RESEARCH PROJECT

DEVELOPING SUPPORT STRATEGIES TO ENHANCE TUBERCULOSIS TREATMENT ADHERENCE IN SEKHUKHUNE DISTRICT CLINICS, LIMPOPO PROVINCE

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DECLARATION

I Raesibe Gloria Maseko declare that the study titled "**Developing support strategies to enhance tuberculosis treatment adherence in Sekhukhune district clinics, Limpopo Province"** hereby submitted to the University of Limpopo, for the Masters' degree in Nursing is my own work and that all the sources contained herein have been clearly acknowledged and this work has not previously been submitted by me for a degree at this or at any other university.

Maseko R. G 24/07/2024

Signature Date

DEDICATION

This dissertation is dedicated to several special people in my life including my late father Lekole Ntsoane, who taught me the power of prayer, may his soul rest in peace. My mother, Rosina Ntsoane for her continuous encouragement during my career. My lovely twins, Gift and Given, my beautiful daughter Blessing and to my sons Praise and Gratitude Maseko who missed me the most during the time of my study.

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ABSTRACT

Background: South Africa (SA) is among the countries that are challenged by Tuberculosis (TB). Active TB patients require daily administration of medicines for six months or longer with no interruption. This can be achieved through great adherence as well as a proper support system. The study aimed to develop support strategies to enhance TB treatment adherence in the Sekhukhune District clinics, in the Limpopo Province.

Method: The study used a quantitative research method. The method was considered to be relevant to this study as the research aimed to develop support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District. Data was collected from five selected clinics in the Sekhukhune District, using questionnaires and analysed using the Statistical Package for the Social Sciences (SPSS) version 29. A total of 90 respondents from a population of 116 participated in the study. Simple random probability sampling was used. The questionnaires were piloted in a different setting to ensure reliability. The outcomes of the analysis were presented as frequencies and percentages in tables, bar graphs and pie charts. Ethical standards were considered throughout the study.

Results: The study revealed that several factors contribute to TB treatment adherence. These factors include but are not limited to demographic, patient-related, socio-economic, healthcare system, disease and medication-related, as well as adherence and supportrelated factors. The results of the study revealed that there is a lack of support from family as well as the community and there is also a lack of knowledge about TB and its treatment. Support strategies were developed to enhance TB treatment adherence in selected clinics in the Sekhukhune District of the Limpopo province.

Conclusion: The study concluded that several factors hinder the adherence to TB treatment at the Sekhukhune District clinics in the Limpopo Province. Inadequate support

and information about TB treatment, the treatment side effects, the comorbidities and the lack of Directly Observed Therapy (DOT) supporters are the main findings of this study.

Key words: Adherence, contacts, defaulter, enhance, patient, strategies, treatment, tuberculosis.

DEFINITION OF CONCEPTS

The following are essential concepts of the study with their operational definitions:

Adherence

Adherence is the degree to which a patient follows the agreement on a management plan regarding medication, proposed lifestyle changes, and diet (World Health Organization, 2014). In this study, the term is a correct way of following medical guidance and taking treatment as ordered for the required six to nine months.

Contacts

A contact is any person who has been exposed to an index patient (WHO, 2014). In this study, it is any person who has been in close contact with a known TB patient for at least eight hours or who shares the same living space.

Defaulter

A defaulter is a person who interrupts TB treatment by at least two months (WHO, 2014). In this study, a defaulter is a TB patient who ceases to take treatment before the exact time of completion.

Enhance

To enhance means to strengthen or to further improve the quality or value (Deuter, Bradley & Turnbull, 2015). In this study, to enhance means an essential approach that is intended to improve medication adherence in TB patients.

Patient

A patient is a person who is registered or who is receiving medical treatment (Deuter et al., 2015). In this study, a TB patient is a person who has been diagnosed with TB and has started on TB treatment using a healthcare provider after clinical findings.

Strategies

Strategies refer to a plan of action to achieve a long-term aim (Deuter et al., 2015). In this study, the strategies are suggested plans to promote treatment adherence and compliance with TB treatment.

Treatment

Treatment means any medication or drugs that are used to prevent or treat a disease (Martin, 2020). In this study, treatment refers to the anti-tuberculosis drugs that are prescribed to the TB patients by a qualified healthcare provider.

Tuberculosis

Tuberculosis is a contagious bacterial infection that implicates the lungs. However, it may spread to other organs (WHO, 2020). It usually spreads from one person to another through an airborne route when an infected person coughs, talks or sneezes and exposes another person to breathing contaminated air. In this study, tuberculosis is defined as an airborne infection of the lungs that spreads from one person who is ill from TB to another through talking, coughing, and sneezing as it spreads by inhaling contaminated air.

LIST OF ABBREVIATIONS

AIDS:	Acquired Immune Deficiency Syndrome
CHC:	Community Health Centre
DOTS:	Directly Observed Treatment, Short course
DR TB:	Drug-Resistant Tuberculosis
FNHATS:	First Nations Health Authority Tuberculosis Services
HCW:	Health Care Worker
HIV:	Human Immunodeficiency Virus
ISTC:	International Standards for Tuberculosis Care
LTFU:	Lost to Follow Up
NDoH:	National Department of Health
PHC:	Primary Health Care
SA:	South Africa
SDGs:	Sustainable Development Goals
SPSS:	Statistical Package for Social Science
TB:	Tuberculosis
UN:	United Nations

WBOT: Ward based outreach team

WHO: World Health Organization
XDR TB: Extensive Drug-Resistance Tuberculosis

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CHAPTER 1: OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND

Tuberculosis (TB) is a paramount public health concern, and it is one of the top ten main reasons of death globally (WHO, 2020). The countries in Sub-Saharan Africa are most affected, and it is a significant challenge in the low- and middle-income countries including South Africa (SA) (Phetlhu, Bimerew, Mari-Modeste, et al., 2018). Tuberculosis is a widespread infectious disease that is caused by mycobacterium tuberculosis that mostly affects the lungs (WHO, 2019). The transmission spreads from one individual to another through droplet nuclei that are produced when a person having pulmonary tuberculosis sneezes, coughs, or talks (National Infection Prevention and Control Guidelines, 2015). The support of the TB patients is guaranteed primarily from the onset of infection, continuing through to the manifestations of symptoms as well as health-seeking behaviour, and it eventually culminates with the treatment outcomes (Samal, 2017). The TB patients require a great level of support to maintain optimum health care as well as to deal with the dynamics of the disease (Shrivastava, Shrivastava & Ramasamy, 2015). Family support includes but is not limited to appreciation, attention, comfort, or assisting people with an approach of consenting to their condition from an individual or group (Mongan & Fajar, 2017). The family role is significant in rendering care and support as TB is a chronic infectious disease that requires prolonged treatment (Milligan, Ivibarren, Chirico, et al., 2021; Samal, 2017). The support and concern of family is pivotal in terms of treatment adherence, continuous care, and the outcomes of TB treatment

(Shrivastavaet al., 2015).

The prevalence of TB is dominating worldwide in all racial groups although it is preventable and treatable (WHO, 2020; Thomas & Pezzella, 2019). TB occurs in many parts of the world and in 2019, the largest number of new TB cases was found in the Southeast Asian Region with 44% of the new TB cases, the African region had 25% of the cases and the Western Pacific had 18% of the new TB cases (WHO, 2019). TB affects many people

globally, and approximately 90% of the TB cases are found in Asia, as well as Africa, and in the low-income countries (WHO, 2014). The Sustainable Development Goals (SDGs) framework's adopted target is to end the TB epidemic with a 90% decrease in deaths and an 80% reduction in incidence by 2030 (WHO, 2020), but very little is deliberated about the support in these different regions. According to the WHO (2018), the global statistics estimated that 10.0 million people developed TB in 2017 and of these

5. 8 million were men, followed by 3. 2 million women and 1. 0 million children.

Tuberculosis affects anyone irrespective of gender or age. The highest burden is in adult men who accounted for 56. 5% of all the cases in 2021 compared to the adult women who accounted for 32. 5% and children for 11% of the cases (WHO, 2022). According to the National Strategic Plan for Human Immunodeficiency Virus (HIV)/TB and sexually transmitted infection (STI) (2017-2022), South Africa has the sixth highest TB prevalence in the world, and it is among the 14 countries with the highest burden of TB/HIV and Multidrug-Resistant TB (MDR-TB). In 2019, the Global TB Report indicated that the HIV co-infection rate between the notified TB cases in SA was 59% which indicates the continued importance of HIV to the epidemic. According to the first national TB prevalence survey (SA, 2018), the country's TB epidemic is driven by low socio-economic status, high HIV co-infection burden, high burden of undiagnosed disease in the communities, and delayed health-seeking behaviour among the individuals with possible TB. South Africa remains among the countries that are challenged by tuberculosis worldwide (WHO, 2019). The patients' long-term prescribed TB treatment appears to alter the strength of their motivation to complete treatment and patients may consider defaulting at numerous stages during treatment (WHO, 2019). According to the National Patients' Rights Charter, every patient has the right access to health care services including treatment rehabilitation, and continuous care to authorise patients to acknowledge treatment and its effects (Thema & Sumbane, 2022). According to the National Health Act (2004), the Office of Standard Compliance' treatment of TB is mandatory therefore the health officers may take advanced measures in a situation where the individuals are not compliant with the

Act or present to be a danger to their personal or public health (National Department of Health,2015).

Active TB patients require routine administration of combined drugs for a six to nine months period or longer with no interruption (Saifu, Eliason & Mensah, 2018). This can be achieved through great adherence as well as a proper support system. Compliance with TB treatment necessitates the active participation of the patient in managing selfcare and cooperation between the patient and the health professionals (Septia, Rahmalia & Sabrian, 2014). The health system plays an important role in treatment adherence by performing home visits, follow-up visits, Directly Observed Treatment Short-course (DOTS) and treatment support systems (Bayer & Castro. 2017). The directly Observed treatment might be a health care provider or family member who ensures that the patient takes their medication regularly for successful outcomes. The patients' adherence and support are golden key factors in treatment success. This can be successful when the healthcare providers create time to educate the patient and maintain support during treatment, and provide ongoing counselling (Mongan & Fajar, 2017). Ongoing counselling improves the patient's knowledge about a healthy lifestyle, social habits, medication side effects, as well as the infection and control measures (NDoH, 2015).

Tuberculosis treatment adherence is pivotal to preventing the prevalence of infection, as well as to achieving a cure, and evading the rise of drug resistance and death (Nezenega, Perimal-Lewis & Maeder, 2020). Non-adherence to TB treatment is a significant barrier and it is one of the most considerable obstacles to TB control globally. It has also become a chief contributing factor of treatment failure (Gebreweld, Kifle, Gebremicheal, Simel, Gezae, Ghebreyesus, Mengsteab & Wahd, 2018). The DOT strategy has been broadly promoted and implemented in developing countries, as a proactive core management approach to address the problem of non-adherence in the TB patients (WHO, 2019). Despite TB being a curable disease, the non-adherence to TB treatment remains a major health problem in SA including in the Sekhukhune District, of the Limpopo Province (WHO,

2018). The researcher intended to develop support strategies to enhance the adherence to TB treatment at the Sekhukhune District clinics in the Limpopo Province.

1.2 PROBLEM STATEMENT

Tuberculosis remains the world's most deadly infectious disease, but although the number of people that have been reported as having accessed TB treatment has increased, it is not enough to reach the global TB target (WHO, 2019). The Limpopo Province's annual performance report highlighted that there is an increase in several patients on the DOT supporters in the province thus leading to an increase in the TB DOT coverage from 72% to 85% in 2015. However, the increased number of patients on DOT supporters does not provide a positive impact on the number of patients that have been cured of TB which raises some concerns (Limpopo Department of Health, 2017). Despite the implementation of the DOT strategy in 1996, the Limpopo Province had a defaulter rate of 6.1% which is higher than the national target of 5.4% (Health System Trust, 2017). The statistics show that there is a problem of TB treatment non-adherence in the Limpopo Province including in the Sekhukhune District.

People keep their health a secret and they delay seeking healthcare, thereby causing the infection to become more difficult to treat and increasing the risk of transmission to many people (Makgopa & Madiba, 2021). The inadequate care and support for the TB patients cause them to feel discriminated against by their family and community members, and this may result in a high defaulting rate, treatment interruption, as well as treatment failure amongst the TB patients in the Limpopo Province including in the Sekhukhune District. The study by Tupasi, Garfin, Kurbatova et al. (2016) argues that insufficient family support towards the TB patients broadly results in non-compliance and in non-adherence to treatment.

The tuberculosis patients do not understand their role during treatment as they become demoralised by their condition due to insufficient social and financial support, the treatment's adverse effects, prolonged treatment periods and social stigma (Saqib,

Ahmad, & Panezai, 2019). Consequently, the TB/HIV co-infected patient may be mostly demotivated to take their treatment which may result in treatment non-adherence. If the issue of TB treatment non-adherence remains unsolved, it may lead to treatment failure and eventually to multidrug-resistant TB which will exacerbate the burden of TB infection to a high death rate among other people within the district. It is from this viewpoint that the researcher developed an interest in conducting a study to develop a support strategy to enhance TB treatment adherence in the Sekhukhune District of the Limpopo Province. There were several studies that were conducted on the development of support strategies to enhance TB treatment adherence although recent updates need to be executed (Sazali, Rahim, Mohammad, Kadir, Payus, Avoi, Jeffree, Omar, Ibrahim, Atil, Tuah, Dapari Lansing, Rahim & Azhar, 2023).

1.3 OVERVIEW OF THEORETICAL FRAMEWORK

Theory is a creative and rigorous formulation of ideas that comprises of defined concepts, existence statements, and relational statements that are interrelated to present a systematic view of a phenomenon (Chinn & Kramer, 2015). Through a systematic approach, the nurses can identify conduct that is related to health which includes but is not limited to compliance to treatment and the utilisation of health care services. The study was grounded by Becker's Health Belief Model in the nursing practice by using six major concepts of the health belief model (Glanz, Rimer & Viswanath, 2015). The Health Belief Model highlights the relationship between a patient's belief and behaviour, and it suggests that the patient's health-seeking beliefs influence their perception of the threats that are brought by a health problem. The researcher was guided by this theory in developing the support strategies to enhance treatment adherence. The research study further utilised the Dickoff survey list using the six concepts of the survey (Dickoff et al.,1968). The idea of the survey is to formulate the conceptual framework that guides in developing the support strategies to enhance treatment adherence.

1.4 AIM OF THE STUDY

The study aimed to develop support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District of the Limpopo Province.

1.5 OBJECTIVES OF THE STUDY

- To identify the factors that hinder and enable TB treatment adherence at selected clinics in the Sekhukhune District of the Limpopo Province.
- To integrate the empirical findings of the study into Dickoff's six surveys for the development of support strategies.
- To describe the support strategies that may be utilised to enhance TB treatment adherence at selected clinics in the Sekhukhune District of the Limpopo Province.
- To recommend the developed strategies for practice in the health care settings.

1.6 RESEARCH QUESTION

- What are the factors that hinder TB treatment adherence at selected clinics in the Sekhukhune District of the Limpopo Province?
- What are the empirical findings of Dickoff's six surveys for the development of support strategies?
- What strategies could be developed to enhance TB treatment adherence at selected clinics in the Sekhukhune District of the Limpopo Province?
- What are the recommended strategies that may be developed for practice in the healthcare setting?

1.7 OVERVIEW OF RESEARCH METHODOLOGY

A research methodology is a type of research that is designed generally to answer the research question (Brink et al., 2018). It represents the major type of research that is used for a study to compare the research designs of reviewed studies and to select the most appropriate design for the proposed study. It identifies possible instruments or measures

of variables as well as develops sampling strategies based on what has been erudited from the studies in the literature (Creswell, 2018). A quantitative, cross-sectional, and descriptive research design was used to collect numeric data to describe the support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District, of the Limpopo Province. A descriptive design was used to describe and recommend the support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District. A cross-sectional study was used to describe the support strategies to achieve the aim of developing support strategies to enhance treatment adherence. The researcher integrated six elements of the survey list by Dickoff (Chapter 3 provides details regarding the list).

In this study, the overall population was all the registered TB patients who were on treatment, as well as those who defaulted and interrupted treatment within the selected clinics in the Sekhukhune District in the Limpopo Province. The simple random sampling technique was used to select the sample size of 90 respondents in this study. Data was collected using a self-administered questionnaire that was self-developed and adapted.

The researcher should discourage subjectivity and lack of openness during data collection to avoid bias (Polit & Beck,2018). The collected data was analysed using the Statistical Package for Social Science (SPSS) version 29 with the assistance of the statistician and the supervisor. The detailed research methodology of this study is discussed in Chapter 3.

1.8 SIGNIFICANCE OF THE STUDY

The study might benefit the TB patients provided the findings are used in formulating strategies to enhance treatment adherence. The researcher finds it imperative to deliberate on the support strategies that may improve TB treatment adherence. The main purpose of this study was to develop support strategies to enhance TB treatment adherence in the Sekhukhune District of the Limpopo Province. The significance of the study is clarified based on the following:

1.8.1 Health service and system

- To strengthen the target to end the TB epidemic by reducing incidents and by promoting support for the TB patients.
- To develop strategies on health promotion, disease prevention and the implementation of those strategies.
- Improve the accessibility of healthcare and the availability of TB treatment.
- To identify support strategies to enhance TB treatment in the Sekhukhune District that may give insight into high defaulter rates and improve the cure rates.

1.8.2 Nursing practice

- Assist the health care providers to identify the gaps to patient support on TB treatment that may hinder progress in TB responses.
- Implement health safety measures and obey the infection control policy.
- Formulate an improvement plan based on the identified gaps and intensify the prevention efforts.

1.8.3 TB patients and family

- Assist the patients to take responsibility for their health and promote treatment adherence.
- Emphasise health education amongst the patients with TB and their families to avert the spread of the disease and maintain suitable health rehearses.
- The study will benefit the current and the future TB patients as the findings may be utilised to formulate strategies to improve the quality of care.
- Promoting treatment compliance may decrease the mortality rate due to drug resistance and treatment failure.

1.9 THE OUTLINE OF THE DISSERTATION

1.9.1 Chapter 1: Overview of the study

This chapter discusses the introduction and the background of the study. It further introduces the problem statement, as well as provides an overview of the literature review, an overview of the theoretical framework, the aim, the objectives, the research question, the overview of research methodology, and the significance of the study.

1.9.2 Chapter 2: Literature review

This chapter focuses on the literature review of developing support strategies to enhance TB treatment adherence at selected clinics. The support strategies and the theoretical framework are included.

1.9.3 Chapter 3: Research methodology

Chapter 3 presents the research method, the study site, the research design that was employed, the population and sampling, data collection, validity and reliability, pilot study, data analysis, and the ethical considerations of the study.

1.9.4 Chapter 4: Presentation of results and discussion of findings

This chapter discusses the presentation of the results, and it provides a discussion of the findings.

1.9.5 Chapter 5: Development of strategy and theory integration

This chapter presents the integration of theory and the study findings as well as the application of the theoretical framework.

1.9.6 Chapter 6: Summary, limitations, and recommendations.

Chapter 6 focuses on the summary, the limitations, and the recommendations based on the research findings of the study and the conclusion thereafter.

1.10 CONCLUSION

Chapter 1 discussed the overview of the study which included the study's introduction and background, the problem statement, the overview of the literature review, the overview of the theoretical framework, the aim of the study, the objectives of the study, the research questions, an overview of the research methodology, and the significance of the study.

Chapter 2 discusses the literature review of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The literature review refers to a universal, valid, and consistent method for identifying, synthesising and assessing the existing form of completed chronicled studies accomplished by researchers, practitioners and academics (Fink, 2019). The scope of this literature is to synthesise information from PubMed articles, the science direct database, manual search from Google Scholar and other reliable sources of work done globally largely on TB treatment adherence. This chapter reviews the relevant literature from preceding studies on the factors that are associated with TB adherence and the support strategies to enhance TB treatment adherence. Previous studies have indicated different factors affecting adherence to TB treatment (Putra & Toonsiri, 2019). The descends of this literature are based on Becker's Health Belief Model (HBM). The Health Belief Model is a theoretical model that is used to assist with the promotion of health, and the prevention of disease and it may also be used to clarify and foresee particularised alterations in health behaviour (Janz & Becker,1974). Becker's Health Belief Model assisted the researcher in describing the support strategies to enhance TB treatment adherence in the Sekhukhune District of the Limpopo Province.

A literature review is an organised and systemic presentation of what has previously been studied and published on a particular subject with the purpose of notifying the researcher of what is already known about the subject and avoiding unnecessary repetition which wastes resources (Pradipta, Houtsma, Van Boven, Alffenaar & Hak, 2020). TB is an international public health issue `and it is one of the foremost reasons for deaths amongst communicable diseases (Adisa, Ayandokun & Ige, 2021). TB is curable if the treatment commences timely, as well as properly, and it is not interrupted throughout treatment. However, high default rates, treatment interruption, and treatment non-adherence significantly contribute to poor TB treatment outcomes, especially in the developing countries (Adisa et al., 2021). The intervention to improve adherence requires clarifying numerous important factors that are related to non-adherence that require a fusion of research to comprehend these factors within the local settings (Ruru, Matasik, Oktavian, Senyorita, Mirino, Tarigan, van der Werf, Tiemersma & Alisjahbana, 2018). The global estimates of the TB infection burden indicate that SA is among the 30 high-burden TB countries, thus contributing 87% of the TB incidences worldwide. SA accounts for 3% of the global TB cases with high TB and HIV comorbidity as well as multidrug-resistant TB (Van Der Walt & Moyo, 2019; Moyo, Ismall, Mkhondo, van Der Walt, Dlamini, Mthiyane, Naidoo, Zuma, Tadolini, Law, & Mvusi, 2023). The HIV-positive patients are at high risk of TB infection. The Limpopo Province is among the provinces that have a high TB burden with 55% of patients diagnosed, with 64% cure rates which is below the 85% target of the World Health Organization’s cure rates target. Improper ways of seeking health and poor treatment adherence are contributing factors to the poor cure rates for the TB patients (Mabunda, Khoza, Lebese, & Van den Borne, 2016; Matakanye, Tshitangano, Mabunda & Maluleke, 2021). According to the 2019 Global TB Report, the TB-HIV co-infection rate was 59% amongst the notified TB cases in SA which indicates the continued significance of HIV to the TB epidemic. Tuberculosis management among People Living with HIV (PLWH) is complicated by several factors including but not limited to the aggravation of side effects, drug interaction, immune reconstruction, drug toxicities and concerns about adherence (Getaneh, Negesse, Dessie & Desta, 2022).

The tuberculosis burden in sub-Saharan Africa is regularly exacerbated by the HIV/AIDS epidemic and other chronic diseases (Anochie, Ajogwu, Kalu, Akpan, Onyeneke & Onyeozirila, 2018). Approximately 75% of the TB patients were TB/HIV co-infected in other regions of Africa (WHO, 2018; Anochie et al. 2018). The PLHIV have many possibilities of emerging TB than those who are not infected (Winter, Smith, Davidson, Lalor, Delpech, Abubakar & Stagg, 2020). Some patients do not adhere to TB treatment including the Antiretroviral treatment (ARVs) due to the number of pills that they should take and the adverse effects of the TB treatment which are more common than in Antiretroviral therapy (ART) medication. Treatment adherence is thought to be one of the most valuable elements of chronic disease control programs, as it ensures successful cure and prevents the development of drug-resistance (Tola, Holakouie-Naieni, Tesfaye, Mansournia, & Yaseri, 2019). The issue of Loss to Follow-Up (LTFU) and the interruption of treatment are regarded as the most common problems for global health as they lead to a poor quality of life, and they increase the duration and the severity of illness, worsen disease transmission, as well as result in possible hospitalisation (Tola et al., 2019). The findings of a study that was performed in South Asia, Pakistan revealed the need for an integrated approach to clinical services and concrete family support for the TB patients (Saqib et al., 2019).

The researchers and the public health programs deliberated on various methods of supporting patients with TB to take their medication appropriately to promote the probability to cure TB including to amass helpful resources to assist the patients to overwhelm their challenges to comply with TB medication (Nezenega, Perimal-Lewis & Maeder, 2020). The combination of multiple patient-centred support interventions tailored to an individual's needs and values can improve the TB control efforts. The researcher looked at the family support, financial support, health system support, health care providers support and TB treatment adherence to develop support strategies to enhance TB treatment adherence.

2.2 FACTORS INFLUENCING TREATMENT OUTCOMES.

The factors influencing the treatment outcomes highlight the patient-related factors which cover social stigma, the lack of information about TB, and the efficiency of medication.

2.2.1 Patient-related factors

Social stigma is among the factors that can affect the process of tuberculosis treatment and it may result in recurrent tuberculosis (Gao et al.,2015). The stigma associated with tuberculosis may result in embarrassment, social rejection, or fear of loss of friends. Knowledge is one of the important aspects that can promote the success of treatment and it may prevent the recurrence incidence of tuberculosis (Bani, Rosid & Jadmiko, 2015). The community knowledge about tuberculosis is of paramount importance because it can reduce the stigma and the mythologies about TB treatment.

