



PROFESSIONAL NURSES' KNOWLEDGE OF TUBERCULOSIS PROPHYLAXIS IN
PEOPLE LIVING WITH HIV AT COLLINS CHABANE MUNICIPALITY, VHEMBE DISTRICT
OF LIMPOPO PROVINCE.

by

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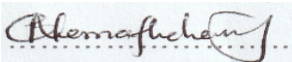
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DECLARATION

I, **Nemafhohoni Mulalo Godfrey**, hereby declare that the dissertation titled: ***“Professional Nurses’ Knowledge of Tuberculosis Prophylaxis in people living with HIV at Collins Chabane Municipality, Vhembe District of Limpopo Province”***, submitted by me, has not been previously submitted for degree purposes at this or any other academic institution, that it is my work in design and execution, and that all references material contained therein were duly acknowledged.

Signature 

Date: 20/11/2022

DEDICATION

I dedicate this study to my wife, Nemafohoni Dakalo, and my three beautiful daughters (Oluga, Zwivhuya and Vhuthuhawe).

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I thank the almighty God for the gift of life and strength to pursue this study. His mercies are new every day.

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- Thanks to the Department of Health Vhembe district, Collins Chabane sub-district and all clinics of my study sites for allowing me to do this research
- All professional nurses, respondents of this study, devoted their time to filling out the data collection questionnaires

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral therapy
XDR-TB	Extensively drug-resistant TB
HIV	Human Immunodeficiency Virus
INH	Isoniazid
MDR-TB	Multidrug-Resistant Tuberculosis
PHC	Primary Health Care
STIs	Sexual Transmitted infections
SPSS	Statistical Package for Social Scientists
TB	Tuberculosis
TB/HIV	Tuberculosis and human immunodeficiency virus
TPT	Tuberculosis Preventive Therapy
WHO	World Health Organization

ABSTRACT

Background: Tuberculosis is constantly regarded as a major global health problem. Globally, tuberculosis is regarded as one of the causes of death among people living with the Human Immunodeficiency Virus and ranks alongside the Human Immunodeficiency Virus, one of the top infectious diseases. Professional nurses are pivotal in preventing tuberculosis among people living with the Human Immunodeficiency Virus, providing tuberculosis prophylaxis, and monitoring adherence. Professional nurses' knowledge of tuberculosis prophylaxis in people living with the Human immune-deficiency virus is key to preventing tuberculosis among people living with the Human Immunodeficiency Virus.

Purpose of the study: The study sought to assess the knowledge of professional nurses regarding tuberculosis prophylaxis in people living with Human Immunodeficiency Virus in Collins Chabane district clinics.

Methodology: A quantitative approach and descriptive research design were used on the selected population of professional nurses from 30 Collins Chabane clinics. Non-probability, purposive sampling was employed to sample all 160 professional nurses. Self-administered questionnaires were used to collect data, and a pre-test was done with 22 professional nurses at three health centres which were part of the main study. To ensure instrument validity content, face and construct validity were maintained. Statistic Package for Social Science version 26 was used to analyse data; to get frequency and percentages, presented in distribution tables and graphs. The researcher adhered to all the ethical considerations, including permission, informed consent, confidentiality, and anonymity. The study respondents had an average of three years of working experience with people living with Human Immunodeficiency Virus. Only a few have been trained specifically for tuberculosis prophylaxis, which resulted in low knowledge of evaluating Tuberculosis prophylaxis eligibility.

Results: This study showed professional nurses' knowledge about tuberculosis prophylaxis and some areas where they are not knowledgeable. The majority (n=138/86%) of respondents know about tuberculosis prophylaxis, and the minority (n=9/5.6%) show low knowledge of tuberculosis prophylaxis. The majority (n=150/94%) have low knowledge of the tuberculosis screening symptoms

combination used to identify who is eligible for Tuberculosis prophylaxis; the majority (n=123/77%) of the study respondents indicated that Tuberculosis prophylaxis reduces the risk of Tuberculosis infection for people living with the Human immunodeficiency virus and the majority of about (n=56/35%) respondents know that all people living with the Human immunodeficiency virus who don't have active Tuberculosis are eligible. The major barriers to the successful implementation of Tuberculosis prophylaxis revealed by this study were poor professional training of nurses on Tuberculosis prophylaxis (n=47/29%) and the effects of the current cough, which is Covid-19 (38/24%). The study showed several obstacles to the implementation of Tuberculosis prophylaxis. The majority identify a lack of specific training for professional nurses regarding Tuberculosis prophylaxis, Tuberculosis resistance, and lack of clarity on the Tuberculosis guidelines (85%, 44.4% and 60.6%), respectively.

Recommendations: The study recommended in-service training of professional nurses, specifically on Tuberculosis prophylaxis, and the revisions of Tuberculosis treatment guidelines for a better understanding by the health carers.

Keywords: Human immune-deficiency virus, Knowledge, Professional nurses, Prophylaxis, Tuberculosis

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CHAPTER 1

OVERVIEW OF THE STUDY

1 INTRODUCTION

Tuberculosis (TB) is a common and often lethal infectious disease that mostly affects the lungs, caused by mycobacterium TB. However, it is curable and preventable (World Health Organization (WHO), 2013; Ong, Migliori, Raviglione, MacGregor-Skinner, Sotgiu, Alffenaar, Tiberi, Adlhoch, Alonzi, Archuleta & Brusin, 2020). When persons with lung TB cough, sneeze, or spit, the disease spreads via the air. Everyone, regardless of age, ethnicity, or gender, is affected by this pandemic. People with impaired immune systems, including people living with Human Immunodeficiency Virus (HIV), malnutrition, diabetes, or cigarette use, have an increased chance of contracting TB, according to the WHO's 2016 worldwide report on the disease. Despite several interventions, such as the current TB prophylaxis to curb TB, the global impact of TB remains a major global health problem, largely causing the death of people living with HIV, ranking alongside HIV as one of the top infectious killer diseases. The following section will unpack the impact and magnitude of this pandemic in a more detailed overview from a global, regional, national, and local narrative discussed in the subsequent section.

1.1 Background

Although WHO declared TB a global pandemic almost 25 years ago, it continues to cause ill health and deaths across populations worldwide (WHO, 2013). Globally, in 2019, 1.4 million died from TB, of which 208 000 were people living with HIV, and 10 million only suffered from TB, wherein 5.6 million were men, 3.2 million women, and 1.2 million were children (WHO, 2020). To fight TB worldwide, two types of TBs, which are Multi-Drug Resistant TB (MDR-TB) and drug-susceptible TB, have been central to many TB narratives. As of October 2020, several regions worldwide reported higher rates of age-standardized incidences of TB and mortality than expected based on their same-day initiation levels in 2019. Bhargava and Shewade (2020) posited that southern sub-Saharan Africa had the highest observed-to-expected ratios of drug-

susceptible TB. The lowest ratios were in high-income North America and Oceania. Eastern Europe had the highest observed-to-expected ratios of MDR-TB, and high-income North America had the lowest ratios (Kyu, Maddison, Henry, Ledesma, Wiens, Reiner, Biehl, Shields, Osgood-Zimmerman, Ross & Carter, 2018).

From a scientific point of view, this clearly shows that TB cases and incidences disproportionately occur in developing countries, particularly Sub-Saharan Africa, where South Africa is located. Although ending the TB epidemic by 2030 is included in the Sustainable Development Goals for the United Nations, the TB crisis remains high. This outcome considers that Africa is the second and largest populous continent, harbouring many attributing factors which incubate TB growth. WHO report of 2019 reiterated that geographically, most 2018 TB cases were in South-East Asia (44%), Africa (24%), and Western Pacific (18%), with smaller percentages in Eastern Mediterranean (8%), the Americas (3%) and Europe (3%). South Africa is one of the countries with the highest TB burden. The WHO statistics gave an estimated incidence of 322 000 TB active cases in 2017 and 301 000 in 2018, with a total of 63 000 deaths in the same year (WHO, 2019). The National Strategic Plan for HIV, TB, and Sexual Transmitted Infections (STIs) identified Gauteng Province in South Africa as one of the districts with a high TB burden, an outcome informed by annual measurements of TB incidence, prevalence, and mortality in 2019 (Motswasele, Peu & Moloko-Phiri, 2020).

To control the pandemic, according to WHO guidelines on TB, the provision of TB prophylaxis is one of the keys and current public health interventions to alleviate the burden of TB among people living with HIV (Sabasaba, Mwambi, Somi, Ramadhani & Mahande, 2019). Antibiotic prophylaxis, which prevents active TB from developing, is beneficial, but current preventative regimens are lengthy, difficult to follow, and involve the risk of adverse effects such as liver damage. Huaman and Sterling (2019) noted that “Isoniazid monotherapy for 6–12 months has been used for decades, and its efficacy in preventing progression to TB disease is 90%.²¹ However, its overall effectiveness has been hindered by low adherence and completion rates due to its prolonged duration and hepatotoxicity risk”. In many TB-endemic countries, a six to nine months isoniazid (INH) course has been the standard. For people living with HIV, WHO recommendations offer a variety of alternatives that last up to 36 months.

South Africa's national strategic plan on HIV, TB, and STIs (2017-2022) outlines three key interventions to reduce TB, including providing TB Prophylaxis to people living with HIV. South Africa adopted WHO's recommendation on TB prophylaxis to treat latent TB, particularly in at-risk populations: people living with HIV and children under 5 years of age, who are household or close contacts of individuals with pulmonary TB. Currently, South Africa uses INH preventive therapy as the TB prophylaxis regimen of choice. Massyn, Peer, English, Padarath, Barron and Day (2016) assert that for the success of the health policy, nurses are the main implementers, particularly in rural areas where there is a limited number of doctors. Thus, despite the success of this intervention, some drawbacks were identified, and most studies noted different factors, including lack of knowledge among health care providers as the primary barrier to the provision and success of TB prophylaxis (Grace, 2019). However, only a few known studies were conducted, making it imperative for the present study to explore more on the professional nurses' knowledge of TB prophylaxis in people living with HIV in Collins Chabane Vhembe district of Limpopo.

1.2 Problem statement

South Africa accounts for 61% of people living with HIV, of whom 21% are on TB prophylaxis, and 40% are not initiated, respectively (WHO, 2019). This confirms that TB remains a public health challenge for people living with HIV due to professional nurses' poor administration of TB prophylaxis. In 2018, 2 638 cases of people living with HIV were reported at Malamulele Hospital, and amongst them, 1497 (58%) were not initiated on TB prophylaxis. In 2019 Collins Chabane municipality reported an increased statistic of 63% for people living with HIV who were not initiated with TB prophylaxis. As a professional nurse, the researcher noted a high TB infection among people living with HIV at 56% in 2018 during statistic review meetings. Among people living with HIV who initiated TB prophylaxis in the health facility, 57% did not complete 12 months of treatment, most likely due to issues associated with the professional nurses' knowledge of the initiation of TB prophylaxis amongst people living with HIV. Despite WHO guidelines on preventing TB among people living with HIV by providing TB prophylaxis at Antiretroviral therapy (ART) initiation. Thus, TB remained high, recording up to 68% of people living with HIV in 2019, and all of them were not initiated to TB prophylaxis at ART initiation (TIER.Net v1.12.6.0). Given the high prevalence of TB patients, incompleteness of treatment, and the paucity of scientific studies in the local health setting, it, therefore, imperative, and necessary for the researcher to explore more professional nurses' knowledge of TB prophylaxis in people living with HIV in Collins Chabane Primary Health Care (PHC) facilities.

1.3 Rationale of the study

In South Africa, Professional nurses play a key role in preventing TB in people living with HIV by providing TB prophylaxis and monitoring its adherence. Various studies on barriers to the implementation of TB prophylaxis among people living with HIV in South Africa show that providers lack knowledge of TB prophylaxis, among others (Lester, Hamilton, Charalambous, Dwadwa, Chandler, Churchyard & Grant, 2010, Abdulrazaak, Govender & Nzaumvila, 2018, Van Ginderdeuren, Bassett, Hanrahan, Mutunga & Van Rie, 2019). Lack of knowledge might result in medication errors and ineffective TB control. Increasing the TB prophylaxis level of knowledge among

professional nurses is one of the key initiatives towards preventing TB among people living with HIV. Most studies focused on patients' perceptions and adherence rates and barriers to implementing TB prophylaxis in people living with HIV. However, little has been done on the knowledge of TB prophylaxis in people living with HIV among healthcare workers (especially professional nurses) compared to the focus on doctors. No known study focused on professional nurses' knowledge regarding TB prophylaxis in people living with HIV in South Africa.

1.4 Significance of the study

This research may improve professional nurses' level of knowledge on the provision of TB prophylaxis for people living with HIV and the effective implementation of TB prophylaxis in Collins Chabane sub-district PHC clinics. The study may help people living with HIV get access to TB prophylaxis as soon as possible to prevent them from the risk of active TB development and MDR-TB, improve professional nurses' knowledge and reduce the rate of Tuberculosis and human immunodeficiency virus HIV and TB co-infection. The Department of Health will also be able to identify obstacles in implementing TB prophylaxis and develop strategies such as workshops, training, and seminars to improve TB prophylaxis outcomes. Policymakers could review policies based on these study findings to improve nurses' knowledge of TB prophylaxis. The study may also contribute to the body of knowledge and help other researchers identify further research gaps.

1.5 Purpose and objectives of the study

1.5.1 Purpose of the study

The study sought to assess professional nurses' level of knowledge of TB prophylaxis in people living with HIV in Collins Chabane sub-district clinics, Vhembe district of Limpopo.

1.5.2 Objectives of the study

Specifically, the study sought to:

- Assess the level of knowledge of professional nurses on TB prophylaxis in people living with HIV in Collins Chabane sub-district clinics in Vhembe district, Limpopo Province
- Identify and describe obstacles in implementing TB prophylaxis among people living with HIV in Collins Chabane sub-district clinics in Vhembe district, Limpopo Province
- Determine measures to improve professional nurses' level of knowledge on TB prophylaxis among people living with HIV in Collins Chabane clinics in Vhembe district, Limpopo Province

1.6 Definitions of key concepts

1.6.1 Knowledge

Knowledge is a familiarity, awareness, or insight about someone or something, including facts, information, descriptions, or learnt skills, through experience or education by perceiving, discovering, or learning (Librarianship Studies & Information Technology, 2017).

In this study, 'knowledge' refers to the level of awareness of professional nurses on the benefit of TB prophylaxis, initiation criteria, and duration of treatment.

1.6.2 Professional Nurse

A professional nurse is someone who has completed the required schooling, has acquired, and maintained the necessary competencies to practice as a professional nurse, and is registered under the act's section 31(1). (Government Gazette, 2020).

In this study, professional nurses refer to all nurses working with people living with HIV for more than one year.

1.6.3 Prophylaxis

Prophylaxis is defined as preventing diseases (William & Shiel, 2018).

In this study, prophylaxis refers to the provision of isoniazid.

1.6.4 Tuberculosis

Tuberculosis is an infectious disease that most commonly affects the lungs but can affect any organ in the body. It can happen when bacteria spread through the air via droplets (Medical News Today, 2021).

