medication (WHO, 2018). TB is certified as the main reason for high mortality among people with low immune systems induced by HIV and AIDS (WHO, 2018).

The majority of people diagnosed with TB reside in South Africa due to HIV/AIDS (WHO, 2018). South Africa has an average of 567 new cases per 100 000 population (Padayatchi, et al., 2019). Based on WHO standards, this is considered high. A further three hundred and twenty-two thousand were diagnosed with TB in 2017 (WHO, 2018). Furthermore, TB mortality is also high in South Africa especially among the patients infected by HIV (WHO, 2018; Padayatchi, et al., 2019).

2.3 Tuberculosis Diagnosis and Treatment

2.3.1 Diagnosis of Tuberculosis

According to the National Tuberculosis Management Guidelines, 2014, TB diagnosis begins when a patient presents with TB signs at a local clinic. The patient is asked to submit a sputum sample for two days. The sputum is sent for analysis and usually, the tests are finalized within two days. To confirm TB infection, one of the above samples needs to be positive (Department of Health, 2014). In the event of there being confirmation that a patient is infected with TB, the counselling and benefits of participating in a TB control programme are explained to the patient. TB treatment is administered immediately if all the sputum samples are positive. Additionally, an X-ray is taken to confirm the sputum test (National Tuberculosis Management Guidelines, 2014). TB therapy is composed of antibiotics, namely: isoniazid and rifampicin which are administered to patients for six months. TB treatment is very effective if it is initiated correctly and at the right time to patients (NDOH, 2014a). According to the TB directives in South Africa, “patients should become less infectious within 2 weeks of initiating treatment” (NDOH, 2009).

2.3.2 Direct Observed Treatment Short course

The TB drugs last six months and it is only after the patient finishes the medication for this duration is he/she to be declared cured. For the TB patients who discontinue their medication, it results in the development of drug resistance and serious complications, prolonged illness and premature death (Birch, et al., 2015). To curtail the challenge of non-adherence to TB treatment, the DOTS approach was introduced in South Africa in 1996, which stipulates that TB patients should be supervised when taking the treatment. The strategy recommends that supporters should observe patients drinking the medication and record this (Karumbi and Garner, 2015). This approach has been a success story in terms treatment and care of TB for the last three decades (Birch, et al., 2015).

There is variation on how the DOTS strategy is implemented in South Africa. Firstly, it is a facility based strategy, whereby TB patients collect their medication in health care facilities, take their medication under the watchful eye of a health care provider (South Africa National Tuberculosis Management Guidelines, 2009). Another strategy is the workplace based DOT, whereby employees who have challenges in accessing health care facilities are observed taking their drugs in their respective workplaces (South Africa National Tuberculosis Management Guidelines, 2009). In addition, DOT is implemented through community-based models whereby

a family member or community member observes the patient taking treatment at their home (South Africa National Tuberculosis Management Guidelines, 2009).

Karumbi and Garner (2015), state that “adherence to treatment means following the recommended course of treatment by taking all the prescribed medications for the entire length of time necessary”. For the TB drugs the clients have to adhere to the regimens (South Africa Tuberculosis control Programme practical guide, 2000). Successful treatment outcomes have been attributed to the DOTS strategy in various parts of the world (WHO, 2018). Some scholars argue that, “DOTs has significantly reduced TB morbidity and mortality and remains one of the most cost-effective public health interventions ever implemented” (Karumbi and Garner, 2015). Despite this, Karumbi and Garner, (2015) suggest that TB patients in the developing world did not show substantial improvement in cure with patients enrolled on DOTS. Adhering to Tuberculosis treatment has benefits for the patients in that it reduces the duration of illness, and prevents the chance of drug-resistant TB (DiStefano and Schmidt, 2016).

2.4 FACTORS THAT CONTRIBUTE TO NON-ADHERENCE TO ANTI-TUBERCULOSIS TREATMENT

There are many factors that contribute to non-adherence to TB treatment and they are generally classified into different categories. This study is guided by the World Health Organisation conceptual framework for understanding factors that interplay to determine adherence to any treatment regimen. According to World Health Organisation adherence is a multidimensional phenomenon determined by the interplay of five dimensions (a) patient-related factors (e.g., self-efficacy, beliefs about the efficacy of medications, knowledge, and perceived barriers to adherence), (b) social and economic factors (e.g., social networks, family functioning, and cost of medications), (c) therapy-related factors (e.g., symptom distress associated with side effects of the regimen, duration of treatment, and dose complexity), (d) condition-related factors (e.g., comorbidities, depression, and other psychiatric diagnoses such as substance abuse), and (e) health care system–related and health care team–related factors (Sabaté, 2003). This framework will be used to explore factors contributing to non-adherence to TB anti-therapy in detail as follows:

2.4.1 Socio-economic factors

According to Sabate (2003), socio-economic factors are “composed of employment status, socioeconomic status, and transportation costs to the hospital or clinic while undertaking TB treatment”. Zegeye, et al., (2019) found out that in Ethiopia suggests that TB clients failed to adhere to TB treatment because they were unemployed, therefore they could not afford transport costs, food, and other medical costs during TB treatment. Similar findings were reported in South Africa, whereby TB clients were unable to tend to travel costs and money for food, hence they did not finish their TB treatment (Skinner and Claassens, 2016). Similar findings were reported in Cape Town, whereby TB clients from slums who were unemployed and stayed far from health care centres, did not complete their TB medication (Theron, et al., 2015). Further similar findings were reported by studies conducted in Brazil, whereby TB patients who lived away from hospitals, in overcrowded settlements, and who did not have family support, defaulted on treatment (Herrero, et al., 2015; Ranzani, et al., 2016). Other socioeconomic factors cited in literature are lower education, and lack of money, which resulted in TB clients defaulting on fees (Peltzer and Pengpid, 2015).

Haslinda and Juni (2017) observe that failure to access health care contributes to failure to complete medications. Distance and travel costs were reported to be the main reasons why TB clients in Indonesia did not adhere to TB treatment (Ruru, et al., 2018). Lack of food is another factor that pushes TB patients to stop taking their drugs (Zegeye, et al., 2019; Woimo, et al., 2017; Mathew, et al., 2015). Boru, et al., (2017) elaborate on further adherence to TB treatment: that an unbalanced diet that most TB patients in poverty-stricken communities interfere with their ability to finish their medication. In other studies, TB patients reported that a shortage of food made them unable to continue with medications because the side effects were too much to bear (Serapelwane, et al., 2016; Endjala, et al., 2017; Skinner and Classens, 2016),

2.4.2 Patients related factors

Sabate, (2003) states that, “patient related factors include self-efficacy, beliefs about the efficacy of medications, knowledge, and perceived barriers to adherence”. Insufficient information about TB, its transmission, curability, nature of treatment were cited by TB patients in Malaysia as the most contributing reason as to why they stopped the medication (Chaidir, et al., 2015; Ruru, et al., 2019). Similar findings were related in previous studies (Zegeye, et al., 2019; Woimo, et al., 2015). Studies conducted in Morocco concluded that the patients

discontinued their treatment due insufficient information about TB, duration and curability of the treatment (Cherkaoui, et al., 2015).