2.2.2 Social and economic factors

The social and economic factors précis poverty focusing on the unemployment status of the TB patients. Poverty has been associated with a high risk of infection, poor treatment outcomes, and an influence on health-seeking behaviour (Putra & Toonsiri, 2019; Wingfield et al. 2014). In SA, a short-term money allowance called the disability grant is distributed to individuals if they are considered to be incapable of working due to physical incapacity or illness (Foster, Vassal, Cleary, et al., 2015). The accessibility of these grants is limited as the patient must be seen by a doctor who is working at the hospital to approve the diagnosis before they can be able to register for the temporary disability grant.

The TB patients are faced with many challenges due to treatment adherence including but not limited to social stigma, long course of treatment, medication side effects, and the poor accessibility of health care (Ashesh, 2019). Insufficient care for the TB patients, less social or emotional support, and inadequate attention may influence treatment adherence and compliance (Saqib, Ahmad, & Panezai, 2019). Therefore, a lack of TB treatment adherence might result in probable advanced transmission of TB, treatment failure, development of drug resistance TB, relapse and death (Lee, Bing, Kiang, Bashir, Spath,

Stelzle, 2020; WHO, 2017). The prevention of future TB must not necessarily focus on diagnosing and treating TB but should also comprise of attempts to address social and other elements of the disease (WHO, 2020).

2.3 THERAPY-RELATED FACTORS

2.3.1 Long treatment duration and adverse effects of medication

The standard TB treatment requires patients to take a drug combination in the intensive phase for two months and four months in the continuation phase respectively for newly diagnosed patients. The MDR-TB patients are required to take medication for eight months at the intensive phase of treatment for up to 24 months. The long-term duration may lead to non-adherence to anti-tuberculosis treatment particularly when the patient is not receiving enough support from the family members and the healthcare workers (Woimo, Yimer, Bati & Gesesew, 2017). The TB patients experience many challenges particularly tough adverse effects including but not limited to fatigue, joint pain and nausea which may influence the quality of life of a patient by interfering with their daily living activities (Raftery, Tudor, True & Navaro, 2018). Treatment adherence obligates the active participation of patient self-care management and association between the patient and the healthcare professionals (Woimo et al., 2017).

2.3.2 Staff knowledge and attitudes

The lack of support from nurses and the community health workers due to insufficiently trained staff who understand the TB treatment process may jeopardise the patient's condition during treatment. The support can be demonstrated by good attitudes and actions when providing counselling on the importance of treatment to be served and when providing the DOTS services. The attitudes of the physicians and the nurses who are rude may result in the patients being rebellious in undergoing their treatment (Putra & Toonsiri, 2019; Ibrahim, Hadejia, Nguku, et al., 2014).

2.4 FAMILY SUPPORT STRATEGIES

Family support is one of the components that can affect the adherence to the TB patients undergoing the treatment process and it may result in recurrent tuberculosis (Putra & Toonsiri, 2019). The Community Health Worker (CHW) needs to do home visits to screen the household contacts and the children under the age of five years (Putra & Toonsiri, 2019). This offers the opportunity to identify the social issues that may affect treatment adherence (NDoH, 2014). The study by Sari, Mubasyiroh and Supardi (2016) argues that the other factors that affect adherence to tuberculosis include the role of the drug supervisor, family support, and the adverse effects that are caused by the combination of drugs.

The provision of support to the TB patients during treatment assists the majority of the patients to complete their treatment successfully and it lessens the number of TB cases as well as drug-resistant TB (Alipanahet al., 2018). Previous studies indicated that family and community support serve as the chief enablers for treatment adherence and the lack of opportunity to that support system might result in TB treatment non-adherence. The attitudes of the family members may affect the patient's decision to discontinue treatment (Mekonnen & Azagew, 2018). The family members, especially the spouses, play an important part in encouraging, supporting, and supervising the patient's medication (Mekonnen & Azagew, 2018). It has been discovered that the patients with frequent medication supervision by the family members and the patients whose family members often encouraged them psychologically were more likely to have a high level of adherence (Chen, Liang, Ruiheng, Jia, Haoqiang, Zhang, Zhum & Zhou, 2020). These special effects may be because the TB patients mostly carry a mental burden about the terror of treatment failure and the lack of confidence in carrying the disease hampers their treatment adherence (Alipanahet al., 2018). To guarantee the fulfilment of the right of access to health care services as assured in the Constitution of the Republic of South Africa (Act No 108 of 1996), the family should exhibit responsible behaviour by implementing the responsibilities of the patient as indicated in the National Patient Charter that specifies

that the patients should be responsible for taking care of their health, by utilising the health care services correctly as well as by complying with the prescribed treatment and supplying the health providers with accurate information for diagnosis, treatment and rehabilitation. However, the constant encouragement and the care of the family can increase the patient's confidence and thus affect the patient's medication adherence. During the illness, the family members are usually involved in assisting to solve problems so that the patients feel motivated and supported (Yin, Wang, Zhou, Wei, 2018).

The close family relationships can upsurge the patients' life satisfaction, as well as disencumber their minds from care, and improve their ability to fight illness whereas the patients with family dysfunctions are more likely to be alienated thereby leading to negative treatment outcomes (Qiu, Yang, Tong, Lu, Gong & Yin. 2018). Home visit execution telephone supervision and contacts by the health workers could enhance treatment adherence as they assist the health worker to manage their patient by reminding them to follow treatment appropriately (Orlandi, Pereira, Biagolini, Franca, & Bertolozzi, 2019). Directly observed therapy is among the most applicable methods of adherence interventions whereby the family members, the healthcare workers or the community members watch the patients when they are taking their medications (NDoH,2014). The other interventions aspired to encourage adherence in the form of DOT include incentives, which include material rewards given to the patients who adhere to treatment, and enablers interventions which allow the TB patients to weaken economic restrictions that are related to DOT including direct and indirect costs to access treatment (Orlandi et al., 2019). The other intervention focuses on the provision of TB education, and prevention as well as emphasises treatment adherence to assist the patients in making conversant decisions as well as the provision of patient-centered care from the healthcare providers (Qiuet al., 2018).

The reminder system and the patient tracer teams are directed at helping the patients to stick to their appointments and follow appropriate actions when the appointment was missed (Gashu, Gelaye, Mekonnen, Lester, & Tilahun, 2020). These interventions include

phone calls, Short Message Services (SMS) technology, reminder letters, home visits, and the pill counting system. The psychological actions are envisioned to encourage the patients through the emotional counselling of patients on TB treatment as a way of promoting adherence (Gebreweld et al., 2018). The findings suggest that the family members cannot be overlooked in the patient's treatment process (Tola, HolakouieNaieni, Tesfaye, Mansournia, & Yaseri, 2019). Therefore, adherence can be improved by training the family members to better deliver therapeutic and psychological interventions through the treatment process.

The DOT therapy concept is among the five components of the DOTs strategy permitted by the WHO to establish the basis for standard TB care and management (WHO, 2017). The DOT strategy has been extensively promoted and implemented in numerous developed and developing countries (WHO, 2017). Despite the significant progress made in the control of TB through the DOT strategy, as well as the potential benefits of the DOT approach in enhancing adherence, TB has remained prevalent, while the treatment outcomes and the success rate still falls under the WHO-defined target particularly in low- and middle-income countries (WHO, 2018). This cost-effective strategy was derived from the collective best practices, the clinical trials, and from the programmatic operations of TB control over the past decades (WHO, 2015). Poor adherence to TB treatment has now become a problem that must be addressed seriously due to the high non-compliance rate which has a bad contribution to the success of TB treatment, including MDR-TB, mortality, and morbidity (Pradipta et al., 2020). The TB patients' adherence can be better through the presence of Drug-Taking Supervisors (DTS) who may come from family members, closest relatives, or health workers who are committed and have time to supervise patients during the treatment period (Chen et al., 2020).

2.5 FINANCIAL SUPPORT

The link between poverty exists throughout the disease, and poverty deteriorates TB treatment adherence (Chen et al., 2020). Financial limitations are affected by insufficient food, high medication costs and low transport budget, as well as anti-TB treatment that

was found to affect poor adherence and the TB patients' loss to follow-up (Ruru et al., 2018). A study performed in the developing countries specified that poor TB treatment adherence may be caused by financial burden (Pradipta et al., 2020). With strong financial security, the patients are more likely to obtain regular treatment and have good adherence (Fang, Shen, Hu, Xu, Jun, Zhang, Kan, Ma, & Wu, 2019). Therefore, attention should be paid to raising financial support and strengthening the management of TB treatment. This factor can be overcome by the financial assistance of transportation, and food as well as by making medication easily accessible to all the TB patients (Nezenega, Perimal-Lewis & Maeder, 2020). The TB medication requires the patients to consume more food

especially protein-rich foods to restore their health, which frequently goes beyond their financial aptitude (Pradipta et al., 2020). From this study, the lack of food is an important barrier to treatment adherence. This can be addressed through collaboration with different sectors such as liaising with governmental and non-governmental organisations for the provision of food aid to the patients (Chen et al., 2020). Being a financially unstable TB patient is challenging as the patients become weak and unfit to work, thereby eventually causing difficulty in having enough food before taking treatment which may lead to feeling hopeless (Ruru et al., 2018).

2.6 HEALTH SYSTEM FACTORS

The increased burden of TB makes disease control precedence public health issues in many developing countries that ought to be addressed within the primary health networks (WHO, 2019). Numerous developing countries lack the necessary funding and systems to ensure wide successful treatment of anti-TB chemotherapy (Fang, Shen, Hu, Xu, Jun, Zhang, Kan, Ma, & Wu, 2019). The influential management system of the DOT strategy enables the effectual practice of existing technologies for TB control within the existing health systems (Gilpin, Korobitsyn, Migliori, Raviglione, & Wever, 2018). The vital characteristics of the DOTs are the rudimentary management unit having adequate personnel and resources for diagnosis, initiating treatment, reporting and recording

patient's progress as well as overseeing supplies (WHO, 2017). This fundamental management unit functions effectively through the current overall health services, for the effectiveness and for the full integration of TB control services in the primary health care network, mainly during the time of health sector reorganisation (WHO, 2019). The patient's satisfaction with healthcare services and the quality of healthcare service affects the non-adherence to TB treatment (Chen et al., 2020). Once the patients perceive that they received insufficient professional care and less time spent with the healthcare providers, by waiting for longer to get health service, they develop the possibility of being non-adherent (Nautiyah, Mittal, Awasthi, & Singh, 2019).

Attention should be paid to, within the healthcare scheme, including the accessibility of health services and the attitudes and behaviour of the healthcare providers as this lies within their sphere of influence (Saqib et al., 2019). Similar health system challenges in implementing different preventive services have been reported in other services thus implicating apparent low quality of care to the TB patients and a shortage of qualified staff to support the patients (Chakaya et al., 2021). The issues of unconducive space, treatment stockout, and the lack of culturally competent healthcare providers are factors that affect adherence and the outcomes of TB treatment (Chandra, Moll, Altice, et al., 2021). According to the International Standard for TB Care (2014), patient-centred care should be promoted to all the TB patients to relieve suffering, improve adherence, and promote the quality of life. The tuberculosis problem requires developing a strong partnership with the non-state health sectors, as well as engagement with the community representatives, and ensuring that TB is an essential component involving universal health care programs (Chakaya et al., 2021).

The commitment of the government to sustain TB control is fundamental for the other four components to be executed and continued. This commitment starts with the translation to policy formulation, and then into the necessary financial and human resources as well as administrative support to ensure that TB control is a fundamental part of the health services (WHO, 2018). The government and the other concerned stakeholders may have

to step up their political and financial commitments toward TB treatment and care to achieve the third United Nations sustainable development goal and the WHO End TB strategy of eradicating TB globally by the year 2030 (WHO, 2019).

Five components of DOTs:

- Government commitment to sustained TB control actions.
- Case detection by sputum smear microscopy of the symptomatic patients selfreporting to the health services.
- Standardised treatment regimen of six to eight months for all confirmed sputumpositive cases with DOT for the first two months.
- A regular, uninterrupted supply of all vital anti-TB drugs.
- A standardised recording and reporting system utilised by the healthcare workers to systematically observe each patient's progress and assessment of the TB control performance program.

2.7 HEALTHCARE PROVIDERS SUPPORT

The TB primary health care provider should consistently re-assess the probable reasons for TB treatment non-adherence during provider-patient encounters and attempt to give essential psychological support by value-added counselling, with a view to upsurge the success rate and the treatment outcomes (Adisa, Teju, Ayandokun & Olusoji, 2021).

Educating the TB patients will considerably decrease the risk of treatment non-adherence (Vernon, Fielding, Savic, Dodd & Nahid, 2019). Health information is vital for adherence as rare investigations highlighted that the patients who never obtain health information from health services were more likely to be non-adherent (Tolaet al., 2019). Therefore, a well-trained healthcare provider is demanded to provide feasible health education within the setting of the patient's background and local traditions (Gebreweld, 2018). Health care providers should explore more on other valuable patients' characteristics including living conditions, monthly income, distance from the DOT facility, and general lifestyles

particularly smoking and alcohol intake, which were mostly regarded as important aspects during ongoing counselling sessions (Adisa et al., 2021).

The Ministry of Health observed distance barriers by training TB promoters from the community to provide chronic medication to patients who are unable to reach the health facilities. Nevertheless, the challenge of healthcare inaccessibility may be partially overcome by the consideration of a non-healthcare facility or clinic-based DOT, possibly the community-based DOT, whereby the healthcare provider visits the TB patients at their community to deliver the DOT service (WHO, 2017). Although community-based DOT may implicate extra costs to the institution, evidence indicates that community or homebased DOT had a higher number of treatment success rates in terms of the twomonth sputum conversion, cure, and treatment completion, as well as having low mortality rates and unacceptable treatment outcomes as contrasted with health facilitybased DOT (Vernonet al., 2019). Most of these support proceedings include different techniques for reminding TB patients about their daily doses by sending a message of reminder, assisting with financial possessions to attend their clinic appointments and the meaning of the healthcare workers who observe patients taking treatment at their homes as this may assist the overwhelmed patients to complete treatment (Byonanebye, Mackline, Sekaggya-Wiltshire, Kiragga, Lamorde, Oseku, King
& Parkes-Ratanshi, 2021).

2.8 SOCIAL SUPPORT

The theoretical definition of social support consists of four types of support, namely informational support, emotional support, companionship support, and material support (Wen, Yin, & Sun, 2020). Several studies specified that these aspects of family support have a significant collaboration with TB patient adherence, but some articles state that some of these four aspects have no connection with adherence. The results of the study by Arifin, Jauariah, Nur and Uzair (2019), have similar conclusions by stating that information support factors have a strong correlation with TB patient compliance. The results from Tinah and Triwibowo (2020), in their study, explained that emotional support

and appreciation support were components that increase TB patient adherence. The four types of social support are:

2.8.1 Informational support

Informational support refers to the provision of advice, guidance, suggestions, or valuable information that assists a person in highlighting sources of stress and resolving individual problems, including education and training (WHO, 2014). An actual prepared health education strategy that is formulated to train the patient prior to treatment should be established, including educating the patient and concierges regarding the disease, the use of treatment, the period of treatment, possible side effects, and the ways to access the support that is available to the patient (Zago, Maffacciolli, & Mattioni, Dalla-Nora & Rocha, 2021). The patients should be provided with a copy of the patient's right charter in a language that is understood by the patient, and it should always be displayed in all the healthcare facilities.

The significant information can be attained by easy modifications based on the attitudes as well as a language that is understood by the patient by bringing important information concerning the sickness (Wen, Yin, & Sun, 2020). The patient with the knowledge about TB treatment enables probable strategies and medical provisions that provide significance to standards, and informal relations thereby ensuring sufficient news, correct diagnosing, and enhanced good compliance (Dilas, Flores, Morales-Garcia, CalizayaMilla, Morales-Garcia, Sairitupa-Sanchez & Saintila, 2023). The results of the study by Arifin et al. (2019) show that the social support component of informational support provided by the families to the TB patients can increase motivation and acceptable behaviour during treatment. The health care providers and the National TB Control Programme (NTP) should accept the method of intercommunication among the patients and their caregivers in the best way to build an optimistic partnership to the successfully improved quality of life and treatment completion (WHO, 2014). A systematic review by Barik, Indrawati, and Sulistiawati (2020) showed that the social and psychological factors of patients such as healthcare workers'

support, social support, family support and peer support have an important role of increasing adherence in the TB patients.

2.8.2 Emotional support

Emotional support refers to the complete manifestations of care that participate to strengthen self-respect in the form of trust, encouragement, empathy, and taking care of others, and that assist in dealing with the psychological problems of life (WHO, 2014). Emotional endorsement in the form of psychological support and home visits is significant to strengthen the psychological and medical needs of the patients through trained community healthcare workers and nurses to evaluate the physical and social needs of the patient (Bhatt, Chopra & Vashisht, 2019). Substantial stigma is connected to the disease, and this may cause intrusion with treatment adherence and may poorly influence the quality of life of patients in sight of stigma and discrimination (Agbeko, Mallah, He, Liu, Song, & Wang, 2022). Offering emotional support services to the TB patients may increase the probability of treatment adherence and attaining experience to act upon multiple thoughts toward treatment (Zarova, Chiwarido, Tadyanemhandu, Machando & Dambi, 2018).

The establishment of individual counselling and support groups through trained providers may allow the patients to socialise with others and share their experiences to support each other (Hasanah, Makhfundli, Ni'mah, Efendi & Aurizki, 2019). Support may be focused on different challenges to treatment stages, side effects, stigma and
discrimination, adherence difficulties, socioeconomic problems, comorbidities as well as death (Agbeko et al., 2022). The psychological issues of TB may hinder both the physical and the emotional well-being of the patients which may cause interference in seeking healthy behaviour, and consequently, it affects the treatment outcomes (Yan, Zhang, Tong, Yin, Lu & Gong, 2018).

2.8.3 Companionship support

Companionship support is referred to as the support that provides the value of social belonging to someone. This type of support helps to make a person feel that they belong to the social system with the ability to trust for particular needs (Nasution, Ariga, Siregar, & Amal, 2018). Companionship support is commonly provided in a way of support from family treatment supporters or social groups possessing different actions to meet the social needs of the patients and reform their confidence to recover (Andrade, Nery, de Souza & Pereira, 2018; Freitas de Andrade, Nery, de Souza, et al., 2018). Trained healthcare workers, community experts and peer support groups may provide education sessions to advise the patients and help in the detection of risk factors for defaulting (Deshmukh, Dhande, & Sachdeva, 2018). From the patient's point of view, having a companion during follow-up days will reduce the psychological matters related to a long duration of treatment as they will be provided with strategies to cope with TB stigma and the discrimination of the disease (Andrade et al., 2018).

2.8.4 Material support

Material support means numerous commodities, which include financial assistance, and material properties that can be received through social schmooze as support to act on daily hurdles (Anisah et al., 2020). At the commencement of treatment, an assessment of the means of financial capital of the patient should be managed with caution to support the most vulnerable patients using enablers (WHO, 2014). A systemic review found that material incentives could be a critical part of social support because of their effectiveness on the TB patients (Carter, Daniel, Torrens, Sanchez, Maciel, Bartholomay, Barreira, Rasella, Baretto, Rodrigues, & Boccia, 2019). This challenge can be tackled effectively by the interventions that enable the patients' adherence to treatment such as food parcels, or transportation coupons through social workers and other assigned health professionals who usually evaluate the needs and monitor their distribution (WHO, 2018). The socioeconomic problems such as hunger, unemployment, and family accountability need to be addressed to allow the patients to adhere to treatment (Anisah et al., 2020). A study

by Wen et al. (2020) revealed that material support appeared feasible and effective in promoting the treatment success of the TB patients including other social support interventions. The tuberculosis patients from the low socio-economic conditions require material support in the form of food parcels, transport fares, and temporary disability grants to improve treatment adherence and also to reduce psychological distress during their time of treatment.

2.9 TUBERCULOSIS TREATMENT ADHERENCE

The target of achieving TB treatment globally has not been achieved yet with a high rate of non-adherence to TB treatment but may eventually increase in the number of MDR-TB (WHO, 2020). Numerous factors influence the level of adherence of patients including the lack of knowledge, financial constraints, lack of social support, poor provider-patient relationship, and health system-related factors (Gebreweld et al., 2018). The other factors include disbelief that medicine can heal TB, the difficult access to treatment in the facilities, and the lack of family support such as supervisors to monitor the patients taking medication (Chenet al., 2020). The WHO Global TB Report (2020) identifies the latest challenges to TB management including equitable access to quality and timely diagnosis, prevention, treatment and care. However, the non-adherence to TB treatment has been consistently documented as a main factor related to poor treatment outcomes and suboptimal TB control globally (Gilpin, Korobitsyn, Migliori, Raviglione, Wever, & 2018). The adherence to TB medication is estimated to be low in developing countries including South Africa. The low adherence may fail initial treatment, the appearance of multidrugresistant TB, prolonged infectiousness, and unsatisfactory TB treatment outcomes (Sahile, Yared, & Kaba, 2018). In addition, the TB patients who are not cured due to treatment non-adherence may cause serious risk to other people and the community (Vernon, Fielding, Savic, Dodd & Nahid, 2019).

Treatment adherence is a challenge that led to unexceptional tolerances and prolonged duration of drug regimens available for both resistant and drug-susceptible TB (Zegeye, Dessie, Wagnew, Gebrie, Islam, Tesfaye, & Kiross, 2019). Poor adherence increases the

risk of negative outcomes, added to relapse, treatment failure and implication of treatment (Yan, Zhang, Tong, Yin, Lu, & Gong, 2018). Since non-adherence is patient-specific, personalised interventions are necessary to enhance the impact of programs to improve treatment adherence (Zegeye et al., 2019). Non-adherence is the greatest challenge for TB control and prevention programs, although TB can be cured with first-line treatment of the six-month regimen depending on the classification of disease (Nezenega et al., 2020). The patients that are entitled to complete over 90% of their TB medication to promote cure and a patient who take up to 95% of treatment are regarded as more adherent (WHO, 2020). The consideration of Fixed-Dose Combination (FDC) tablets for TB medications may be beneficial to overwhelm the burden of the TB treatment issues that are reported by the patients. The FDC for TB medications is currently a provisional recommendation in the update of 2017 WHO TB treatment guidelines for DS-TB patients, although it is not yet available in the public health institutions (WHO, 2017). The WHO recommends that at least there is an 85-90% treatment success rate for all the diagnosed TB cases (WHO, 2019) however, to achieve the target among the TB patients, there may be a necessity for a better understanding of the certain barriers to TB adherence about TB and its management (Nautiyahet al., 2019). This may be necessary since treatment adherence is significant for curing TB, as well as for controlling the spread of TB infection while minimising the development of drug resistance (Pradipta et al., 2020).

There are some studies from many developed and some developing countries that have assessed knowledge, attitude, and practice about TB, including the barriers of TB treatment and adherence (Umeokonkwoa, Okedo-Alexa, Azuogua, Utulua, Adekea & Disub, 2020). However, most of these studies still left gaps that underline the necessity for continuous monitoring and evaluation of patient with specific reasons for TB treatment non-adherence, while making consistent exertions to evaluate the support system as well as finding suitable solution to the low TB treatment success rate (Gube, Debalkie, Seid, Bisete, Mengesha, Zeynu, Shimelis & Gebremeskel, 2018). The stop TB strategy

emphasises on global accessibility to high quality care and patient-centered treatment with treatment support as the foundation of DOTs that upgrade the treatment success rate (WHO, 2019). It is compulsory to complete the course of TB treatment as this will allow the individuals to get a chance of healing as well as protecting other people from contracting the disease (Mekonnen, & Azagew, 2018).

The patient's inability to adhere to TB treatment has been a major universal problem that led to unsatisfactory treatment outcomes including drug resistance, relapse and increased health care costs as well as death (Alipanah et al., 2018). It has been indicated that forgetfulness, poor knowledge about TB and its treatment, the distance travelled to the health facilities, poor nurse-patient relationship, and adverse events were mostly the reported reasons for TB treatment non-adherence (Gilpinet al., 2018). The DOT has been recommended through a well-trained supervisor, whereby a health care worker observes the patient when taking medication daily to witness compliance of the treatment (WHO, 2018). However, the implementation of the DOT strategies on both patients and on the health care providers is still a challenge in the Sekhukhune District clinics. Tuberculosis treatment non-adherence is influenced by various beliefs about the disease and treatment, including perceived wellness or cure, perceived risk, and perceived barriers over the benefits (Sahile et al., 2018). The National TB guidelines suggest that appointing treatment supporters to every patient including family members or health workers to support during clinic visits is of much benefit (WHO, 2019). However, little is known about the support strategies to enhance TB treatment adherence in the Sekhukhune District of Limpopo Province. Above all, evidence was limited to the support strategies to enhance TB treatment adherence. This necessitates the synthesis of several studies to understand the underlying factors for TB treatment non-adherence in the local setting.