In this study, tuberculosis is caused by a bacterium or tubercle bacillus.

1.7 Outline of the dissertation Chapters

The dissertation is structured as follows:

Chapter 1: Background of the study

This section provides context for the dissertation by presenting literature that explains the study's background. The study's goal and objectives, as well as the problem description, the significance of the study, and the issues it aimed to address, are all presented.

Chapter 2: Literature review

Data-based and theoretical based information is reviewed in TB and prophylaxis in a global, regional, national, and local approach.

Chapter 3: Research Methodology

The study design and approach are presented, and the aspects of the entire method include sampling, population, data collection, analysis, ensuring reliability and validity, and ethical consideration.

The study's design and methodology are given, with sampling, population, data collecting, analysis, guaranteeing reliability and validity, and ethical considerations covered.

Chapter 4: Results presentation and interpretation

This chapter summarises and discusses the research findings considering the study's objectives.

Chapter 5: Discussion of the study findings

Other research conducted in comparable and different situations are examined to drive the study's meaning and highlight shortcomings.

Chapter 6: Summary, Conclusion, and Recommendations

The findings are used to draw conclusions and suggestions, presented in this chapter, along with a summary of the entire study.

1.8 Summary of the chapter

This chapter gave an overview of the study and provided background information. The problem statement, the study's logic, its purpose, its aims, and its significance for the population were all briefly discussed in this chapter. The key notions have been defined. The relevant literature for the topic will be discussed in Chapter 2.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

In the previous chapter, the background and introduction of the study were outlined; therefore, the literature review will be presented in this chapter. According to Singh and Thurman (2019), the literature review is a process that involves understanding what is known about a particular situation or phenomenon. Furthermore, it identifies the knowledge gap that exists so that the study can conclude the topic being researched. In addition, the literature review provides the in-depth knowledge needed to study a selected problem enabling the researcher to build on the works of others. In this section of the study, literature relevant to the knowledge of professional nurses on TB prophylaxis in people living with HIV will be discussed from a historical, global, regional, and national perspective. Sources used include scholarly articles in journals, e-books, books, and book chapters. The search keywords for sources included professional nurses, Knowledge, TB prophylaxis, and people living with HIV. These keywords helped the researcher to gather relevant information from different sources. However, due to a higher number of sources, the present study was not too specific in terms of the period of sources since the area of study has a historical background; nevertheless, most of the sources were five years old, and all of them were published in the English language. The researcher will initially read the abstract for the selected sources to find if the source was relevant.

2.2. Global overview of TB prophylaxis of people living with HIV

Between 2000 and 2015, TB diagnosis and treatment saved an estimated 53 million lives worldwide, with 10 million lives saved in Africa between 2000 and 2014. One of the newly established Sustainable Development Goals aims to end the TB epidemic by 2030. According to the WHO (2019), low and middle-income countries are the most impacted, accounting for more than 90% of worldwide TB cases (Phetlhu, Bimerew, Marie-Modeste, Naidoo & Igumbor, 2018). India (26 percent), Indonesia (8.5 percent), China (8.4%), the Philippines (6%), Pakistan (5.7 percent), Nigeria (4.4 percent), Bangladesh (3.6 percent), and South Africa (3.6 percent) are among the nations most impacted by TB in 2020, according to the WHO (WHO, 2020). According to the Global

TB report 2020, only 2.5 percent of TB cases occurred in the WHO European zone and 3% in the Americas region.

This high TB prevalence rate is attributed to a lack of comprehensive and appropriate healthcare and inadequate monitoring. WHO (2018) noted that TB is a global pandemic. It was also reported that on the 15 countries with the highest estimated TB incidence rates, 13 are in Africa, while half of all new cases occur in six Asian countries: Bangladesh, China, India, Indonesia, Pakistan, and the Philippines. A March 2018 WHO fact sheet on TB indicates that a third of the world's population (more than 2 billion) is currently infected with the TB bacillus. According to Floyd, Glaziou, Zumla and Raviglione (2018), 1 in 2 people in the world are contracting the tuberculosis bacillus for the first time, and 1 in 10 of those newly infected will become ill or infected later in life.

It is scientifically established that TB weakens the immune system as concurrent contamination with HIV. People with co-contamination of HIV and TB are more likely to expand TB. Thus, TB is the main cause of death among HIV-effective people (Pinto & Carvalho, 2017). In Africa, HIV is the unmarried most crucial issue contributing to the boom with inside the prevalence of TB since 1990. The identical truth sheet said that in 2018, globally speaking, there are 9.37 million new instances of TB, with the African region and the Southeast Asian region having a percentage of 30% and 34%, respectively (Floyd et al. 2018). However, the expected prevalence rate in Sub-Saharan Africa is nearly twice that of Asia, with over 350 cases per 100,000 people of the human population. The worldwide network awoke to this ailment when, in 1993, WHO declared TB a worldwide emergency.

2.3. Sub Saharan Africa Overview

HIV and TB continue to be the main reasons of morbidity and mortality in lots of growing nations. Countries in Sub-Saharan Africa are the maximum affected, with an anticipated 25 million people living with HIV contamination (Verguet, Riumallo-Herl, Gomez, Menzies, Houben, Sumner, Lalli, White, Salomon, Cohen & Foster, 2017), and those living with HIV and TB co-infection account for one in 3 HIV-associated deaths (United Nations Joint Programme on HIV and AIDS, 2017). HIV and TB infections were acknowledged as a public fitness task in South Africa, with statistics

indicating that during 2015 a mean of seven million human beings have been living with HIV (Phillips, 2017). The TB prevalence charge became anticipated to be the second-maximum globally, with 781 in line with 100,000 populations in 2014 (WHO, 2015). TB is the 9th main cause of human demise globally; mainly from an unmarried infectious agent, rating above HIV and Acquired Immunodeficiency Syndrome (AIDS). In 2016, 25 million human beings felt unwell with TB with inside the Sub-Saharan African region, accounting for 1/4 of latest TB instances global. An anticipated 417,000 human beings died from the disorder with inside the African region (1.7 million globally) in 2016. Over 25% of TB deaths arise with inside the Sub-Saharan African Region. Seven nations accounted for 64% of the brand-new TB instances in 2016, with India main the count, accompanied via way of means of Indonesia, China, the Philippines, Pakistan, Nigeria, and South Africa. In 2016, an anticipated 1 million youngsters have become unwell with TB and 250 000 youngsters died of TB (together with youngsters with HIV-related TB). TB is a main killer of HIV-tremendous human beings: in 2016, 40% of HIV deaths have been because of TB.

2.4. South African Situation

In South Africa, provinces such as the Western Cape have the lowest HIV prevalence; However, TB is a significant problem with an estimated incidence rate of 681 per 100,000 population, which is higher than the national average of 520 per 100,000 population (Phetlhu et al. 2018). TB in South Africa is generally worse in rural areas, where incidence rates vary more than in urban areas. The complexity of managing these two conditions is compounded by the high probability of comorbidities, with each condition exacerbating the other (Massyn et al.2016). The increasing number of patients co-infected with TB and HIV has contributed to increased complexity in TB surveillance and evaluation (WHO, 2015a), further compromising the short course of directly observed treatment, making it unsustainable and ineffective. Furthermore, Alotaibi, Yassin, Mushi, Maashi, Thomas, Mohamed, Hassan, and Yezli (2019) added that “fragmented TB and HIV services under the vertical approach, a lack of adequate human capital, and conflicting interests of funding agencies has polarised diseases rather than effectively treating them as comorbidities”. Therefore, integrating TB and HIV services has emerged as an important strategy to respond to this dual infection. However, the guidelines for each program need to be harmonised to facilitate the

desired integration and efficient treatment of patients co-infected with TB and HIV. The integration of services and associated policies has been supported by many low- and middle-income countries, including South Africa, where the National Strategic Plan on HIV, STIs and TB recommended screening all patients for TB infection, and all patients living with TB are tested for HIV. It is, therefore, very important to strengthen health systems and improve the provision of services for patients co-infected with HIV and TB. TB prophylaxis was introduced, and then understanding rural caregivers' knowledge about TB and HIV policies would go a long way towards successful implementation.

2.5. TB prophylaxis

TB is the main motive of mortality from an infectious disorder worldwide, bills for 40% of deaths amongst people living with HIV, consistent with WHO (2018). "HIV has been recognised as a large chance for latent to energetic TB progression. Prophylactic TB remedy is powerful at stopping the improvement of energetic TB disorder, consistent with researcher. However, six-nine months guides of everyday INH, which might be widespread in maximum countries, deliver the chance of destructive events, together with liver damage" (Dhital, Sharma, Poudel & Dhutal, 2017). However, patients also have difficulty adhering to these long treatment courses.

There is a consensus that chemoprophylaxis should be offered to all household contacts under the age of 5 infected with HIV (WHO, 2018). TB strains resistant to the two most powerful TB drugs, namely INH and rifampicin, are called MDR-TB. Extensively drug-resistant TB (XDR-TB) is TB caused by isoniazid and rifampicin resistant bacteria, fluoroquinolones, and second-line injectable anti-TB drugs (amikacin, kanamycin, or capreomycin). These forms of TB do not respond to six months of standard treatment with first-line anti-TB drugs and can take up to two years or more to be treated with less effective, more toxic, and much more expensive drugs. The South African National TB Program recommends six months, five weeks INH therapy, or three months of directly observed INH plus rifampin (60/30) for all children with have positive household contacts cases of the smear microscopy. The American Academy of Paediatrics recommended slightly higher doses (10-15 mg/kg) in their 2014 position paper, and more recent local studies supported this recommendation (personal communication). The local recommendation is subject to change. Agyeman

and Ofori-Asenso (2017) confirm recalling that "INH can and does cause a range of 'minor' side effects, including mild transient headaches, nausea, and dizziness. It is unlikely detected in young children and infants, but that does not mean they do not occur. In addition, the drug is known to cause hepatotoxicity; More often, a transient and asymptomatic increase in transaminases may occur. In relatively rare cases, clinical hepatitis may occur and resolve when INH is stopped. Studies have shown that the biggest problem that can happen to a TB patient is when their body resists two or more of the standard drugs. Developing resistance to drugs is a challenge not only for the patient himself but also for others, as he can infect other people with his drug-resistant germs (Floyd et al. 2018).

2.6. Knowledge and obstacles regarding TB prophylaxis

Many studies have documented gaps in knowledge and poor attitudes and practices related to infection prevention and control, including TB control (Baral & Koirala, 2022). Numerous reports around the world have found that "nurses have significant knowledge gaps in TB diagnosis, treatment and prevention and control; have some negative attitudes and stigma associated with the disease; and engage in bad practices, all of which contribute to increased risk of infection and negative impacts on patients and the community".

However, few studies specifically examined the knowledge of nurses working in South Africa about TB prophylaxis. van Rensburg et al. (2018) reported that "results echo previous indications that nurses often do not exhibit the desired knowledge, attitudes, and practices required to adequately protect themselves and others against TB and suggest further exploration towards understanding the influences on TB prevention practice among nurses". The knowledge regarding TB prophylaxis not to reinforce current practices' limitations and weaknesses are key. The knowledge of nurses working with people living with HIV should be believed to be stretched from knowing the symptoms and diagnoses and knowing much about TB prophylaxis. To date, there are multiple treatment options for TB patients, and patients who comply with the prescriptions can fully recover from the disease. The various antimicrobial drugs are effective and may take up to 24 months to suppress the bacteria. Due to the aggressiveness of TB, patients may begin treatment at the hospital. Unlike active TB, latent TB can be treated by a single antimicrobial drug at a time.

Black, Amien and Shea (2018) attested that “patients' non-compliance with the TB therapy program is a major challenge in treating TB. Consequently, the bacteria grow resistant to drugs and become hard to treat. MDR-TB is an example of such a form of TB, which has become a major public health concern globally”. China, India, and the Russian Federation are home to about half of the global MDR-TB cases. “Among the major challenges in TB control in India are poor PHC infrastructure in rural areas of many states; unregulated private healthcare leading to widespread irrational use of first- and second-line anti-TB drugs; spread of HIV infection; Poverty; lack of political will; and above all corrupt administration: (Pinto and Carvalho, 2017).

Furthermore, it is surprising that people still think TB is a disease of poor people, most of whom live in slums in many communities. For example, wealthy people need to know that their workers in their own villas may be asymptomatic carriers of this deadly disease. Therefore, they can be infected with TB even without entering these slums.

2.7 Summary of the chapter

This chapter has reviewed literature relevant to the knowledge of professional nurses on TB prophylaxis in people living with HIV, which was discussed from a historical, global, regional, and national perspective. Chapter 3 describes the research design and method adopted for the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter focused on the literature review, and this chapter outlines the designs or methodology adopted for the study. According to Burns and Grove (2019), research methodology explains the research approaches. The procedures by which researchers go about their work of describing, explaining, and predicting phenomena are called research methodology (Kumari, Lavanya, Vidhya, Premila & Lawrence, 2023). This section discussed the research methods employed to achieve the objectives. The methodology includes research methodology, study design, setting, population, sampling method, sample size, data collection, and analysis. Validity, reliability, and ethical considerations form part of the chapter.

3.2 Research approach

Grove, Burn and Gray (2019) argue that quantitative research is a formal, objective, rigorous, and systemic progression used to generate numerical information. This research approach sought to define new situations, events, or concepts, examine relations among variables and determine the efficacy of remedies or interventions in selected health results worldwide (Grove et al. 2019; Kumari et al. 2023). The purpose of quantitative research is to provide a plan. It enables a systemic test for research questions and hypotheses to provide a framework to maintain control across the study (LoBiondo-Wood, Haber, Berry & Yost, 2021). Information is numerically gathered and attained using a formal measurement and statistically analysed (Polit & Beck, 2020). The study employed a quantitative research approach in tandem with the study problem. Mathematical values were collected from respondents to systematically assess professional nurses' level of knowledge of TB prophylaxis in people living with HIV at Collins Chabane sub-district clinics, Vhembe district of Limpopo. This approach was considered because it can control the study through research conditions to maximise bias, precision, and validity.

3.3 Study design

A research design determines the best way to respond to research questions, considering the subject groups, time frames, research related interventions (Burns &

Grove, 2019). Grove et al. (2019) noted that a research design is a plan that maximises control over possible interfering factors against the anticipated outcome. The researcher adopted a descriptive and cross-sectional study design in this study.

3.3.1 Descriptive research design

Descriptive research design accurately and systematically defines the population, situation, or phenomenon. Silverman (2020) argued that this design responds to what, where, when, and how questions, besides the why questions. The descriptive research design is relevant where the research seeks to detect characteristics, frequencies, trends, and categories. Therefore, it gathers information that illuminates relationships, patterns, and links between variables to describe phenomena. The study adopted a descriptive research design to describe professional nurses' level of knowledge of TB prophylaxis in people living with HIV at Collins Chabane sub-district clinics, Vhembe district of Limpopo.

3.3.2 Cross-sectional study design

Polit and Beck (2020) outlined that the cross-sectional design entails collecting data at one point in time. This design examines changes in variables over time by comparing their values among several groups in different phases (Burns & Grove, 2019). This study adopted the cross-sectional study because data were collected from the sampled group once within a short time in different clinics.