Forgetting to take medication by TB patients has been associated with non-completion of the TB treatment. In Northwest Ethiopia, TB clients failed to finish the medication due to forgetfulness (Tesfahuneygn, et al., 2015). Duque-Silva, et al., (2015) observe that as the TB infection progresses it compromises the central nervous system, thus affecting their cognitive capacity. Therefore, patients are unable to recall their medication drinking schedule (Chaudhary, et al., 2017). Alcohol consumption, cigarette smoking and/or illicit drugs are other factors that have been pinpointed in literature as risk behaviours that lead to TB patients discontinuing taking medication. Freiman, et al., (2018) explain that substance abuse is detrimental to TB clients' chances of being declared cured because it affects recovery. In agreement, Wurie, et al., (2018) state that when TB patients are under the influence of alcohol, they become too drunk and forget to take their medication, hence they fail to finish prescribed medication on time. In addition, smoking interferes with TB drugs, thus delaying the healing process (Lin and Melendez-Torres, 2016; Theron, et al., 2015). A study conducted in Namibia suggests alcoholic TB patients forgot their drug collection appointment at the centre, hence they default (Chinyama, 2017). A patient's mental health is strongly correlated with failure to finish TB drugs. TB patients who are depressed are unlikely to finish their medication (Sweetland, et al., 2017; Tola, et al., 2017).

2.4.3 Condition-related factors

Literature suggests that TB patients are unable to finish their treatment due to the duration and pill burden (Sabate ,2003). This corroborates with a number of studies which suggest that TB drug side effects were the main reason for non-continuation with treatment (Deshmukh, et al., 2015; Tesfahuneygn et al., 2015; Tola, et al., 2015). An amplification of drug toxicity in patients on TB/HIV treatment is a factor in determining compliance (Gray and Cohn, 2013). Other studies have also concluded that the duration of TB treatment is another reason why patients default. According to the WHO standard TB treatment, "patients had to take four drugs for 2-3 months and a further two or three drugs for 6-8 months three times a week". The pill burden was also seen to negatively influence non completion of TB drugs in a survey conducted in Ethiopia (Chaidir, et al., 2015). In support of these findings, a study conducted by Hassard, et al., (2017) concluded that pain associated with daily injection pain contributed 78% towards poor adherence.

2.4.4 Health care team/health system factors

According to Sabate (2003), “ineffective health care systems have been linked to poor treatment adherence among TB patients”. Challenges, such as accessing the health centre, or the cost incurred have all been led to TB patients defaulting on their treatment and being non-adherent in the long run (Zegeye, et al., 2019; Mekonnen and Azagew, 2018; Woimo, et al., 2017,; Mathew, et al., 2015). TB patients in Indonesia reported that the long distances to health care centres hinders them in collecting drugs on time, hence they discontinue their medication (Ruru, et al., 2018). Although TB medication is free in Ethiopia, the majority of the patients did not complete their drugs on schedule, because of lack of nearby DOTS supply centres (Boru, et al., 2017). In Nigeria, the majority of the patients cited distance and cost of transportation to the clinic as a major barrier (Gube, et al., 2018). Studies conducted in Ethiopia suggest that arrogant and insensitive hospital staff member caused TB patients to miss drug collection appointments (Zegeye, et al., 2019; Mekonnen and Azagew, 2018; Woimo, et al., 2017, Mathew, et al., 2015; Chaidir, et al., 2015). Insensitivity, failure by health care workers to support seriously ill patients who do not have physical ability to come for treatment were also cited as reasons for non-compliance (Hassard, et al., 2017).

2.5 STRATEGIES TO IMPROVE ADHERENCE TO TB TREATMENT IN SOUTH AFRICA

The following strategies have been seen to improve treatment outcomes for chronic illness including tuberculosis. These are discussed in detail as follows.

2.5.1 Integrated approach for HIV, TB and NCDs: The Integrated Chronic Disease Model (ICDM)

According to the South African National Department of Health (2016), “ICDM is an approach that strengthens the health system providing integrated prevention, treatment and care for clients with chronic conditions at the primary health care (PHC) level, in order to ensure a seamless transition to ‘assisted’ self-management within the community”. The main purpose of the ICDM is to manage non-communicable and communicable diseases using a public health approach whereby interventions target communities, population and facility level. It is projected that if this model is implemented in South Africa, the majority of chronic patients (73%) will be successfully cured (NDOH, 2016).

2.5.2 Early missed appointment tracing

One of the most effective strategies which have been used to improve adherence among chronic patients is early missed appointment tracing. Early tracing of the patients who miss

appointments is very important because it will significantly reduce loss to follow up. Information management systems like Tier.net and ETR.net are central to this tracking system. In addition, there a number of tracing strategies which have been used to trace the patients and they prove successful, namely phone calls, letters, outreach teams, and door to door visits (NDOH, 2016).

2.5.3 Mobile Health (mhealth)

Another effective strategy which has been used to trace patients and improve adherence is the use mobile health systems. Although these have been found effective, they depend on how they are used. An example of mhealth initiatives are drones, SMS and Whatsapp video calling (NDOH, 2016).

2.5.4 Peer support strategies

Peer support has been “...found to be effective in improving treatment adherence” among TB patients (NDOH, 2016). It involves gathering the clients offering them join adherence and they also share experiences and challenges (NDOH, 2016). Examples of peer strategies being used include the buddy system and the peer mentoring system (NDOH, 2016). The peer mentoring initiatives can be initiated by health workers or by patients and they have found to improve clinical outcomes in patients with TB (NDOH, 2016).

2.5.5 Education and Counselling

Education and counselling have been key tenets of managing patients with chronic illness in most health care systems. It is argued that education and counselling should be provided once a person is diagnosed of TB (NDOH, 2016). Some examples of counselling include adherence counselling which is meant to give support to TB clients who are not responding well to the treatment especially those with co infections. The main focus of education and counselling is to demystify barriers to adherence in a more supportive way (NDOH, 2016).

2.5.6 Incentives and reimbursements

Incentive or reimbursements is another way of improving adherence. It involves repaying the clients for the hidden cost associated with the treatment (NDOH, 2016).

2.6 Summary of the chapter

In this chapter, relevant literature on tuberculosis, factors that contributed to TB treatment non-adherence was discussed. The literature included discussions on socio-economic, personal, medication, health system and community factors.

CHAPTER 3

RESEARCH METHODS

3.1. Introduction

The previous chapter presented literature on TB and factors that contribute to poor treatment. Chapter 3 elaborates the research methods used to answer the objectives of the study. The current study adopted a qualitative exploratory and descriptive design. In addition, the study setting, data analysis, ethical considerations, study population, sampling methods, data collection and criteria for trustworthiness are elaborated in detail.