2.9.1 The support strategies to enhance TB adherence.

2.9.1.1 The end TB strategy

The goal of the global TB strategy is to stop the universal TB epidemic (WHO, 2020). The latest determined and practicable universal targets have been suggested under this strategy. Ending the TB epidemic will require further expansion and reaching interventions for TB care and prevention, formulating policies, and sharing responsibility in a conducive environment (Phetlhu et al., 2018). The global expansion of TB care and control can be achieved by the subsequent development of DOTS, incorporating other TB-related indicators of the Millennium Development Goals, and implementing End TB strategies to impact positively (End TB Strategy, 2014).

2.9.1.2 Directly Observed Treatment (DOTS) strategy

The DOT strategy remains a strength of TB prevention and care that has been recommended as the appropriate approach to be executed (Putra & Toonsiri, 2019; Mongan & Fajar, 2017). The DOTS approach assists in providing comprehensive support to the TB patients and their families for better treatment outcomes (Alipanah, Jarlsberg, Miller, Linh, Falzon & Jaramillo, 2018). The community-based DOT may contribute to dealing with TB cases as they are accessible and more expedient to the patients (NDoH, 2014). The integration of DOT works within the PHC Ward-Based Outreach Teams (WBOT) that promote sustainable community care programme (NDoH, 2014). The presence of health services in the form of DOT within the community will positively impact great compliance and successful treatment (Dobler, Korver, Batbayar, Oyuntsetseg, Tsolmon, Wright & Marais, 2015).

2.10 THEORETICAL FRAMEWORK

According to Becker's Health Belief Model, health-related behaviour is affected by the individual's perception of the threat brought by a health problem and the value related to acts aiming to reduce the threat (Becker, 1974). The Health Belief Model holds attention to this study because it focuses on discussing problem behaviour that increases health problems. It emphasises that a person's health-related behaviour has an influence on their perception. The model assumes the adherence of the patients as well as the potential to

reduce the risk of disease (Glanzet al., 2015). One of the models that is used to explain and understand health behaviour in TB treatment adherence is the HBM (WHO, 2017). The HMB suggests that a person's behaviour is influenced by their perceived susceptibility to and the severity of the condition. Adherence in treatment will fail if the TB patients perceive themselves as potentially vulnerable (susceptible), or if they view the disease as severe, are persuaded that the prevention regimen is effective (benefits) and think that there are some difficulties or barriers to attaining recovery (Azizi, Karimy & Salahshour, 2018).

The HBM proposes that health-related behaviour is based on the perception of the individual under the following premise:

- The individual susceptibility of a condition.
- Potential serious consequences of that condition.
- The plan of action that could be used to reduce the severity or susceptibility of the condition.
- The benefit of taking action (preventive measures).
- The perceived barriers of taking possible measures.

2.10.1 The six components of the Health Belief Model

2.10.1.1 Perceived susceptibility

Perceived susceptibility is a perception of the probability of acquiring a diagnosis that is relevant to the person's health problem (Glanzet al., 2015). In this study, a person must believe to be at risk of acquiring the TB disease before they decide to act by being screened.

2.10.1.2 Perceived severity

This is a person's feeling on the importance of contracting a sickness or leaving a disease untreated leading to social consequences such as feeling stigmatised or having severe

physical complications such as death. Insufficient support may hinder individual severity of illness that may cause loss of hope, default treatment, feeling rejected by others, and eventually dying due to the gravity of the disease (Glanzet al., 2015).

2.10.1.3 Health Motivation

Health motivation is the person's confidence and ability to successfully perform a specific health behaviour. This implies the passion of the patient to comply with the recommended treatment. Continuous health motivation may be of importance to encourage adherence and support during the treatment time (Glanz et al., 2015).

2.10.1.4 Perceived benefit

Perceived benefit refers to the individuals who believe in the recommended action to reduce the threat of illness. That is when a patient believes that the treatment given will cure the disease or reduce its severity. This benefit might reduce the threat of the TB disease and its consequences whereby treatment adherence may benefit the patient from the risk of disease and severe complications (Glanz et al., 2015).

2.10.1.5 Perceived barriers

Perceived barriers are the possible obstacles to performing recommended health action including negative consequences. Barriers may involve the accessibility of health care, the duration of treatment, or the treatment side effects. Negative consequences may be psychological as the patient might be afraid of losing friends, or they might fear screening procedures, inconvenient appointments, and costs during treatment (Glanz et al., 2015).

2.10.1.6 Cues to action

The cues to action refer to the prompts that are essential to trigger decision-making processes to receive the relevant health action. It includes internal feelings on decisionmaking towards the individuals' health (Glanz, et al., 2015).

2.10.2 How the theory assisted in data collection

- The HBM is useful in gathering information by conducting a health needs assessment and other exertion to determine the subject at risk and the population that should be targeted.

2.10.3 How the theory-guided in data analysis

- The theory helps in communicating the relevant procedure to select recommended measures as well as that it emphasises the advantages towards the targeted population.
- Conveying the results of the health issues associated with risk behaviours clearly and vaguely to understand the perceived severity of the disease.
- A theory aids in identifying and reducing the barriers that arise during data analysis.

2.10.4 How the theory-guided in the development of strategies

- The HBM helps to establish a new approach concerning the TB patients' belief in healthy behaviour to enhance adherence and treatment success.
- Motivational Interviewing (MI) in the HBM assists in consolidating intrinsic motivation and grounded health education models on an ongoing basis (Azinini, Karimy & Salahshour, 2018).
- Demonstrating actions through skill development activities and providing support that enhance self-efficacy as well as the possibility of successful behavioural alterations.

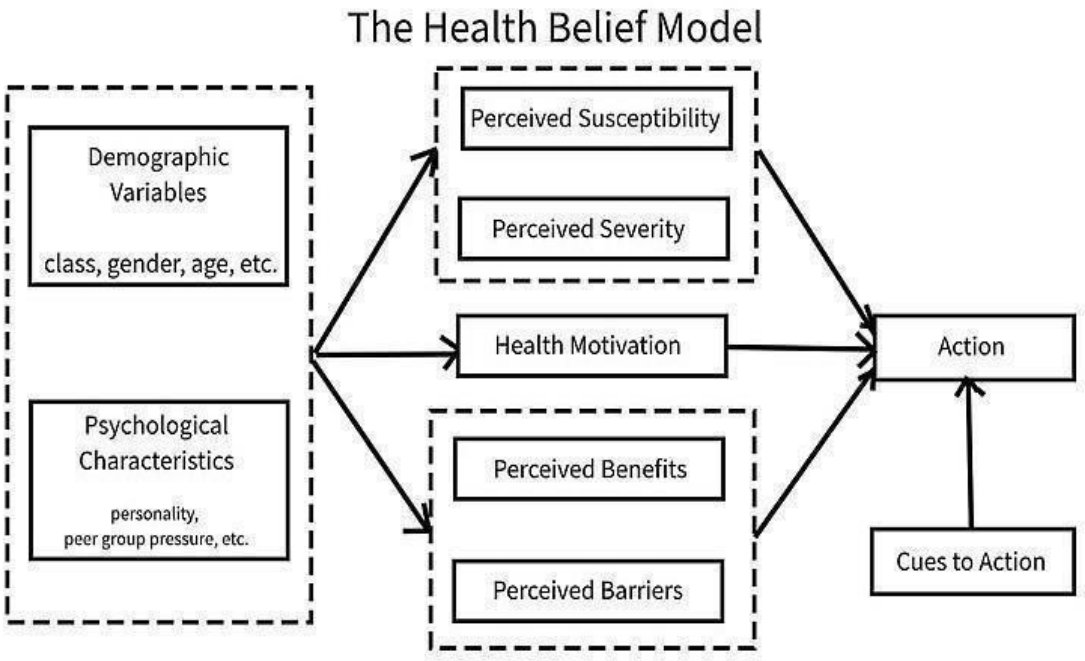


Figure 2.1: The Health Belief Model. Source: Accessed from www.searchgate.net on 20 August 2021

2.11 CONCLUSION

Chapter 2 discussed the literature review that is related to the study. TB is curable provided the patients take their treatment properly for a specified and recommended period, however, many patients opt to stop taking treatment when they feel better even if treatment has not been completed. Assisting patients to attain complete adherence is a difficult challenge because it is prejudiced by interactions among various factors, therefore management, the researchers and the healthcare providers need to look at numerous fundamental factors when planning adherence interventions. It is very important to supervise and encourage the adherence to TB patients by continuing with treatment through the assistance from healthcare workers, family members or another community member to prevent further complications. Chapter 3 will discuss the research methodology of the study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter discussed the literature review that is related to this research project. It noted an important discussion as highlighted by various researchers on developing support strategies to enhance TB treatment adherence. This current chapter begins by defining the research methodology and its importance in this experiential research project. It also highlights the study site which is the selected area where the study was conducted. Furthermore, the chapter looks at the research design as a plan for how this study was conducted, and the chosen research approach that is the quantitative method. In addition, the chapter presents the population from which the research sample was obtained. The chapter therefore continues to discuss the sample from which the quantitative data was collected during the research process and suggests the sample methods to work upon. It continues to debate on the sample size that signifies the number of respondents that were involved in the study to represent the population. The chapter further discusses the data collection method and also the data analysis method that was utilised. Lastly, this chapter gives attention to validity and reliability as instruments that were used in this study.

3.2 RESEARCH METHOD

The quantitative research method refers to the formal systemic process of gathering numeric data and analysing it using the statistical process to obtain information (Burns & Grove, 2021). The quantitative method is a research method that relies on measurements to compare and analyse different variables (Brink et al., 2018). The researcher considered the quantitative research method as an appropriate and relevant method to this study as it accentuates objectivity, describes variables, and has the ability to generalize findings using formal structured instruments on the data collected from the respondents. A quantitative research method was used to develop support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District, of the Limpopo Province. The methodology comprises of the study site, the research design, the

population and sampling, data collection, validity and reliability, the pilot study and data analysis.

3.2.1 Dickoff survey list

The ideas of the Dickoff survey can be utilised in the formulation of the conceptual framework that guides the development of support on a patient with TB. The six concepts of the Dickoff survey list include the agent, recipient, context, dynamics, procedure, and terminus. The following questions are advised as the foundation for the formulation of the conceptual framework that informed the development training programme in this study. 3.2.1.1 *Agent*

The agent refers to the person or the things that are the implementers of the framework (Dickoff et al., 1968). The agent is the first aspect of the survey list which refers to a person who performs an activity which is the development and implementation of support strategies to improve patient knowledge about the disease, compliance and treatment adherence towards the TB patients (Bopape, 2021). The agent is the researcher who conducts the needs analysis and enables the development of the support for empowering and encouraging patients (Bopape, 2021). In this study, the agent is represented by the researcher, operational managers, district and subdistrict managers, nurses and another multidisciplinary team. The agent is expected to be competent, and they must be able to capacitate necessary information, as well as have the capability to execute these activities with ease (Bopape, 2021). The nurse managers should ensure their presence in the clinics to provide psychosocial support by acknowledging the personnel and considering their concerns (Dikobe, Moagi & Sehularo, 2023).

3.2.1.2 *Recipient*

The recipient is the second concept of the Dickoff survey list. According to Dickoff et al. (1968), the recipient is a person or a thing receiving action from the agent. In this

framework, the recipient is any patient getting TB treatment. The TB patients are the recipients who receive guidance and support from the nurses, families, friends and other health teams by maintaining support, empowering experiences and addressing disempowering experiences while actively engaging in the facilitation and the implementation process for the caring for the patients (Nesengani et al., 2020).

3.2.1.3 *Context*

The context refers to the resources, activities, and environment that facilitate implementation (Dickoff et al.,1968). The context of this study is vital as it is where TB patients are usually found. The context is also described as an environment where data is collected for the development of support strategies (Bopape, 2022). The study indicated that a combination of organisational resources and a conducive, safe, as well as comfortable working environment in the primary healthcare system can facilitate implementation (Mboweni, 2018). The context of this framework includes Primary Health Care (PHC) clinics, mobile clinics, health centres and hospitals.

3.2.1.4 *Process*

The procedure refers to the process that is followed to ensure the success of the development of the strategies to enhance TB treatment adherence (Dickoff et al., 1968). It is evident from the study that quality training, mentoring, support, and compliance to policies, guidelines, SOPs, and protocols are the guiding principles that facilitate the achievement of patient to framework outcomes (Mboweni, 2018).

3.2.1.5 *Dynamics*

Dynamics is the fifth concept of the Dickoff survey list. They refer to the energy sources of power or energy amongst the activities (Dickoff et al., 1968). The evidence from the study findings shows that motivation, recognition, as well as the acknowledgment of TB patients for their compliance facilitates implementation. This would boost their selfesteem,

build confidence, and improve their sense of responsibility and worth towards the health workers and the community (Mboweni, 2018).

3.2.1.6 *Terminus*

The terminus refers to the outcomes or the end results of the activity (Dickoff et al.,1968). In this context, it refers to the endpoint or the outcomes of a newly developed conceptual framework. The end point or this framework aims to support the patients diagnosed with TB. The conceptual framework will facilitate the TB patients to develop effective coping skills. The implementation of the developed conceptual framework should be supported by all the agents (Dikobe et al., 2023).

3.3 STUDY SITE

The study was conducted within the Sekhukhune District Municipality in the Limpopo Province. The Sekhukhune District Municipality is located in the Southeast part of the Limpopo Province, which is South Africa's largest province. The district shares boundaries with the Capricorn and the Mopani Districts in the north, while Mpumalanga is in the south and the Waterberg District is in the west. The district was established in the year 2000 and it is one of the five district municipalities in the Limpopo Province (Sekhukhune District Profile, 2020). The district is composed of four local municipalities, namely Elias Motswaledi, Ephraim Mogale, Makhuduthamaga and Fetakgomo Tubatse (Figure 3.1). The district is made up of 117 wards with a total of 764 villages. There are 74 traditional leaders within the district (Sekhukhune District Profile, 2020). The district has a total population of 1.19 million which is 20% of the total population in the Limpopo Province (Annual Report 2020/2021). The study was conducted within the Sekhukhune District, in the Feta kgomo Tubatse Municipality around Burgersfort town in the Limpopo Province. The district consists of 24 fixed clinics and four mobile clinics. The researcher purposely selected five clinics within the district to conduct the study due to the high prevalence of TB cases reported in 2020. The study was conducted at selected clinics namely, Dilokong Gateway, HC Boshoff CHC, Matsageng Clinic, Mecklenburg Gateway and the Mmutlane

Clinic. In response to the high prevalence, the researcher saw the necessity to conduct a study with support strategies to enhance TB treatment adherence.

Figure 3.1: Sekhukhune District map. Source: municipalities.co.za

3.4 RESEARCH DESIGN

The research design is defined as the plan of gathering data within a research study (Polit & Beck, 2018). The quantitative research method was used to collect numeric data about developing support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District of the Limpopo Province. The descriptive and cross-sectional research design was used in this study.

3.4.1 Descriptive design

A descriptive research study is a non-experimental research study that is conducted to describe phenomena or study relationships between variables without any attempt to manipulate variables (Brink et al., 2018). A descriptive design aims at obtaining more information about the structure of a problem that is studied in a selected field (Polit & Beck, 2018). The descriptive design was used to develop the support strategies to enhance TB treatment adherence at selected clinics of the Sekhukhune District in the Limpopo Province.

3.4.2 Cross-sectional design

In this study, the cross-sectional descriptive design of a quantitative approach was used to develop the support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District. A cross-sectional design is a research design in which the study is conducted at a specific period while the data from the respondents is collected at the same time (Brink et al., 2018). A cross-sectional survey was used to collect numerical data as it is time-saving and cost-effective.

3.5 POPULATION AND SAMPLING

3.5.1 Population

A population is a complete set of persons or objects that possess some common characteristics of a researcher's interest (Brink et al., 2018). The individuals in a population theoretically have an equal opportunity to be selected for the sample. In this study's population, there were 116 registered active TB cases including patients who defaulted, interrupted and had treatment failures within the selected clinics in the Sekhukhune District of the Limpopo Province during the year 2022. The population in this study was registered TB cases at selected clinics of the Sekhukhune district in the Limpopo province. Each participating facility was estimated to be represented by a maximum of 30 TB patients. This made up a total of 116 participants from the selected facilities during the period of study.

3.5.2 Sampling

Sampling refers to a process of selecting individuals from the population to obtain information regarding a phenomenon that represents the population of interest (Gray & Grove, 2021). The sampling frame refers to the total number of selected members of the population from which respondents the researcher applied simple random sampling. Simple random sampling refers to a method whereby an individual is selected (Fouche,

Strydom, & Roestenburg, 2021). To select the sample, the population theoretically has an equal chance to be selected for the sample (Polit & Beck, 2018). In this study, probability sampling was used to determine the sample size which was 90 from the estimated population of 116. The respondents were selected randomly using the fishbowl technique whereby one number that was assigned to a respondent was written on a paper and placed in a container, the required number was noted, then the container was shaken and selected again until the needed number of respondents per clinic was achieved.

The information from the TB register that indicated the patient's name, registration number, treatment start date, completion date and follow-up records was necessary. This information was useful in tracing the defaulters and the lost follow-up patients.

- **Inclusion criteria:** According to Polit and Beck (2018), the inclusion criteria refer to the criteria that stipulates the characteristics of a potential participant who is specifically considered to be eligible for a study in a population. The inclusion criteria were all the active TB cases including the newly diagnosed patients, defaulters, and the lost to follow-up that were available during the period of the study.
- **Exclusion criteria**: The exclusion criteria are a set of predefined delineations that are used to identify subjects that are not included in the study (Bruce & Frey, 2021). The TB patients who were transferred out and those who died during treatment were excluded in this study.

3.5.3 Sample size

The sample size refers to the total number of individuals comprised in a research study that represents a population (Polit & Beck, 2018). In this study, the sample size was determined by the total number of TB patients per facility during data collection. Table 3.1 below presents the total number of current TB cases from the selected study sites.

Table 3.1: Number of TB cases per facility

Name of facility	Total number of TB cases
Dilokong Gateway	31
HC Boshoff CHC	27
Mecklenburg Gateway	22
Matsageng Clinic	19
Mmutlane Clinic	17
Total population	116

The researcher used Slovin's formula to determine the sample size. Slovin's formula is a random sampling technique formula to estimate A sampling size. Regarding the level of accuracy, there is a confidence of 95%, meaning that there are 95 chances in 100 that the sample results represent a true indication of the population in a specified accuracy range against five chances in 100 that it does not. Slovin's formula lacks precision with wording and its accuracy depends on the population size (Ryan, 2013). Slovin's formula is an appropriate tool that is useful when error tolerance is about 5% and the population portion is 0.5 (Jonathan, 2019).

- The Slovin's formula: n= N/1+ N x(e)2 n = the sample size (unknown)
  N = the population size which is estimated to 116 e = confidence level= standard confidence level is 95% for a better accurateness, that gives the margin of error of is 0.05
- A computer of the coefficient level e=100%-95% e=5%=0.05
- Sample size = $N/ (1+ Ne^2)$

  $= 116/ (1+ (116) (0.05)^2$

= 116/1.29)

= 89.9

n = 90 respondents

3.6 DATA COLLECTION

Data collection refers to the identification of the subject and the systemic gathering of information related to the research purpose or specific objectives, questions, or the hypothesis of the study (Gray & Grove, 2021). Data was collected from five selected clinics in the Sekhukhune District of the Limpopo Province.

3.6.1 Recruitment of participants

The study population was 116 TB patients including the non-adherent patients who were selected when they were coming for treatment follow up visits at their respective clinics with the help from the CHW and the TB nurses of the participating clinics. The recruitment of the participants took a period of four months from August 2022 to November 2022 respectively from all the participating clinics. The healthcare providers and the CHW were involved during the recruitment and the researcher as well as the TB nurses were the gatekeepers. The patients were advised and counselled that the research will benefit them as well as the entire community. The patients were also advised that the study will further assist in the improvement plan of their own health and their facilities.

3.6.2 Data collection instrument

Data was collected using a self-designed questionnaire with the intention of developing support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District, of the Limpopo Province. The questionnaire is a document that is used to collect report data through the self-administration of questions from the

participants (Polit & Beck, 2018). The purpose of questions is to find out the respondent's thoughts, attitudes, beliefs, feelings, experiences and knowledge. The questionnaire was formulated in line with the literature review, and it was accepted in terms of content and face validity. The prepared questionnaire was discussed with the supervisor and the statistician before it could be used.

3.6.3 Structure of the questionnaire.

A questionnaire instrument is a quick method of gathering data from a large group of people (Brink et al., 2018). The open-ended and the close-ended questionnaires were formulated in English and translated to the home language to accommodate the respondents who did not understand the English language. A letter accompanying each questionnaire explained the purpose of the research and it emphasised that a questionnaire is answered voluntarily. A well-formulated questionnaire is simple for the respondent to address, and it is also easy for the researcher to administer and score (Gray & Grove, 2021). The researcher collected data using self-administered questionnaires from the selected patients in the TB clinics to explore the current support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District. Data was collected using a structured questionnaire with 46 questions that were arranged into the following sections:

- Section A is about the demographic information which consisted of six questions,
- Section B are the patient related factors which composed of four questions,
- Section C outlined the socio-economic factors with four questions,
- Section D are the health care system related factors with eleven questions,
- Section E outlined the disease and the medication related factors, and it was composed of eleven questions,

- Section F consisted of ten questions that outlined the adherence and support related TB questions.

3.6.4 Administration of the questionnaire

The self-administered questionnaire was distributed by the researcher to the respondents in the five participating clinics from the Sekhukhune District clinics at the Feta Kgomo Tubatse sub district. The researcher made appointments with the operational managers of the five clinics to arrange data collection. The TB patients are clustered in groups for follow up visits, therefore the researcher noted the patients' review dates and availed herself in time to continue with the data collection process with the respondents from each participating clinic. Informed consent was obtained from the respondents before administering the questionnaires. The researcher administered questionnaires with the aid of the healthcare providers and explained the purpose and the danger of participation prior to the completion of the questionnaires. The researcher verifies that there was no possible harm such as physical harm, emotional and psychological troubles that could harm the respondents. The respondents were taken through all the relevant information that was written on the consent form regarding the freedom from harm and maltreatment.

The respondents from the HC Boshoff CHC were handed the questionnaire in their institution after consultation in a vacant ventilated consulting room to avoid the disruption of the clinic daily routine. The respondents were provided with a table and chairs to enable them to answer the questionnaires with ease. The researcher noted the TB collection days of the respondents and availed herself to meet with her participants with the help of the TB focal nurse of the facility. Data was collected in August 2022. A 30-minute time frame was allocated for each respondent to complete a questionnaire and the researcher collected the completed questionnaire from the respondents to keep them in a safe place.

The researcher handed out the questionnaires to the respondents at the Matsageng clinic after consultation with their TB nurse in an empty clean consulting room with a large table and chairs. With the aid of the clinic TB nurse, the researcher managed to group the

patients per visit and twig on time to avoid interruption with the service delivery of the clinic. Data was collected in September 2022. A 30-minute time frame was allocated for each respondent to complete the questionnaire and a researcher collected the completed questionnaires from the respondents to keep them in a safe place.

The respondents from the Dilokong Gateway Clinic were given the questionnaire at their clinic before consultation with their health providers in a prepared ventilated spare room as they were waiting to get their service. A TB nurse helped to cluster the patients per visit with a scheduled time to avoid overcrowding that may hinder their daily services. The respondents were placed in a well-ventilated room, having a table and chairs to answer the questionnaire with ease respectively at every participating facility. A 30-minute time frame was allocated for each respondent to complete the questionnaire in a language that they understood, and the researcher collected the completed questionnaires from the respondents to keep them in a safe place. Data was collected in October 2022. The researcher collected data at Mmutlane and at the Mecklenburg Gateway Clinic in November 2022. The researcher together with the clinic TB nurse categorized the patients for follow up visits by dates to simplify the process of data collection. Most of the TB patients are inpatients who wait for a long time therefore the researcher handed out the questionnaires to the respondents prior to their treatment collection in an empty room to avoid delays and disruptions of the clinic routine.

A 30-minute time frame was allocated for each respondent to complete the questionnaire and the researcher collected the completed questionnaire from the respondents to keep them in a safe place. The TB patients who defaulted and interrupted treatment were traced by the CHW using their home address. The researcher was available during data collection for the purpose of any clarity or explanation that may be of significance. The researcher introduced herself to the potential participants and read through the consent form that entailed the title and the purpose of the study as well as the participants

(Annexure 2). The researcher collected data in a four-month period from August 2022 to November 2022 respectively from each participating clinic. The process of data collection continued until each effort to contact every participant in the sample had been reached.

3.6.5 Safety of the questionnaire

All the completed questionnaires were kept under lock in a safe cupboard in one of the participating health institutions. Collected data was made accessible to the researcher only. The respondents were assured that the questionnaires would not be accessible to anyone except the researcher and the supervisor.

3.7 VALIDITY AND RELIABILITY

3.7.1 Validity

Validity refers to the ability of an instrument to measure the variable that it is intended to measure (Brink et al., 2018). Validity guarantees the accuracy, truthfulness, and the authenticity of the instrument (Fouche et al., 2021). The validity in this study was done on analysing collected data and the literature review to distinguish the consistency of the different variables on the support strategies to enhance TB treatment adherence at the selected clinics in the Sekhukhune District. The two types of validity that were applied in this study are content validity and face validity.