3.4 Study setting

The study setting is where the study was conducted (Grove et al. 2019; LoBiondo-Wood et al. 2021). This study was conducted at selected PHC facilities under Collins Chabane Municipality (LIM345). Collins Chabane's local municipality is under Vhembe district, far north of the Limpopo Province in South Africa. The municipality shares borders with Musina in the north, Thulamela in the north-east, the Mopani district in the south, and Makhado in the west. Socio-economic status in the area ranges from low to middle. The main economic sectors are agriculture, community services, finance, and trade transport. Education and employment rate are still a problem in the Municipality. Collins Chabane sub-district is one of four Vhembe sub-districts, and it consists of five local areas, 33 PHC facilities, and one district hospital. Collin Chabane PHC facilities serve 180 villages with a population of 328 636 people (Municipalities of South Africa). Services rendered at Collins Chabane sub-district PHC facilities are

Minor ailments, Prevention mother-to-child, STI, Wellness services, Home-based community care, Maternal services, Women's health, Youth services, Child health services, TB services, HIV/AIDS services, Mental health services, Chronic, People with disabilities and geriatric services and Rehabilitation services. Collins Chabane PHC facilities were used in this study because the researcher has noted a high rate of TB infections among people living with HIV.

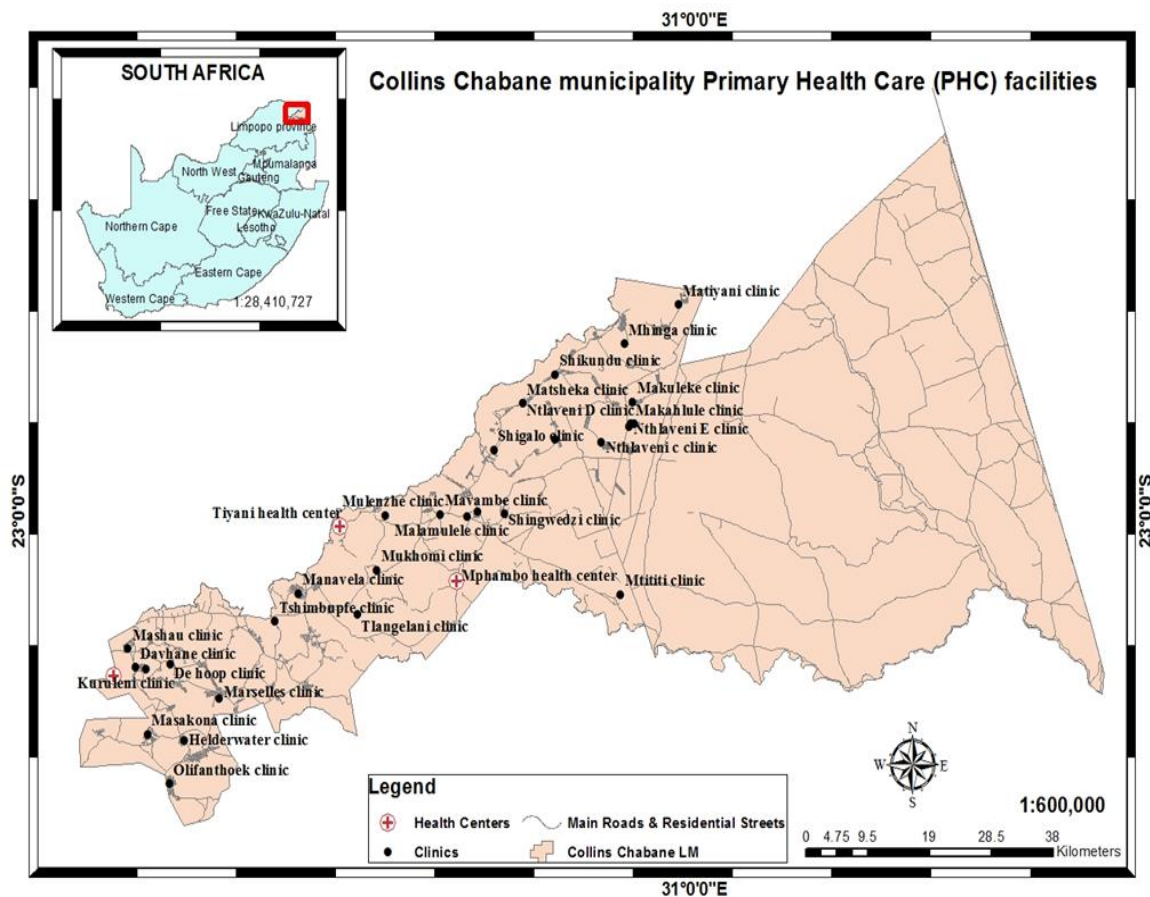


Figure 3.1: Map of Collins Chabane Municipality PHC facilities (Musumuvhi, 2020)

3.5 Population of the study

In a study, Burns and Grove (2019) defined population as a specific group of people or elements focused on. Therefore, the population comprises of all professional nurses at PHC facilities in the Collins Chabane sub-district. The target population is composed of the entire group of people whom the researcher intends to generalise from the study findings (Nieswiadomy & Bailey, 2018). The target population included all professional

nurses working with people living with HIV. Hence, the accessible population was professional nurses working with people living with HIV from selected PHC facilities who agreed to participate in the study.

3.5.1 Collins Chabane Municipality Population frame

The table below shows Collins Chabane Municipality's population frame.

Table 3.1: Collins Chabane Municipality population frame

Name of Municipality	No. of Professional Nurses
Collins Chabane	220

3.6 Sampling

Polit and Beck (2020) noted that sampling selects a certain group of the population to represent the entire population. Sampling entails choosing a group of people who fit certain events, behaviours, or other elements required for the study (Burns & Grove, 2019).

3.6.1 Sampling approach

The present study adopted a non-probability sampling technique. The non-probability sampling method was employed for both respondents and clinics. A non-probability sampling approach is where elements of the population do not have an equal opportunity to be included in the sample (Burns & Grove, 2019). Non-probability purposive sampling entails elements handpicked for the sample determined by the researcher's knowledge about the population (Polit & Beck, 2020). Non-probability sampling requires the researcher's judgement when selecting participants who are most informed about the phenomenon and articulate and explain nuances (Brink, Van der Walt & Van Rensburg, 2012 and Nayak & Singh, 2021). The study adopted non-probability, purposive sampling to sample the clinics and professional nurses. Burn and Grove (2019) established that purposive sampling considered purposeful, judgmental, or selective sampling. Thus, the researcher consciously selects respondents, items, events, or incidents required for the study.

3.6.2 Sampling of clinics and professional nurses

Given the small number of professional nurses in each clinic, the purposive sampling selected all 33 PHC facilities and all 160 professional nurses because they provide comprehensive TB prophylaxis to TB patients and work with people living with HIV. Thus, contributing to the high consultation pool to the TB continuum.

3.6.3 Inclusion Criteria

- All professional nurses, both male and female
- All professional nurses working with people living with HIV at selected clinics in Collins Chabane sub-district PHC facilities who were willing to participate had a chance to participate in this study

3.7 Measurement instrument

According to Nieswiadomy and Bailey (2018), measurement entails allocating numbers to variables. In research, measurement implies the quantification of information. Instruments are intended to measure precise variables (Burns & Grove, 2019). The present study adopted a questionnaire with open and close-ended questions. A questionnaire is a self-report form meant to mine information from written, verbal, or electronic responses of a given subject (LoBiondo-Wood et al. 2021). Questionnaires gather a broad range of information in descriptive studies. It also gathers information about the subjects' beliefs, attitudes, opinions, knowledge, or intentions (Nayak & Singh, 2021). Grove et al. (2019) argue that interview and questionnaire outcomes are the same. However, questionnaires have less depth, and the subject cannot explain responses or ask questions; the researcher cannot probe. Questions are consistently asked to each subject; hence, less opportunity for bias compared to interviews. A semi-structured questionnaire was employed. The semi-structured, self-administered questionnaire was designed using the latest Tuberculosis Preventive Therapy (TPT) guideline, the 2018 National TPT policy, and literature review. The questionnaire had open and close-ended questions. The questionnaire had four sections. Section A: Demographic data questions, which included: gender, age, professional level, clinical experience with HIV, whether trained for TPT, Section B: Knowledge of TB prophylaxis, section C: obstacles in the implementation of TB prophylaxis and section D: measures to improve professional

nurses' knowledge of TB prophylaxis. The questionnaire was written in English because all professional nurses can read and write in English.

3.8 Pre-test

The instrument package is pretested to assess its efficacy (Polit & Beck, 2020). A pre-test was done to evaluate and refine the questionnaire. A pre-test determines the time required to administer the instrument (Nayak & Singh, 2021). The pre-test identifies possible challenges the questionnaire poses for respondents to read or comprehend, questions that might be intolerable or offensive, assess the sequencing of questions, and evaluate efficacy. A pre-test was done on 22 professional nurses at three health centres under Collins Chabane municipality which were part of the main study. The same methodology, context, recruitment of respondents, sampling method, data collection process, and data management were used for the main study.

3.9 Validity and Reliability

3.9.1 Validity

Validity is the efficacy of an instrument to measure the intended (Polit & Beck, 2020). Instrument validity ascertains the instrument's efficacy considering the context (Brink et al. 2012 & LoBiondo-Wood et al. 2021). This study ensured instrument validity content.

3.9.1.1 Content validity

According to Burn and Grove (2019), content validity examines how a measurement method includes all the major elements required by the measured concept. Converting recent TB and HIV guidelines ensured content validity and conducting a literature review before designing the questionnaire. The questionnaire was presented to research supervisors, HIV and TB program managers at the Vhembe District office to ensure that information is based on the knowledge of professional nurses regarding TB prophylaxis in people living with HIV.

3.9.1.2 Face validity

Face validity refers to how the instrument appears to measure the intended information (LoBiondo-Wood et al. 2021). According to Burns & Grove (2019), face validity validates the instrument considering its intended measure. Face validity was ensured by submitting the questionnaire to experts such as statisticians and supervisors for evaluation before the real study.

3.9.1.3 Construct validity

Construct validity determines if the instrument measures the desired theoretical construct. This includes examining the relationship between the conceptual and operational definitions of the variable (Burns & Grove, 2019). Brink et al. (2012) argued that construct validity measures the relationship between the instrument and the related theory. The researcher did a literature review to show the significant elements of variables included in developing a questionnaire. The questionnaire was submitted to the experts, the promoters and core - promoters, to check the instrument's feasibility before the real study.

3.9.2 Reliability

Polit and Beck (2020) opine that reliability is how results remain the same when repeated or measured in different situations, people, measuring versions, or items on multi-item instruments (internal consistency). On the other hand, Brink et al. (2012) define reliability as the at which the instruments can yield consistent results when used over time either by the same person or different people. Reliability testing examines the possible measuring error in the research instrument (Burns & Grove, 2019). The test-retest method through administering the questionnaire in different instances on a neutral population, with the same characteristics to ensure the reliability of the questionnaire. The test-retest study was conducted in 3 health centres under the Collins Chabane sub-district on 22 professional nurses. The reliability of instruments can be verified by examining the similar answers from the number of professional nurses who were available on my second visit . Cronbach alpha measures the level of internal consistency ($0 \leq \alpha \leq 1.0$) of the instrument. It was adopted to determine the reliability, and the results yielded was 0.7, which shows a strong internal consistency.

3.10 Plan for data collection

Data collection is gathering information to address a research problem (Polit & Beck, 2020). Burns and Grove (2019) argued that data collection is getting respondents and collecting data/information for research purposes. The researcher collected data scheduled for August to October 2021. The researcher made an appointment with operational managers and professional nurses from 30 selected clinics. The researcher visited clinics on a given appointment in various clinics to conduct the study. Respondents were recruited by word of mouth in their respective clinics. The researcher asked for a room in a clinic to meet respondents individually, ensuring that every respondent wore a mask, hands were sanitised, and maintained a 1.5-meter distance between respondents and the researcher to prevent COVID 19 infections. The purpose of the study was explained to the respondents, and written informed consent was signed before the research process. The right to participate was explained to respondents and self-administered questionnaires collected data. The researcher informed the respondents of the possible time frame to complete the questionnaire (30 to 45 minutes). Questionnaires were administered to all volunteers to complete. The respondents completed the questionnaires individually on their own time in the absence of the researcher to avoid bias and interruptions in their routine work. The questionnaires were returned to a sealed box in the operational manager's office, where they were collected after one week.

3.11 Plan for data management and analysis

The researcher collected the completed questionnaires after one week from the clinics. Questionnaires were kept in a locked cupboard at researchers' house, and only the researcher has access to the keys. Data analysis codes and derive meaning from the data (Nayak & Singh, 2021). Microsoft Excel was used to capture data, then exported and analysed by the Statistical Package for Social Scientists (SPSS) version 26. Open-ended questions were analysed by grouping similar information and reported in numerical forms. Data were analysed to get frequency and percentages. Thereafter, it was presented in distribution tables and graphs.

3.12 Ethical considerations

Polit and Beck (2020) noted that where people are study participants, caution is required to protect their rights. Therefore, the researcher adhered to the following considerations:

3.12.1 Permission

The researcher presented the proposal to the Department of Nursing and submitted to the University of Venda, the School Higher Degrees Committee, Executive School Higher Degrees Committee, and Research Ethics Committee to obtain permission and an ethical clearance certificate for data collection. The ethical clearance certificate (**SHS/21/TDC/02/1805**) and a letter requesting permission to use PHC clinics were submitted to the Provincial Department of Health Research Committee. The permission from the provincial Department of Health Research Committee was submitted to Vhembe District and Collins Chabane Municipalities, respectively, to obtain permission to collect data from clinics. The permission from the Vhembe district and Collins Chabane local area was submitted to clinic managers to request permission to collect data from clinics.

3.12.2 Informed consent

Informed consent refers to the participants' agreement to partake in the study after learning adequate information about the research. Knowing more about the study can help participants decide whether to consent to or decline participation voluntarily (Polit & Beck, 2020). Respondents were informed about the aim and purpose of the study, and they signed a written informed consent before the commencement of the study. The informed consent form was written in English.

3.12.3 Voluntary participation

Researchers are required to inform the respondents that participation is strictly voluntary. Hence, failing to volunteer will not result in any penalty or loss of benefits (Polit & Beck, 2020). Therefore, respondents were informed of the voluntary terms and were allowed to withdraw at any time, even without giving reasons.

3.12.4 Confidentiality and Anonymity

According to Burns and Grove (2019), confidentiality refers to the researcher's administration of private information from the respondents. The researcher did not divulge or make the collected data available to anyone. The researcher protected or maintained the anonymity of the respondents, and the collected data remained private except for the researchers involved in the study. Respondents' personal information was not included in the research instrument. Anonymity is the most secure way to ensure confidentiality because the researcher cannot relate participants to their information (Polit & Beck, 2020). Respondents' identities remained anonymous by not mentioning or including them anywhere in the study. Respondents were informed of such anonymity. In this study, the response was anonymous. The questionnaire was distributed without any respondents' or facility's identifying information.