3.2 Research Design

De Vos, et al., (2016) defines research design as “a strategy in which the researcher will obtain research participants and collect information from them” . The current study employed a qualitative approach to explore factors that are associated with non-adherence to anti-tuberculosis treatment in the Vhembe district. The justification for using a qualitative approach was to explore the factors in depth that were responsible for the failure to complete TB drugs.

3.2.2 Descriptive Design

Omair (2015) explains that, descriptive design is, “used to describe a single variable completely, accurately and thoroughly”. The descriptive design was of great use, because it assisted in giving an in-depth picture of the challenges that TB patients encounter during their treatment, and how they contribute to non-compliance to TB medication from community health workers’ perspectives (Gray, et al., 2016).

3.2.3 Explorative Design

Creswell and Creswell (2017) describe an explorative approach as, “one that aims to establish facts, to gather new ideas and to determine whether there are patterns in the data”. Their study used an exploratory approach in order to gain more information on the factors responsible for non-completion of prescribed drugs from the perspectives of community health workers.

3.3 Study Setting

The study was conducted in the Mbahe, Nweli and Malavuwe villages, which are in Thohoyandou, in the Vhembe District in the Limpopo Province. The three villages are in Ward 39 of the Thulamela Local Municipality. These areas are characterised by a large extent of underdevelopment, unemployment, and poverty. The villages are situated at about 26 kilometers on the North-Eastern side of the Thohoyandou Shopping Complex. There are 3 clinics situated in these three study sites; Tshififi, Sterkstroom and Dzingahe.

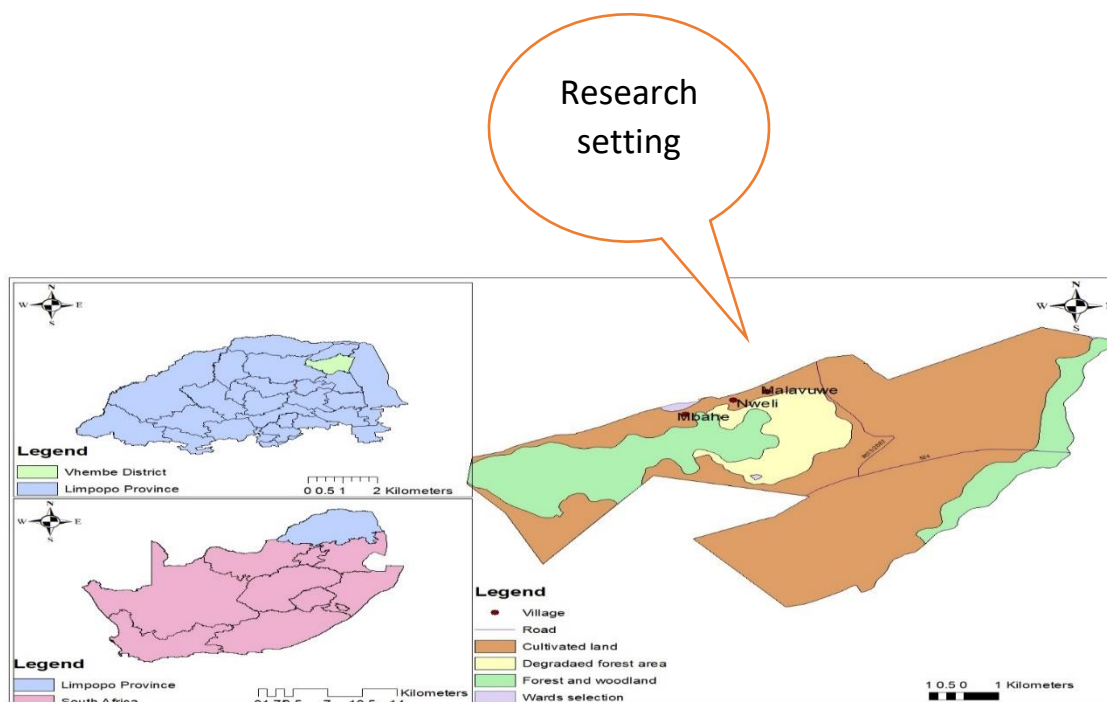


Figure .1: Map of the study areas

Source: GIS Lab Univen

3.4 STUDY POPULATION AND SAMPLING

3.4.1 Population

According to Creswell and Poth (2017), a population is, “the total number of possible units or elements that can be included in the study”. This study targeted community health care workers in Mbahe, Malavuwe, and Nweli. There are about 40 community health workers working in

these three communities. The distribution of community health workers is summarised in Table 2.

Table 2: Distribution of community health workers

Name of the study site	No of Home-based Care Organisation	No of the community of Health workers
Malavuwe	1	13
Mbahe	1	15
Nweli	1	12
Total	3	40

3.4.2 Sampling

Etikan, et al., (2016) define sampling as, “the researcher's process of selecting the sample from a population in order to obtain information regarding a phenomenon in a way that represents the population of interest”. In order to recruit the community health workers, purposive sampling was utilised. Purposive sampling was used because the researcher knew the participants who had information about factors that influences TB clients to discontinue their TB treatment. Twenty-one community health workers from different home-based care (HBC) organizations in the area participated in this study.

3.4.3 Inclusion criteria

Participants who met the following inclusion criteria were included in the study:

- Community healthcare workers who were working for more than a year within their communities.
- Aged 18 years and above.
- Willing to participate and ability to communicate in English, Xitsonga and Tshivenda.
- Working with TB patients.

3.4.4 Exclusion criteria

Community healthcare workers with less than one-year experience were not included in the study.

3.4.5 Sampling procedure

In this study, participants were recruited after getting permission from the provincial authorities (Limpopo Province Department of Health), District Health Officers (DHO) of the respective district and home-based managers. Eligible participants were selected using purposive sampling. The investigator used her expert judgement in selecting participants that purposefully informed understandings on the purpose of the research (Creswell, and Poth, 2016). Furthermore, the managers at each home-based organisation assisted the researcher to select the community-based workers who met the eligibility criteria.

3.6 Sample size

Data saturation determines the sample size in a qualitative research (Das, et al., 2016). This is because the quality of data is key issue rather the larger number of participants (Gray, et al., 2016). Data saturation occurred after interviewing 18 participants, however, the researcher continued to collect data to confirm data saturation and stopped after interviewing 21 participants due to continuous repetition of information by community health workers.

3.5. Data collection instrument

The method for collecting data in this study was the through in-depth interviews. According to Gray, et al., (2016) an in-depth interview is, “a technique designed to elicit a vivid picture of the participant’s perspective on the research topic”. The interviews were conducted by the researcher on a face-to-face approach. The interview guide (Annexure C) was conceived on the basis of the study’s intent, and relevant literature. The instrument was composed of one central question: What do you think are the factors that influence patients not to adhere to TB treatment?

3.5.1. Pre-test

A pre-test to test the interview guide was conducted with five community health workers. The purpose for the pretest was to test the interview guide in order to remove any errors before the actual participants were interviewed.