3.7.1.1 Content validity

Content validity refers to the method of assessing how accurate the instrument adequately signifies the creation of content for the concept that it is intended to measure (Polit & Beck, 2018). In this study, the researcher used the content validity of the questionnaires to guarantee if the content of the instrument is in agreement with the objectives and the purpose of the study. The supervisors evaluated the questionnaire for accuracy and validity before they could be administered.

3.7.1.2 Face validity

Face validity means that an instrument seems to measure exactly what it is supposed to measure (Brink et al., 2018). It is the first task to ascertain the accuracy of the data collection instrument. To ensure face validity, the researcher submitted the questionnaire to the supervisors to assess the validity of the contents of the questionnaire. There were other questions during the pretest where most respondents did not answer them, therefore the questionnaire was reviewed, and the questions were revised and improved with the help of the supervisor. A pretest was conducted at one clinic which is not part of the study to examine the validity of the questionnaire and it was finalised before the genuine data collection started.

3.7.2 Reliability

Reliability is a measure in which an instrument can be contingent to produce consistent results when it is used recurrently over time on the same respondents (Brink et al., 2018). Polit and Beck (2018) view reliability as the consistency and accuracy of the information that is provided in the study. In this study, reliability was guaranteed by conducting a pretest prior to the main study.

3.8 PILOT STUDY

The pilot study is a scale study that is conducted before the main study in a minimal number of the selected population (Polit & Beck, 2018). The purpose of the pilot study is to investigate whether the proposed study is feasible and to identify any errors of the data collection instrument, such as wording or an inadequate time frame (Brink et al. 2018). The pilot study was conducted successfully prior to the main investigation to identify pitfalls in the prepared questions in one institution that will not participate in the investigation. The questionnaires were piloted in a different facility that did not participate during the main study for pre-testing. The results showed a lack of knowledge about TB from the respondents that affects their treatment adherence, therefore, they need proper support. The results of the pilot study were discarded as they were not important in the final

research. The researcher was able to refine the errors that were identified on the questionnaires during the pilot study. The pilot study guided the researcher to decide on the best way to carry out the final study and it allowed her to assess how likely the procedure would be successful.

The researcher confirmed that each member of the population receives an equal chance of inclusion in the study through simple random sampling methods that may be applied repeatedly and yield the same results (Polit & Beck, 2018).

3.9 DATA ANALYSIS

Data analysis is defined as a technique that is used to reduce, organise, and provide a meaning of data (Gray & Grove, 2021). Descriptive statistics were used to summarise and convert collected data into an organised picture in different ways so that it creates an interesting meaning to the readers of the research report (Polit & Beck, 2018). Descriptive statistics were utilised to approximate the frequency of the percentages. Data was analysed according to the sections of the questionnaires. The collected data was analyzed in a quantitative way using the SPSS version 29 (Creswell, 2018). The Chisquare test is a type of trial that is used to test the hypothesis about the proportion of the cases in different categories (Creswell, 2018). The standard deviation with the chisquare test was obeyed to associate the support strategies to enhance treatment adherence. The use of graphs and percentages was utilized to analyse the relationship between the variables.
The researcher checked whether the collected data was complete and accurate as incomplete data is rejected before it can be analysed.

3.10 ETHICAL CONSIDERATIONS

Ethics are defined as actions with an attached sense of excellence (Brink et al., 2018). The ethical considerations that were followed in this study include the permission to collect data and ethical clearance, informed consent, the principle of autonomy, confidentiality and privacy, beneficence and non-maleficence as well as justice.

3.10.1 Permission to collect data and ethical clearance.

The research proposal was submitted to the University of Limpopo Turfloop Research Ethics Committee (TREC) to receive ethical clearance. Permission to conduct the study was obtained from the Limpopo Department of Health, as well as from the local area managers and from the operational managers of the institutions. The permission was also obtained from the respondents.

3.10.2 Informed Consent

Informed consent is an ethical principle of voluntary participation that formalises to protect the respondents from harm (Brink et al., 2018). The right to self-determination was supported by obtaining informed consent from the respondents. The researcher explained the benefits and the dangers of participation in a language that is understood by the respondents. The informed consent which was attached with the questionnaire was

signed voluntarily by the respondents after explaining the main purpose of the study. The respondents were made aware that there will be no punishment or penalty if they are not eager to participate and they can withdraw at any time during the period of the study.

3.10.3 Principle of anonymity

Anonymity is explained when the respondents' specific responses cannot easily be linked to the provided information in any way (Gray & Grove, 2021). The participants were informed that their personal information will not be displayed anywhere on a questionnaire to ensure anonymity. The respondents were told not to write their names, addresses and the names of their clinic on the provided questionnaires (Brink et al., 2018) but a number was assigned to a participant's data to ensure that the data remains anonymous.

3.10.4 Principle of Confidentiality and privacy

The information that is provided by the respondents, particularly the personal details, should be protected and it must be inaccessible to anyone except the researcher. Prior to

conducting the study, the researcher explained the process and how the collected data will be carried out to ensure privacy and confidentiality. The collected data will always be kept in a safe place (Brink et al., 2018). This will emphasise the honesty of the respondents when completing the questionnaires. The participants were informed that the data that was obtained from questionnaires will not be disclosed to other people for confidentiality purposes. The respondents were reassured that the collected data will not be divulged, and no respondents will be identified in that report to maintain privacy.

3.10.5 Principle of beneficence and non-maleficence

The researcher should ensure that there is no harm to the respondents in the study (Fouche et al., 2021). The researcher confirmed that the environment was free from harm, and it was conducive for the respondents. The research problem involving harmful conditions should be revised to allow further investigations in an ethical environment. The researcher always avoided harm to the respondents by structuring questions carefully and evaluating any sign of distress that could develop. If the respondents show signs of distress, the researcher must allow interrogation, and refer them for counselling (Brink et al., 2018). The researcher explained the benefits and risks the that may be encountered during the study.

3.10.6 Principle of justice

The respondent has the right to fair treatment and selection (Brink et al., 2018). Based on the problem that was identified in the study, the researcher fairly selected the respondents. The researcher utilised simple random sampling where all the respondents had equal chance to be selected and participate in a study. The researcher must not justify physical status or cultural values of the respondents and must always fulfil all the promises as agreed. The researcher was on time to indicate commitment to the study and may provide word of motivation to show interest and gratitude to the respondent.

3.10.7 Bias

Bias refers to any effect that produces misrepresentation on the interpretation of the study that may affect the quality of the findings (Polit & Beck, 2018). According to Brink et al. (2018), bias may occur at any phase of the research process, and it may include factors such as research subjectivity, sampling imbalance and the respondents' bias during the planning phase of the study.

3.10.7.1 Respondents' lack of openness

The respondents' partial participation may result in the misinterpretation of what is being measured (Gray & Grove, 2021). The researcher emphasised openness from the respondents to obtain a sufficient true reflection of their current situation (Polit & Beck, 2018). The respondents were provided with clear and comprehensive information concerning participation prior to the study to avoid bias. Anonymity and confidentiality were provided with an environment that encourages the respondents to feel free to answer the questionnaire appropriately (Brink et al., 2018).

3.10.7.2 Research subjectivity.

The experience and the expectations of the researcher may distort the information in a specific manner (Polit & Beck, 2018). The researcher should be careful concerning subjectivity by not directing the whole information about the content of the study before it is conducted. Therefore, the researcher may avoid this by not providing their expectations (Brink et al., 2018).

3.10.7.3 Sample imbalance.

Sample imbalance occurs when the incorrect sampling method is utilised to represent the selected population (Brink et al., 2018). The researcher avoided using their own preferences in the selection of a sample by adhering to the principles of systematic

random sampling in selecting the sample to ensure that there is no sampling imbalance. The respondents were allowed to complete only one questionnaire to avoid sample biasness. The pre-test of the instrument was conducted at a different clinic that was not taking part during the research study to prevent the respondents from knowing the content of the questionnaire before the main study.

3.11 CONCLUSION

The chapter described various types of the research design that was selected, namely the quantitative research approach. The researcher chose the quantitative research method to describe the support strategies to enhance TB treatment adherence at the Sekhukhune District clinics in the Limpopo Province. The chapter highlighted the selected health institutions where the study was conducted and also stated the total population within which the sample was selected. The chapter also highlighted the type of sample that was selected from the target population. Simple random sampling and probability sampling were the methods of sampling that were used in this research. The TB patients were identified as the respondents in the process of data collection as stated in this chapter. The questionnaires were the instrument that was used to collect data from the respondents. The chapter further discussed the process of data analysis in line with quantitative research. The next chapter deals with the presentation of the findings, their interpretation and the discussion of data.

CHAPTER 4: RESULTS AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

This chapter discusses the results of the data that was collected the questionnaires that were distributed to the TB patients from the selected clinics in the Sekhukhune District of the Feta Kgomo Tubatse Sub-district Limpopo Province. The researcher is a professional

nurse working as a community health practitioner at the PHC clinic where they encountered many TB patients who came for treatment review. The clinics are surrounded by mining industries which put many people at the risk of being infected with TB. During the rendering of the health care services to the people of the community, the researcher noticed that most patients are males, and some seem like they need support during the period of treatment. The interest of developing the support strategies on the TB patients established and informed the undertaking of this study. A total number of 90 TB patients that were acquired during data collection included lost to follow up patients. the consenting age for the inclusion criteria was from 16 years, and all were given questionnaires. The questionnaire was divided into sections and data was analysed in the same manner.

Section A included the demographic factors, Section B had patient patient-related factors, Section C included the socio-economic factors, while Section D had the health care system-related factors. The disease and medication-related factors were highlighted in Section E and Section F stipulated the adherence and support-related factors.

4.2 DEMOGRAPHIC FACTORS

The socio-demographic factors include age, gender, home language, marital status, religion, and level of formal education. The significance of using demographic information was to label the exact image of the respondents who participated in the study. The researcher grouped the respondents into age groups. A total of 90 respondents participated in this study. The age of the participants was between 16-72 years. All the participants were TB reactive and on treatment whereas the others had completed treatment. The majority of the respondents 33.3% (n=30) were between the age of 29-39 followed by 24.4% (n=22) of the respondents with the age of 40-50 years. The age range between the 16-28 years made up 22.2%(n=20) followed by the age of 51-61 years at 14.5%(n=13) then the least was the 62-72 years of age at 5.6%(n=5).

Table 4.1: Table indicating demographic data

Demographics Data	Frequency(n)	Percentage (%)
Age		
16-28	20	22.2%
29-39	30	33.3%
40-50	22	24.4%
51-61	13	14.5%
62-72	5	5.6%
Gender		
Female	41	45.6%
Male	49	54.4%
Home language		
Sepedi	80	88.9%
Isizulu	6	6.7%
Swati	2	2.2%
Xitsonga	1	1.1%
Other	1	1.1%
Marital status		
Single	42	46.7%
Married	35	38.9%
Separated	6	6.7%

Divorced	5	5.5%
Widowed	2	2.2%
Religion		
Christian	66	73.3%
Non-Christian	21	23.3%
Other	3	3.4%
Highest level of education		
Primary	19	21.1%
Secondary	49	54.4%
Tertiary	14	15.6%
None	7	8.9%

The results show gender variations of the participants in this study. All the respondents participated. The findings indicate that 54.4%(n=49) of the respondents were males while 45.6%(n=41) were females. This indicates that most of the TB patients that participated in this study were males.

The study's findings on the home language of the participants highlighted that the majority of the respondents 88.9%(n=80) speak Sepedi, followed by 6.7%(n=6) who speak Isizulu, and those who speak Swati were at 2.2%(n=2). The least were the Xitsonga at 1%(n=1) and other language also at 1%(n=1).

The findings on the marital status indicates that 46.7%(n=42) of the respondents were reportedly single, while 38.9% (n=35) were married. Those who reported that they were separated were 6.7%(n=6) then the divorced were 5.5%(n=5), the least 2.2%(n=2) were

widowed. The marital status of the respondents does not have an impact on TB treatment adherence.

The findings on the religion of the participants in this research indicates that the majority 73.3%(n=66) were Christian, the non-Christian were 23.3%(n=21) then 3.4%(n=3) were made by other religions.

The results on the level of education shows that the majority of the respondents 57.8%(n=52) obtained a secondary level of education, followed by 22.2%(n=20) of the respondents who obtained the tertiary education level, then13.3%(n=12) obtained only the primary education level, and the least 6.7%(n=6) had no education at all. This highlighted that the majority of the TB patients in the Sekhukhune district have attended school up to secondary level only and they were followed by those who went to tertiary institutions, while only a few went for primary education and others never went to school.

4.3 PATIENT-RELATED FACTORS

The patient related factors that were discussed are smoking cigarettes, drinking alcohol and the 5source of information.

The respondents were asked whether they had smoked cigarettes during the period of treatment. The results show that a total of 30%(n=27) respondents reported to have smoked cigarettes in the past six months of taking treatment whereas 70%(n=63) had not done so. Regarding alcohol intake, 38.9%(n=35) reported having been taking alcohol during the last six months while 61.1%(n=55) of the respondents reported not having taken alcohol during the previous six months of treatment.

Table 4.2: Patient related factors.

Patient related factors	Frequency	Percentage
Cigarette smoking		

Yes	27	30%
No	63	70%
Alcohol drinking in the last 6 months		
Yes	35	38.9%
No	55	61.1%
Source of information		
Media	23	25.6%
Health worker	62	68.9%
Internet	3	3.3%
Others	2	2.2%

The respondents were asked about their source of information about TB, the findings on the source of information indicated that 25.6%(n=23) got TB information through the social media, the majority 66%(n=62) highlighted that they got information from the health workers, then 3.3% (n=3) got the information from the internet while 2%(n=2) obtained information from others.

4.4 SOCIO ECONOMIC FACTORS

The socio-economic factors assessed who the TB patients were living with, their employment status and food availability.

The results on the question of who the patients are staying with shows that the majority 80%(n=72) of the respondents were staying with their family, then 15.6%(n=14) stayed with their extended family, while 4.4%(n=4) indicated that they were staying alone.

Table 4.3: Table indicating socio economic factors

Socio economic factors	Frequency	Percentages
Who do you live with?		
Family	72	80%
Extended family	14	15.6%
Alone	4	4.4%
Employment status		
Employed	14	15.6%
Self employed	12	13.3%
Unemployed	54	60%
Pensioner	10	11.1%
Availability of food		
Always available	36	40%
Sometimes available	43	47.8%
Not always available	10	11.1%
Not available	1	1.1%

The respondents were asked about their occupation status, the results on the employment status indicate that the majority 60%(n=54) of the respondents were unemployed, followed by 15.6%(n=14) of the respondents who are employed, then 13%(n=12) of the respondents were self-employed, and lastly 11.1%(n=10) were pensioners. The study shows the high rate of unemployment of the patients on the TB treatment who are required

to do regular follow up at their various TB clinics following a balanced diet and a healthy lifestyle.

The respondents were asked to indicate the availability of food during their TB treatment period. The findings on the availability of food indicated that 47.8%(n=43) of the respondents reported that food was sometimes available to take with the treatment, 40%(n=36) indicated that food was always available then 11.1%(n=10) said that food was not always available to take with their TB treatment. Only 1.1(n=1) respondent reported the unavailability of food at all during their treatment period.

4.5 HEALTH CARE SYSTEM RELATED FACTORS

The healthcare system related factors discussed the convenient TB clinic opening hours, the distance travelled to the clinic, the patient waiting time, the DOT supporter, the duration of treatment and the staff's attitudes.

Table 4.4: Table indicating health system related factors

Healthcare system related factors	**Frequency**	**Percentage**
Most convenient TB clinic opening hours		
07h00-16h30	12	13.3%
07h300-18h00	11	12.2%
07h00-19h00	44	48.9%
24hours	23	25.6%
Distance travelled to the clinic		
<5 kilometres	45	50%
5-10 kilometres	28	31.1%

10-15 kilometres	17	18.9%
Waiting time at the TB clinic		
Less than 1 hour	53	58.8%
1-2 hours	32	35.6%
More than 2 hours	5	5.6%
Who supervised you during treatment?		
Health care workers	30	33.3%
Family member	53	58.9%
Community member	2	2.2%
None	5	5.6%
How long should a person take TB treatment?		
6 months	35	38.9%
Stop anytime when feeling better	8	8.9%
Complete 6 months and health worker tells to stop.	47	52.2%
Staff attitude		
Very friendly	40	44.4%
Friendly	35	38.9%
Unfriendly	15	16.7%

The respondents were asked what opening hours for the TB clinic were most convenient to them. The results indicated that the majority 48.9%(n=44) of the respondents wanted the clinic to open from 07H00-19H00 followed by 25.6%(n=23) of the respondents who wanted their clinic to render 24-hour services and 13.3%(n=12) were the respondents who are satisfied with 07H00-16H30 followed by 12%(n=11) who wanted the clinic to serve them from 07H30-18H00 as their most convenient opening times for their TB clinic visits. The respondents were asked about the distance they travel to reach their health facilities. The findings on the distance travelled to the TB clinic show that (50%(n=45) of the respondents were travelling for 5-10 kilometres. Then 31.1%(n=28) of the respondents indicated that they travel for 10-15 kilometres to reach their nearest health facility. The least 18.9%(n=17) of the respondents were those who travel less than five kilometres to reach their TB clinic.

The respondents were asked about the length of time they usually wait in their respective clinics before they were attended. The results on the patient waiting time show that

58.8%(n=53) of the respondents reported to have been waiting for less than one hour at the TB clinic before they were attended. Then 35.6%(n=32) of the respondents had to wait for one to two hours for them to be attended to, while 5.6% (5) reported to have to wait for more than two hours before they can be attended to. The results shows that majority of the TB patients do not take a long time before they can be attended to at the

TB clinics although there are some that wait for a longer time before they are attended.

The respondents were asked about who was supervising them while they were taking TB treatment. The options they had to choose from were the healthcare worker, a family member, a community member and none. The results indicate that the majority

58.9%(n=53) of the respondents were supervised by their family members, then 33.3%(n=30) of the respondents were supervised by the healthcare workers, while 5.6%(n=5) had no one to supervise them and 2.2%(n=2) were supervised by a community

member. The findings of this study highlight that most TB patients were supervised by their family members when taking medication.

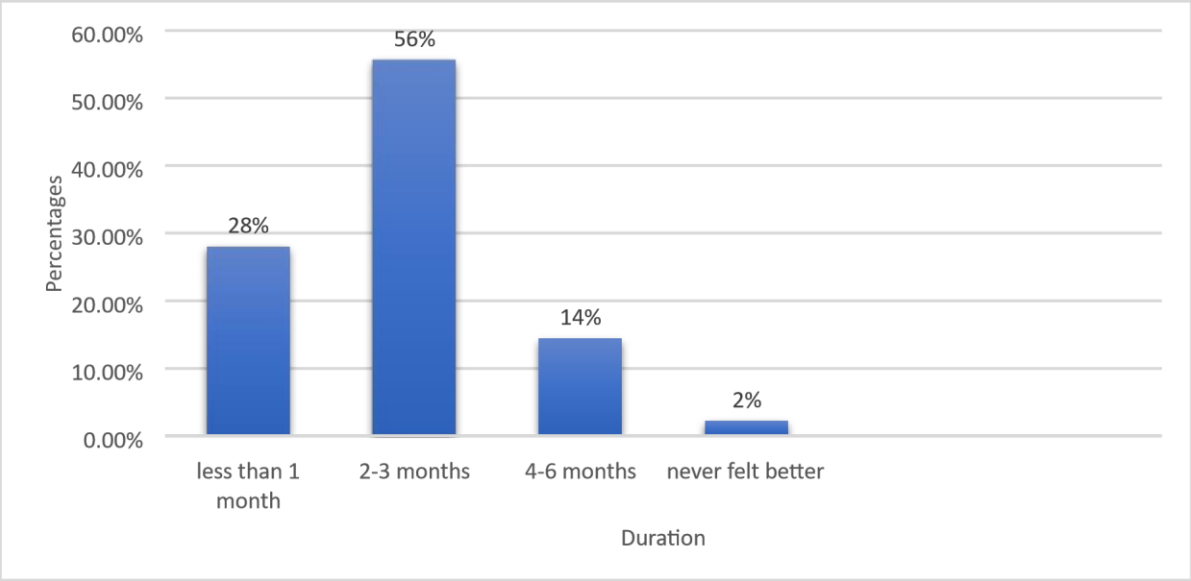
The respondents were asked about the duration of TB to assess their knowledge on treatment duration. The results on the duration of the treatment indicated that mostly 55.6% (n=50) the respondents understand that treatment should be taken for a complete six months, and the health worker informs them to stop taking treatment (treatment completed), whereas 38.9%(n=35) highlighted that treatment should be taken for six months. Only, a few 5.6%(n=5) answered that they might stop treatment at any time when they are feeling much better. The study's findings indicate that most TB patients understand their duration of treatment as compared to those who do not have the knowledge about the duration of their treatment.

The respondents were asked to rate the attitudes of the health workers when they visited the clinic to collect their treatment. The results on the staff attitudes indicated that 44.4%(n=40) of the respondents highlighted that the staff's attitudes were very friendly, followed by 38.9%(n=35) who indicated that the staff were friendly then16.7%(n=15) said the staff were unfriendly to them when they went to collect their treatment. The results of the study highlighted that most of the patients accept the attitudes of the staff about the respondents who do not accept the attitudes of the healthcare staff.

4.6 DISEASE AND MEDICATION-RELATED FACTORS

The following were assessed as the disease and medication-related factors; the time taken for the TB patients to start feeling better, the experienced side effects, any other medication taken besides the TB treatment and which medication was taken with the TB treatment.

The respondents were asked how long it took for them to feel better from the time they started taking TB treatment. The findings indicated that the majority 56%(n=50) took



between two and three months to start feeling better, followed by 28%(n=25) of the respondents who took less than one month to feel better, then14%(n=13) felt better at four and five months and the least 2%(n=2) indicated that they never felt better at all. The patients who reported to never feeling any better are those who defaulted treatment with reason. The findings revealed that most of the patients feel much better during their second to third month as compared with those who are still in their first month of treatment.

Figure 4.1: Time taken for TB patients to start feeling better.

The respondents who participated in the study were asked if they have experienced any side effects while taking TB medication. A total of 46%(n=41) of the respondents had experienced some side effects while taking medicines while 54%(n=49) had not. The study's findings indicate that the TB patients do experience treatment side effects, but some never experience any side effects.

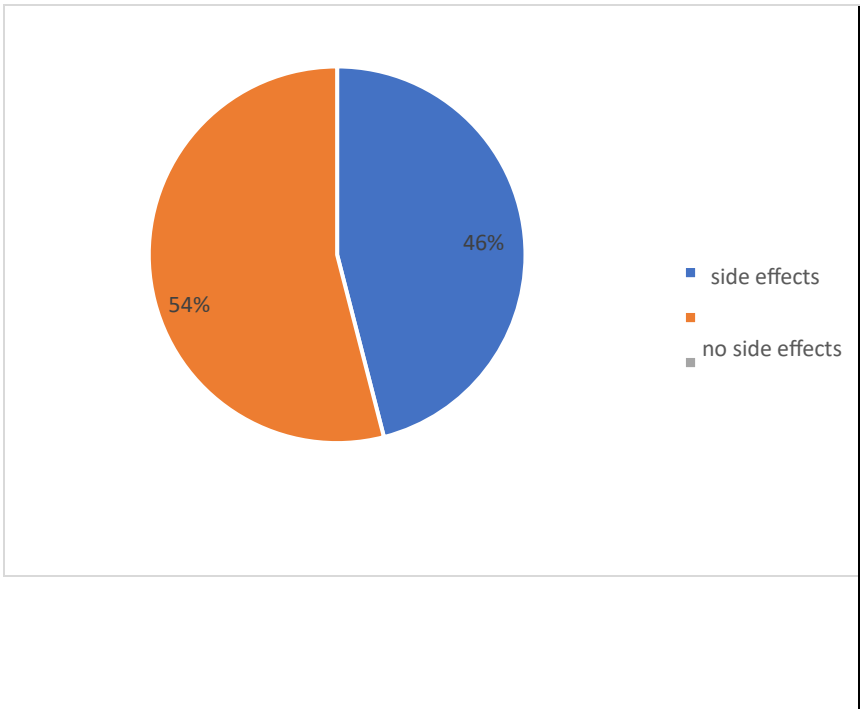


Figure 4.2: Patient's experience of side effects.

The respondents were asked if they were taking other medicines besides TB medication. A total of 90 respondents responded. The results of the study showed that 41%(n=37) of the respondents were taking other medication together with TB treatment and 59%(n=53) indicated that they were taking TB treatment only. These results indicate that most TB patients were taking TB treatment only as compared to those who were taking TB treatment with other medication.