3.12.5 The risk-benefit ratio

Before the study, the researcher and reviewers must test the ratio between the benefits and risks involved (Brink et al. 2018). The benefits are the positive values that the research provides, and risk refers to the possibility that the participants may be harmed during the research. In this study, respondents benefitted by improving their knowledge of TB prophylaxis, and participants were at risk of contracting the COVID-19 virus. The researcher asked for a room in a clinic to meet respondents individually, ensuring that every respondent was wearing a mask, hands were sanitised, and a 1.5-meter distance between respondents and the researcher was maintained to prevent COVID-19 infections.

3.13 Summary of the chapter

This chapter outlined the data collection methods, study design, study setting, population, sampling approach, sample size used to achieve the research objectives, and data analysis. The validity, reliability, and ethical considerations were also included. Chapter 4 focused on analysed data and interpretation of results.

CHAPTER 4

DATA ANALYSIS, PRESENTATION, AND INTERPRETATION OF THE RESULTS

4.1 Introduction

The previous chapter discussed the methodology employed to address the research problem. This chapter, therefore, presents the analysed data and interpretation of the results. The present study investigated professional nurses' level of knowledge on TB prophylaxis in people living with HIV in Collins Chabane sub-district clinics, Vhembe district of Limpopo. Data were collected from 160 professional nurses using the Collins Chabane sub-district clinics questionnaire. The study sought:

- To assess the level of knowledge of professional nurses on TB prophylaxis in people living with HIV in Collins Chabane sub-district clinics in Vhembe district, Limpopo Province
- To identify and describe obstacles in implementing TB prophylaxis among people living with HIV in Collins Chabane sub-district clinics in Vhembe district, Limpopo Province
- To determine measures to improve professional nurses' level of knowledge on TB prophylaxis among people living with HIV in Collins Chabane clinics in Vhembe district, Limpopo Province

The data from the questionnaire was captured in Excel and exported to SPSS, where descriptive statistics was employed. The questionnaire was divided into four sections: demographic data, knowledge regarding TB prophylaxis, obstacles to implementation, and measures for successful implementation.

4.2 Presentation of the Results

The study findings are presented in graphs, charts, and tables in the form of frequencies and percentages regarding the knowledge of professional nurses on TB prophylaxis. Demographic profiles of respondents included age, gender, experience working with people living with HIV, marital status, and professional level.

4.2.1 Demographic information

The demographic information in the table below presents the characteristics: the respondent's gender, age, marital status, professional level, and experience working with people living with HIV.

Table 4.1: Demographic information of respondents

Characteristics	Frequency (n)	Percentage (%)
Gender of Respondents		
Female	132	82.5
Male	28	17.5
Total	160	100
Age of respondents		
20 - 25 years	37	23.1
26-35 years	32	20.0
36-45 years	52	32.5
46-55 years	21	13.1
56 years and above	18	11.3
Total	160	100
Marital status Respondents		
Single	30	18.8
Married	104	65.0
Widowed	5	3.1

Divorced	21	13.1
Total	160	100.0
Level of qualification		
Degree	65	40.6
Diploma	87	54.4
Clinical Nurse Practitioner	8	5.0
Total	160	100.0

4.2.1.1 Demographic information of respondents.

The majority (n=132/82.5%) of study respondents were female and male-only represented (n=28/17.5%). The larger part of the sample of nurses was those between the age bracket of 36-45 years (n=52/32.5%), 25 years and below (n=37/23.1%), and 26-35 years (n=32/20%) of age consecutively. However, the least number was the ones who were therefore above 56 years which constituted (n=18/11.3%). The majority (n=104;65%) were married, (n=30/18.8%) were single, and the minority of (n=5/3.1%) were widowed as well as (n=21/13.1%) divorced. In terms of professional qualifications of the respondents, most about (n=87/54.4%) were nurses with diplomas and followed by (n=65/40.6%) with degrees as well as (n=8/5%) the clinical nurse practitioner.

4.2.1.2 Working experience with people living with HIV

The figure below presents the number of years of a professional nurse working with people living with HIV, which is also one of the key factors which affect the successful implementation of TB prophylaxis.

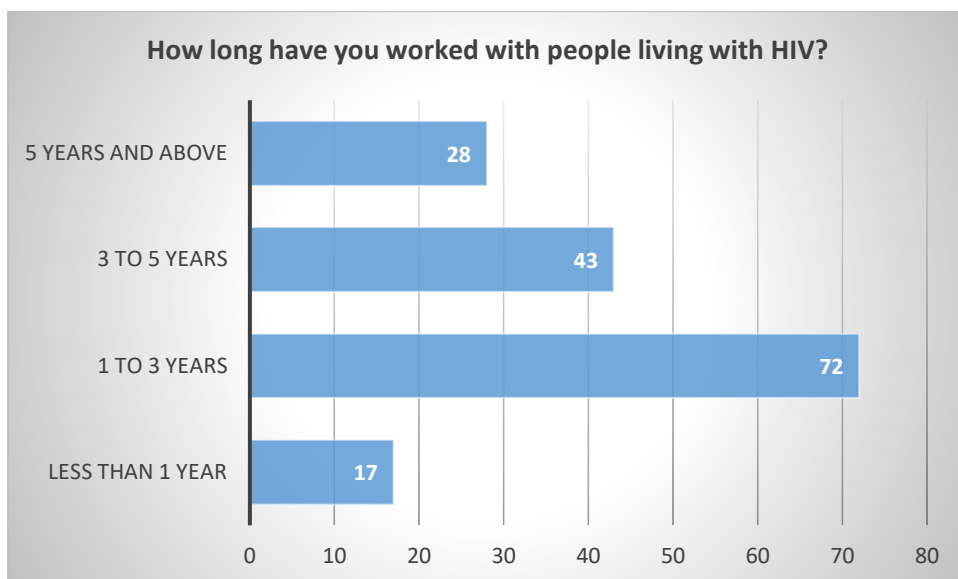


Figure 4.1: Working experience with people living with HIV

Figure 4.1 above shows the working experiences of professional nurses in which it was revealed that the majority (n=72/45%) have been working with people living with HIV for 1 to 3 years, followed by those from 3 to 5 years (n=43/27%). The minority (n=17/11%) has worked with people living with HIV for less than a year, and those with more years about five years and above were (n= 28/17%).

4.2.1.3 Training in TB & HIV collaborative and TB prophylaxis

The figure below shows the training level of respondents in TB and HIV collaboration and TB prophylaxis. Bar number 1 shows the training level of respondents on TB and HIV collaboration, and bar number 2 shows the training level of respondents on TB prophylaxis.

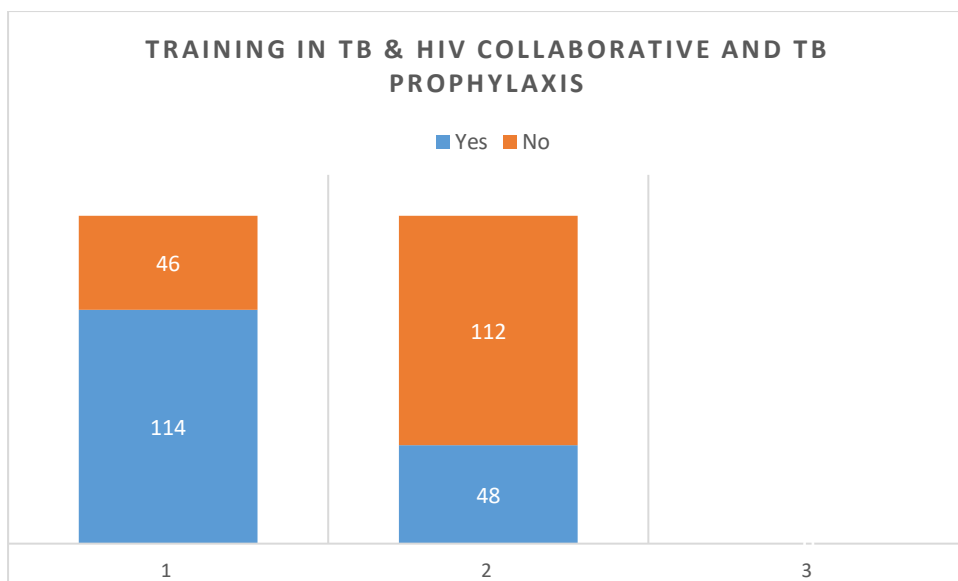


Figure 4.2: training in TB & HIV collaborative and TB prophylaxis

Figure 4.2. above shows the training levels of the respondents, in which the majority (n=114/71%) of them said yes, they were trained in TB and HIV collaborative activities, and (n=46/29%) said No; however, only (n=48/30%) attested that Yes, they were specifically trained for TB prophylaxis while (n=112/70%) said No.

4.2.2 Knowledge about TB prophylaxis

The study findings below show the knowledge of professional nurses on TB prophylaxis presented in graphs, charts, and tables in the form of frequencies and percentages.

4.2.2.1 TB prophylaxis reduces the risk of TB infection

As shown in Figure 4.3 below, most (n=123/77%) respondents indicated that TB prophylaxis reduces the risk of TB infection for PLHIV, while (n=37/23%) denied the same assertion. The following figures will illustrate more on the level of knowledge regarding TB prophylaxis.

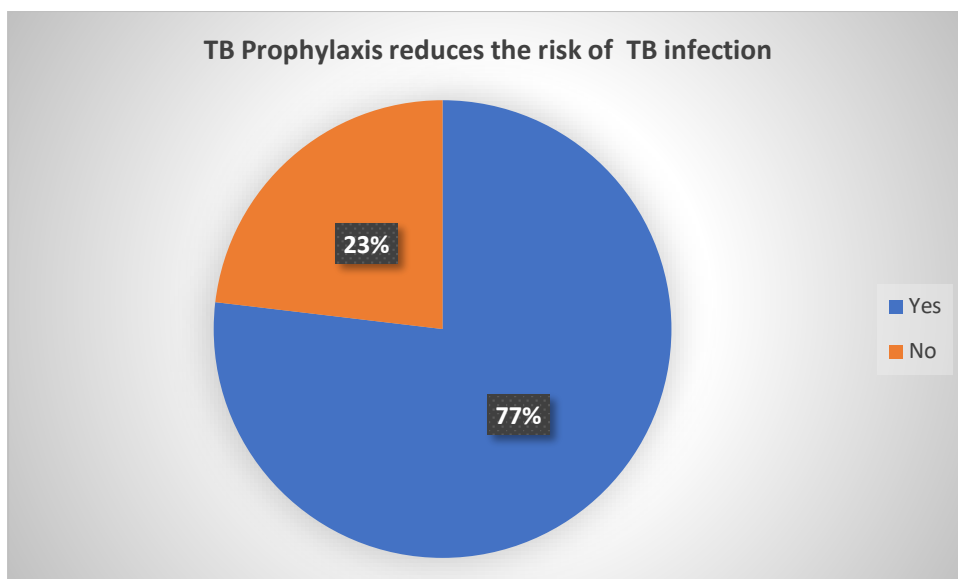


Figure 4.3: TB prophylaxis reduces the risk of TB infection.

4.2.2.2. Knowledge level on combinations of TB screening symptoms to determine the people living with HIV eligibility for TB prophylaxis

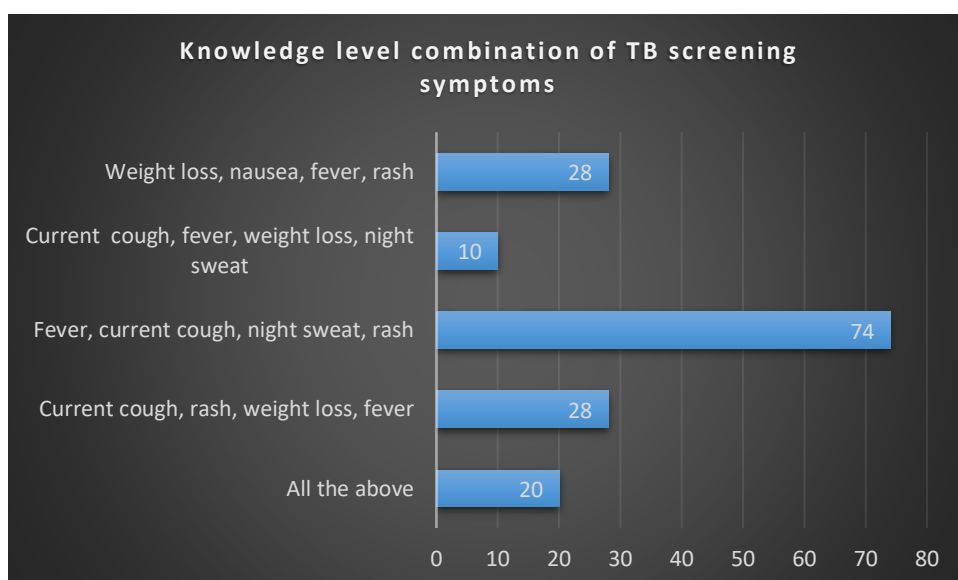


Figure 4.4: knowledge level combination of TB screening symptoms

The figure above illustrates the combination of TB screening for symptoms used by nurses to identify who is eligible for TB prophylaxis. The majority (n=74/46%) attested that the combination includes fever, current cough, night sweats and rash and only

(n=10/6%) of them established that its current cough, fever, night sweats and weight loss. Some respondents who shared the same frequency (n=28/17%) attested that it is weight loss, nausea, fever and rash and a small number (n=20/12%) reported all the above.

4.2.2.3. Chest radiography is a requirement for screening people living with HIV for TB prophylaxis eligibility

The present study established that chest radiography is unnecessary to screen people living with HIV for TB prophylaxis eligibility. Only (n=53/33.1%) agreed with the majority of (n=107/66.9%) did not support the use of radiography.

4.2.2.4. Eligibility for TB prophylaxis

Below is the graph which presents the eligibility for TB prophylaxis.

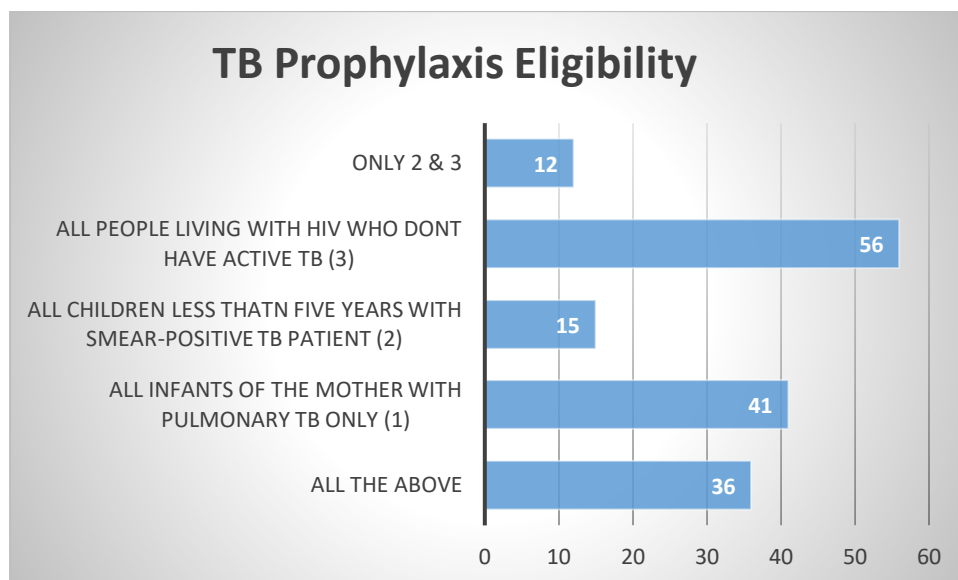


Figure 4.5: TB Prophylaxis Eligibility

The graph above shows the respondent's opinions and knowledge regarding TB prophylaxis eligibility. The majority of (n=56/35%) respondents revealed that all the people living with HIV who do not have active TB are eligible. However, (n=41/26%) of them attested that only on all infants whose mothers have pulmonary TB. Apart from all the opinions, (n=36/23%) established that all the opinions are correct.