3.5.2. Data collection procedure

After the Limpopo Health Department gave written permission to collect data, the researcher sought permission from the Vhembe District Health Manager to conduct the study with the community health workers. Thereafter, permission was sought from respective home-based organization managers. The researcher was then introduced to the participants by the managers of the respective home-based organisations. All the participants chose to be interviewed at their workplace as compared to their homes. Before interviewing the participants, the researcher assisted them in signing consent forms. The manager's offices were utilised because the room was quiet with few distractions and interruptions. Possible distractions such as phones were switched off and the time for the interview was agreed to beforehand. The interviews were conducted over three weeks.

The researcher facilitated all of the 21 interviews and utilised a number of skills so as to get enough information from the participants. The first skill which was used by the researcher was probing, with phrases such as, "tell me more about that", "please elaborate", and "that is interesting". Additionally, the current study used clarification during interviews, for instance the researcher kept on saying, "Let's see whether I understood you correctly, you said that ...". Furthermore, minor verbal responses such as, "eeeh" or "yes" were employed to allow the participants the room to elaborate more. Non-verbal cues such as an open posture, nodding and a relaxed facial expression were used to make the participants relax and open up.

In order to elicit data from the participants the researcher also made use of field notes and observations. Fields notes are written accounts of what transpired during the interviews, and what the researcher experienced or noticed. After each interview, the researcher wrote field notes, including items such as personal feelings, reflections, key phrases, observations and events. The observational notes were used to capture the non-verbal behaviour of the participants. Additionally, permission to use the audiotape was also sought from individual participants to ensure that no discussion was lost by the researcher. The local language, Tshivenda was used to interview the participants. One central question was used to open the interview. Participants were asked: "*What do you think are the factors which make your patients not to adhere to TB treatment?*"

3.6. Measures to ensure trustworthiness

To ensure that the findings of the study were trustworthy in qualitative research, the following criteria are applied.

3.6.1 Credibility

Credibility is defined as “the way in which the study has been done in order to increase the probability that the description of the findings is credible” (Lincoln and Guba, 1985). The current study used prolonged engagement to ensure credibility. According to Lincoln and Guba (1985) prolonged engagement means, “spending enough time with each participant in order to promote trust ,staying in the field until data saturation occurs and obtaining an in-depth understanding of the phenomenon under study”. The current study ensured prolonged engagement by meeting with the interviewees before data collecting, during entry into the community and obtaining consent. Furthermore the researcher dedicated 45 minutes with each participant to ensure that they understood about the study. In addition, the researcher replayed the voice recorders and wrote field notes after every interview session.

3.6.2 Dependability

Dependability is defined as, “the provision of evidence such that if repeated with the same or similar participants in the same context, its findings will be similar” (Gray, et al., 2016). In this study, dependability was ensured by utilising the services of the independent coder, providing thick description on the research methods and using the interview guide. The researcher ensured dependability by allowing the participants to evaluate the findings and recommendations to make sure that they are all supported by the data received from the participants rather than the researcher’s own ideas, preferences and assumptions. In addition, the researcher used the Code-Recode Strategy which involves the researcher coding the same data twice by giving a two weeks’ period between each coding. The results from the two coding were compared to see if the results were similar.

3.6.3 Transferability

Transferability refers to, “the extent to which data of a specific study could be transferred or applied to other people in a similar context” (Gray, et al., 2016). In order to ensure the transferability of this study, the researcher documented a thick description in a clear simple language regarding methodology and context, how themes and subthemes were inducted to give readers a chance to decide for themselves if the results are transferable to their own contexts or situations. The researcher explained the entire research processes, from

methodology, data collection process and analysis, to production of the final report. It is the purpose of this study that community health workers may transfer the results and apply them in similar situations. The researcher has therefore made available thick description of data to people who might need it in order to permit judgments about contextual similarity.

3.6.4 Conformability

Lincoln and Guba (1985) define conformability as, “the potential for congruency of data in terms of accuracy relevancy or meaning”. The researcher ensured confirmability through the use of a reflexive journal. An audit trail, pilot study and assistance of independent coder assisted in achieving this, as well. Finally, this was also achieved by making sure that information was audio recorded and transcribed; therefore minimizing potential for researcher bias and allowing for direct, source-based confirmation of data. This requires that data is free from researchers’ bias which was achieved by use of bracketing and reflecting on her beliefs on the phenomenon under discussion to avoid influencing the data.

3.7. ETHICAL CONSIDERATION

According to Gray, et al.,(2016), ethics refers to, “the principle of respect for a person, beneficence and justice”. To ensure that the research is conducted in a safe way, certain ethical principles should be applied. The following aspects were applied.

3.7.1. Ethical clearance

The proposal was submitted to the School of Health Sciences Higher Degree Committee for ethical clearance. Once the requirements of the School of Health Sciences Higher Degree Committee were met, the proposal was submitted to the University of Venda Higher Degree Committee for quality assessment and approval. Ethical clearance was granted by the University of Venda Research and Ethics committee (Annexure E). Furthermore, the researcher sought permission from the Limpopo Department of Health and the Vhembe District Department of Health (Annexure D). Permission to conduct the study was requested in writing from the Managers of the three community home-based organizations and was obtained by each of them.

3.7.2. Rights to Informed Consent

The right to informed consent refers to, “the process of providing participants with information about the title, purpose, objectives, potential risks and benefits of the study, as well as the participants' input in order to ensure that they agree to participate in the research without any element of force, fraud, or any other constraints” (LoBiondo-Wood and Haber, 2017). Before data was collected from the participants, they were sensitised about the objectives, aims, methods for collecting data, their rights, and the length of the study (Annexure A). The researcher briefed the participants that participation was voluntary and that they were entitled to decline or opt-out at any time.

3.7.3. Privacy, anonymity and confidentiality

Anonymity refers to, “the act of keeping individuals nameless in relation to their participation in the research” (De Vos et al., 2016). The participants identities were protected using pseudo names and codes. Furthermore, to ensure confidentiality, the transcripts and all research data was kept in a computer with encrypted password. De Vos et al., (2016) define privacy as, “the individual’s right to determine the time, extent and general circumstances under which personal information will be shared”.

3.7.4. Protection from any harm

The questions in the interview guide were asked in a way that did not inflict harm on the participants.

3.8. Data Analysis

Data analysis refers to, “qualitative data analysis as a search for general statements about relationships among categories of data” (De Vos, et al., 2016). Data was analysed by applying Tesch’s method (Flick, 2015), which involved separating, examining, comparing, and categorizing raw data with the purpose of amalgamating it in a new way (De Vos, et al., 2017). This method was chosen since it is a systematic approach and its’ procedures are clearly described. The following steps were followed during data analysis. The collected data was transcribed, then translated from Tshivenda to English language by a language expert.

Step 1: Organise and Prepare

The researcher transcribed the interviews verbatim, aligning field notes with transcripts.