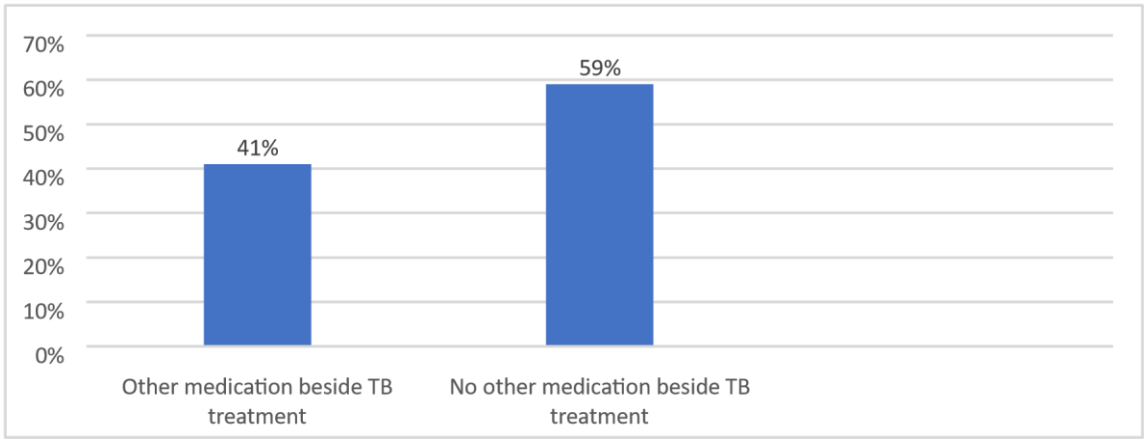
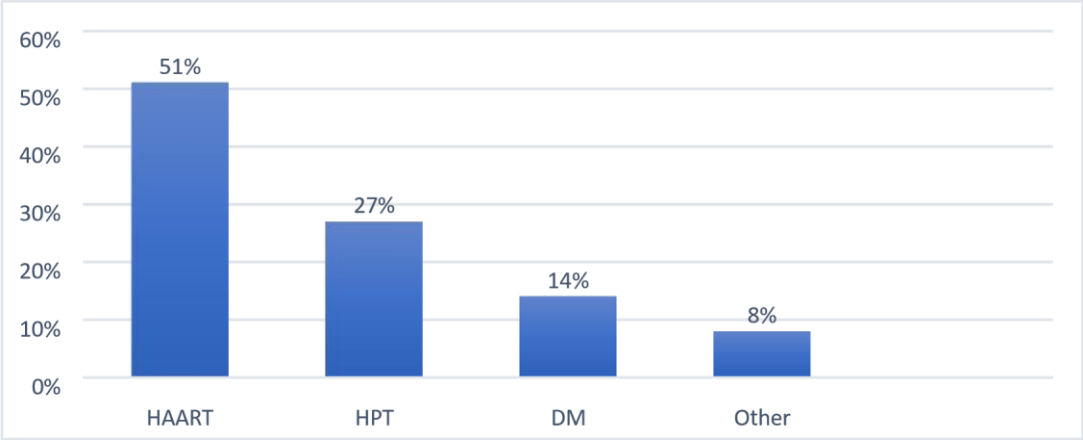


Figure 4.3: Patients on other medication besides TB treatment

A total of 37 of the respondents who were taking other medicines were further asked which medication was being taken. The results indicate that 51%(n=19) were taking Highly Active Anti-Retroviral Therapy (HAART), followed by 27% (n=10) of the respondents who were taking anti-hypertensive treatment, while 14% (n=5) of the respondents were taking diabetes treatment and the remaining 8%(n=3) were taking



other medications.

Figure 4.4: Medication taken with TB treatment.

4.7 ADHERENCE AND SUPPORT-RELATED FACTORS

Adherence and support related factors include, treatment supporters, how often they visit the clinic for treatment collection, means of communication, any need for additional support and what kind of support is needed.

Table 4.5: Adherence and support related factors.

Adherence and support related factors	**Frequency**	**Percentages**
Do you have a treatment supporter?		
Yes	65	72.2%

No	25	27.8%
How often do you visit the clinic for treatment collection?		
Weekly	6	6.7%
Monthly	11	12.2%
Fortnight	70	77.8%
When medication is finished	3	3.3%
Means of communication		
Face to face	15	23%
Phone calls	27	42%
Text messages	23	35%
Do you need any additional support?		
Yes	70	77.8%
No	20	22.2%
What kind of support do you want?		
Temporary disability	28	40%
Counselling	8	11%
Food parcels	15	21%
Home visits	13	19%

Other	6	9%

The respondents were asked if they were having treatment supporters. A total of 90 of the participants responded. The study's findings showed that 72.2%(n=65) of the respondents have treatment supporters and the remainder of 27.8%(n=25) showed that they do not have treatment supporters. These findings indicate that the majority of the respondents has got treatment supporters when compared to those patients with no treatment supporters.

The respondents were asked how often they visited the clinic for the collection of their treatment. The results indicated that the majority 77.8%(n=70) of the respondents were visiting the clinic fortnightly followed by 12.2%(n=11) of the respondents who were visiting their TB clinic for treatment collection on a monthly basis then, 6.7%(n=6) of the patients were collecting their treatment on a monthly basis. Only 3.3%(n=3) of the respondents reported to be collecting their treatment when it is finished.

The respondents were asked what mode of communication they used during the period of treatment. The results on the means of communication with the treatment supporters indicate that 42%(n=27) of the respondents were communicating face to face with their treatment supporters, followed by 35%(n=23) of the respondents who were using text messages to communicate with their supporters about their TB illness, then 23%(n=15) of the respondents were communicating through phone calls during their treatment. This study indicates that the face-to-face method and the phone calls have a great impact on supporting TB patients during their treatment period compared to text messages which were less utilised.

The respondents were asked if they need any additional care and support during their treatment period. Of the 90 respondents, the results showed that the majority 77.8%(n=70) of the respondents responded that they need additional support, then 22.2%(n=20) showed that they do not need any additional support during their treatment

period.
The respondents who indicated that they need additional support responded to the question. The results on the kind of support the respondents need during the treatment period indicates that 40%(n=28) of the respondents need a temporary disability grant, followed by 21%(n=15) who wished to receive food parcels during the hard times of taking their TB treatment. The other group of the respondents 19%(n=13) wished to be visited at their homes then 11%(n=8) needed counselling during their time of treatment. Only 9%(n=6) chose others as they needed support that was not mentioned on the list.

4.8 DISCUSSION OF THE RESULTS

4.8.1 Section A: Demographics

The purpose of this section is to discuss the results and link the findings with the results of the other related previous research about developing support strategies to enhance TB treatment adherence in the Sekhukhune district, of the Limpopo Province. The study found that there is a need to develop support strategies to enhance TB treatment adherence in the Sekhukhune district clinics.

The demographic data presents the general image of the respondents who indicated their responses towards TB treatment adherence. The demographic data includes age, gender, home language, marital status, religion, and the highest level of education.

The study indicates that most of the respondents who were on TB treatment were between the ages of 29-39 years. TB can affect anyone regardless of age or gender (WHO, 2022). Although TB is a disease that affects anyone, this study indicated that TB could affect all the age groups including children. Age was found as another factor affecting treatment adherence. A Study by Matakanye (2021) indicates that the elderly patients are likely not adhering to TB treatment due to reasons such as forgetfulness, treatment side effects, and the lack of family support which makes it hard for them to understand health education. By contrast, this study revealed that most respondents who were non-adherent

are the middle-aged group as they do not consider TB as a serious condition. The attitudes and the behaviour of the youth play a role in treatment adherence.

The study indicates that most of respondents who were on TB treatment during the study were males than females. The WHO reported that the largest burden of TB was in adult men (WHO, 2019). As in this study, it is indicated that more males were TB reactive than women, as the males tend to be non-adherent and need support. According to the WHO's recent data, TB affects 9.9 million people, counting 5.5 million men, 3.3 million women, and 1.1 million children (WHO, 2021). Gender was not associated with adherence as TB can affect anyone and similar results have been reported in other studies (AlSahafi, Shah, AlSayali, Mandoura, Assiri, Almohammadi, Khalawi, AlGarni, Filemban, & AlOtaibe, 2019). The Sekhukhune District is rich in chrome and most men are working in the mines where they are prone to contaminated air that may affect their health thus causing different illness.

The Sekhukhune District is inhabited mostly by Pedi speaking people. The majority of the respondents were Pedi speaking which is expected as it is the native language in the district (Sekhukhune District Profile, 2020). Isizulu, Swati and other languages that are spoken in SA made 10% of the total number of respondents in this study. The respondents who are using other languages are those who came to seek employment or visitors. According to the experience of the researcher, using a language that is understood by the patients is important as nursing patients with different languages may cause misunderstanding and a communication breakdown. The patients should be addressed using a language that they understand using a dignified approach to make them feel supported and welcomed. TB affects anyone regardless of marital status, therefore there is no link between religious and treatment adherence Marital status also does not have an impact on TB treatment adherence. The study's findings highlighted that most of the respondents were Christian. TB affects anyone regardless of religion, therefore there is no link between religion and treatment adherence. Religion also does not have an impact on treatment adherence and support.

The study's findings indicate that the majority of the respondents attended the secondary level of education. This indicates that the majority of the patients who are on TB treatment had secondary education but only a few received tertiary education. The importance of education in this study was to determine the level of understanding of the TB patients because it has an impact in treatment adherence. The study conducted by Mekonnen and Azagew (2018) revealed that the patients with a college education, a degree or any other qualification made up a larger proportion of low adherence, which may be related to the living and working environment, and the patients with a busy schedule tend to forget to take their medication. However, the level of education is often associated with the patient's knowledge about TB, which also has an impact on adherence. The discussion indicates that most the highly educated people are probably adhering to treatment based on their knowledgeable mentality unlike people with low education. The current study's results are in line with the above literature as most of the respondents who are on TB treatment have at least a secondary education.

4.8.2 Section B: Patient-related factors

The previous section presented the demographic data of the respondents. This section provides the patient-related factors which consist of alcohol and smoking cigarettes, and the source of information.

The study findings indicate that most of the respondents are drinking alcohol as compared to smoking cigarettes. Alcohol and substance abuse have been cited as reasons for nonadherence to TB treatment in general. There have been numerous publications describing the impact of alcohol and substance abuse among the TB patients (Necho, Tsehay, Seid, Zenebe, Belete, Gelaye, & Muche, 2021). Overall, the harmful use of alcohol is responsible for 51% of the global burden of disease as well as it being the leading risk factor for premature mortality and the disability among people aged 15-45 years (WHO, 2019). Alcohol use disorder my result in an increased chance of liver damage among the TB patients and it may alter the metabolism of antibacterial drugs (Thoms, Thiruvengadam, Kadam, Ovung, Sivakumar & Shivakumar, 2019). The study

further identified that substance abuse may put most patients at risk of contracting disease such as TB as they affect their respiratory system.

The study's findings indicate the use of alcohol and substance abuse are a problem because they put the patients at risk of not adhering to their treatment. The study further showed that the majority of the respondents got health information from the health workers. The study also shows that the social media platforms have the potential to create health awareness.

4.8.3 Section C: Socio-economic factors

The previous section discussed the patients' related factors. This section discusses the socio-economic factors which comprise of who the patients are living with, their employment status and their situation in terms of the availability of food.

The findings of this study revealed that the majority of the TB patients are staying with their family members. Close family relationships can increase the patients' life satisfaction, disencumber their mind from care, and enhance their capability to fight the disease, however, the patients with family dysfunction are more likely to be isolated and that leads to negative treatment outcomes (Qiu, Yang, Tong, Lu, Gong, & Yin, 2018). This study indicates that the patients who are staying with their families are more adherent as they receive support and care from their families. The majority of the TB patients in the study are living in a huge family whereby (33.3%) live with seven or more people in a house. Living in an overcrowded condition where family members share a room is a risk as overcrowded conditions increase the possibilities of the transmission of TB (Vanleeuw, Mkabile & Atkins, 2022). In a situation such as this, a home visit is important to screen the contacts and educate them on how to live a healthy life. Poor living conditions may increase the spread of infection thereby resulting in re-infection.

The study indicates that most people are living in poverty as many people are suffering because of the increased rate of unemployment in SA. This study confirms that 60% of the TB patients are unemployed. In South Africa, the unemployment rate of the TB patients

has been found to be higher (54%) than the general population (30%), but the direct costs of treatment and care were low as treatment is free (Vanleeuw, ZembeMkabile & Atkins, 2022). The study revealed that the TB patients lack basic resources on a daily basis for their survival because of poverty that may lead to non-adherence.

The End TB Strategy recommends that the government use universal health coverage, social protection and interventions to reduce poverty, by ensuring food security and improving the living and working conditions to reduce TB incidence (WHO, 2015). The study indicates that the TB patients who are living in poverty were assisted to receive a temporary disability grant for survival during their treatment period. The study further highlights that the patients depended on the grant to relieve their burden and they did not want to complete treatment as they want the grant to continue. The results from a study in Bandung Indonesia, show that beside having a proper system of free TB diagnosis and treatment services throughout, the patients experienced out of pocket costs (McAlister et al., 2020). The TB patients are expected to visit the clinic fortnightly, and they are expected to have money for transport for every visit. This issue was recognised by the WHO in The End TB Strategy which incorporated a target of no TB-affected family facing catastrophic cost because of TB by the year 2020, however, to reach this target, there will be a need for substantial input across a many activities and policies from the NTP and other relevant government sectors (WHO, 2015). The patients who depend on their families for financial backup, end up defaulting treatment as the family become tired of supporting the patient financially. This study indicates the financial burden as the other reason for treatment interruption because most patients become non-adherent due to poverty.

The study indicates that some TB patients are not adhering to treatment due to the lack of food to take with the treatment. Food insecurity in the TB patients is driven by high levels of unemployment and poverty in the households as most patient cannot afford adequate nutritious food due to the high cost of food while in a financial stress (Rudgard, Carter, Schuffell, Cluver, Fraser-Hurt & Boccia, 2018). Some of the TB patients decided to stop taking treatment because they cannot take medication on an empty stomach.

Malnutrition has also been shown to increase the mortality rate among the TB patients as the majority of the patients lack most basic food and inadequate nutritious food during treatment (Vanleeuw et al., 2022). Some of the patients are underweight due to the imbalanced diet that they are following because of poverty as they cannot afford nutritious food.

The TB patients can apply for state provided social assistance in the form of the disability grant that is provided to people with a physical or mental disability that are unfit to work for a minimum period of six months although many reported to encounter problems and a high cost of trying to access it (Watthananukul, Liabsuetrakul, Pngrassami, & Chongsuvivatwong, 2020). There is limited evidence on the effect of food supplementation and financial support on the treatment outcomes for the TB patients to strengthen their resilience and support their ability to care for their household members with TB (Erlingers, Stracker, Hanrahan, Nonyane, Mmolawa & Tampi, 2019). The TB patients have a concern about the food parcels that they are receiving as they are not enough to manage their duration of treatment.

4.8.4 Section D: Health care system related factors

This section presents the health care system related factors. The previous section discussed the most convenient TB clinic opening hours, the distance travelled to the clinic, the patient waiting time at the TB clinic, who supervised the patients when they were taking treatment (DOT supporter), how long should a patient take TB treatment and the staff attitudes.

The study findings indicate most of the clinics were not rendering 24 hours services thus resulting in the non-utilisation of the PHC services. According to the findings of the study, most of the patients were not satisfied with the clinics' operating hours as some of them are working. The majority (48.9%) of the participants indicate that they want the clinic to operate at least 12 hours per day followed by (25.6%) patients who want the clinics to operate 24 hours. The reason being that they are working far and by the time they are off

from work, the clinic is already closed and some defaulted treatment because the clinic's operating hours are not matching with their free time thereby preventing them from accessing the health care services.

A study by Masemola (2021) revealed that the clinics not operating 24/7 led the patients to go to the nearest hospitals for health care services on days that they are not operating including public holidays, during weekends, after 4pm and during the night. Some patients are not happy with the working hours as they cannot manage to collect their medication during the day because they will be at work while some are attending school and the clinic closed at 16H30.

According to the study's findings, most of the TB patients in this study indicated that they are travelling long distances to reach their nearby clinics and only a few stay near the clinics. A study by Orlandi, Pereira, Biagolini, Franca and Bertolozzi (2019) revealed that taking too long to get to the medical facility required higher transportation costs, and the patients who were financially constrained by transportation costs had a higher risk of nonadherence to treatment. The lack of accessibility of the patients to reach the health services due to the long distance to reach the clinic have a huge effect on treatment adherence. Some of the patients depend on their families to pay for the transportation fares as they are unemployed, and their families cannot always afford to support them financially. The patients staying next to the clinics do not experience transport challenges because they can take a walk to their clinics. The financial cost to the diagnosed TB patient and the subsequent care can include medical costs such as the transportation to get to the health facility, accommodation, or food, and such costs create barriers to health care access and treatment adherence which in turn can affect treatment outcomes and may increase further community transmission of the TB consequently (Viney, Islam, Hoa, Mrihito, & Lornnroth, 2019). The majority of the patients experience high transportation costs to reach the TB clinics as this makes it difficult to take treatment promptly because they are poor to afford transport fares.

The results of a survey in the Philippines highlighted that the total costs of TB patient care were aggravated mostly by the direct non-medical costs including the transport expenses, regular food and nutritional supplements. A study by Gebreweld et al. (2018) revealed that the distance travelled by the patients to their clinics is an enabler to complete their regimen and they further highlighted that in most villages, there is a lack of transport, as the patients must walk long distances to the nearby village to get transport. Some of the patients end up defaulting treatment due to the long distance they must travel to reach the clinics while they are unemployed and having no additional funds to assist. This study indicates that the TB patients experience a serious problem with regards to the money for transport for the whole period of treatment.

The study shows that the patients bypass the nearby clinics, and they choose to travel to another clinic due to the fear of long queues that result in a long waiting time. The study indicates that most of the TB patients are given an opportunity for fast queues for them not to stay longer in the clinic. Most of the TB patients are entitled to a fast queue, others miss their appointments due to different reasons, however, when they visit the clinic, they follow the queue which impacts their waiting time. According to the standard of the PHC services, the normal waiting time for consultation is only one hour. Similarly, a study by Matakanye (2021) supports this study that the long waiting time affects treatment adherence. The study further highlighted that the long health education that is provided to the patients has an impact on treatment adherence.

Therefore, the health system interventions such as training the healthcare providers, provider–patient communication and health system strengthening to shorten waiting times and to raise the quality of health services could address these factors (Nezenega et al., 2020). Most of the TB patients are impatient in a way that they may eventually skip appointments and moving from one clinic to another to look for short queues that may reduce their waiting time. This highlights that the time that the patient spends at a TB clinic plays a significant part of treatment adherence.

The findings revealed that most of the patients in this study are supervised by their family

member. Furthermore, the study highlights that the patients who do not have DOT supporters had no one supporting them when taking their medication. The studies have shown that DOT is mostly provided by the family members and that well-trained family members will provide better DOT than the health services personnel (Yin, Wang, Zhou, & Wei, 2018). The DOT supporters play a great role during the treatment period by observing patients when taking their medication and ensuring that the patients take correct doses at the right time. The constant encouragement and care of the family can increase the patient's confidence, thus affecting the patient's medication adherence (Chen et al., 2020). A Study by Chen et al. (2020) revealed that the patients with frequent medication supervision by the family members and the patients whose family members often encouraged them mentally were more likely to have a superior level of adherence.

Therefore, people can improve patient adherence by training the family members to better provide therapeutic and psychological interventions. The study further noticed that the patients who are supervised complete their course as the DOT supporters take care and can detect treatment interruptions earlier. The supporters may also be able to identify the challenges that are related to treatment and address them as soon as possible.

The results agree with the other similar study which found that a devoted DOT supporter helps to maintain good interaction between the patient and the health care workers which provides chances to identify the challenges that are related to the treatment side effects and it gives further health education on how to resolve those challenges (Matakanye, 2021). This study indicates that the TB patients who do not have treatment supervisors are more likely to disrupt treatment and this leans to becoming non-adherent. The study further highlights that the TB patients who do not have DOT supporters have a lack of trust from their health care workers or family members.

The results show that the respondents of this study have knowledge about the duration of treatment. The patients' lack of knowledge about TB often meant an incorrect understanding of the disease (Qiu, Yang, Tong, Lu, Gong, & Yin, 2018). In this study, the patients' knowledge of TB was relatively good and the patients who had a good knowledge

of TB were more likely to show adherence. Another study indicates that prolonging the duration of treatment has a negative impact towards treatment adherence as it affects their daily activities (Aibana, Dauria, Kiriazova, Makarenko, Benchmaha, Rybak, Flanigan, Petrenko, Becker & Murray, 2018). The study further shows that prolonging the treatment duration has a psychological impact as they remain isolated form their friends and families for a long period. This could exhaust the patients and the families as it may affect them psychologically as well as financially and some tend to lose their jobs because of the long duration of the treatment. A study by Gebreweld et al. (2018) revealed that a long duration of treatment poses barriers to treatment adherence. The study further revealed that the patients who took long to feel better are more discouraged to continue with treatment and tend to be more demoralised as they think that treatment is not working.

This study found that the health professionals' interactions and the positive attitudes towards the patients contribute to TB treatment adherence. A study by Gebreweld et al. (2018) revealed that good interaction and the positive attitudes of the health care workers will reduce the number of patients interrupting treatment to attend social proceedings. The patients are satisfied when they are treated by personnel that are friendly as some other patients cannot tolerate the rudeness of the nurses (Nezenega et al., 2020). The patients may be discouraged when they visit the clinic if the attitude of the health providers is poor as this may lead to defaulting treatment (Matakanye, 2021). In contrast, the patients may sometimes take advantage of the good attitudes of the health care workers and not comply to treatment as they know that they cannot be rude to them. Those who rated the attitudes of the health workers as unfriendly are defaulters who do not comply with treatment, and they did not have treatment supporters.

Tuberculosis in all forms is an occupational health hazard for the health workers who are at the frontline and are at risk of contracting it (Acha-Anyi, Acha -Anyi, Asongu & Tchanyou, 2020). The WHO recommended that the healthcare staff should put on face masks to protect themselves from inhaling harmful respiratory infections such as MDRTB bacteria and provide the coughing patients with surgical masks (WHO, 2020). Similarly, the health

care workers fear nosocomial infection which can possibly promote stigmatisation and social exclusion of the TB infected individuals due to the lack of infection control measures that correlate with the lack of infrastructures and protective equipment (Vigenschow, Edoa, Adegbite, Agbo, Adegnika, Alabi, Massinga-Loembe & Grobusch, 2021).

The success aspects such as the adherence to treatment, the quality of care and patient health education will depend on the quality of the work environment. Reducing long working hours to avoid burnout, and better fiscal payments, may decrease the erosion rate of the staff that may promote performance of the health personnel (Dilas et al., 2023).

4.8.5 Section E: Disease and medication related factors

The previous section discussed the health care system related factors. This section presents the disease and medication related factors that are composed of; the time taken for the TB patient to start feeling better, the experience of the treatment side effects, as well as other medication beside TB treatment.

The study found that most of the patients who participated in the study felt better after two to three months. Educating the TB patients about their illness, medications, duration of treatment, curability of the disease and the consequences of non-adherence could be crucial in improving the patients' knowledge (Dilas et al., 2023). Most of the patients have little knowledge about the disease in general and the duration of treatment before they were diagnosed with TB. A total of 20% of the patients received primary education and 8% have no school and it was difficult to understand TB infection completely. These findings are consistent with the observations in which a lack of knowledge was reported as a factor that is associated with the non-adherence to TB treatment. To address the knowledge deficit among the TB patients, it is necessary to implement effective measures to enhance the patients' knowledge of TB disease and its treatment (Tola, HolakouieNaieni, Tesfaye, Mansournia, & Yaseri,2019). The patients should be given ongoing counselling and health education about the disease so that they can understand it properly to enhance adherence. The patients with inadequate knowledge and support

were non-adherent to the treatment and never felt better. The respondents who never completed treatment utilised not feeling better to justify their reason for not completing treatment.

The study results revealed that 45.6% of the patients who participated in the study experienced treatment side effects. It is necessary to monitor and guide the patients to ensure timely detection and the management of adverse reactions during medication use.

Gebreweld et al. (2018) highlighted that some of the patients stop TB medication as the side effects discourage them from taking treatment mainly during the intensive phase of treatment believing that the treatment is worsening their condition. It is important to manage the side effects earlier and also provide health education to the patients. The adverse reactions caused by the anti-TB drugs are a serious problem as it makes them not to cope with the daily activities. This issue may not only exacerbate the severity of the adverse reactions, but it may also lead to the non-adherence to treatment (Hamdouni, Ahid, Bourkadi, Benamor, Hassar, & Cherrah, 2020). This study revealed that the patients who experienced adverse drug reactions were more likely to be non-adherent. Providing counselling on the possible adverse events in a language the patient best understands may be helpful in preparing the patients towards the best appreciation and the commitment to their treatment (Adisa et al., 2021). Some patients thought that the healthcare workers were unsupportive when experiencing treatment side effects, although the others appreciate the given support. The patients who experience treatment side effects need continuous support including health education and the management of adverse effects in a positive manner.