4.2.2.5. Smear-negative people living with HIV showing TB symptoms

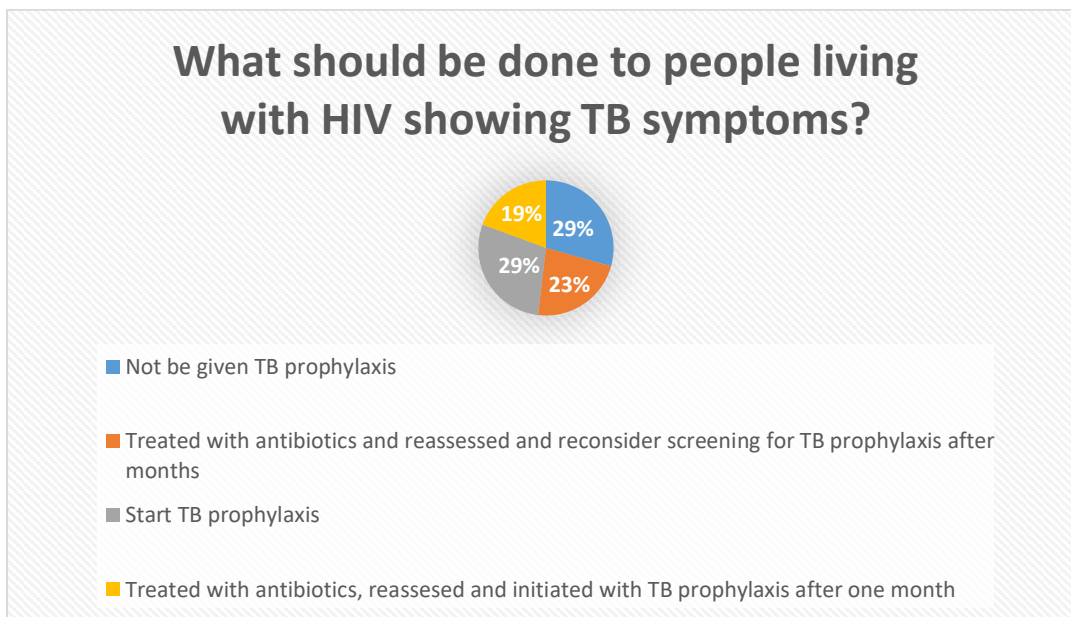


Figure 4.6: What should be done to people living with HIV showing TB symptoms?

The figure above presents the results on the knowledge levels of professional nurses on what should be done for smear-negative people living with HIV who are showing symptoms, and the majority established that they should start TB prophylaxis (n=46/29%) and not be given TB prophylaxis (n=46/29%) consecutively. About (n=37/23%) revealed that they were treated with antibiotics reassessed and reconsidered screening for TB prophylaxis months, and (n=31/19%) suggested prophylaxis after one month.

4.2.2.6 The knowledge level regarding the use of TB preventatives

The following graph presents the findings on TPT as secondary prophylaxis and pregnancy as a contraindication against starting TB prophylaxis.

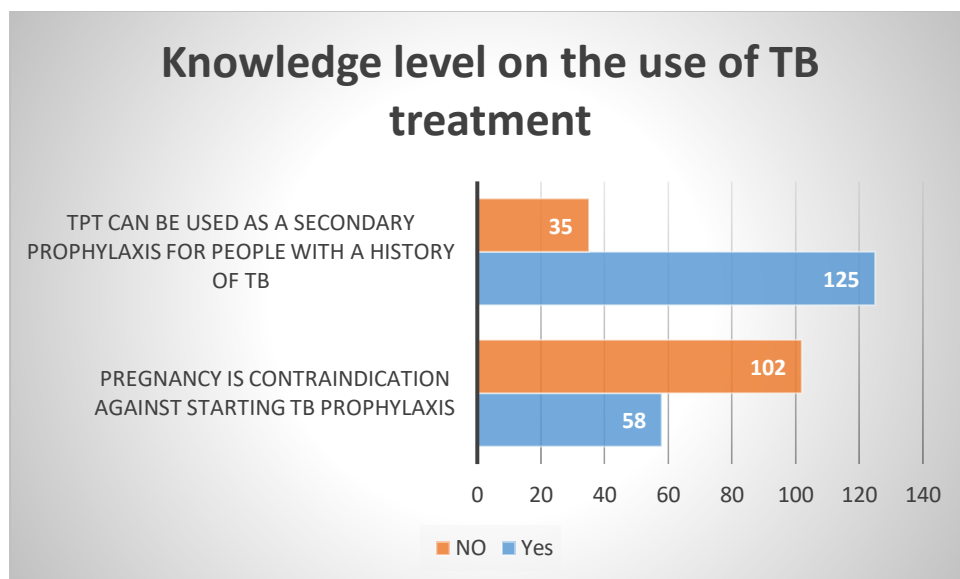


Figure 4.7: knowledge level on the use of TB treatment

The graph above shows the knowledge levels of TB treatment concerning TPT. Most (n=125/78%) respondents suggested that TPT can be used for people with a TB history as secondary prophylaxis. However, (n=35/22%) denied the same sentiment. As is a contraindication of TB prophylaxis, pregnancy was denied by (n=102/63%) participants, with only (n=58/36%) saying yes, it is.

4.2.2.7 Best TB prophylaxis drug

The figure below presents the best TB prophylaxis drug.

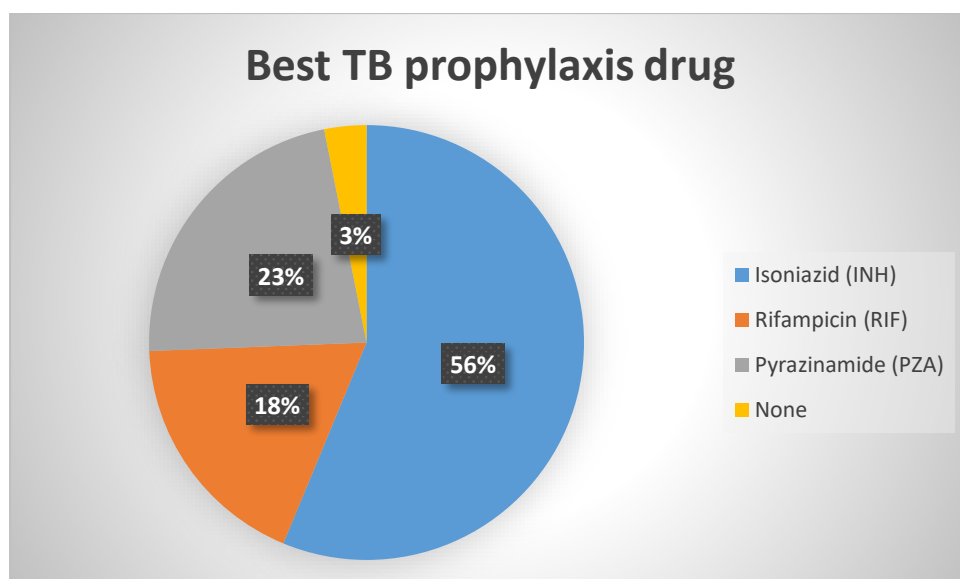


Figure 4.8: Best TB prophylaxis drug

The figure above shows the TB prophylaxis drugs in which the respondents reported that the INH (n=89/56%) is the best, followed by the pyrazinamide (n=37/23%) and lastly, rifampicin (n=29/18%). However, an (n=5/3%) of those who said none should be ignored.

4.2.2.8. Knowledge level regarding the dosage of INH

The figure below presents the dosage of INH in children and adults

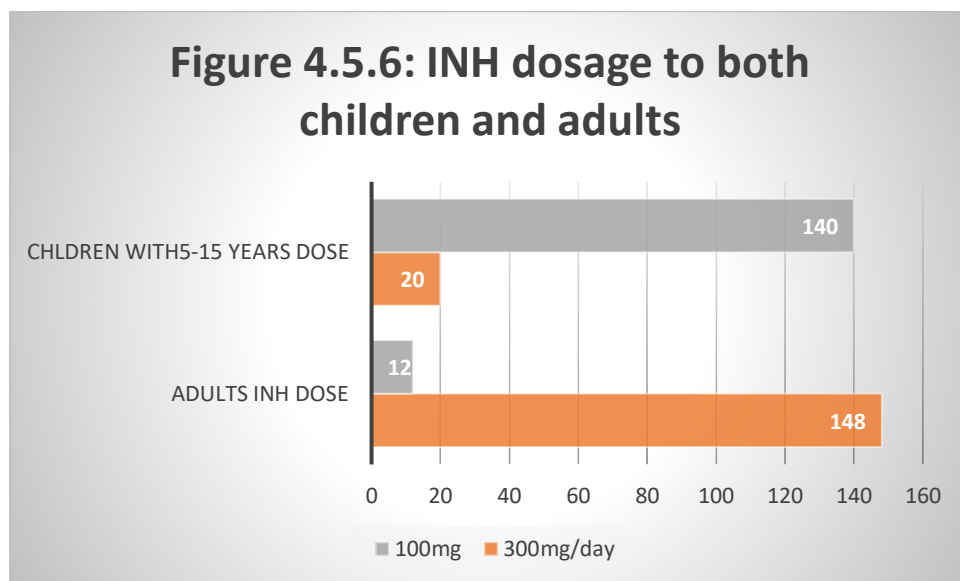


Figure 4.9: INH dosage for both children and adults

In terms of administration of INH drug, as shown in figure 4.9 above, the majority (=148/92.5%) revealed that the INH for adults living with HIV is 300mg/day, with a minority (n=12/7.5%) indicating that it is 100mg/day. The study established that for children older than five and younger than 15 years of age is 100mg/day, and the minority revealed that its 300mg/day.

4.2.2.9 Knowledge level regarding the assessment of adherence to TB prophylaxis

The figure below presents the knowledge level regarding assessing adherence to TB prophylaxis.

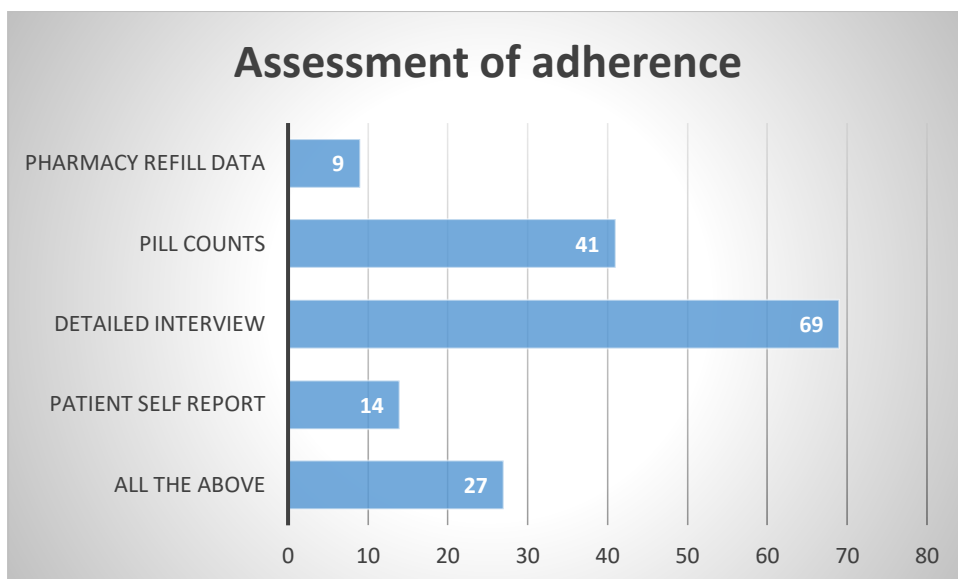


Figure 4.10: Assessment of Adherence

As shown above, in assessing patients' adherence to TB prophylaxis, the study found that most respondents used detailed interviews (n=69/43%), followed by pill counts (n=41/26%). Lastly, patient self-report (n=14/9%). However, pharmacy refill data were all suggested, with few (n=9/6%) people.

4.2.2.10 Initiation of TB prophylaxis in adults

The figure below presents the knowledge level regarding initiating TB prophylaxis for eligible people living with HIV.

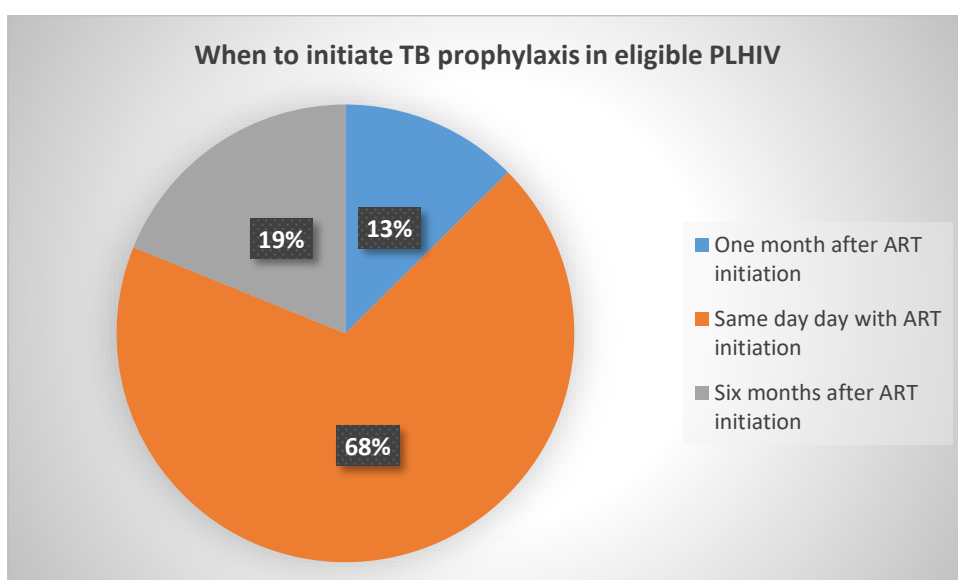


Figure 4.11: When to initiate TB prophylaxis for eligible people living with HIV

The level of knowledge regarding the initiation of TB prophylaxis for eligible people living with HIV is presented in the figure above. It was revealed by the majority (n=109/68%) that it could be initiated the same day after ART, and the other (n=30/19%) suggested six months after ART, and lastly (n=21/13%) said one month after ART.