Step 2: Review one document (one interview)

The shortest transcript was picked up by the researcher and it was read through again.

Step 3: Make a list of Topics

A list of all topics was made and pulled together.

Step 4: Abbreviate Topics into codes

This is where the checklist was developed as patterned against the data, and emerging topics were abbreviated as codes.

Step 5: Categorize Topics

The researcher categorised topics into codes.

Step 6: Abbreviate topics as codes

The topics were abbreviated as codes

Step 7: Assembling similar categories of data

The researcher found the most descriptive wording for the topics, and then turned them into categories and then reduced the total list of categories by grouping topics that were related to each other.

Step 8: Recording the existing data

At this stage, the existing data was recorded to ensure that all data would be considered.

3.9 Dissemination Plan

The mini dissertation will be published in a Department of Higher Education and Training approved journal. In addition, the findings will be presented at conferences and symposiums. A soft copy of this mini dissertation will be uploaded onto the University of Venda and Limpopo Department of Health online research repositories. The three home-based care organisations will also be presented with hard copies of the dissertation.

3.10 Summary of the chapter

Chapter 3 presented the methodology which was employed in the current study. The rationale for using qualitative methodology was that it was the most appropriate method to investigate the views of community health workers regarding non-adherence of their clients to TB medication. The study design, population, sampling methods, study setting, data collection techniques, data analysis were also discussed in relation to the study.

CHAPTER 4

PRESENTATION AND DISCUSSION OF RESULTS

4.1 INTRODUCTION

The research methods were reported and discussed in the previous chapters. The findings of the study are presented in this chapter. Tesch's method was employed to manually analyse the data. The factors responsible for influencing TB patients to discontinue medication are presented as main themes and sub themes. In addition, the main theme and sub themes are presented in tables. The findings are presented and discussed in conjunction with relevant literature

4.2 STUDY FINDINGS

The collected data was analysed using the open coding Tesch method. The data was grouped into themes and four themes emerged from the data, namely, economic, patient related, medication and social related factors that influenced patients not to adhere to TB medications. Out of these four themes, sub-themes emerged.

4.2.1 Participants' demographic information

This section provides participants' demographic information which they were requested to provide during the interview. Table 4.1 depicts the biographical data of community health workers who participated in this study.

Table 4.1. Biographical profile of the research participants.

Participant	Age	Sex	Marital Status	Qualification	Experience in Years
1	29	Female	Single	High school	3
2	30	Female	Married	High school	2
3	27	Female	Single	High school	3
4	35	Female	Single	High school	3
5	40	Male	Married	High school	4
6	47	Female	Single	Primary school	4
7	42	Male	Married	Primary school	2
8	43	Female	Single	Primary school	4
9	48	Female	Married	High school	3
10	30	Female	Single	High school	4
11	29	Female	Married	High school	4
12	31	Female	Single	High school	3
13	34	Female	Married	High school	4
14	28	Female	Married	High school	3
15	27	Female	Single	High school	3
16	43	Female	Married	Primary school	4
17	33	Female	Single	High school	4
18	39	Female	Married	Primary school	3
19	35	Female	Single	High school	3
20	46	Female	Married	Primary school	4
21	41	Female	Single	Primary school	4

4.2.2 Presentation of findings in the form of themes and sub-themes

Table 4.2 presents a summary of the findings into themes and sub-themes.

Table 4.2 Summary of identified themes and sub-themes.

	Themes	Sub theme
	4.2.2.1 Economic factors	1.1 Lack of transport money to collect medication
		1.2 Lack of food whilst taking medication
	4.2.2.2 Patient related factors	2.1 Lack of knowledge about TB treatment
		2.2 Substance abuse
		2.3 Forgetting to take medication
		2.4 Relocation
		2.5 Patient's fear of stigma
	4.2.2.3 Medication related factors	3.1 Concern about side effects of medication
		3.2 Concern about duration of treatment and number of pills.
	4.2.2.4 Social factors	4.1 Lack of family support
		4.2 Use of cultural/alternative medicines

4.2.2.1 THEME 1: Economic factors

The majority of the participants mentioned that the reasons TB patients defaulted on treatment is because most TB patients are from poor backgrounds. The participants identified the following reasons which will be discussed as sub-themes: Lack of transport money to collect medication and lack of food whilst taking medication as the reason why they failed to complete their treatment.

Sub-theme 1.1 Lack of transport money to collect medication

Although TB treatment in South African public health facilities is free, there are hidden costs such as that of transportation. About three participants pinpointed the lack of transport to facilities for collecting medication as the contributory factor for non-completion of TB treatment. The participants revealed that the patients cannot afford transport costs, so they end up not going to collect their medication. The following vignettes substantiate the reasons why participants do not comply with their anti TB medication regimen:

“Most of the patients come from disadvantaged families, they do not have money to collect their drugs on scheduled appointment.”

“It’s not like they don’t want to drink their medication some cannot simply a bus fare to the clinics because majority of them they are poor.”

“What makes them to stop this anti TB treatment is because they are employed hence, they don’t have money for transport.”

This is in line with a number of studies which linked non adherence to transport (Zegeye, et al., 2019; Mekonnen and Azagew, 2018; Woimo, et al., 2017; Mathew, et al., 2015). Similar findings were also reported among TB patients who mentioned the transport cost to collect their medication as the main reason why they do not finish their medication. (Ruru, et al., 2018). The Vhembe district is the and poorest district in South Africa, and very rural, therefore the majority of the patients come from remote parts of the district with poor infrastructures, which makes public transportation relatively expensive.

Sub-theme 1.2 Lack of food whilst taking TB medication

About four participants indicated that patients did not complete their medication due insufficient food in the household. A shortage of food before taking medication is responsible for non-completion of treatment. The following quotations confirm that patients were unable to finish the prescribed TB regimen due to insufficient food:

“They stopped drinking medication because they did not have enough food.”

“Food is the main challenge if they are hungry; they simply stop drinking the medication.”

“How can we expect them (clients) to drink their medication when they are hungry.?”

“Food is the major reason why our clients do not continue with their medication.”

It is evident from these statements that the patients failed to comply to finish prescribed TB drugs on time their due to insufficient food at home. This was confirmed by different studies conducted in South Africa and beyond (Zegeye, et al., 2019; Woimo, et al., 2017, Mathew, et al., 2015). Boru, et al., (2017) observed that for poor patients, lack of food security prompted TB patients to discontinue their medication. In another study in Ethiopia, it was found that lack of free food availability in hospitals also pushed TB patients to default on their treatment (Gebreweld, Kifle, et al., 2018). In addition, the majority of the clients served by participants are unemployed, have no source of income and are ineligible for social grants. As a result, lack of enough food compromises their ability to adhere to the medication. Thus, it is argued that people who are hungry are inclined not to adhere to TB treatment. It is confirmed that lack of food in the household frustrates TB clients' efforts to adhere to treatment.

4.2.2.2 THEME 2: Patient related factors

Participants identified the following reasons which will be discussed as sub-themes: insufficient information about TB treatment, substance abuse, forgetting to take medication, relocation, too busy with work, patient's fear of stigma.