The study results revealed that 41% of the TB patients were taking TB treatment with other medication. Previous interview studies have demonstrated that there is a ‘pill burden’ that is caused by the many tablets that the patients must consume and related medication side effects with some requiring extra medication to alleviate the symptoms that are caused as a side effect of the TB treatment, thereby adding to their pill burden (Alipanah, Jarlsberg, Miller, Linh, Falzon, & Jaramillo, 2018). Ting et al. (2020) highlight the difficulties with

medication intake due to the number or the size of the pills, thus reflecting findings that are consistent with previous interview studies (Ting et al., 2020). The study indicates that the patients taking TB treatment with other chronic medication became overwhelmed by the treatment which make them not to cope well with their daily activities. The difficulties with medication intake due to the number or the size of the pills were another key identified burden that was consistent with the previous interview studies (Ting et al., 2020).

The time-consuming treatment of chronic diseases without adequate support of the patient or communication between the healthcare providers can negatively impact clinical outcomes (Gallacher, May, Langhorne & Mair, 2018). The patients who take multiple treatments need continuous support to overcome the challenges encountered during treatment as some may stop taking all the treatment because of the lack of motivation. Treatment burden had a significant impact on the participants' daily life and although many struggled with adjusting to a lengthy and time-consuming treatment regimen, most understood the importance of treatment completion (Ting et al., 2020). The patients may become demotivated after taking multiple medications without feeling better. The study by Matakanye (2021) highlighted that the TB co-infected patients and the patients with an unknown HIV status are at risk of defaulting treatment. It is essential to expand the HIV screening of the TB patients and the appropriate initiation of ART to reduce HIV transmission, which also improves individual prognosis and reduces the burden of HIV and TB (Ramirez, Mejia, Rojas, Seas, Van der Stuyft, Gotuzzo & Otero, 2018). The success in the collaboration of TB and HIV /AIDS programs will emphasise improvement control of TB among the HIV-infected people significantly for the public health benefits (Anochie et al., 2018).

4.8.6 Section F: Adherence and support-related factors.

The previous section discussed disease and the medication related factors. This section discusses adherence and the support related factors that include the following questions:

Do you have a treatment supporter? How often do you visit the clinic for treatment collection? What is your preferred means of communication? Do you need any additional support and what kind of support do you want?

The study indicated that 72.2% of the TB patients who participated in this study were having treatment supporters. The efforts of the treatment supporter appeared to result in timely and effective handling of the participant's needs and created a sense of partnership and trust (Milligan, Iribarren, Chirico, Telles & Schnall, 2021). The main purpose of the treatment supporters is to support the patient timeously and identify any obstacles and challenges that may arise during the time of treatment. The patients on TB treatment are attached to their treatment supporters for the success of treatment. The findings suggest that the TB patient need social care and support from the families and the communities along with standard medical treatment (Saqib, Ahmed & Panezai, 2019). The TB patients who are supported by their families are more less likely to default treatment as the majority are staying together and receiving the support at all times. The patients without treatment supporters are prone to defaulting and relapsing as they are not supported.

This study revealed that the TB patients were visiting the clinic fortnightly for treatment collection. Receiving TB treatment particularly through DOT can also worsen the real or the perceived stigma that is associated with TB, as the patients might fear that the people around them will learn about their disease when they know that they are attending the TB clinic (Ting, El-Turk, Chou, & Dobler, 2020). The patients may therefore avoid visiting treatment clinics and they may also be reluctant to take medication. The TB patients who comply with treatment follow ups are booked for treatment collection days to reduce their waiting time and to avoid long queues however, the defaulters may experience some delays in the access to health service. This communication might be important to observe and support the TB patients at each clinic visit to allow for an improved framework in distinguished care, with differing intensity that can be given to the patients depending on their needs (Lester, Park, Bolten, Enjetti, Johnston, Schwartzman, Tilahun & von Delt, 2019).

The study indicates that the patients who participated in this study were using phone calls to communicate with their treatment supporters. Increasing the access to mobile phone telecommunications provides better opportunity to enable direct communication between the TB patients and their health care providers (Bediang, Stoll, Elija, Abena, & Geissbuhler, 2018). The monitoring of the TB patients using mobile-phone messaging has been shown to increase medication adherence; however, the quality of evidence has been determined to be low (Latif, Sjattar, & Erika, 2020). The patients who were supervised using mobile phones were non adherent as they may answer to different information through the phone. The respondents who were communicating face to face were less as it is time consuming although it is of good quality.

The study revealed that 77.8% of the TB patients who participated in this study need additional care and support while 22.2% do not. The TB patients need to be supported throughout their treatment period. The study further asked the participants the kind of support that is needed.

The TB patients need support during the treatment process. The patients who are successfully supported complete their treatment and those who were not supported do not adhere to treatment and may have a tendency of defaulting treatment. A total of 31.1% of the respondents needed the temporary disability grant. While 16.7% of the respondents needed support through home visits. Then 14.4% needed counselling during their time of treatment. The patients who wished to receive food parcels were 8.9% then lastly there were 6.7% patients who wanted other care besides those mentioned above.

4.9 CONCLUSION

This chapter presented the research findings on analysing and interpreting the research data. The study revealed that most of the respondents do not have proper support from their family members and from the healthcare providers. The TB disease is stressful, and the patients might get overwhelmed so there is a need for care and support of the patients during treatment for positive treatment outcomes. The required support may be

psychological, financial or social. The next chapter will discuss the development of the strategies and theory integration. This study was consistent with the findings of the other studies, and more attention was also recommended to improve adherence and support.

CHAPTER 5: DEVELOPMENT OF STRATEGIES AND THEORY INTERGRATION

5.1 INTRODUCTION

The previous chapter presented the research results and the discussion of the findings. This chapter discusses the integration of theory, the study findings and Dickoff's survey list guiding the findings on the development of the strategies.

5.2 INTEGRATION OF THEORY AND STUDY FINDINGS

One of the recommended models to explain and understand the health behaviour concerning the treatment adherence of the TB patients is The Health Belief Model (Janz & Becker, 1984). This model was first developed in the fifties by a group of social psychologists who tried to explain the reasons for a group's failure on undergoing the Rosenstock's disease prevention program (Rosenstock, 1974). It was later extended by Janz and Becker (1984) to study a person's behaviour towards the diagnosis being made, in particular the problem of adherence to the treatment regimen. The success of TB treatment is not only an individual's effort, but it needs support from several other factors such as the support from the health workers, family support, peer support, and social support (Barik, Indrawati, & Sulistiawati, 2020).

The patient's health condition is generally weak due to the current TB illness and changes in the nutritional status; therefore, the health care providers and the families have an important task to accomplish by ensuring regular monitoring of treatment until the patient recovers (Safri et al., 2014). The study by Chen et al. (2020) revealed that the regular supervision of the family members on medication and spiritual encouragement, good doctor-patient relationships and knowledge related to TB, as well as the high need for

policy support contribute to high adherence in the patients with statistical results having family members as supervisors during the treatment period. The treatment policy support for TB disease management does not only focus on the aspects of the clinical service approach, but it is also important to look at the aspects of family and community support (Saqib et al., 2019).

The theoretical framework can be useful in developing strategies to enhance TB treatment adherence. Medication adherence and treatment success require a multifaceted approach to help to adapt to change and maintain behaviour due to the long treatment process of pulmonary TB (Parwati, Bakta, Januraga & Wirawan, 2021). This might be due to the patient's perceived wellness or cure after taking some medications and thus interrupting their treatment. On the other hand, when the patient perceives that the disease is severe and the risk of discontinuing TB medication leads to poor health outcomes, their non-adherence to TB medication would be less likely (Mekonnen & Azagew, 2018).

Another study in Addis Ababa revealed that the perceived risk of discontinuing TB medication was the reason for good adherence, while perceived wellness was the reason for the patients not having the decision of discontinuing TB medication (Sahile, Yared, & Kaba, 2018). In the context of TB treatment adherence, this model can be applied to develop strategies that address the perceived barriers to adherence and enhance the perceived benefits of the treatment (Gube, Debalkie, Seid, Bisete, Mengesha, Zeynu, Shimelis, & Gebremeskel, 2018). The ideas of the Dickoff survey were used to frame the conceptual framework that guides the development of the support of the TB patients. The strategies are based on the Health Belief Model and Dickoff's survey list. The support strategies to enhance TB treatment adherence can be grouped into several categories including providing education and information, addressing perceived barriers, providing reminders, involving the patient, medication management strategies and social support interventions which are discussed below.

5.2.1 Providing education and information

The tuberculosis patients need information and education about the nature of the disease and its treatment, as well as the encouragement to complete treatment to achieve cure (Dlodlo, Brigden, Heldal, Allwood, Chiang, Fujiwara, Graham, Guillerm, Harries, Koura, Kumar, Lin, Meghji, Mortimer, Piubello, Roth, Satyanarayana, Sekadde, Solovic, Tonsing, & Van Deun, 2019). The study discovered that the TB patients lack information and education about the TB disease, transmission, as well as about prevention and the adherence to treatment. It would be difficult for the family members to support the TB patient if they lack knowledge about the TB disease. If the TB patients understand the disease and its treatment, information is likely to be shared among the community members as a result, the community will learn more about the disease (Dlodlo et al., 2019). The proper communication enables trusting relationships between the patient and the provider to improve the cure rate and treatment sustainability (Moodley, Saimen, & Zakhura, 2020). The patient's knowledge about the TB treatment enables strategies and medical provision that gives meaning, social relations guaranteeing sufficient information, correct diagnosis and good adherence (Dials, 2023).

Providing education and information about TB and the importance of adhering to treatment to increase the perceived severity of the condition and the perceived benefits of treatment are significant components. According to the concept of perceived benefit, the TB patients must believe that adhering to medication is important to their TB treatment, therefore this construct must be reinforced in the TB control programs (Azizi, Karimy & Salahshour, 2018). The patient with an understanding of health information allows correct educational interventions that improve information about TB regarding transmission, prevention and medication management as they are the most contributory factors in both health seeking behaviour and treatment outcomes in various communities (Dilas et al., 2022). The poor health literacy of the patients and limited awareness to TB have an impact on treatment adherence therefore, continuous health education on treatment and comprehensive counselling are important adherence processes that enable patient compliance with various clinical requirements (Du, Chen, Zhu, Zhang, Wu, Xu, Ji, Zhou, & Lu, 2020).

The lack of education was recognised as the other component that facilitates difficulty in understanding the health education (Frederickden, Gibbons, Brown, Edwards, Yang & Fitzsimmins, 2018). Other studies revealed that the shortage of health literacy is related to poor utilisation of the precautionary health care services (Goto, Ishikwa, Okuhara & Kiuchi, 2019). The health literacy materials should be clear and easy to understand, and they should be available in the language that the patient is most comfortable with. The patients with more education understand the potential risk of imperfect treatment which promotes the motivation to adherence to treatment (Azizi et al., 2018). The lack of knowledge about the TB disease was related to the increased probability of consulting traditional healers, thereby causing delays on the TB diagnosis (Marahatta, Yadav, Giri, et al., 2020). Although the government has maintained free TB services to the people, some patients from poor families are required to spend their money to buy medication in the private health sectors due to the shortage of information about the free TB programmes in the public health sectors (Pradipta et al., 2021). The patients require continuous health information about TB and the importance of taking treatment to increase their understanding and motivation to adhere to treatment. Daily health education at every TB clinic, the provision of TB posters, the sharing of TB leaflets in all the health facilities, as well as the formulation of TB support groups will improve education and the information about the disease.

5.2.2 Addressing the perceived barriers

The study realised that most TB patients undergo certain barriers to treatment which prevent them from adhering to treatment until the completion of treatment. The lack of knowledge about TB in general further had serious consequences such as poor medication adherence especially when the patients felt relieved from symptoms after taking medication for two months which increased the risk of relapses and multi-drug resistant TB (Marahatta et al., 2020). The delay in diagnosis and treatment initiation can leave the patient and their families susceptible to seek care from formal and informal health services and they may take inappropriate antimicrobial doses of over-the-counter

medication (Pokharel, Raut, Adhikari, 2019). The lack of support and compassion for the patient can affect the patient's trust and probability to attend the TB clinic. The lack of adequate time to discuss the health conditions, inadequate counselling, and less comprehension about the disease often daunted the patient to attend the follow up care (Marahatta et al., 2020).

Migration and the changes of the physical address had negative effects on treatment adherence, as some of patients would change address without notifying their health team and become unable to access a health facility due to the distance travelled and the cost of transport that was required for them to reach the health facilities (Matakanye, 2021). The cost associated with visiting the clinic from long distances, the long waiting time and the inflexible clinic hours further impede the patients from accessing the health services, so consequently they visit when the disease is severe (NDoH, 2016). Despite TB diagnosis and care being offered free in South Africa, the patients experience considerable out of pocket payments in accessing the TB services with the poorest patients incurring the highest relative cost (Moodley, Saimen, Zakhura, Motau, Setswe, Charalambous & Chetty-Makhkan, 2020).

The patients may forget or miss an appointment, and they might feel exhausted to take medicines and more importantly they may fall prey to the cycle of distance, monetary constrains and the time that is required for the current DOT treatment that require daily visits to the health centre. The stigma originating from the close family members produces discrimination (Pradipta et al., 2021), as in the present study it was identified that several patients reported to have been left alone by their close family without any support in facing the disease. Psychological conditions such as depression, anxiety, denial and the lack of motivation in the TB patients may lead to a delay of seeking healthcare which ultimately leads to poor medication adherence (Agbeko et al., 2022). The lack of community involvement and treatment programmes is another barrier to treatment adherence. Involving community members to support early treatment seeking can inspire the compliance to treatment regimen and it can also be beneficial (NDoH, 2016).

Despite proper diagnosis or guidance during the first clinic visit, the uneducated patients may suffer substantial delay in the initiation of proper TB treatment as there is time that is wasted when seeking second opinions due to psychological factors of denial amongst the patient diagnosed with the stigmatised disease (Ehsanul Huq, Moriyama, Zaman, Chisti, Long, Islam, Hossain, Shirin, Raihan, Chowdhury, & Rahman, 2018). Most households in the low socioeconomic settings have limited access to smartphones and tablets that could be helpful during treatment. Some studies suggest that the cost of providing smartphones to the patients and supporting app-based adherence is more costeffective for the patients and health service than the current adherence support models which are much labourintensive and time consuming (Story, Aldridge, Smith, Garber, Hall, Ferenando, 2019).

The findings signify the importance of identifying strategies to overcome the barriers to develop an effective agenda of self-management for people with TB and other conditions (Azizi et al., 2018). The study implies that support interventions that combine psychosocial counselling and medication adherence counselling would be suitable to address the socioeconomic barriers that potentially reduce stigma and clarify the obstacles that are faced by the TB-affected households (Dixit, Biermann, Rai, Aryal,
Mishra, de Siqueira-Filha , Paudel, Pandit, Sah, Majhi, Levy, van Rest, Gurung, Dhital, Lönnroth, Squire, Caws, Sidney & Wingfield, 2021).

5.2.3 Reminder system

Providing reminders and the support for treatment adherence such as phone call reminders, medication calendars, text messages reminders or support groups, can help the patients to remember to take their medication on a daily basis and on time as well as to address the perceived barriers of forgetfulness. Although DOT can be administered in the clinic, in the community, or in a home setting, it still entails considerable inconvenience to the patients and to the service providers (Story, Aldridge, Smith, Garber, Hall, Ferenando, Possas, Hemming, Wurie, Luchenski, Abubakar, McHugh, White, Watson,

Lipman, Garfein & Hayward, 2019). The development of video telephone technology has raised the possibility of remote Video-Observed Treatment (VOT) as an alternative approach to DOT (Story et al., 2019).

A study by Ramsey, Holbein, Powers, Hershey, Kabbouche, O'Brien, Kacperski, Shepard and Hommel (2018) suggests that the phone calls provide both additional reminders as well as accountability, and they are of significance in promoting adherence by demonstrating increased effectiveness of adherence apps with caregiver support. Digital technologies such as the use of the SMS and medication monitors may reduce the costs, improve treatment support, and may also promote adherence to treatment on the persons treated for active TB in a cost-effective manner (Nsengiyumva, Mappin-Kasirer, Oxlade, Bastos, Trajman, Falzon & Schwartzman, 2018). The utilisation of the SMS and VOT could allow the patients to report any potential adverse reactions and other concerns in an opportune manner, thus potentially improving the treatment outcomes (Nsengiyumva et al., 2018). The impact of mobile health technologies including smartphones or electronic pill boxes on the enhancement of infectious disease services has been demonstrated globally as being effective in improving adherence (Gashu, Gelaye,

Mekonnen, Lester, & Tilahun, 2020). The WHO's End-TB strategy emphasises the use of Mobile Health Interventions (MHIs) to improve the implementation and the monitoring of TB services (WHO, 2017), and it has indorsed the application of the MHIs to improve adherence to treatment (Byonanebye et al., 2021).

A study by Gashu, Gelaye, Lester, and Tilahun (2021) highlighted that the daily medication reminders system and the weekly refilling reminder considerably promotes the patient's adherence to TB treatment. A systemic review indicated that the phone reminder system has an unexceptional impact on treatment success as it may facilitate health communication among the patient and the health care providers (Gashu et al., 2020). Early active tracing of the patient missing appointments reduces the number of lost to follow up. The modes of tracing TB patients includes telephone calls, SMS, outreach team, home visits while the electronic medical record system such as Tier.net and ETR net also

facilitate the identification of the missed appointments (NDoH, 2016). A study by Bediang, Soll, Elia, Abena and Geissbuhler (2018) suggests that the SMS reminders do not statistically increase the proportions of treatment success and cure proportions at five months and the cure at six months. The patients should be given appropriate advice about the relevant personnel to contact during emergency and they must have contact information of the health care team (Alfenaar et al., 2022). Providing reminders using a smart phone promotes patient adherence although there is still a challenge as some other patients do not have the smartphones. It is of importance to have the contact details of a family member who will always be contacted to remind the patient about treatment time and the days for follow ups.

5.2.4 Involving the patients during treatment

Involving the patients in the treatment decision making process and providing individualised treatment plans to enhance their sense of control over the treatment process and increasing their perceived self-efficacy in adhering to treatment is key. The patients' sources of support are not only obtained from the family and the health workers, but it can also be obtained through peer support. The peer support interventions can improve TB patient self-efficacy and adherence to recover through group activities by sharing experiences during treatment, complaints and the obstacles that are experienced including the solutions to their problems during treatment to motivate each other (Jauhar, Widjanarko, Java, & Support, 2019).

The study results by Azizi et al. (2018) revealed the significance of self-efficacy towards treatment adherence that the healthcare provider should consider when formulating the schedules of motivating patients on adherence. Enhancing the TB patient's sense of control and being personally responsible on their treatment process might indicate readiness for the successful completion of treatment (Grigoryan, Pherson, Harutyunyan, Truzyan, & Sahakyan, 2022). The individuals' behaviour is influenced by the psychological instincts that are more focused on the efforts to strengthen self-efficacy, which gives the patients confidence and enthusiasm to undergo long term treatment (Azizi, Karimy,

Salahsour, 2018). Providing ongoing counselling to the TB patient and their close family members will promote relevant support and adherence to treatment.

5.2.5 Medication Management Strategies

The patients may encounter challenges with taking their medication such as unpleasant side effects or the difficulty in swallowing pills, therefore medication management strategies should be including medication counselling, dose adjustments, and the use of alternative medications. Moodly et al. (2020) revealed that the patients who are mostly aware of the treatment's adverse effects are likely used to notify their health care providers to facilitate timeously management of those adverse effects by reducing their severity and preventing unacceptable outcomes. Correct medical history taking is of significant importance prior to the commencement of treatment as some other adverse effects were usually not voluntary therefore, the patients should be advised that the TB medications are commonly harmless and the adverse effects could be controlled if they occur (Zimri, Casper, Hoddinott, Schaaf, Garcia-Prats, Rose, Hesselling, & Viljoen, 2020).

The first health teachings of the patients and the parent's children with TB should focus on information about the prescribed TB medication and the most common adverse effects including more severe adverse effects (Alfenaar et at., 2022). TB treatment must be based on a combination of drugs (regimen) that cures people with TB and reduces the risk of drug-resistant TB, therefore the fixed-dose combination is considered as it reduces the number of pills to be taken on a daily basis (Dlodlo et al., 2019). As the adverse effects became a major challenge to ignorant TB patients and caregivers, the education about adverse effects should be done continuously, in a trusting manner among the patients as an element of complete psycho-social support (Lamaitre, 2022). The health care providers should continue to work with the families including the caregivers in both adherence interventions and medication management or establishing caregiver accountability for missed medication to improve adherence (Ramsey et al., 2018).

Continuous monitoring including patient counselling are important during the treatment process to detect possible adverse effects in time (WHO, 2020). The weight-based dose selection should be carefully monitored in children and in patients with extremely high or low body weights, particularly if the maximal dose limit is not provided (Alfenaar et al., 2022). Certain adverse effects can be dangerous if not recognised early and managed quickly (Gupta, Kumar, Natarajan & Singla, 2020). Severe reactions such as impaired vision, shock or fever are very rare, and the drug that is thought to be responsible should be discontinued. Jaundice may be due to induced hepatitis, therefore any person with these symptoms should stop taking TB medication, undergo liver function test and be referred urgently to doctor for further considerations (Alffenaar, Akkerman & Bothamley, 2018). It is important to determine if the patient is taking oral contraceptives, antiepileptics, corticosteroids, oral Diabetes treatment, oral anti-coagulants, or antiretroviral drugs, in which the use of alternative family planning methods or dose adjustments changes to medications may be required (Dlodlo et al., 2019).

Other psychiatric illness such as depression or suicidal thoughts may be related to the TB disease and should be reported, therefore regular checkup, counselling and support is recommended, especially during diagnosis, and throughout treatment (Hayward, Deal, Rustage, Nellums, Sweetland, Boccia, Hargreaves, & Friedland, 2022). The choice of appropriate treatment regimen should ideally be determined based on the person's drug resistant profile. The drug dosage for children should be adjusted as necessary and their weight should be monitored at each follow up visit and must be recorded in the TB treatment card (Dlodlo et al., 2019). The health provider should show an effort to identify the patient's reason for missing doses by working together with the patient and the caregiver to ensure continuity of care (WHO,2014). Alternatively, the provider-patient relationship is encouraged to promote free communication and the clarification concerning treatment to facilitate good treatment outcomes.

5.2.6 Social support strategies

Social support can play an important role in improving adherence. TB infection pries with the health-related quality of life of the patients including the physical, social, emotional and the financial domains of the individuals (Agbeko, Mallah, He, Liu, Song & Wang, 2022). The TB patients reported the lack of social support from the caregivers and the community members regardless of the circumstances which they are undergoing (Roba, Dasa, & Weldegebreal, Asfaw, Mitiku, Teklemariam, Naganuri, Geddugo, Mesfin, Befikadu, & Tesfaye, 2018). Previous studies indicated that social support strengthens the adherence to treatment, and it enhances the psychological condition by altering emotional conditions, promoting self-efficacy, buffering stress and encouraging positive deeds (Baniqued, Ballecer, Ballesteros, Balmonte, Bancud, Rebueno & Macindo, 2020).

Several interventions show that aspects in the form of social support including family support, peer support, the support from health professionals and the surrounding community can increase compliance (Deshmukh et al., 2018). The results from a study by Chen, Du, Wu, Xu, Ji, Zhang, Zhu and Zhou, (2020) revealed that the regular supervision by the family members on medication and treatment motivation and encouragement by health care providers, good provider -patient relationship and high need for policy support contributed to high adherence in the patients with family members as supervisors during medication period.

The adherence intervention of DOT, such as patient education, health care providers support, psychological support are interrelated with reduced mortality rate, LTFU and the increase in treatment success (Alipanah, Jarlsberg, Miller, Linh, Falzon, Jaramillo & Nahid, 2018). The study further highlighted that the combination of various adherence interventions of DOT or Self-Administered Therapy (SAT) was linked with better outcomes as contrasted to the treatment method only. South Africa has adapted the End TB strategy and established a social welfare system with the mechanism to provide social assistance in the form of the disability grant that is provided to people with mental or physical disability that are unfit to work for a minimum of six months, although it is not easily attainable as

the patients encounter challenges and costs associated with the application process and the high level of discretion that arises (Vanleeuw, Mkabile, Atkins, 2022). The family members play a significant role during the course of treatment as they take most of the time being next to the patient providing support. The health care providers can also provide support by checking in regularly with the patients and offering counselling or other support services to enhance treatment adherence.

5.3 DICKOFF SURVEY LIST GUIDING THE FINDINGS ON THE DEVELOPMENT OF STRATEGIES.

The ideas of Dickoff's survey were used to formulate the conceptual framework that guides the development of support for the TB patients. The six concepts of the survey list comprise of the agent, recipient, context, dynamics, procedure, and the terminus that are used to guide the findings on the development of strategies.

5.3.1 Agent

The researcher also plays a significant role of enabling the implementation of activities that promote service delivery by taking care of the TB patients effectively under their health needs (Nesengani et al., 2021). In this study, the agent may be the healthcare workers, doctors, and other multidisciplinary team members who are joined for the sake of the patient for successful treatment and care. The agent must understand their roles in supporting the patients suffering from TB. The agents such as family members, close relatives, or friends should be involved and be provided with the necessary support. The support from social workers and psychologists also assists in learning to cope with stressful situations and therefore psychotherapy including individual, or group therapy may be significant (Dikobe et al., 2023). This will assist the patients to engage with the others with similar diagnoses to support each other. It is indicated in the study results that the agent should be provided with comprehensive quality training to improve their competence, skills, and confidence in the TB programme for the provision of quality care to the patient (Mboweni, 2018).