4.2.2.11 Duration of TB prophylaxis among people living with HIV

The table below shows the duration of TB prophylaxis among people living with HIV in children and adults.

Table 4.2: Duration of TB prophylaxis among people living with HIV

Age group	Frequency (n)	Percentage (%)
Adults living with HIV		
Six months	14	8.8
36 months	6	3.8
12 months	131	81.9
All the above	9	5.6
Total	160	100
Eligible <15 years children living with HIV		
Six months	27	16.9
36 months	101	63.1
12 months	11	6.9
All the above	21	13.1
Six months	27	16.9
Total	160	100

Table 4.3 above shows the duration of TB prophylaxis among people living with HIV in children and adults. The majority of 81.9% suggested that TB prophylaxis in adults lasts for 12 months, while (n=101/63.1%) suggested that it lasts for 36 months in children, with only a few respondents of about (n=11/6.9%) saying 12 months for children.

4.2.3 The major barriers to a successful implementation of TB prophylaxis

The following graph shows the major barriers to TB prophylaxis implementation. The open-ended responses were coded, captured quantitatively, and reported in frequency and percentage.

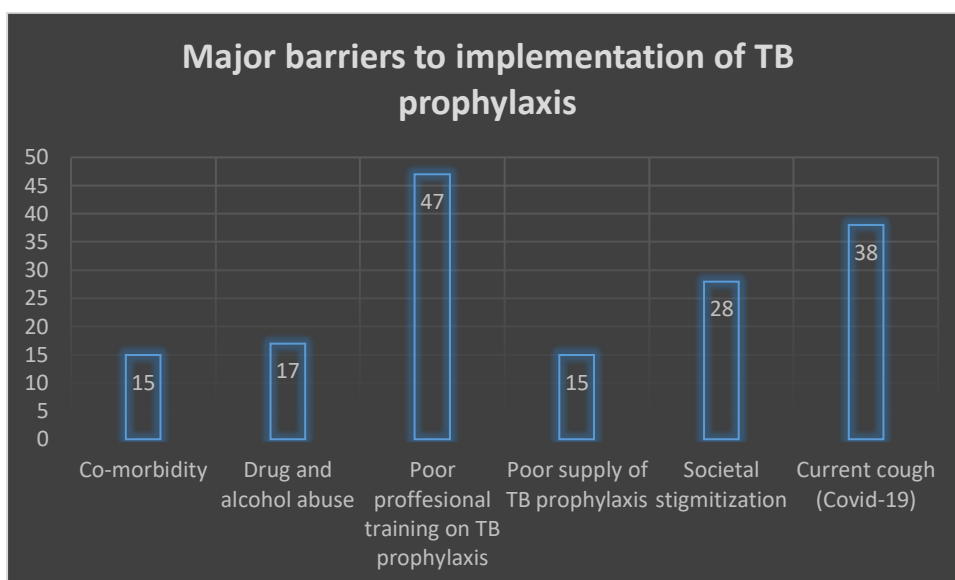


Figure 4.12: Major barriers to implementation of TB prophylaxis

The figure above shows the major barriers to successfully implementing TB prophylaxis. The major barriers are poor professional training of nurses on TB prophylaxis (n=47/29%) and the effects of the current cough, which is COVID-19 (n=38/24%). Societal stigmatisation, co-morbidity, drug and alcohol abuse and poor supply of TB prophylaxis were the lowest (n=28/18%), (n=15/9%), (n=17/11%), (n=15/9%) respectively.

4.2.4 Obstacles in the implementation of TB prophylaxis

The study findings below in Table 4.6 show the obstacles to implementing TB prophylaxis. The questions were constructed on a 4 Likert scale which is present as SD= Strongly Disagree, D= Disagree, A= Agree, SA= Strongly Agree.

Table 4.3: Obstacles in the implementation of TB prophylaxis

Statement	SD		D		A		SA	
	N	%	N	%	N	%	N	%
Nurses' acceptability of TB prophylaxis	86	53.8	10	6.3	8	5.0	56	35.0
Lack of nurses' knowledge of TB prophylaxis	72	45.0	11	6.9	59	36.9	18	11.3
Lack of clarity of TB prophylaxis guidelines	13	8.1	28	17.5	22	13.8	97	60.6
TB prophylaxis training	7	4.4	6	3.8	11	6.9	136	85.0
Patient acceptability of TB prophylaxis	17	10.6	39	24.4	96	60.0	8	5.0
Fear of TB prophylaxis resistance	14	8.8	23	14.4	52	32.5	71	44.4

The above table presents the obstacles faced in the implementation of TB prophylaxis; the lack of TB prophylaxis training by professional nurses was discovered as the most hindering factor by a majority of (n=136/85%). Lack of clarity about the TB prophylaxis guidelines was also discovered in (n=97/60.6%) and (n=71/44.4%) suggested fear of TB prophylaxis resistance. The nurse's acceptability of TB prophylaxis was denied as a factor by (n=86/53.8%) together with (n=72/45%), who suggested that lack of nurse knowledge is not an obstacle; however, (n=56/35%) said it should not be ignored.

4.2.5 Measures to improve professional knowledge regarding TB prophylaxis

In reporting the measures to improve professional knowledge regarding TB prophylaxis, an open-ended questionnaire was arranged, and 10% of the questionnaires were sampled to develop the codes. The capturing was done Excel, and the data was exported to SPSS for analysis. The percentages and frequencies were calculated and are presented in Figure 4.13.

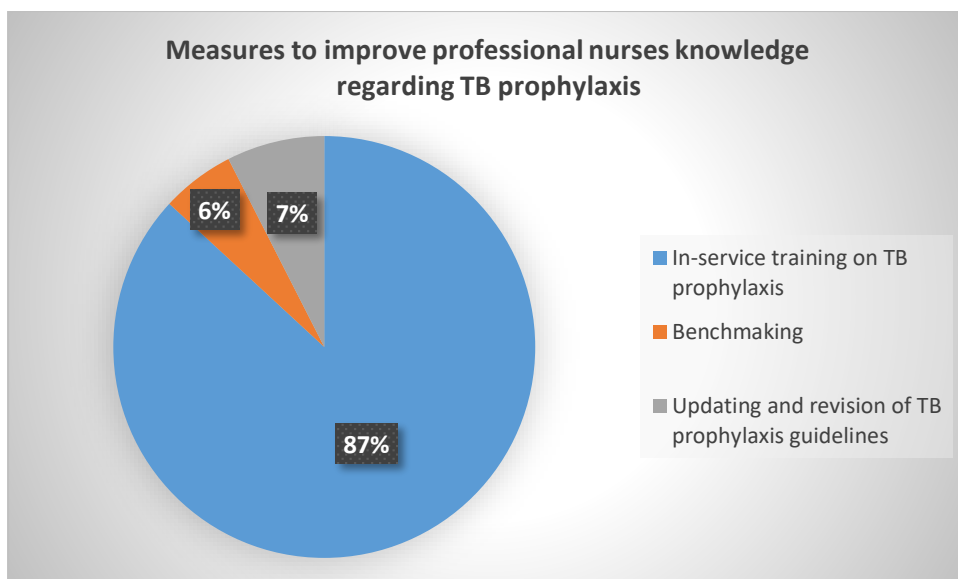


Figure 4.13: Measures to improve professional nurse’s knowledge regarding TB prophylaxis

The above figure shows the measures that can be adopted to improve professional knowledge regarding TB prophylaxis. Most (n=139/87%) suggested that in-service training of nurses on TB prophylaxis is key. However, benchmarking from other clinics (n=10/6%) and updating and revising TB prophylaxis guides (n=11/7%) were also mentioned.

4.3 Summary

The findings show that professional nurses (n=150/94%) have little knowledge of diagnosing people living with HIV and their eligibility for TB prophylaxis. Lack of TB prophylaxis training, clarity on TB prophylaxis and fear of TB prophylaxis resistance were presented as major problems in the implementation of TB prophylaxis in this study. The key barriers were TB resistance, societal stigmatisation, poor professional training and the pressure of the current cough (Covid-19). In-service training was suggested as a key measure to improve professional nurses’ knowledge of TB prophylaxis among people living with HIV in Collins Chabane clinics in Vhembe district, Limpopo Province.

CHAPTER 5

DISCUSSION OF STUDY FINDINGS AND LITERATURE CONTROL

5.1 Introduction

The previous chapter presented the study findings. This chapter focused on the findings about professional nurses' knowledge of TB prophylaxis in people living with HIV in Collins Chabane sub-district clinics, Vhembe district of Limpopo. The study findings were presented and interpreted in chapter four. Therefore, this section discusses the findings of the study by applying the literature provided in chapter two using the aims and objectives of the study. Specifically, the study aimed:

- To assess the level of knowledge among professional nurses on TB prophylaxis in people living with HIV in Collins Chabane sub-district clinics in Vhembe district, Limpopo Province
- To identify and describe obstacles in implementing TB prophylaxis among people living with HIV in Collins Chabane sub-district clinics in Vhembe district, Limpopo Province
- To determine measures to improve professional nurses' level of knowledge on TB prophylaxis among people living with HIV in Collins Chabane clinics in Vhembe district, Limpopo Province

5.2 Demographic information

The study findings were collected from 160 professional nurses from 30 health facilities in Collins Chabane, and the majority (n=132/82.5%) were females. Generally, this shows that females largely dominate the nursing profession. Sasa (2019) conducted a study and confirmed that there are few men in the nursing profession and that it is a public perception that nursing is a female-dominated profession.

Therefore, the implication of the present study can be largely influenced by females. Therefore, the responses are not a balanced reflection of people from both sexes. The majority (n=72/45%) of the respondents had working experience ranging from 1-3 years working with people living with HIV. This implies that the data collected in this study cannot have higher credibility, as it was solicited from professional nurses with

poor experience on issues revolving around TB prophylaxis. The study revealed a better number ($n=65/40.6\%$) of nurses with a professional degree. However, many ($n=87/54.4\%$) had diplomas, and this level of qualification is expected to enhance knowledge regarding TB prophylaxis. However, this level of qualifications did not significantly affect the knowledge level, and the research assumed that it might have been affected by the length of work experience.

The present study has revealed that although many ($n=114/71\%$) nurses were trained in TB collaborative activities, only a few ($n=48/30\%$) have been trained specifically on TB prophylaxis. Thus, Musuka, Teveredzi, Mutenherwa, Chingombe, and Mapingure (2018) reiterated the importance of regular training. Hence, they noted that nurses in hospitals know better than those in dispensaries. Therefore, people assume that training programs for primary healthcare services, particularly in rural areas, are often neglected. It can be noted that these findings are like the factors identified in the knowledge attitudes and practices survey conducted by Lopez-Varela, Fuente-Soro, Augusto, Sacoor, Nhacolo, Karajeane, Vaz, and Naniche (2018) among healthcare workers in Mozambique. This also showed an association of knowledge considering the level of education and profession. However, gender and age have no significant influence.

5.3 Knowledge level regarding TB prophylaxis

This study reveals areas where professional nurses know about TB prophylaxis and some areas where they need to be more knowledgeable. In this study, respondents answered 14 multiple-choice questions assessing knowledge about TB prophylaxis in people living with HIV. All questions were corrected using the latest TPT policy, ART, and TB guidelines. Among 14 knowledge questions, most respondents ($n=138/86\%$) showed they knew as they answered 10 questions correctly. Only four have the least correct answers, which shows low knowledge regarding TB prophylaxis. Most respondents ($n=123/77\%$) know that TB prophylaxis reduces the risk of TB infection for people living with HIV. Similar studies presented that INH provision for 6 months significantly reduced TB incidence. Those never on INH had 20 times higher TB incidence rates than INH-completed people (Beshaw, Balcha & Lakew, 2021).

Most respondents (n=125/78%) knew that the TPT could be used for people with a history of TB as secondary prophylaxis. TB prophylaxis provides benefits to patients who finish the TB treatment. It can be started after successfully completing TB treatment or after a previous episode of TB if active TB disease is excluded (Guidelines for Tuberculosis Preventive Therapy among HIV-infected individuals in South Africa, 2010).

The study respondents (n=107/66.9%) know that radiography is unnecessary for diagnosing a patient living with HIV to be eligible for TB prophylaxis. The confusion about radiography was also found in Dhital et al. (2017) study. They noted a lack of knowledge and confusion among professional nurses regarding tests used to screen or diagnose people living with HIV for their eligibility for TB prophylaxis. The confusion and lack of knowledge did not only impact the tests, especially modern techniques but also between active TB disease and latent TB infection. The National Guidelines on the treatment of TB infections (2023) reiterated that chest X-ray is not recommended for excluding active TB disease before initiating TB preventive therapy.

The majority (n=56/35%) of respondents knew that all people living with HIV who don't have active TB are eligible for TB prophylaxis, and pregnancy, as is a contraindication of TB prophylaxis, was denied by (n=102/63%) respondents with only (n=58/36%) who responded positively. According to National consolidated guidelines, 2020, all people living with HIV without TB symptoms are eligible for TB prophylaxis, and a pregnant woman is also eligible for TB prophylaxis if the CD4 count is equal to, or less than 350 cells and if > 350 TB prophylaxis should be deferred till 6 weeks after delivery.

Most professional nurses (n=86/56%) knew that INH is the best TB prophylaxis drug. Almost all respondents (n=148/92.5%) and (n=140/87%) know INH doses for adults, which is 300mg/day, and children's doses which are 100mg/day. The majority (n=131/81.9%) knew that the duration of TB prophylaxis in adults is 12 months. Most (n=109/68%) of professional nurses know that TB prophylaxis is initiated on the same day as ART. Furthermore, people who started INH before ART had a higher TB incidence rate than those who started after ART. Therefore, people on INH and ART had 100% prevention from new TB incidence (Beshaw et al. 2021). However, ART alone is believed to be more protective than INH alone; people live longer on ART. Hence, TB incidence decreased (Beshaw et al. 2021). Another study which reported

similar findings recommended the provision of INH prophylaxis to all individuals in all health institutions with HIV/AIDS care and treatment centres after screening for active TB and excluding contraindication (Yanes-Lane, Ortiz-Brizuela, Campbell, Benedetti, Churchyard, Oxlade & Menzies, 2021). Despite the poor provision of TB prophylaxis in the Collins Chabani sub-district, this study reveals that professional nurses know about TB prophylaxis, which is a significant factor. This high level of knowledge might be because the majority (n=114/71%) of respondents were trained in TB and HIV collaboration, and some of them (n=48/30%) were specifically trained for TB prophylaxis. These findings are also relevant to the study done on Health Care Workers from a government district hospital and 14 PHC clinics in the rural Msinga sub-district of KwaZulu-Natal, whereby it was found that the majority (90%) of respondents of the study demonstrated high levels of TB prophylaxis-related knowledge (Ahmed, Grammatico, Moll, Malinga, Makhunga, Charalambous, Ladines-Lim, Jones, Choi & Shenoi, 2021). TB prophylaxis-related knowledge among professional nurses significantly improves the provision of TB prophylaxis, preventing TB among people living with HIV. It decreases the risk of TB disease cross-transmission.