Sub-theme 2.1 Lack of knowledge about TB treatment

The following participants' quotations substantiate that indeed, insufficient information about how TB is treated contributed to their non-adherence.

“Our clients stop drinking medication as soon as they become better because they believe that they are already cured.”

“Some participants quotations seem to suggest myths about anti-TB treatment hence it contributes to patients not adhering to their medication.”

“They believe that TB is incurable, and they don't trust these medications because it is very dangerous to the body.”

This is agreement with studies conducted elsewhere, which also suggest that patients with deficient knowledge about TB treatment and its efficacy were unable to finish the prescribed drugs as per schedule (Chaidir, et al., 2015; Ruru, et al., 2019). Studies conducted in Morocco concluded that the patients discontinued their treatment because they did not have knowledge about the treatment which they were taking and the importance of completing the treatment (Cherkaoui, et al., 2015; Duque-Silva, et al., 2015).

Sub-theme 2.2 Substance abuse

The abuse of substances emerged as one of the reasons why TB patients are non-adherent to their medications. Three participants reported that their clients abuse drugs and alcohol, hence they forget to drink medication:

“Most of our clients abuse alcohol as a result they forget to take their medication on time.”

“They drink and smoke everyday then they forget to go and collect their medications at the clinics and hospitals and when we look for them, we always find them in local shebeens.”

“These people consume alcohol in such a way that they encamp at shebeens in the process they forget their medications at home as result they default.”

Alcohol consumption, cigarette smoking and/or taking illicit drugs are other factors that have been pinpointed in literature as risk behaviours that lead to TB patients discontinuing their medication. Freiman, et al., (2018) explain that substance abuse among TB patients impairs focus and renders the drugs ineffective. In agreement, Wurie, et al., (2018) states that when TB patients are under the influence of alcohol, they become too drunk and forget to drink their drug, hence they do not finish their medication. A study conducted in Namibia suggests alcoholic TB patients forgot their drug collection appointment at the centre, hence they defaulted (Chinyama, 2017).

Sub-theme 2.3 Forgetting to take medication

Forgetting to drink TB treatment was also mentioned as a factor for treatment interruption or default. The following quotations substantiate how forgetfulness interrupts treatment completion:

“They miss taking tablets at the clinic and drinking them because they have forgotten about it.”

“I have seen that the patients because of work or home commitments simply forget to take medications....”

This corroborates with findings among Ethiopian patients, which suggest that the majority of the patients dropped out of the TB therapy because they forgot to take their medication (Tesfahuneygn, et al., 2015). The researcher argues that the participants interviewed in this study work with clients with TB related to HIV, therefore it is possible that due to AIDS, their central nervous system is affected, hence they forget. Duque-Silva, et al., (2015) argues that it is common among TB clients living with HI/AIDS to suffer from AIDS related dementia, which affects the memory. Therefore, it can be assumed that the patients in this study were likely to be

co-infected by other chronic diseases such as diabetes, with a demanding treatment regimen, hence they forgot to take their medication.

Sub-theme 2.4 Relocation

Relocation was also mentioned as a contributory factor which influenced TB clients to be unable to finish their TB drugs. The participants in this study explained that the majority of their clients are very mobile they move from their family home to their workplaces, and as a result they default on their treatment.

“Changing place of stay by some of clients results in them missing appointments at the clinic.”

“I have a number of these TB clients who stop their medication because they are moving to bigger cities such as Joburg for work reasons.”

“We have reported a number of these people who move from one place to another without notifying us as a result majority of them develop complications.”

Similar findings were reported by different authors, which suggest that a major reason for default was relocation to another place. Unplanned travelling or relocation to other provinces were also pinpointed as contributing factors which made TB clients to not complete their prescribed medication (Ali and Prins ,2016). Similar findings were observed by Ruru, et al.,(2018) who showed that migration or frequent movement was associated with poor compliance to TB therapy. A similar conclusion was reached by a study conducted in Argentina, which concluded that most patients dropped off from the retreatment programme because they migrate to other countries (Herrero, et al., 2015).

Sub-theme 2.5 Patient’s fear of stigma

Patients’ fear of stigma and discrimination were prominent during the interviews. Stigma and discrimination did not lead to non-adherence, but exposure of the taking of drugs led to stigma, with reports of people avoiding them at home and the community at large.

“In our community people who are on any chronic medication including TB are given names by community members, family and friends as a result they are scared to disclose that they on medication due to fear of being rejected.”

“People blame and laugh at them saying they are spreading diseases.”

“ How could my clients they drink their medication in such an environment whereby once they know that they are sick of TB some are chased from home so they will rather stop medication than being chased.”

Similar findings were reported in South Africa, where the TB patients did not complete their treatment because the community discriminated against them (Kigozi, et.al., 2017; Cele, et al.,, 2016). In many parts of the world, people living with TB are discriminated against by employers, communities and their families, therefore, the majority of them are too scared to be seen to be on TB drugs, and therefore discontinue treatment before they are discovered (Tadesse, 2016; Skinner, et al., 2016).

4.2.2.3 THEME 3: Medication related factors

Side effects of TB drugs, duration of the treatment regimen, and taking other medication were cited as reasons why TB clients do not complete their medication.

Sub-theme 3.1 Concern about side effects of medication

Eleven participants, mentioned that TB drug side effects discourages their clients to stop taking the medication.

“Our clients experience a lot when they start to take TB treatment such as loss of appetite and after this, they just stop drinking the medication.”

“When the TB patients realise that they are becoming weak, vomiting and dizzy because if the medication they refuse to continue with the medication.”

“One of my patients realised that she was releasing yellow urine she threw the tablets away and stopped taking the medication in my presence.”

Similar findings are also reported in literature, which suggests that patients who experience drug side effects are likely to stop taking the medication (Chaidir, et al., 2015; Ruru, et al., 2019). Hassard, et al., (2017) observed that the majority of the patients in their study mentioned side effects as the reason why most patients pull off the DOTS programme. The same conclusion was reached by a study conducted in Ethiopia, which described that when TB clients notice body reactions due to the anti-biotics, they stop taking medication and look for alternative medicine which they say does not have side effects (Woimo, et al., 2017, Zegeye, et al., 2019).

Sub-theme 3.2 Concern about duration of treatment and number of pills.

Most participants mentioned concerns about the quantity of pills and length of the treatment taken by their clients

“TB patients complain about the number of pills they have to drink which they consider too much as a result majority of them discontinue.”

“TB medication last for six months and the pills are just too much and unbearable they just stop taking it without informing you.”

“Our clients always default because of the pill some say they are too big to swallow.”