5.3.2 Recipient

In this study, the recipient is any health care user receiving TB treatment or who has completed treatment. The TB patients are the recipients who receive guidance and support from the nurses, families, friends, community members and another health team on adhering to treatment by empowering them during the treatment process. The TB patients should be provided with support physically, socially, and emotionally, therefore support programs should be established for the TB patients to cope with the psychosocial problems they experience when taking their TB treatment (Dikobe et al., 2023). Activities such as gardening, playing indoor games or sharing their experiences are significant to alleviating stressful times of treatment for the patients who are in stable condition. Several strategies have been identified to be implemented to enhance support for the TB patients.

5.3.3 Context

Contexts are the resources, activities and the environment which enable to facilitate implementation (Dickoff et al., 1968). In this study, the PHC clinics, mobile clinics, community health centres and the hospitals are the context that facilitates service delivery to the patients. Treating patients and nurses with respect and attending to their concerns or challenges can also facilitate implementation. The maintenance of the physical infrastructure of the PHC facilities, having enough space, the re-organisation of the facility in line with the ideal clinic, ICSM and standards and reducing waiting times can facilitate quality as well as implementation. Prioritising PHC in budget planning is necessary to deal with the overt challenges influencing implementation. The provision of HIV/TB management pre-service training to nurses, CPD and in-service training on HIV/TB changes can facilitate TB management implementation (Mboweni, 2018). The nurse manager may often support and participate in caring for patients, particularly during busy days to relieve the heavy workload of the professional nurses (Nesengani et al., 2020).

5.3.4 Process

Procedure refers to the steps or the process that are followed to ensure the success of TB treatment adherence (Dickoff et al.,1968). The health care workers should discuss the TB disease and its treatment including duration, side effects and the expectations from the client to give a brief picture of the treatment process. Aspects such as providing relevant information about TB, treatment monitoring and support, monitoring treatment adherence and follow-up visits might have an impact on motivating the patients to treatment (Zago et al., 2021). The patients should be given leaflets or formal health education in a language they understand as informal information to promote trust towards patients. Education sessions and adherence counselling must be provided from the time of eligibility without delaying the initiation of treatment (NDoH,2016). Education should include the family or treatment supporters to help them in dealing with the TB infection. Effective communication between the health care provider and the patient may facilitate the adherence and the support to the TB patients.

5.3.5 Dynamics

Dynamics refers to the energy sources of power or the energy amongst the activities (Dickoff et al., 1968). The evidence from the study findings shows that motivation, recognition, acknowledgment of TB patient for their compliance facilitates implementation. Interaction between patient and nurse should be responsive to the needs of the patient, therefore improved quality of care provided by the nurse may facilitate openness, and the patient may be more liable to listen and apply the provided information (Grondahl, Muurinen, Katajisto, Suhonen & Leino-Kilpi, 2019). The patients should be involved in the treatment process on decision-making and provide adapted treatment plans to promote a sense of recognition over the treatment process. Community engagement may further counteract the social stigma attached to TB and promote social participation and the psychosocial well-being of the patient (Marahatta, Amatya, Adhikari, Giri, Lama, Kaehler, Rijal, Marahatta, & Adhikari, 2018). The success of treatment requires commitment and

collaboration from the healthcare providers and other stakeholders to acknowledge the patient's good adherence and compliance during the treatment process.

5.3.6 Terminus

The study highlights the outcomes as effective adherence to TB treatment. This will facilitate the improvement of the patient health status by increasing connections to TB, improving adherence and by ensuring the retention to care and transferring stable patients. This will further enable a decrease in the death rate and an increase in life expectancy (Mboweni, 2018). The study will benefit the patients to gain more confidence and courage during treatment as they are always supported by their healthcare workers and other agents. Challenges such as inadequate infrastructures, poor relationships between the patient and healthcare user can influence treatment adherence. The lack of treatment supporters to other patients may put them at risk of not adhering to treatment and may result in treatment interruptions and default treatment.

5.4 CONCLUSION

The intervention strategies were developed based on the HBM and as guided by Dickoff's theory model. The strategies were developed based on the HBM in conjunction with Dickoff's survey list. The strategies to enhance treatment adherence include providing education and information, addressing perceived barriers, providing reminders, involving patients during their treatment care, medication management strategies and social support interventions. Dickoff's survey list was utilised to guide the findings on developing the strategies. The next chapter discusses the summary of the study, the limitations, and the recommendations.

CHAPTER 6: SUMMARY, LIMITATION, RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

This chapter presents a summary of the study, its limitations, recommendations, and the conclusion made by the researcher. The discussion will focus on the research objectives of the study and comparing the research findings with the current literature.

6.2 SUMMARY OF THE STUDY

The main purpose of the study was to develop support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District, of the Limpopo Province. Many types of support strategies were already developed to promote treatment adherence, however, the researcher looked at existing support strategies to make some additional improvements in the development of the support strategies. The researcher presented the TB treatment non-adherence that was grounded on the experiences of the respondents gained during their treatment. The researcher confirmed that by selecting five clinics from the Sekhukhune district to obtain comprehensive information from the patients who shared their knowledge with TB treatment non-adherence. The researcher intended to understand the problem well from the individuals who were coming from different facilities.

Data was collected from the relevant respondents who shared their experiences interacting with TB treatment non-adherence and were then allowed to share their ideas on how the problem can be solved. The researcher observed the issue in detail using the study findings and came up with research strategies to improve treatment adherence. The researcher identified the problems that are affecting TB treatment adherence which include: the lack of knowledge and information related to TB, the lack of family and community support, the duration of the treatment, treatment side effects, and the attitudes of the health providers. The HBM and the Dickoff survey theory were used to guide the researcher in developing the strategies.

6.2.1 Restatement of the problem

TB treatment adherence has declined as many patients do not have treatment supporters while others are not attached to DOT supporters. Sekhukhune is one of the districts with a high rate of TB cases in the Limpopo Province (Sekhukhune District Profile, 2020). The Sekhukhune District clinics are experiencing a lot of TB patients who are not adhering to treatment and are defaulting as a result of the inadequate support that is provided. The PHC services are near and are free of charge, although some patients choose to avoid the nearby clinic and choose to travel long distances to the next clinic to avoid stigma and discrimination. The TB patients still lack knowledge and understanding regarding the TB disease, diagnosis, treatment, and how to take care of themselves and their families. The TB patients do not receive adequate support from their families, communities, and health care workers as they lack coping strategies during the treatment process. It was important for the researcher to describe the support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune district, of the Limpopo province, and also to develop appropriate support strategies from the literature and study findings to upgrade the adherence support.

6.2.2 Restatement of the research aims and objectives.

The aim of the study has reached its satisfaction. The aim of this study was to develop support strategies to enhance TB treatment adherence through support and the quality of healthcare services rendered to the people by reducing the high rate of defaulters, loss to follow-up, relapse, and the death rate among the patients. The main purpose is to expand the support strategies to enhance treatment adherence, by instilling knowledge that may promote positive results. The objectives of the study met its satisfaction. The support strategies have been described based on the study's findings which were presented in Chapter 4 and discussed in Chapter 5. The study objectives were as follows:

To identify factors that hinder and enable TB treatment adherence at selected clinics in the Sekhukhune District, of the Limpopo Province.

- In this study, most patients (60%) on TB treatment are unemployed therefore they lack basic resources on a daily basis for their survival.
- Most TB patients are not satisfied with the clinics' operating hours as most clinics are operating until 16H30 and some patients are unable to collect their treatment during the working hours because of daily commitments.
- The experience of the adverse reactions caused by the TB drugs poses a serious problem as it makes them not to cope with and eventually stop taking the treatment.
- The lack of knowledge and information about TB results in a delay in seeking health-seeking behaviour that may result in a difficulty in curing TB.

To integrate empirical findings of the study into six surveys of Dickoff for the development of support strategies.

- Agents such as family members, close relatives or friends should be involved and must be provided with the necessary support. The agent should understand their position of supporting patients suffering from TB.
- The TB patients need support physically, socially, and emotionally, therefore support programmes should be established for the TB patients to cope with the psychosocial problems they have experienced.
- Health education teachings of patients and parent's children with TB should be focused on information about the prescribed TB medication and most common adverse effects, therefore medication management strategies including medication counselling, dose adjustments, and use of alternative medications should be highlighted.

To describe the support strategies to enhance TB treatment adherence at selected clinics in the Sekhukhune District, of the Limpopo Province.

- Providing education and information related to TB and the importance of adhering to treatment, to increase the perceived severity of the condition and the perceived benefits of treatment.
- Addressing the perceived barriers to enhancing TB treatment adherence, such as the lack of knowledge, delay in diagnosis and initiation of treatment, stigma, lack of community involvement, inadequate counselling and the lack of support.
- The utilisation of mobile health interventions such as text message reminders, phone calls or medication calendars to improve implementation and the monitoring of TB patients as emphasised by the WHO End TB strategy.
- Involving patients in the treatment decision-making process and providing individualised treatment plans, to enhance their sense of control over the treatment process and increase their perceived self-efficacy in adhering to treatment.

To recommend the developed strategies for practice in health care settings.

The strategies that were developed to enhance treatment adherence in healthcare settings include:

- Patients require continuous health information about TB and the importance of taking treatment to increase their understanding and motivation to adhere to treatment.
- Social support intervention in the form of family support, peer support, support from health professionals, DOT support, and the surrounding community are identified as important aspects to promote treatment adherence and enhance the psychological state of the patient.

6.2.3 Main findings of the study

This study indicated that adherence is influenced by the following factors:

6.2.3.1 Lack of knowledge and information about the disease

According to the study findings, treatment adherence is influenced by a lack of knowledge about TB and treatment in general. It was further identified that the patients do not have a proper understanding of TB as they still have mixed opinions about the disease such as consulting traditional healers or private practitioners. The study findings showed that most patients lacked knowledge about the TB disease, and this resulted in delays in seeking healthcare which further prolonged the risk of transmission to the family and community at large. A low level of health education was identified as another factor that contributed to the difficulty in understanding TB treatment health education.

6.2.3.2 Lack of support from family and community

The findings of this study indicated that some patients lack support from their families during treatment time. Some patients did not receive family support, as they have never disclosed their status to the family members and to the close relatives with whom they are staying with. Adequate family support is regarded as important for adhering to treatment, particularly during the intensive phase of treatment. Some patients discontinue their treatment due to a lack of family and community support. About 4.4% of the respondents advised that they are staying alone while taking treatment. Comprehensive support and care with emotional support, social support, and financial support may encourage the patient to adhere to treatment. The study findings showed that the patients who disclosed their condition to their family receive good care and support during their treatment.

6.2.3.3 Lack of DOT supporters

The finding of this study highlighted that most patients had no regular DOT supporters. The patients who do not have DOT supporters are taking treatment on their own as they indicated not to trust anyone. The DOT supporters are important as they observe the patient when swallowing their daily dose to ensure that treatment is taken well. A regular DOT supporter promotes good interaction with the patient and encourages the patient to ask questions and they can elicit further health education. The study further discovered

that the patients without DOT are likely to default treatment especially if they do not feel better.

The treatment supporters are expected to play the role of the DOT supporters by observing the patient when taking their medication. This may not always be practical because some treatment supporters do not live together with the patient therefore, they are not likely to always observe the patient when taking medication. About 59% of the respondents were supervised by their family members when taking treatment. However, the high number of respondents not adhering to treatment but having family members supervising them did not concur that were being observed during their treatment.

6.2.3.4 Lack of transport and distance traveled to the health facility.

The other TB patients reported the challenge of accessing health services due to the lack of transport and the distance traveled to reach the health facility. The patients who are working on the farms and those staying in mountainous areas reported troubles related to the transport system to the health facility that may lead to negative effects on treatment adherence. This study indicated that LTFU and non-adherence to treatment is exacerbated by a lack of transport costs for follow-up visits as most patients are staying far from the health facilities. The study revealed that the patients experience a lack of transport fares to reach the clinic because they are unemployed as their relatives cannot always afford to provide them with financial backup for the entire period of treatment and they eventually miss their appointments and end up defaulting treatment.

6.2.3.5 Treatment side effects

The results showed that the treatment adverse effects cause the patients to stop treatment as soon as they start developing treatment side effects. Poor nurse-patient relationship promotes treatment non-adherence as some patients raised concerns of not getting an adequate explanation of the side effects during the initiation of the treatment. The other side effects that were observed during the intensive phase of treatment were most patients cease to take medication as they feel that treatment worsens their condition. The side

effects may be managed immediately as they occur by providing health education to the patient to expect them.

6.2.3.6 Attitudes of healthcare workers toward patients

The study observed that the attitudes of the healthcare providers contribute to patient adherence, therefore a positive attitude is significant as it guarantees the patient to adhere to treatment. It was discovered that the healthcare providers who are not friendly to the patients create a problem of treatment non-adherence. Some patients appreciate the work done by the health care providers thus indicating that they are doing good otherwise there were others who confirmed that the health care providers are harsh and that might jeopardise adherence. The patients feel demotivated when they visit the clinic to realise that the attitude of a healthcare provider is not acceptable, therefore they will not comply with the instructions and eventually not adhere to treatment.

A bad attitude may turn back the patients to come for treatment collection only if they are finished but not according to scheduled dates. Some healthcare providers intend to be strict towards the TB patients because being too friendly to the patients tends to reduce adherence as they may take advantage of being friendly and not adhere to treatment. This study indicates the interaction of the healthcare provider, and the patient is appreciated to reinforce treatment adherence, the patients feel comfortable when they are cared for and treated with respect.

6.2.3.7 Comorbidities

The study indicates that the TB-HIV comorbidities have a negative influence on TB treatment adherence. The co-infected patients are more likely not to adhere to their medication due to numerous pills which pose more risk of drug adverse effects. The study highlighted that there is a link between adherence and comorbidities because co-infected patients have the challenge of not adhering to treatment.

6.2.3.8 Stigma and discrimination

The study revealed that the patient hides their TB statuses from friends and family as they are afraid of the stigma that is related to the disease and being discriminated. The fear of stigma takes part in reverting the TB patients to miss clinic appointments which further influences treatment adherence. The study further showed that the patients do not disclose to anyone about the TB illness as they are afraid to be isolated and do not trust anyone. The patients choose to isolate themselves from other community members because of their illness which may upsurge the risk of transmission. In this study, the patients give reason of no one to trust and the fear of being discriminated against by family, friends and community members.

6.3 LIMITATIONS OF THE STUDY

The study has limitations. The study concentrated more on adult TB patients who were on treatment during the period of data collection and did not dwell much on TB in children.

Another limitation is that the study focused on generalising TB, but it was not specific to either MDR-TB or XDR-TB. The study was limited to only one sub-district of Sekhukhune District in the rural Province of Limpopo, focusing on the PHC and it did not include the hospitals that could have produced different data results.

6.4 RECOMMENDATIONS OF THE STUDY

The following recommendations were performed based on the research findings concurrently to improve treatment adherence. The recommendations are directed to the Limpopo Provincial Department of Health, the community health centres clinic operational managers, and the nursing staff in general. The recommendations are classified as per the service providers.

6.4.1 Management and policymakers

- Ensure accessibility and the integration of services in the facilities by encouraging the patients to collect treatment at nearby facilities to reduce congestion within the health facilities, and to lessen the stigma derived from the disease and long waiting hours.
- Reinforce the extension of the working hours at the clinics as most of the patients are very committed during the day so that they can visit the clinic after hours.
- The provincial and district management team including the OPM should develop a plan to deal with the shortage of resources such as infrastructure, material resources and adequate employees.
- Develop guidelines and policies that encourage family members providing support to the TB patient to have training on the importance of supervising patients during their treatment and encourage the early reporting of any adverse effects.
- Develop policies that reinforce the incorporation of the healthcare providers, the religious leaders and the traditional healers and be offered basic TB training to be regarded as DOT supporters working together as a team.
- Establish patient support groups that encourage patients to share experiences about the disease and reduce the stigma and discrimination that are related to TB by involving the TB survivors from previous groups to testify about their experience during the treatment period.
- The PHC facilities should develop an SOP that will guide a flow of the patients having TB including children, adults and pregnant women.

6.4.2 Health workers

- Provide health education and continuous counselling to all the TB patients and close relatives, particularly at the commencement of treatment with emphasis at every visit using a language that is well understood by the patient.
- To engage patients to social services that provide food and reinforce incomegenerating projects to improve the accessibility of food for patients on TB treatment.
- Utilise client satisfaction surveys to identify the pitfalls within the context of the disease to improve the delivered services and emphasise good interaction between the patients and the health care providers.
- The training of the health care staff should be done timeously to close the common gaps and obstacles that are related to TB such as data management.
- Involve community health workers during the treatment period to lessen the burden of work that is repeatedly being experienced by the healthcare providers particularly the nurses at the health facilities and improve efficiency.
- Encourage the follow-up of patients who interrupt TB treatment before they become defaulters and commence flexible working hours at the TB clinics to provide for the patients' needs.

6.4.3 Implementing the developed strategies

- To adopt and implement developed intervention strategies by involving the NGOs and other stakeholders within the district to identify their impacts on the community.
- Encouraging continuous health education to the communities about TB in the form of home visits, awareness campaigns, door-to-door, or road shows by educating people about TB and its treatment.

6.4.4 Further research

Future studies are essential to upgrade and update the existing knowledge on developing support strategies to enhance TB treatment adherence and further studies are significant to refute the developed strategies. Further research is recommended to evaluate the factors that hinder TB treatment adherence in the Sekhukhune District, of the Limpopo Province.

6.5 CONCLUSION

This chapter presented the summary of the study which encompasses the restatement of the research problem, the research aim and objectives as well as the main findings of the study. The limitations of the study and the recommendations were also highlighted. The establishment of the purpose of the study was achieved. The support strategies to enhance treatment adherence were guided by the HBM to enhance the development of the strategies. The purpose of the strategies is to improve treatment adherence in the Sekhukhune District, of the Limpopo Province. The main purpose of the study was to develop support strategies to enhance TB treatment in the Sekhukhune District of the Limpopo province. The researcher looked at the gaps based on the existing strategies to improve the development of the support strategies that will promote treatment adherence. The findings of the study identified the problem of TB treatment non-adherence in the Sekhukhune District of Limpopo province. The researcher assures people that the developed support strategies will have an impact on the patients and the community. The researcher believes that the study is unique therefore it will add value to the body of knowledge.

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ANNEXURE A: QUESTIONNAIRE IN ENGLISH

DEVELOPING SUPPORT STRATEGIES TO ENHANCE TB TREATMENT ADHERENCE AT SELECTED CLINICS IN SEKHUKHUNE DISTRICT, LIMPOPO PROVINCE.

The purpose of the study is to develop strategies to enhance adherence of TB treatment at selected clinics in the Sekhukhune District of the Limpopo Province.

Patient questionnaire number: _____

Date of interview: _____ Instructions:
Provide the following information by marking with an “X” in the appropriate block except on number 29 and 30 which you should enter the text in the space provided.

SECTION A: DEMOGRAPHIC INFORMATION

1. How old are you?

18-28	1
29-39	2
40-50	3

c51-61	4
62-72	5
73>	6

2. What is your gender?

Female	1
Male	2

3. What is your home language?

Sepedi	1
Isizulu	2
Swati	3
Xitsonga	4
other	5

4. What is your marital status?

Single	1
Married	2
Separated	3
Divorced	4

Widowed	5

5. What is your religion?

Christian	1
Non-Christian	2
Other	3

6. What is your level of formal education?

Primary	1
Secondary	2
Tertiary	3
None	4

SECTION B: PATIENT RELATED FACTORS

7. Did you smoke cigarettes in the previous 6 months?

Yes	1
No	2
Cannot remember	3

8. Did you drink alcohol in the last 6 months?

Yes	1
No	2
Cannot remember	3

9. Did you have a treatment supporter?

Yes	1
No	2

10. What sources of information did you have about the TB disease?

Media	1
Health worker	2
Internet	3
Others	4

SECTION C: SOCIO ECONOMIC FACTORS

11. Who did you live with?

Family	1
Extended family	2
Alone	3
Other	4

12. How many other people are you staying with?

0	1
1-3	2
4-6	3
7 and above	4

13. What is your employment status?

Employed	1
Self employed	2
Unemployed	3
Pensioner	4

14. What is your situation in terms of the availability of food during the period of taking treatment?

Always available	1
Sometimes available	2
Not available	3

SECTION D: HEALTH CARE SYSTEM RELATED FACTORS

15. What is the most convenient TB clinic opening hours suitable for you?

07h00- 16H30	1
07H30-18H00	2

07H00-19H00	3
24HOUR	4

16. Where are you regularly collecting your TB treatment?

HC Boshoff CHC	1
Dilokong gateway	2
Matsageng clinic	3
Mecklenburg gateway	4
Mmutlane clinic	5

17. How much distance do you travel to the TB clinic?

<5 kilometres	1
15-30 kilometres	2
30-45 kilometres	3

18. Who is the easiest person to talk to about the challenges of TB treatment?

Health worker	1

Family member	2
CHBC	3
None	4

19. How much does it cost to reach the health facility?

Nothing	1
R28 return	2
R32 return	3
R50 or more	4

20. How long do you usually wait at the TB clinic before being attended?

Less than 1 hour	1
1-2 hours	2
More than 2 hours	3

21. Who supervised you when you were taking TB treatment?

Health care worker	1

Family member	2
Community member	3
None	4

22. How long should a patient take TB treatment?

6 months	Yes	No
Stop anytime when feeling better	Yes	No
Complete 6 months and health worker tells you to stop (treatment completed)	Yes	No

23. To identify your understanding based on the TB disease, the following are signs and symptoms of TB. Please tick the appropriate column

Cough	Yes	No
Chest pains	Yes	No
Night sweat	Yes	No

Weight loss	Yes	No

24. How is the staff's attitude when visiting the clinic for collection of treatment?

Very friendly	1
Friendly	2
Unfriendly	3
Very unfriendly	4

25. When you went for treatment collection, how was the availability of medication at the TB clinic?

Always available	1
Sometimes available	2
Not available	3

SECTION E: DISEASE AND MEDICATION RELATED FACTORS

26. How long did it take you to feel better from the time you started taking TB treatment?

Less than 1 month	1
2-3 months	2
4-5 months	3

Never feel better	4

27. Did you experience any side effects when you were taking treatment?

Yes	1
No	2

28. If yes to the above question, which side effect did you experience?

Skin rash	1
Numbness of the joints	2
Diarrhoea and vomiting	3
Dizziness and headache	4
Others	5

29. Did you take any other medication besides TB treatment?

Yes	1
No	2

30. If yes to the above question, which medication are you taking?

Diabetes treatment	1

Highly Active Antiretroviral Treatment	2
Anti-hypertensives	3
Others	4

31. Did you inform your family members that you are taking TB treatment?

Yes	1
No	2

32. If the answer is no, why? _____

33. Did you complete your TB treatment?

Yes	1
No	2
Still on treatment	3

34. If the answer is No to the above question, what was the reason for you not to complete treatment?

Treatment side effects	1
Feeling better	2
Lack family support	3

Insufficient supply	4
Not feeling better	5
Other	6

35. In your opinion what could motivate TB patients to comply with treatment?

Answer: _____

_____

_____

SECTION F: ADHERENCE AND SUPPORT RELATED QUESTIONS

36. Do you have DOT supporters?

Yes	1
No	2

37. If yes to the above question, who is your treatment supporter?

Family member	1
Health worker	2
Friend	3
Other	4

38. How often does your treatment supporter visit you?

Once a week	1

Fortnight	2
Sometimes	3
None	4

39. How often do you visit the clinic for treatment collection?

Weekly basis	1
Fortnight	2
Monthly	3

40. Do they accompany you during treatment collection days?

Yes	1
No	2

41. Do you feel free to discuss concerns about your illness with treatment supporter?

Yes	1
No	2

42. What is your means of communication with your treatment supporter?

Face to face	1
Phone calls	2
Text messages	3

43. Do you have anyone who reminds you about your treatment follow up?

Yes	1
No	2

44. Are your family members or friends supportive on your illness?

Yes	1
No	2

45. Do you need any additional care or support at your home?

Yes	1
No	2

46. What kind of support do you want?

Counselling	1
Home visit	2
DOT supporters	3
Food parcels	4
Temporary disability grant	5
Other	6

……THANK YOU FOR YOUR TIME AND PARTICIPATION……

ANNEXURE B: QUESTIONNAIRE IN SEPEDI

GO HLOMA MAANO AGO THEKGA GO TSWELETSA DIPHETOGO GO BALWETSI BA TB KA DIKLINIKING TSEO DI KGETHILWEGO KA SEKHUKHUNE DISTRICT, PROFENSENG YA LIMPOPO

Maikemisetso a thutwana ye ke go hloma maano a go tsweletsa diphetogo tsa go tsea dihlare tsa TB gabotse go dikliniki tseo di kgethilwego ka Sekhukhune District Limpopo Province.