Considering the diagnosis of people living with HIV to determine TB prophylaxis eligibility, this study revealed that the majority (n=150/94%) of respondents had little knowledge, minority (n=10/6%) of the respondents recognised the right combination of TB symptoms which included weight loss, fever, current cough, and night sweats. Low knowledge level on diagnosing people living with HIV for their eligibility for TB prophylaxis significantly affects the provision of TB prophylaxis. People living with HIV will not initiate or delay TB prophylaxis and can also have initiated TB prophylaxis while they have TB. According to ART clinical guidelines (2019), active TB should be ruled out before initiating TB prophylaxis by screening for TB symptoms: current cough, fever, night sweats and weight loss. These findings support the studies that established the lack of TB-related knowledge among TB physicians from Asia and East Africa who cannot determine TB symptoms (Swift, Molella, Vaughn, Breeher, Newcomb, Abdellatif & Murad, 2020). Therefore, it is key to note that this may translate into delays in providing TB prophylaxis, diagnosing, isolating, and treating TB patients or leading TB patients to no diagnosis and consequent transmission in hospitals and communities.

Knowledge of the duration of TB prophylaxis in children was poor, with only a few respondents (n=27/16.9%) saying six months which is correct, and the majority (n=133/83.1%) of respondents were incorrect. The study also reveals that the majority (n=123/77%) of respondents had a low level of knowledge on what should be done to people living with HIV showing TB symptoms. Only (n=37/23%) revealed that they were treated with antibiotics and reassessed and reconsidered screening for TB prophylaxis after three months which was the correct answer. This is a concern and a significant factor. Lack of knowledge in administering TB prophylaxis and screening for TB could negatively affect the quality of life among children. Hence, professional nurses might need to undergo job services, in-service training, and quarterly assessment always to be abreast with the new changes, implement, and adhere. Similar studies were conducted in Lesotho, Nepal, Vietnam, Brazil, and Iraq where they noted that lack of TB symptoms-related knowledge by health care workers delays diagnosis, isolation and treatment of TB patients or failure to diagnose TB patients and consequent transmission in hospitals and the community (Alotaibi et al. 2019; Jury, Imogen, Kelly Thompson & Jane, 2021).

Similar studies by Naidoo, Theron, Rangaka, Chihota, Vaughan, Brey and Pillay (2017) showed that nurses' level of knowledge was low and recommended that training programs significantly increase their knowledge levels. Furthermore, they attested that it's not surprising that well-trained professional nurses with a university degree or state diploma had good and excellent knowledge about TB prophylaxis. The present study had many degreed nurses, and this might have increased their knowledge levels if the training on TB prophylaxis had been offered.

5.4 Obstacles to the implementation of TB prophylaxis

The study showed some obstacles to the implementation of TB prophylaxis. The majority identify a lack of specific training for professional nurses regarding TB prophylaxis, TB resistance, and need for clarity on the TB guidelines (85%, 44.4%, and 60.6%). Lack of specific training may lead to low knowledge of TB prophylaxis, affecting the provision of TB prophylaxis. Some schools of thought have highlighted that more in-service training will yield better results as a nurse will be updated about the current changes in the implementation of TB prophylaxis (Swift et al. 2021). Furthermore, continuous training in TB prophylaxis will reinforce their knowledge. However, on the contrary, a study in Ukraine identified obstacles as structural barriers

related to centralised, facility-based TB services and economic impacts of treatment, providing communication, the psychological toll of TB, and treatment pill burden as prominent challenges hindering the success of TB prophylaxis (Kigozi et al. 2017). The researcher opines that a TB prophylaxis knowledge deficit among professional nurses may result in substandard care, poor service provision, inefficient resource use, impact on health outcomes and an increase in the risk of TB transmission and development of resistance. In addition, the knowledge and attitude of professional nurses towards TB determines the quality of information given to the patients in health-related education. Insufficient or incomplete information passed on to the patients can create wrong perceptions or strengthen the patients' negative perceptions.

5.5 Measures to improve professional nurses' knowledge of TB prophylaxis

The present study suggested the measures that can be implemented to harness and improve the nursing practice regarding TB prophylaxis. These measures might improve the health standards of the patient in the long term and could decrease the cost of hospitalisation. The majority (n=139/87%) of this study suggested that in-service nurses training on TB prophylaxis is key. However, benchmarking from other clinics (n=10/6%) and updating and revising TB prophylaxis guides (n=11/7%) were also mentioned. The study conducted in Lesotho, Malawi, Namibia, and Zambia by Musuka et al. (2018) supported this study noting that knowledgeable professional nurses and nursing assistants serve patients effectively and efficiently. Therefore, it is even more important when implementing TB and HIV policies because it might significantly impact patient health outcomes and curbing the spread of diseases.

Similar problems were raised in studies from Southern African countries such as South Africa, Zimbabwe, Botswana and Mozambique (Cobert, Lantos, Janko, Williams, Raghunathan, Krishnamoorthy, JohnBull, Barbeito & Gulur, 2020). Asian countries such as China and India also noted the same problems where nurses in these rural areas have insufficient knowledge of TB and HIV policy components to influence the process of implementation positively (Weerasuriya, Harris, McQuaid, Bozzani, Ruan Li, Li, Rade, K., Rao, Ginsberg & Gomez, 2021). This study also confirmed that despite government's adoption of the integrated model of care in 2011 and the position of TB and HIV coordinators instructed to facilitate the integration of TB and HIV programs, the two programs still work in a parallel fashion without coordination. In conclusion, as

knowledge about TB prophylaxis is evolving, TB prophylaxis training updates should be made available to all levels of nurses. However, emphasis of the training should be on professional nurses.

5.6 Summary of the chapter

The chapter discussed the demographic findings, including gender, age, marital status, professional level, and working experience. Knowledge level regarding TB prophylaxis, obstacles to implementing TB prophylaxis and measures to improve professional nurses' knowledge of TB prophylaxis were also discussed.

CHAPTER 6

SUMMARY, LIMITATIONS, RECOMMENDATIONS, AND CONCLUSION

6.1. Introduction

The previous chapter discussed the results of the study. This chapter concludes the study, summarises the findings, discusses the limitations, and makes recommendations for the practice, policy, and further research study.

6.2 Summary of the study

The study assessed professional nurses' level of knowledge on TB prophylaxis in people living with HIV in Collins Chabane sub-district clinics, Vhembe district of Limpopo. Specifically, the study sought to:

- Assess the knowledge of professional nurses on TB prophylaxis in people living with HIV in Collins Chabane sub-district clinics in Vhembe district, Limpopo Province
- Identify and describe obstacles in implementing TB prophylaxis among people living with HIV in Collins Chabane sub-district clinics in Vhembe district, Limpopo Province
- Determine measures to improve professional nurses' knowledge of TB prophylaxis among people living with HIV in Collins Chabane clinics in Vhembe district, Limpopo Province

6.2.1 Methodology

A quantitative approach and descriptive research design were used on a selected population of professional nurses working from 30 Collins Chabane clinics. Non-probability, purposive sampling was employed to sample all the health facilities and 160 professional nurses. Self-administered questionnaires were used to collect data, and a pre-test was done with 22 professional nurses at three health centres which were part of the main study. To ensure instrument validity content, face and construct validity were maintained. Data were analysed using Statistic Package for Social Science version 26 to get frequency and percentages, presented in distribution tables and graphs. The researcher adhered to all the ethical considerations, including permission, informed consent, confidentiality, and anonymity.

6.2.2 Results

Demographic information

The majority (n=132/82.5%) of the study respondents were female. The study respondents had an average (n=75/45%) of three years of working experience with people living with HIV, and only a few (n=48/30%) have been trained specifically for TB prophylaxis. In terms of professional qualifications of the respondents, about (n=87/54.4%) nurses had diplomas, followed by (n=65/40.6%) with degrees and (n=8/5%) were clinical nurse practitioners.

Knowledge of TB prophylaxis

This study shows areas where professional nurses are knowledgeable and not knowledgeable about TB prophylaxis—knowing how to screen TB symptom combinations to identify who is eligible for TB prophylaxis. Most (n=150/94%) of respondents missed the combination, and only (n=10/6%) recognised a true combination of TB symptoms: current cough, fever, night sweats and weight loss. Most (n=123/77%) of the study respondents indicated that TB prophylaxis reduces the risk of TB infection for people living with HIV, while (n=37/23%) denied the same assertion. The majority of (n=56/35%) respondents of people living with HIV who do not have active TB are eligible. However, (n=41/26%) of them attested that all infants are from mothers with pulmonary TB only. Apart from all the opinions, (n=36/22.5%) established that all the opinions are correct. Concerning TPT, most (n=125/78%) respondents suggested that the TPT can be used for people with a history of TB as secondary prophylaxis. However, (n=35/22%) denied the same sentiment. (n=102/63%) respondents denied that pregnancy as a contraindication of TB prophylaxis, and only (n=58/36%) respondents saying agreed. In assessing patients' adherence to TB prophylaxis, the study found that most of the respondents used detailed interviews (n=69/43%), followed by pill counts (n=41/26%), lastly, patient self-report (n=14/9%). However, pharmacy refill data was also suggested, although few were recorded (n=9/6%) respondents.

Major barriers and obstacles to a successful implementation of TB prophylaxis

The major barriers to the successful implementation of TB prophylaxis revealed by this study were poor professional training of nurses on TB prophylaxis (n=47/29%) and

the effects of current cough, which is COVID-19 (38/24%). The study showed many obstacles implementing TB prophylaxis, and the majority identified a lack of specific training for professional nurses regarding TB prophylaxis, resistance, and a lack of clarity on the TB guidelines (85%, 44.4%, and 60.6%) respectively.

Measures to improve professional nurses' knowledge of TB prophylaxis

The majority (n=139/87%) suggested that in-service training of nurses on TB prophylaxis is a key measure to improve professional nurses' knowledge of TB prophylaxis among people living with HIV.

6.3 Limitations of the study

The present study has limitations regarding the enrolled number of professional nurses from numerous healthcare facilities in Collins Chabane; the sample size represented a small proportion of all professional nurses in South Africa. Thus, the study's cross-sectional design limits the generalisability of the findings. This study was conducted in selected clinics of the Collins Chabane sub-district of Vhembe district, Limpopo Province of South Africa. As a result, it may not apply to other provinces or clinics, and the findings may not be generalised to the whole of Limpopo Province. Data was collected using a self-administered and structured questionnaire. Hence, one must note that one cannot discount the existence of personal desirability and bias that respondents might not report their knowledge.

6.4 Plan for dissemination and Implementation

Respondents were informed of the results and consulted on the potential or actual benefits of such results to them or others. Results were disseminated in the form of journal articles and oral presentations. A copy of the dissertation was made available to Collins Chabane sub-district clinics. This study will be published in accredited Journals and online web-based Journals.

6.5 Recommendations

Taking the study findings of this present study into consideration, the following recommendations are proposed:

6.5.1 Recommendation for practice

There is a need to acknowledge the necessity for adequate training of professional nurses, specifically on TB prophylaxis. During this training, it will be crucial to ensure

accurate information dissemination, highlighting all the issues regarding diagnosing people living with HIV and eligibility for TB prophylaxis.

Advocates, implementers and local governments, and health through national policies should articulate and provide understandable and accurate information regarding the guideline of TB therapy.

The study recommends that in-service training is key. From the human research management point of view, a “productivity mix” impacts professional nurses’ motivation, productivity, and performance. This means an inability to provide standard care and responsiveness to patient needs.

Moreover, several approaches to enhance the productivity, responsiveness, and competencies of professional nurses can be implemented at both health-system and health facility levels. These may include variations in payment systems, accountability mechanisms, and supportive supervision, quality assurance and improved performance, and performance-based incentives.

6.5.2 Recommendation for the Department of Health

The Ministry of Health South Africa should consider expanding training services, specifically TB prophylaxis, to underserved areas since the inability to access proper information regarding TB prophylaxis is one of the major barriers.

Additionally, the Department of Health must give constant training to all categories of nurses on all policy guidelines related to TB and HIV, mostly in rural areas because of the shortage of registered nurses. This usually leaves the two other categories in total responsibility for patients living with HIV and TB.

6.5.3 Recommendation for further studies

Further studies on the professional nurse’s knowledge level regarding TB prophylaxis are recommended to uncover more gaps that this study might have missed. Moreover, a mixed approach and a bigger sample are recommended to understand the phenomenon better. Evidence synthesis research is required to explore the area of TB prophylaxis further.

6.5.4 Recommendations for professional nurses

This study recommends in-service training. In-service is key. Therefore, it is highly recommended that professional nurses trained in TB prophylaxis train others at their respective clinics. Professional nurses must familiarise themselves with new, updated TB prophylaxis guidelines and policies.

6.6 Conclusion

The study showed that most respondents generally have little knowledge of diagnosing people living with HIV and their eligibility for TB prophylaxis, hence the need for more specific in-service training and education regarding TB prophylaxis. Several obstacles, such as lack of TB prophylaxis-specific training, drug resistance and lack of clarity on TB guidelines, were presented in this study, and the key barriers to better implementation of TB prophylaxis were identified as TB resistance, societal stigmatisation, poor professional trained and the pressure of current cough (Covid-19). Furthermore, the study revealed that although the knowledge levels are low with several barriers to the successful implementation of TB prophylaxis, the study recommended in-service training of professional nurses, specifically on TB prophylaxis, benchmarking, and the revisions of TB treatment guidelines for better understanding by the health care workers.