The quantity and duration of the medication has been linked to poor compliance in regard to TB medication. In Ethiopia, TB patients attributed the number of TB pills to being the main reason why the majority of them stopped visiting the local hospital to collect medication (Boru et al.,(2017). Furthermore, in another study the patients complained about the number of times they are supposed to take the pills which they considered a burden as it was hindering the other part of their lives such as fending for a living (Woimo, et al., 2017). Danso, et al., (2015) argue that, “the long duration of treatment was a heavy burden because it had a negative impact on the patient's responsibility to care for their children and to provide income for their families”. This is consistent with a study in Ethiopia which found that having to swallow a large number of pills was one reason for non-compliance (Habteyes et al., 2015).

4.2.2.4 Theme 4 Social factors

Factors such as absence of family support and use of alternative medicines also contribute to TB clients not finishing their drugs

Sub-theme 4.1 Lack of family support

Non-acceptance because of illness in the immediate family was mentioned to be one of the factors which drives TB patients to default on their TB treatment.

“Most of my clients comes from families which discourages them, family members once they realise that they are drinking medication they are interrogated so most of them had to stop medication.”

“The family where these patients come from fight with our clients and because of the stress which emanates from these conflicts pushes them to discontinue their medication.”

“The families are not supportive at all because TB medication needs monitoring, but the family member was do not care.”

This is consistent with the findings of Deshmukh, et al., (2018) who revealed that TB patients are discriminated against in communities in which they stay and are barred from partaking in social activities with other members of the community. Similar findings were also reported in South Africa, which suggest that TB patients decline to collect the medication because they were scared to be seen by fellow community members (Kvasnovsky, et al., 2016). Skinner and Claassens (2016) pinpointed that lack of supervision and support to TB patients by close family members contributed to sick family members throwing away the medication in protest.

Sub-theme 4.2 Use of cultural/alternative medicines

Most participants cited cultural factors as one of the factors that hinder patients from adhering to TB treatment. This is supported by the following quotations:

“Most of them uses herbs and traditional medicine instead of TB treatment.”

“After starting with the treatment they stop medication because they start to drink holy waters from faith healers.”

“After they consult the prophet and traditional healers most of the TB patients stops from taking medication.”

Similar findings were reported in KwaZulu-Natal that most TB patients abandon their drugs for traditional medication (Skinner and Claassens, 2016). Along the same line, findings by different studies reported that TB patients did not adhere because they were using traditional medicine instead of their hospital treatment (Chaidir, et al., 2015; Ruru, et al., 2019).

4.3 Summary of the chapter

This chapter presented and discussed the data collected from community health workers who worked with TB patients in the Vhembe district. The following chapter will present the summary, limitations, conclusion and recommendations.

CHAPTER 5

SUMMARY, LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

Based on the data examined in the previous chapter, this chapter summarises the results, draws conclusions, makes suggestions and acknowledges the constraints of the analysis

5.2 SUMMARY OF THE STUDY

The purpose of the study was to explore factors associated with non-adherence to TB treatment in the Vhembe District, South Africa. In-depth individual interviews were used to collect data from the participants. One open-ended question guided the data collection process (See Annexure 3). The population consisted of community health workers who worked with TB patients in Mbahe, Malavuwe and Nweli. The study participants were selected purposively. Data saturation occurred after interviewing 21 participants.

The objectives of this study were as follows:

- Explore the views of community health worker regarding factors associated with non-adherence to Tuberculosis treatment.
- Describe the views of community health worker regarding factors associated with non-adherence to Tuberculosis treatment.

The findings from the study showed that TB clients were not completing their TB medication due to a number of factors. It was clear from the findings that one of the reasons for treatment non-completion was lack of transport to go and collect their medication. Most the TB clients live in abject poverty, hence they are unable to afford the transport costs to collect their medication from the nearest health centres. Another reason for failure to complete TB treatment was lack of food in the household. As indicated above, the majority of the TB clients were unemployed, hence, they did not afford basic necessities such as food. In addition, the community health workers reported key factors responsible for failure to finish prescribed TB treatment in the Vhembe district as being that patients had insufficient information about TB and its treatment, suffered from substance abuse, forget to take their medication, had to relocate, were too busy with work, and their fear of stigma.

The participants also reported that medication related factors such as TB drug side-effects such as nausea, lack of appetite and colorization of urine, influenced their clients to stop TB treatment. Another medication related factor cited by participants was number of pills taken per day and duration of the treatment as a reason for the failure to finish prescribed TB treatment in the Vhembe district. Discrimination and absence of family support were pinpointed as social factors that influenced TB clients to discontinue treatment. Another frequently mentioned factor that contributed to non-adherence was the use of alternative medicine by TB clients. In most rural communities TB, patients trust traditional practitioners as compared to medical doctors, hence they easily stop taking TB treatments.

5.3 RECOMMENDATIONS

In order to help TB clients to improve their treatment completion rates that the following recommendations are made.

5.3.1 Recommendations for Practice

- Innovative Health education and awareness programmes such as road shows be rolled out so as to educate people about TB treatment, signs and symptoms and the importance of adherence.
- A social grant or incentive for TB clients should be introduced to help them cover the costs.
- Community health workers should be trained to provide adherence counselling ongoing, home assessments and health education to TB clients and their families.
- Adherence counselling should discourage substance abuse and the patients should be referred to social workers and psychologists for counselling.
- Family therapy should be provided so that family members can acknowledge the value and rights of TB patients.
- In addition to counselling digital adherence technologies should be rolled out.
- The Centralised Chronic Medicines Dispensing and Distribution (CCMDD) should be strengthened so that patients receive their medication at home.
- To strengthen digital tuberculosis tracking system in all health facilities.

5.3.2 Recommendations for future studies

- In-depth studies should be conducted to explore factors that contribute to TB non-adherence regularly because the factors vary with time and environment.

- A quantitative study should explore the determinants of TB treatment on a large sample size.

5.4 Limitation of the study

The study was aimed on explaining, and not quantifying, the phenomenon observed. The study took place in a rural setting; for some conditions prevailing in urban settings may be different, therefore the study findings cannot be generalised. However, a full description of the methods was elaborated in detail.

5.6. Conclusion of the study.

The literature and empirical findings from this study are that failure to finish prescribed TB treatment is a challenge in the Vhembe district. Furthermore, the study concluded that failure to complete TB treatment in Vhembe is as a result of socio-economic, personal, medication related and social/community factors.

5.7 Summary of the chapter

In this chapter, the researcher presented conclusions and recommendations for this study. The study concludes that failure to finish prescribed TB treatment is influenced by several factors. The community health workers mentioned economic factors such lack of transport money to collect medication and reviews and lack of food to eat in the household when taking medication as the causes for failing to complete prescribed medication. The study also revealed that personal factors such as insufficient information about TB treatment, substance abuse, forgetting to take medication, relocation, and patients' fear of stigma contributes to failure to finish TB treatment according to the schedule. Furthermore, medication related factors that include concerns about drug side-effects, duration of treatment and number of pills, influenced TB patients to not complete their drugs as per schedule. Social factors that include absence of family support and use of cultural/alternative medicines were also mentioned. The limitations to the study were also articulated. Recommendations pertaining to the research findings, were presented accordingly.