Nomoro potsiso baka ya motseakarolo: _____

Letsatsikgwedi la dipotsiso: _____

Tshupetso:

Efa Karabo ya nnete ka go laetsa “X” ka gare ga lepokisana la maleba ka ntle le potsiso ya 29 le 30 tseo di nyakago Karabo ya mantsu go sekgoba se se filwego. **KAROLO YA**

A: DIPOTSISO MABAPI LE TSA MATSWALO A MOLWETSI

1. Ona le mengwaga e me kae?

18-28	1
29-39	2
40-50	3
51-61	4
62-72	5
73>	6

2. E kaba bong bja gago ke bja eng?

Mosadi	1
Monna	2

3. Leleme la geno kela mohuta mang?

Sepedi	1
Isizulu	2
Swati	3
Xitsonga	4
other	5

4. Maemo a gago a tsa lenyalo ke afe?

Gase ka nyala/nyalwa	1
Nyetse/nyetswe	2
Kgaogane	3
Hladile	4
Mohlologadi	5

5. Tumelo ya gago keya eng?

Mo kriste	1
Mo Islam	2
Tse dingwe	3

6. Maemo a gago atsa thuto ya ka sekolong ke a fe?

Praemary	1
Sekontari	2
Tertiary	3
Lefela	4

KAROLO YA B: DIPALOKATISO TSAGO AMANA LE MOLWETSI.

7. O kile wa kgoga motsoko wa sekerete mo dikgweding tse tshelelago tsago feta?

Ee	1
Aowa	2
Ake sa gopola	3

8. O kile wa nwa jwala mo dikgweding tse tshelelago tsago feta?

Ee	1
Aowa	2
Ake sa gopola	3

9. Ekaba ona le Mothusi/ mohlokomedi geo enwa dihlare?

Ee	1
Aowa	2

10. O kwele ka eng mabapi le tshedimoso ya bolwetsi bia TB?

Seyalemoyeng/thelebiseneng	1
Bashomi ba tsa maphelo	2
Interneteng	3
Tse dingwe	4

KAROLO YA C: PALO KATISO MABAPI LETSA SELEGAE

11. O dula le mang ka gae?

Ba lapa	1
Meloko ya kgauswi	2
Ke nnosi	3
Tse dingwe	4

12. Ke ba ba kae batho ba bangwe bao o dulago le bona?

0	1
1-3	2
4-6	3
7 lego feta	4

13. Maemo a gago atsa mosomo ke afe?

Kea soma	1
Ke moipereki	2
Ake some	3
Ke pentshele	4

14. Maemo a gago mabapi le dijo nakong ya go tsea dihlare ke afe?

Di dula di le gona	1
Ka nako ye nngwe di ba gona	2
Gadi dule dile gona ka mehla	3
Gadi gona	4

KAROLO YA D: PALOKATISO MABAPI LE TSHEPIDISO YA TSA MAPHELO

15. Ke nako efe ya maleba ya go bulwa ga kliniki yeo ego loketsego go yo tsea dihlare?

07h00- 16H30	1
07H30-18H00	2
07H00-19H00	3

Iri tse 24	4

16. Ke Kae gantsi mo o tseago dihlare gago tsa TB gona?

HC Boshoff CHC	1
Dilokong gateway	2
Matsageng clinic	3
Mecklenburg gateway	4
mmutlane clinic	5

17. Ekaba o sepela leeto le le kakang go yo tsea dihlare tsa gago tsa TB?

<5 ya dikilometara	1
Dikilomitara tse 15-30	2
Dikilometara tsee 30-45	3

18. Ke mang motho yo bonolo yo o ka boledisanago le yena mabapi le dihlotlo tsa dihlare tsa TB?

Mosomi wa tsa maphelo	1
Mothusi wago nwa dihlare	2
Basomi ba maphelo ba selegae	3

Lefeela	4

19. O lefa bokae go fihla kliniking ya geno?

Lefeela	1
R24 goya lego boa	2
R30 goya lego boa	3
R50 le go feta	4

20. Ga ntsi o ema lebaka le le kaakang ka kliniking pele gage oka hwetsa thuso?

Ka tlase ga iri	1
Iri goya go tse pedi	2
Iri tse pedi lego feta	3

21. Ke mang yo a go hlokometseng ge o enwa meriana ya TB?

Mosomi wa tsa maphelo	1
Mohlokomedi waka	2
Ba ka gae	3
Leloko la motseng	4

22. Molwetsi wa TB o tsea lebaka le le kakang go nwa diihlare tsa TB?

Dikgwedi tse tshela	Ee	Aowa
Aka lesa dihlere ge a ekwa bokaone	Ee	Aowa
O fetsa dikgwedi tse tshela a kwa ka ba maphelo ge bare o feditse go nwa dihlare.	Ee	Aowa

23. Laetsa kwesiso ya gago bakeng sa bolwetsi bja TB, go dika le di tshupetso tse di laatelago tsa TB. Kgetha Karabo ya nnete.

Go gohlola	Ee	Aowa
Dihlabi tsa mafahla	Ee	Aowa
Go tswa dikudumela bosego	Ee	Aowa
Go ota	Ee	Aowa

24. E kaba mekgwa ya baoki ge o ile go tsea dihlare kua kliniking keya mohuta mang?

Ba na le botho kudu	1
Ba na le botho	2
Ga ba ne botho	3

Ga ba ne botho le ga nnyane	4

25. Ge o latile dihlare kua kliniking, ekaba dihlare dia hwetsagala?

Di dula di hwetsagala	1
Ka nako dia hwetsagala	2
Ga di hwetsagale	3

KAROLO YA E: MALWETSI LE DIPALOKATISO MABAPI LE DIHLARE TSA TB

26. Go tsea lebaka le le kaakang gore motho a ikwe bokaone go tloga ge a thomile go tsea dihlare tsa TB?

Ka tlase ga kgwedi	1
Dikgwedi tse 2 goya go tse 3	2
Di tse 3 goya go tse 6	3
Aka se ke a kwa bokaone	4

27. O kile wa itemogela tse dingwe tsa ditlamorago tsa merianaa ya TB nakong ya ge o enwa meriana?

Ee	1
Aowa	2

28. Ge eba karabo ya gago ke Ee go potsiso ya ka godimo, ke dife ditlamorago tseo o itemogetsego tsona?

Sebabo se se sesane	1
Go baba ke manokologo	2
Letshologo le lehlatso	3
Modukulogo le go opa ke hlogo	4
Tse dingwe	5

29. Gona le dihlare tse dingwe tse o di nwago ka ntle le dihlare tse tsa TB?

Ee	1
Aowa	2

30. Ge eba karabo ya gago ke Ee go potsiso ya ka godimo, o tsea dihlare tsa eng?

Bolwetsi bja swikiri	1
Bolwetsi bja kokwanahloko	2
Madi ama golo	3
Bolwetsi bja monagano	4

Tse dingwe	5

31. O tsebisitse ba lapa la geno gore o nwa dihlare tsa TB?

Ee	1
Aowa	2

32. Ge eba karabo ya gogo ke Aowa go potsiso yaka godimo, go reng o sa ba tsebise?

_____

33. Ekaba o feditse go nwa dihlare tsa gago tsa TB?

Ee	1
Aowa	2

34. Ge eba karabo ya gogo ke Aowa go potsiso yaka godimo, lebaka ke eng ose wa ruma go nwa dihlare tsa gago?

Ditlamorago tsa dihlare	1
Go ikwa bokaone	2
Go hloka thekgo ka gae	3
Go hlokega ga dihlare kliniking	4
Go se kwe bokaone	5

Tse dingwe	6

35. Go ya ka kwesiso ya gago, ke eng seo se ke hlohleletsang balwetsi ba TB go nwa dihlare ka tshwanelo?

Karabo:

_____

_____

_____

KAROLO YA F: DIPOTSISO TSA GO TSWELETSA TUTUETSO LE THEKGO GO MOLWETSI WA TB

36. O na le mohlokomedi ge o enwa dihlare?

Ee	1
Aowa	2

37. Ge eba karabo ya gago ke Ee go potsiso ya ka godimo, mohlokomedi wa gago ke mang?

Mosomi wa tsa maphelo	1
Ba ka gae	2
Mogwera	3
Ba bangwe	4

38. E kaba mohlokomedi wa gago o go etela makga ama kae?

Beke ka beke	1
Ga bedi ka kgwedi	2
Ka nako e nngwe	3
Ga a tle	4

39. E kaba o etela kliniki ga kae go yo tsea dihlare tsa gago tsa TB?

Ga tee ka beke	1
Ga bedi ka kgwedi	2
Ga tee ka kgwedi	3

40. E kaba ona le mofelegetsi ka matsatsi a gago ago yo tsea dihlare?

Ee	1
Aowa	2

41. E kaba o a lokologa go ahlaahla di pelaelo tsa gago mabapi le dihlare tsa TB go mohlokomedi wa gago?

Ee	1
Aowa	2

42. Go tsea sebaka se se kae go boledisana le mohlokomedi wa gago?

Ka mehla	1

Ga tee ka beke	2
Ka dinako tse dingwe	3

43. Go na le yo mongwe yo ago gopotsago ka taba yago yo lekolwa gape kliniking?

Ee	1
Aowa	2

44. E kaba ba lapa la gago goba bagwera ba gago ba go fa thekgo mo bolwetsing bja gago?

Ee	1
Aowa	2

45. E kaba o hloka tlhokomelo ya tlaleletso goba thekgo ka lapeng leno?

Ee	1
Aowa	2

46. Ke tlhokomelo ya mohuta mang ya tlaleletso yeo o e nyakago?

Go fiwa khantsheling/hlohleletso	1
Go etelwa ka gae	2
Go ba le Mothusi wa go nwa dihlare	3
Diphuthelwana tsa dijo	4

Tshelete ya mphiwafela wa bolwetsi	5
Tse dingwe	6

……..…RE LEBOGA NAKO LE GO TSEA KAROLO GA GAGO…….

ANNEXURE C: LETTER REQUESTING PERMISSION TO CONDUCT RESEARCH

P. O. Box 2006

Moroke

1154

13 July 2021 Department

of Health Private Bag X9302

Polokwane

0700

Dear sir/Madam

Requisition to conduct a research study on developing support strategies to enhance tuberculosis treatment adherence at selected clinics in Sekhukhune

District Limpopo Province

I Maseko R. G. hereby ask for permission to conduct a research study among tuberculosis (TB) patients who are not adhering to TB treatment in Sekhukhune District Clinics. I am currently studying Master of Nursing Science at University of Limpopo.

The aim is to develop the support strategies to enhance TB treatment adherence in selected clinics in the Sekhukhune District, of the Limpopo Province. The target population interested in the study is active TB patients including defaulters and lost to follow up. Participation in the study will be voluntary and data collection will not interfere with daily routine. The findings of the study will be confidential and useful for educational purpose.

Your cooperation will be highly appreciated in this regard.

Researcher: Maseko R. G.

Contact details: 072 403 2008 / 013 214 9910.

Email address: gloriameladi@gmail.com

ANNEXURE D: LETTER REQUESTING PERMISSION TO CONDUCT RESEARCH

PO BOX 2006

Moroke

1154

13 July 2021

District Executive Manager

Private Bag X04
Chuenespoort

0745

Dear sir/Madam

Requestion to conduct a research study on developing support strategies to enhance tuberculosis treatment adherence at selected clinics in Sekhukhune District, Limpopo Province

I Maseko R. G. hereby ask permission to conduct a research study among tuberculosis (TB) patients who are not adhering to TB treatment in Sekhukhune District Clinics. I am currently studying for a Master of Nursing Science at the University of Limpopo. The aim is to develop support strategies to enhance TB treatment adherence in selected clinics in the Sekhukhune District, of the Limpopo Province. The target population interested in the study is active TB patients including defaulters and lost to follow up. Participation in the study will be voluntary and data collection will not interfere with daily routine. The findings of the study will be confidential and useful for educational purposes.

Your cooperation will be highly appreciated in this regard.

Researcher: Maseko R. G.

Contact details: 072 403 2008 / 013 214 9910.

Email address: gloriameladi@gmail.com

ANNEXURE E: INFORMED CONSENT FORM IN ENGLISH

UNIVERSITY OF LIMPOPO

Statement concerning participation in Clinical Research Project.

NAME OF THE STUDY: **DEVELOPING SUPPORT STRATEGIES TO ENHANCE TUBERCULOSIS TREATMENT ADHERENCE IN SEKHUKHUNE DISTRICT CLINICS, LIMPOPO PROVINCE**

I have read the information on the aims and objectives of the proposed study and was provided the opportunity to ask questions and given adequate time to rethink the issue.

The aim and objectives of the study are sufficiently clear to me. I have not been pressurised to participate in any way.

I understand that the participation in this clinical study is completely voluntary and that I may withdraw from it at any time and without supplying reasons. This will have no influence the care that I receive from my regular doctor.

I know that this study has been approved by the Research, Ethics and Publications Committee of Faculty of Medicine, University of Limpopo. 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.

…….. …….

Name of participant Signature of participant

…….. ……. ……

Place Date Witness

ANNEXURE F: INFORMED CONSENT FORM IN SEPEDI

YUNIBESITHI YA LIMPOPO

Lefoko mabapi le go tsea karolo go sengwalwa thuto sa dinyakisiso

LEINA LA SENGWALWA TUTO: **GO TSWELETSA DINTLHA TSA THEKGO GO TUTUETSA BALWETSI BA BOLWETSI BJA MAFAHLAKA KATIKOLOGONG YA SEKHUKHUNE, PROFENSENG YA LIMPOPO**

Ke badile molaetsa kamoka mabapi le maikemisetso le morero wa sengwa thuto se ebile ke filwe monyetla wa go ka botsisa dipotsiso le nako ya go naganisisa gabotse ka sona.

Merero le maikemisetso ka moka txa sengwalwa thuto se di hlathollotswe ka botlalo.

Gase ka gapeletswa go tsea karolo mo tsengwalwa thutong se.

Ke kweshisa gore go tsea karolo mo thutwaneng ye gase kgapeletso le gore nka tsea sephetho sa go tlogela go tsea karoloka ntle le go fa mabaka. Se gase amane le go hwe tsa ditirelo tsa maphelo go tswa go dingaka tsa mehleng.

Kea tseba gore thutwana ye e filwe tumelelo ke ba komiti kgolo ya tsa maphelo go tswa Yunibesithing ya Limpopo. Ke na le maitemogelo a gore dipoelo tsa sengwalwa thuto se

di tla ba le mohola wa go nyakolla le go phatlalatswa. Kea dumela ge eba serithi sa ka s e shirelеditswe ele ka nnete.

Ke mo go fa tumelelo ya go tsea karolo mo sengwalwa thutwaneng se.

…….. …….

Leina la motsea karolo Mosaeno wa motsea karolo

…….. ……. …….

Lefelo Letsatsikgwedi Tlhatse

ANNEXURE G: BUDGET

ITEM	**DESCRIPTION**	**COST**
Stationery	Blank pages	R400
	printing	R300
	photocopies	R200
	binding	R100
Communication for appoint ments	Airtime	R200
	Data	R800
	Fax and emails	R100
Transport	From HC Boshoff to selected clinics	R1000

Language editor	Editing dissertation	R5000

ANNEXURE H: TIME FRAME

The following table describes the estimated time of activities for the study:

ACTIVITY	**TIME FRAME**
1 Writing research proposal	May 2021 to July 2021
2 Presentation of proposal to Department of Nursing Re search Ethics Committee	July 2021
3 Revise proposal	July 2021
4 Submission to Senior Degree Committee	August 2021
5 Submission to Faculty/ Higher Degree Committee	September 2021
6 Submission to Turfloop Research Ethics Committee	October 2021
7 Pilot study	December 2021
8 Data collection	August 2022
9 Data analysis	December 2022

10 Report writing	January 2023
11 Presentation of report to nursing department research personnel	October 2023
12. Submission of dissertation for external examination	January 2024
12 Submission to language editor	June 2024

ANNEXURE I: FACULTY APPROVAL OF PROPOSAL

University of Limpopo
Faculty of Health Sciences
Executive Dean
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 2149, Fax: (015) 268 2685, Email: tebogo.mothiba@ul.ac.za

DATE: 06 DECEMBER 2021

NAME OF STUDENT: **MASEKO RG**
STUDENT NUMBER: **200517146**
DEPARTMENT: **NURSING**
SCHOOL: **HEALTH CARE SCIENCES**
QUALIFICATION: **MNURS**

Dear Student

FACULTY APPROVAL OF PROPOSAL (PROPOSAL NO. FHDC2021/8)

I have pleasure in informing you that your MNURS proposal served at the Faculty Higher Degrees Meeting on the 17 NOVEMBER 2021 and your title was approved as follows:

Approved Title: "Developing Support Strategies to Enhance Tuberculosis Treatment Adherence in Sekhukhune District Clinics, Limpopo Province".

Note the following:

Ethical Clearance	Tick One
Requires no ethical clearance Proceed with the study	
Requires ethical clearance (TREC) (apply online) Proceed with the study only after receipt of ethical clearance certificate	√

Yours faithfully

Prof T.M Mothiba
Chairperson

CC: **Supervisor: Mr M.O Mbombi**
Co-Supervisor: Prof M.P Mamogobo

ANNEXURE :

J ETHICS CLEARANCE CERTIFICATE

ANNEXURE :

University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: anastasia.ngobe@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE

ETHICS CLEARANCE CERTIFICATE

MEETING: **19 April 2022**

PROJECT NUMBER: **TREC/67/2022: PG**

PROJECT:

Title:	Developing Support Strategies to Enhance Tuberculosis Treatment Adherence in Sekhukhune District Clinics, Limpopo Province.
Researcher:	RG Maseko
Supervisor:	Mr. MO Mbombi
Co-Supervisor/s:	Dr. MP Mamogobo
School:	Health Care Sciences
Degree:	Master of Nursing Science

PROF D MAPOSA
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:

i) **This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.**

ii) **Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.**

iii) **PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.**

Finding solutions for Africa

ANNEXURE :

K LIMPOPO DEPARTMENT OF HEALTH PERMISSION LETTER

ANNEXURE :

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref : LP_2022-06-007
Enquires : Ms PF Mahlokwane
Tel : 015-293 6028
Email : Phoebe.Mahlokwane@dhsd.limpopo.gov.za

Raesibe Maseko

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

DEVELOPING SUPPORT STRATEGIES TO ENHANCE TUBERCULOSIS TREATMENT ADHERENCE IN SEKHUKHUNE DISTRICT CLINICS, LIMPOPO PROVINCE

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 office of District Executive Manager a week before the study is conducted.
    b. This permission is for **Dilokong Clinic; HC Boshoff Gateway Clinic; Matsgeng Clinic and Mmutlane Clinic Only**.
    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

Mamadiliane

25/07/2022

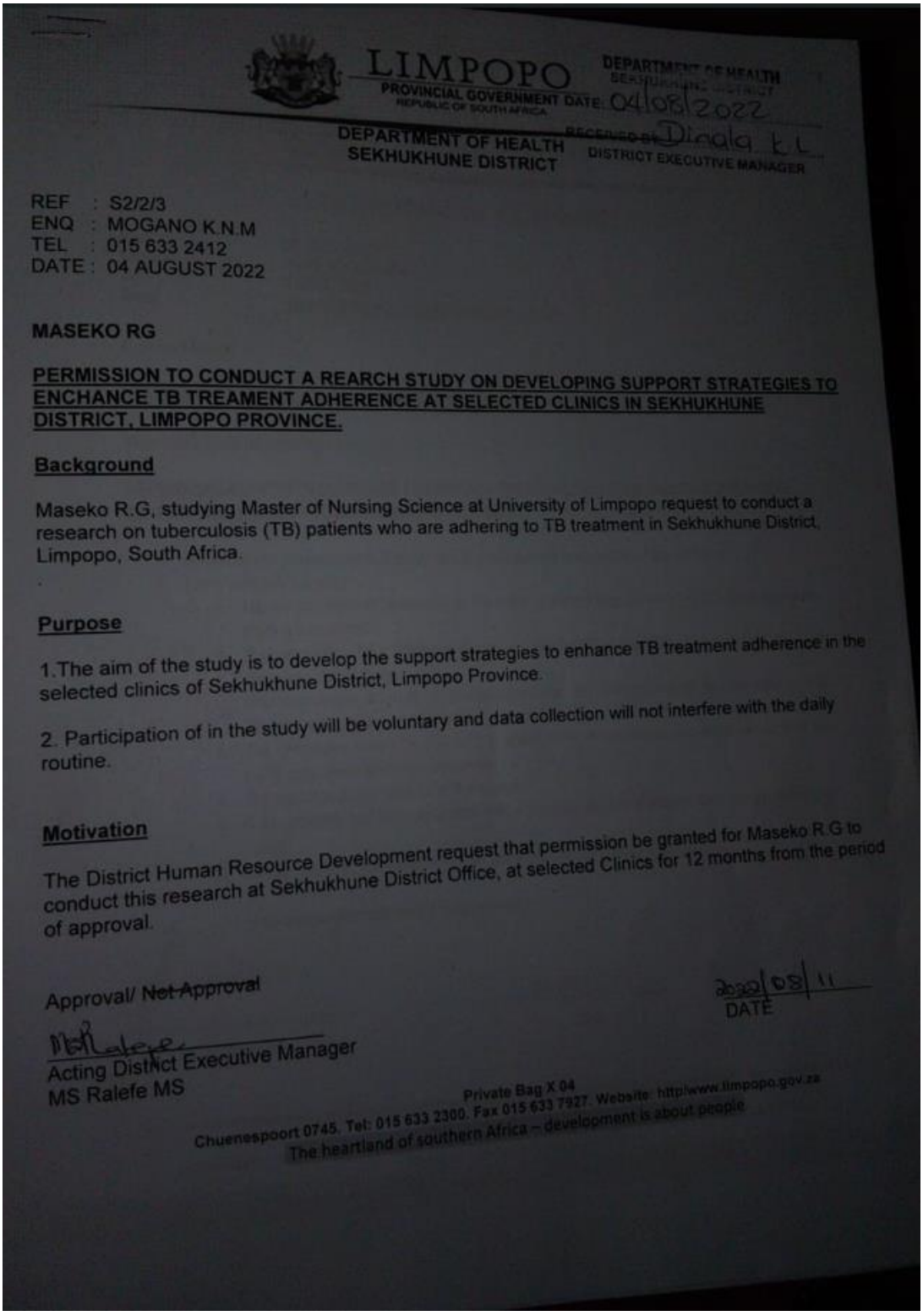
Head of Department **Date**

pp

ANNEXURE :

L DISTRICT EXECUTIVE MANAGER PERMISSION LETTER

ANNEXURE :



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH
SEKHUKHUNE DISTRICT

DEPARTMENT OF HEALTH
SEKHUKHUNE DISTRICT
DATE: 04/08/2022
RECEIVED BY: Dinala K.L
DISTRICT EXECUTIVE MANAGER

REF : S2/2/3
ENQ : MOGANO K.N.M
TEL : 015 633 2412
DATE : 04 AUGUST 2022

MASEKO RG

PERMISSION TO CONDUCT A REARCH STUDY ON DEVELOPING SUPPORT STRATEGIES TO ENCHANCE TB TREAMENT ADHERENCE AT SELECTED CLINICS IN SEKHUKHUNE DISTRICT, LIMPOPO PROVINCE.

Background

Maseko R.G, studying Master of Nursing Science at University of Limpopo request to conduct a research on tuberculosis (TB) patients who are adhering to TB treatment in Sekhukhune District, Limpopo, South Africa.

Purpose

1.The aim of the study is to develop the support strategies to enhance TB treatment adherence in the selected clinics of Sekhukhune District, Limpopo Province.

2. Participation of in the study will be voluntary and data collection will not interfere with the daily routine.

Motivation

The District Human Resource Development request that permission be granted for Maseko R.G to conduct this research at Sekhukhune District Office, at selected Clinics for 12 months from the period of approval.

Approval/ ~~Not Approval~~

2022/08/11
DATE

Acting District Executive Manager
MS Ralefe MS

Private Bag X 04
Chuenespoort 0745. Tel: 015 633 2300. Fax 015 633 7927. Website: http\www.limpopo.gov.za
The heartland of southern Africa – development is about people

ANNEXURE :

ANNEXURE M: EDITTING CERTIFICATE

ANNEXURE

LoveToEdit

You Write. We Edit. You Love it.

22 July 2024

TO WHOM IT MAY CONCERN

RE: CONFIRMATION OF LANGUAGE EDITING SERVICES: R. G. MASEKO

I confirm that I have done language editing for R. G. Maseko's dissertation titled:

DEVELOPING SUPPORT STRATEGIES TO ENHANCE TUBERCULOSIS TREATMENT ADHERENCE IN SEKHUKHUNE DISTRICT CLINICS, LIMPOPO PROVINCE

The dissertation now conforms to the University of Limpopo's language editing standards.

Yours sincerely

Moyo

Lynn N. Sibanda Moyo

Tel: 011 050 0376

Mobile: 071 989 0983

Email: lynn@lovetoedit.co.za

Member of the Professional Editors Guild

Professional EDITORS Guild