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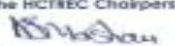
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ANNEXURE A: ETHICAL CLEARANCE

ETHICS APPROVAL CERTIFICATE	RESEARCH AND INNOVATION OFFICE OF THE DIRECTOR	
NAME OF RESEARCHER/INVESTIGATOR: Mr. GM Nemafohoni		
STUDENT NO: 11574489		
PROJECT TITLE: <u>Professional nurses' knowledge of tuberculosis prophylaxis in people living with HIV at Collins Chabane municipality, Vhembe district of Limpopo province.</u>		
ETHICAL CLEARANCE NO: SHS/21/PDC/02/1805		
SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS		
NAME	INSTITUTION & DEPARTMENT	ROLE
Dr SA Makanda	University of Venda	Supervisor
Dr T Luthlinda	University of Venda	Co - Supervisor
Mr. GM Nemafohoni	University of Venda	Investigator - Student
Type: Masters Research Risk: Minimal risk to humans, animals or environment (Category 2) Approval Period: May 2021 - May 2023		
The Human and Clinical Trials Research Ethics Committee (HCTREC) hereby approves your project as indicated above.		
General Conditions		
While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:		
<ul style="list-style-type: none"> - The project leader (principal investigator) must report in the prescribed format to the REC. - Adhere to an ethical approval on the progress of the project, and report completion of the project. - Notify ethics in case of any adverse event or any matter that threatens ethical principles during the course of the project. - Actually a number of projects may be randomly selected for an external audit. - The approval applies strictly to the protocol as indicated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes to the REC. Would there be deviations from the project protocol without the necessary approval of such changes, the ethical approval is immediately and automatically voided. - The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the REC and the approval renewed before or on the expiry date. - In the interest of ethical responsibility, the REC reserves the right to: <ul style="list-style-type: none"> - Request access to any information or data of any time during the course or after completion of the project. - To ask further questions. Seek additional information. Request further verification or monitor the conduct of your research or: <ul style="list-style-type: none"> - suspend or postpone approval; - Any unethical principles or practices of the project are revealed or suspected; - It becomes apparent that any relevant information was withheld from the REC or that information has been falsified or misrepresented; - The required annual report and reporting of adverse events was not done timely and accurately. - New institutional rules, national legislation or international conventions, deem it necessary. 		
ISSUED BY: UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE Date Considered: April 2021		UNIVERSITY OF VENDA OFFICE OF THE DIRECTOR RESEARCH AND INNOVATION 2021-05-19 Private Bag X9050 Tlokoeng 0950
Name of the HCTREC Chairperson of the Committee: Dr NS Mashau		
Signature: 		

ANNEXURE B: REQUEST FOR PERMISSION TO CONDUCT A STUDY

P.O Box 1165

Phangami

0904

Limpopo Department of Health

Private Bag X9302

Polokwane

0700

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT A STUDY

I am currently registered for a master's degree in the Department of Nursing at the University of Venda. I request permission to conduct a study on "**Professional Nurses' Knowledge of Tuberculosis Prophylaxis in people living with HIV in Collins Chabane municipality, Vhembe district of Limpopo Province**". The study will be conducted at selected 30 PHC clinics in the Collins Chabane sub-district. A questionnaire will collect data from professional nurses in selected clinics. The researcher will ensure that service delivery is not interrupted during the data collection process by collecting data during the lunch break.

Your permission to conduct the study in your facility will be appreciated. If you have any questions, you can contact me or my supervisor DR Mulondo S.A on 0824465625 or email: Seani.Mulondo@univen.ac.za

Sincerely

Nemafhohoni Mulalo Godfrey (Master's student)

Email: nemafhohonimg@gmail.com

Cell: 0729079544 or 0732520771

ANNEXURE C: PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref : LP_2021-06-004
Enquires : Ms PF Mahlokwane
Tel : 015-293 6028
Email : Phoebe.Mahlokwane@dohsd.limpopo.gov.za

Mulalo Godfrey Nemafohoni

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

Professional Nurses' knowledge of tuberculosis prophylaxis in people living with HIV at Collins Chabane Municipality, Vhembe district of 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 institution supervisor/s a week before the study is conducted.
 - b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
 - c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
 - d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
 - e. The approval is only valid for a 1-year period.
 - f. If the proposal has been amended, a new approval should be sought from the Department of Health
 - g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated


pp Head of Department

15/07/2021
Date

NB: Currently access is restricted to our facilities due to Covid-19 , therefore this approval is applicable within our Covid-19 policies and circulars

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

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ANNEXURE D: APPLICATION TO THE DISTRICT

P.O Box 1165

Phangami

0904

The Head of Department

Department of Health Vhembe district

Private Bag X5009

THOHOYANDOU

0950

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT A STUDY

I am currently registered for a Master's Degree in the Department of Nursing at the University of Venda. I request permission to conduct a study on "**Professional Nurses' Knowledge of Tuberculosis Prophylaxis in people living with HIV in Collins Chabane municipality, Vhembe district of Limpopo Province**". The study will be conducted at selected 30 PHC clinics in the Collins Chabane sub-district. A questionnaire will collect data from professional nurses in selected clinics. The researcher will ensure that service delivery is not interrupted during the data collection process by collecting data during the lunch break.

Your permission to conduct the study in your facility will be appreciated. If you have any questions, you can contact me or my supervisor DR Mulondo S.A on 0824465625 or email: Seani.Mulondo@univen.ac.za

Sincerely

Nemafhohoni Mulalo Godfrey (Master's student)

Email: nemafhohonimg@gmail.com

Cell: 0729079544 or 0732520771

ANNEXURE E: PERMISSION FROM THE DISTRICT



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH
VHEMBE DISTRICT

Ref: S5/6
Enq: Muvuri MME
Date: 23.07.2021

Dear Sir/Madam *INEMAFICHONI M.G*

PERMISSION TO CONDUCT A STUDY (RESEARCH):

1. The above matter refers.
2. Your correspondence dated *23.07.2021* requesting for permission to conduct a study is hereby acknowledged.
3. The approval from the Provincial office that you provided to this office serves as a reference for this approval.
4. Permission is therefore granted for the study to be conducted within Vhembe District facilities.
5. You are however advised to make the necessary arrangements with the facilities you wish to visit for your research purposes.
6. Wishing you success in your studies

[Signature]
DISTRICT CHIEF DIRECTOR

23/7/2021
DATE

Private Bag X5009 TLOHOYANDOU 0950
OLD parliamentary Building Tel (015) 962 1000 (Health) (015) 962 4958 (Social Dev) Fax (015) 962 2274/4623
Old Parliamentary Building Tel (015) 962 1848, (015) 962 1852, (015) 962 1754, (015) 962 1001/2/3/4/5/6 Fax (015) 9622373, (015) 962 227

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ANNEXURE F: LETTER OF INFORMATION

Title of the Research Study: PROFESSIONAL NURSES' KNOWLEDGE OF TUBERCULOSIS PROPHYLAXIS IN PEOPLE LIVING WITH HIV IN COLLINS CHABANE SUB-DISTRICT CLINICS VHEMBE DISTRICT OF LIMPOPO PROVINCE.

Principal Investigator/s/ researcher : Nemafohoni M.G, Masters student

Co-Investigator/s/supervisor/s : Doctor Mulondo S.A

Brief Introduction and Purpose of the Study

Dear participants,

We kindly invite you to participate in the study entitled: Professional Nurses' Knowledge of Tuberculosis Prophylaxis in people living with HIV in Collins Chabane Municipality, Vhembe District of Limpopo Province. The purpose of this research is to assess the knowledge of professional nurses on tuberculosis prophylaxis in people living with HIV in Collins Chabane sub-district clinics Vhembe district of Limpopo Province.

Outline of the Procedures

You are invited to take part in the study on TB prophylaxis. If you agree to participate, you will complete a questionnaire that should take about 30-45 minutes. The questionnaire asks questions about the knowledge of professional nurses regarding TB prophylaxis in people living with HIV. We are kindly asking for a few minutes of your time to help us understand your knowledge of TB prophylaxis in people living with HIV by completing a questionnaire for evaluation. The information you provide could help improve tuberculosis preventive therapy (TPT) outcomes. The participants of this study are professional nurses working in Collins Chabane clinics. 160 participants are expected to participate in this study voluntarily

Risks or Discomforts to the Participant: Not applicable

Benefits

The outcomes of the study's findings may be made available to the provincial Department of Health, and the implementation of recommendations would improve

TPT results. Overall, effecting recommendations from the study will further benefit people living with HIV by getting access to TB prophylaxis appropriately and preventing them from the risk of active TB development.

Reason/s the Participant May Be Withdrawn from the Study

Your participation in this study is voluntary, and you are under no obligation to participate. If you decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to stop or withdraw at any time and without giving a reason. This study requires you to submit non-identifiable questionnaires. Therefore, it will not be possible to withdraw once you have submitted the questionnaire because we will not be able to identify your questionnaire.

Remuneration

The participant will receive no payment. The participant will incur no cost for participating in this study.

Costs of the Study

Participants are not expected to cover any costs in this study.

Confidentiality

Your participation in this study will be kept confidential according to the ethical standards required for research projects. Your name will not be recorded anywhere, and no one will be able to connect you to the answers you give. Do not sign the consent form. This is not numbered and cannot be linked to you. Individual participants will not be identified. Therefore, the risk to your identity is minimal. To give consent, you must put an 'X' on the space provided for signature.

Research-related Injury

There is no risk of injury in this study.

Persons to contact in the event of any problems or queries.

Please contact the researcher Nemafohoni Mulalo Godfrey on 0729079544, email: nemafohoning@gmail.com, my supervisor Doctor Mulondo Seani Adrinah on 0824465625, email: seani.mulondo@univen.ac.za or University Research Ethics Committee Secretariat on 015 962 9058. Complaints can be reported to the Director: Research and Innovation, Prof GE Ekosse, on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher (**Nemafhohoni Mulalo Godfrey**) about the nature, conduct, benefits and risks of this study –
- Research Ethics Clearance Number: **SHS/21/TDC/02/1805**
- I have also read and understood the above-written information (*Participant Letter of Information*) regarding the study
- I am aware that the study results, including personal details regarding my sex, age, date of birth, initials and diagnosis, will be anonymously processed into a study report
- In view of the research requirements, I agree that the data collected during this study can be processed in a computerized system by the researcher
- At any stage; I may withdraw my consent and participation in the study without prejudice
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study
- I understand that significant new findings developed during this research which may relate to my participation will be made available to me

Full Name of Participant	Date	Time	Signature
I,

Nemafhohoni Mulalo Godfrey herewith confirms that the above participant has been fully Informed about the nature, conduct and risks of the above study.

Full Name of Researcher: Nemafhohoni Mulalo Godfrey

Signature:  Date: 01/06/2021

Full Name of Witness (If applicable)

..... Date Signature.....

Full Name of Legal Guardian (If applicable)

..... Date..... Signature.....

ANNEXURE G: QUESTIONNAIRE

INSTRUCTION

Dear participants

You are kindly invited to participate in this research voluntarily and kindly requested to respond to the following questions on your demography, knowledge about TB prophylaxis in people living with HIV, obstacles in the implementation of TB prophylaxis, and measures to improve professional nurse's knowledge. Please read carefully and answer all questions. Do not write your name or your ID number. Do not share your information with anybody. Please feel free to contact me if you experience any difficulties.

SECTION 1: DEMOGRAPHIC DATA

Instruction for respondents: mark your answer with an "X".

1.1 Gender

FEMALE	MALE
--------	------

1.2 Age

20-25 years	
26-35 years	
36-45 years	
46-55 years	
56 years and above	

1.3 Marital status

SINGLE	MARRIED	WIDOWED	DIVORCED
--------	---------	---------	----------

1.4 Level of qualification

DIPLOMA	DEGREE	CLINICAL NURSE PRACTITIONER
---------	--------	-----------------------------

1.5 How long have you worked with people living with HIV at your clinic?

LESS THAN 1 YEAR	1 TO 3 YEARS	3 TO 5 YEARS	5 YEARS AND MORE
------------------	--------------	--------------	------------------

1.6 Have you ever been trained in TB and HIV collaborative activities?

YES	NO
-----	----

1.7 Have you ever been specifically trained on TB prophylaxis?

YES	NO
-----	----

SECTION 2: KNOWLEDGE ABOUT TB PROPHYLAXIS

Instruction for respondents: for each of the following sections, please mark one appropriate answer with an "X".

2.1 In your opinion, do you think that TB prophylaxis reduces the risk of TB infection for people living with HIV?

Yes	No
-----	----

2.2 Which combinations of TB screening symptoms do you use to identify whether people living with HIV are eligible for TB prophylaxis or not?

1. Current cough, rash, weight loss, fever	
2. Fever, current cough, night sweat, rash	
3. Current cough, fever, weight loss, night sweat	
4. Weight loss, nausea, fever, rash	

2.3 Do you think chest radiography is a requirement for screening people living with HIV for TB prophylaxis eligibility?

Yes	No
-----	----

2.4 In your opinion, who is eligible for TB prophylaxis?

1. All infants of the mother with pulmonary TB only	
2. All children <5 years in contact with smear-positive TB patient	
3. All people living with HIV who don't have active TB	
4. All the above cases	
5. Only 2 & 3	

2.5 Smear-negative people living with HIV showing TB symptoms should?

1. not be given TB prophylaxis at all	
2. treated with antibiotics and reassessed and reconsider screening for TB prophylaxis after three months.	
3. start TB prophylaxis.	
4. treated with antibiotics, reassessed and initiated with TB prophylaxis after one month	

2.6 Do you think pregnancy is a contraindication against starting TB prophylaxis?

Yes	No
-----	----

2.7 Can TPT be used as secondary prophylaxis for people with a history of TB?

Yes	No
-----	----

2.8 Which one is the best TB prophylaxis drug?

1. Isoniazid (INH)	
2. Rifampicin (RIF)	
3. Pyrazinamide (PZA)	
4. None	

2.9 Which one is the INH drug dose used to prevent TB in adults living with HIV?

1. 100 mg/day	
2. 200 mg/day	
3. 300 mg/day	
4. 150 mg/day	

2.10 Which one is the INH drug dose used to prevent TB in Children >5 to <15 years living with HIV?

1. 150 mg/day	
2. 100 mg/day	
3. 50 mg/day	
4. 300 mg/day	

2.11 How do you assess whether your patients are adherent to TB prophylaxis or not?

1. Patient self-report	
2. Detailed interview	
3. Pill counts	
4. Pharmacy refill data	
5. All above 6.	

2.12 When do you initiate TB prophylaxis in eligible people living with HIV?

1. one month after ART initiation	
2. three months after ART initiation	
3. same day with ART initiation	
4. six months after ART initiation	

2.13 Eligible adults living with HIV should take TB prophylaxis for the duration of?

1. six months	
2. 36 months	
3. 12 months	
4. all the above	

2.14 Eligible people living with HIV < 15 years of age should receive and complete TB prophylaxis for duration of?

1. 12 months	
2. six months	
3. 36 months	
4. none of above	

2.15 In your opinion, mention the major barriers against successful implementation of TB prophylaxis in your area?

.....

.....

.....

SECTION 3: OBSTACLES IN THE IMPLEMENTATION OF TB PROPHYLAXIS

3.1 indicate your view, the following are obstacles in implementing TB prophylaxis. Mark your answer with an “X”.

	Strongly disagree	disagree	Agree	Strongly agree
Nurses' acceptability of TB prophylaxis				
Lack of nurses' knowledge of TB prophylaxis				
Lack of clarity of TB prophylaxis guidelines				
TB prophylaxis training				

Patient acceptability of TB prophylaxis				
Fear of TB prophylaxis resistance				

SECTION 4: MEASURES TO ENHANCE PROFESSIONAL NURSES' KNOWLEDGE

4.1 In your opinion, what measures can improve professional knowledge on TB prophylaxis.

.....

.....

.....

ANNEXURE H: PROOF OF EDITING

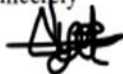
10/05/2022

Editing and Proofreading Report for Nemafohoni Mulalo Godfrey (11574489)

This letter serves to confirm that I, Dr Nyete Liberty, Takudzwa, proofread and edited a Master in Nursing Science Dissertation by Nemafohoni Mulalo Godfrey (11574489) from the University of Venda, titled *Professional Nurses' Knowledge of Tuberculosis Prophylaxis in People Living with HIV at Collins Chabane Municipality, Vhembe District of Limpopo Province*.

I carefully read through the Dissertation, focusing on proofreading and editorial issues. The recommended suggestions were highlighted.

Yours Sincerely



Nyete Liberty, Takudzwa (PhD)

Tel.: 0766815547

E-mail: lnyete@gmail.com