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ANNEXURE A: LETTER OF INFORMATION

Title of the Research Study: Factors associated with non-adherence to anti-TB treatment among patients in the Vhembe District, Limpopo Province, South Africa.

Principal Investigator/s/ researcher : (Sindisa Caroline Baloyi). (*MPH Student*)

Co-Investigator/s/supervisor/s : (Ntsieni Mashau B. Cur and PhD)
: (Kwabena Kyei Bsc, Msc, and Ph.D.)

Brief Introduction and Purpose of the Study: This research study was conducted for the degree of Masters in Public Health at the Community based organisation of the Vhembe District Limpopo. The purpose of the study was to explore factors associated with non-adherence to anti-TB treatment among patients in the Vhembe District Limpopo Province South Africa.

Outline of the Procedures: In this study, you are kindly requested to participate by responding to a few questions that I would like to ask you. Probing and follow up questions will be asked to get in-depth information from participants. The interview will last around 30 – 50 minutes. The study is conducted for educational purposes. Please note that participation is voluntary, and you are not compelled to take part in this study. However, I would really appreciate it if you would share your experiences and thoughts with me. For you to be included as a participant in this study you must be a registered community health worker working at the Home-based organisation in the Thulamela Municipality

Risks or Discomforts to the Participant: There are no foreseeable risks and discomfort for participating in this study.

Benefits: There are no direct personal benefits for participating in the study. Your participation in this study may benefit other people in the nursing profession.

Remuneration: You will not receive any remuneration for participating in the study.

Costs of the Study: You will not be expected to spend money in the study for transport since interviews will be conducted in your place of work.

Confidentiality: You are assured that I consider this interview to be confidential. Your responses will be heard or read by only those people involved in this research. No names will be used on the data collection tools. The tape and written documents recording your responses will be kept in a safe and locked place.

Research-related Injury: There are no foreseeable research-related injuries in this study.

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

Sindisa Caroline Baloyi, (Student NO: 11520161 (Cell. 079 6941779) my supervisor DR. N.S Mashau (Tel no.015 962 8006) or the University Research Ethics Committee Secretariat on 015 962 9058. Complaints can be reported to the Director: Research and Innovation, Prof GE Ekosse on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za

ANNEXURE B: CONSENT FORM

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by Sindisa Caroline Baloyi, about the nature, conduct, benefits, and risks of this study.
- I have also received, read and understood the above-written information (*Consent letter*) regarding the study.
- I am aware that the results of the study, including personal details will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had enough opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during this research which may relate to my participation will be made available to me.

Full Name of Participant

Date

Time

Signature

I, Date..... Time..... Signature.....

(*Sindisa Caroline Baloyi student No: 11520161*) herewith confirm that the above participant has been fully informed about the nature, conduct, and risks of the above study.

Full Name of Researcher

.....

Date.....

Signature.....

ANNEXURE C : INTERVIEW GUIDE

The central question: What do you think are the factors that influence patients not to adhere to TB treatment?

Follow up questions that will be asked to gain a deeper understanding of participants regarding factors that are associated with non-adherence to TB treatment?

What are your views regarding the non-adherence to TB treatment by your patients?

ANNEXURE D: LIMPOPO DEPARTMENT OF HEALTH PERMISSION



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref : LP – 201910 - 001
Enquires : Ms PF Mahlokwane
Tel : 015-293 6028
Email : Kurhula.Hlomane@dhsd.limpopo.gov.za

S C Baloyi


PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

Factors associated with non – adherence to anti – tuberculosis treatment in Vhembe district, South Africa

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
 - a. Present this letter of permission to the institution supervisor/s a week before the study is conducted.
 - b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
 - c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
 - d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
 - e. The approval is only valid for a 1-year period.
 - f. If the proposal has been amended, a new approval should be sought from the Department of Health
 - g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated


Head of Department


Date

Private Bag X9302 Polokwane
Fidel Castro Ruz House, 18 College Street, Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.
Website: <http://www.limpopo.gov.za>

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ANNEXURE E: ETHICAL CLEARANCE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:

Ms SC Baloyi

Student No:

11520161

PROJECT TITLE: Factors associated with non-adherence to anti-tuberculosis treatment in Vhembe district, South Africa.

PROJECT NO: **SHS/19/PH/16/2608**

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

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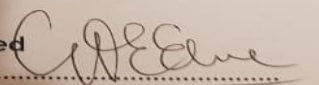
ISSUED BY:

UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE

Date Considered: August 2019

Decision by Ethical Clearance Committee Granted

Signature of Chairperson of the Committee:

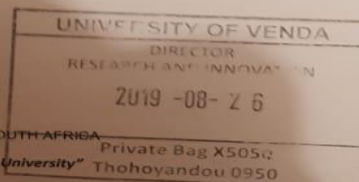


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ANNEXURE K: INTERVIEW TRANSCRIPT

R= Researcher

R: Good morning and how are you?

Participant: We are fine, thank you and how are you? You are welcome.

R: I am from the University of Venda. I am doing research on factors that influence patients not to adhere to TB treatment.

Participant : mmmm

R: Thank you. As I have already introduced myself, I am a student who is doing research and I My first question: What do you think are the factors that influence patients not to adhere to TB treatment?

Participant: mmmm

R: So i would like to know what makes your clients not to adhere to TB treatment.

Participant: I have a lot of clients who are on TB medication and they stop medication for many reasons

R: Tell me more about why they suddenly stop medication

Participant: What I have seen with my clients they tell me that they are no longer drinking the medication because they don't have the money to go and collect those pills. They are not working and the hospital is in Thohoyandou where they collect the medication.

R: Go on what make your other clients to discontinue their treatment

Participant: Some they live alone and they are shunned by the family and they abuse alcohol no one check them they are always in local shebeens

R: Yes

Participant: How can they drink the medication when they don't have food to it I try to encourage them but some of them they believe in traditional belief that TB is a an evil spirit

R: Go on tell me more about the traditional beliefs.

Participant: Now days they are fire churches which encourage our clients to shun medications. I know a lot of my clients who have defaulted. Some of the go to local sangoma to get mutis I think to lessen the side effects of the medications.

R: Alright I see I want to understand so they go to sangoma so that they can relieve the side effects of the medication?

Participant: That's what they tell us but what I have these people causes a lot of damage to our clients bodies so as result the family members encourages them to dump these pills for traditional medicine.

R: Can you tell me more on other challenges that makes your TB clients to stop taking their medication.

Participant : Most of the clients here abuse alcohol and drugs as a result they are always high as a way of coping with stress. I remember the other client of mine after she started feeling better she just relocated to Joburg but unfortunately she passed on. I think our people are not knowledgeable about TB treatment, once the feel better they stop going to the clinic.

R : It is good to hear that. Do you have anything to add ?

Participant : I think we have talked about most of the things about our work.

R : In that case, I think we can end our discussion here, but we will continue to contact each other. Thank you very much ! Have a good day.