AN EVALUATION OF THE ISONIAZID PREVENTIVE THERAPY INITIATION IN LIMPOPO PROVINCE

by

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DECLARATION

I declare that **AN EVALUATION OF THE ISONIAZID PREVENTIVE THERAPY INITIATION IN LIMPOPO PROVINCE** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other education institution.

25 October 2018

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SIGNATURE **DATE**

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AN EVALUATION OF THE ISONIAZID PREVENTIVE THERAPY INITIATION IN LIMPOPO PROVINCE

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ABSTRACT

The purpose of this study was to investigate the Isoniazid preventive therapy (IPT) initiation amongst eligible HIV positive patients at health facilities in the Polokwane sub-district to identify key features in the knowledge and practice of health professionals as well as available resources at the health facilities. A quantitative non-experimental, descriptive, cross-sectional design was used to describe the practice of IPT initiation in health facilities. Data were collected using a structured questionnaire with medical doctors, operational managers and registered nurses from the district's 34 health care facilities. The census sample was 124. Data were captured and analysed using Statistical Package for the Social Sciences (SPSS) Version 24. The results showed that the health care professionals knew the policy and procedures for the implementation of IPT but lacked knowledge on patient screening. The findings further suggest that record keeping and data capturing was not implemented sufficiently. Resources at the facilities were found to be sufficient.

KEY CONCEPTS

Eligible; HIV positive individuals; Isoniazid preventive therapy; initiation; knowledge; practice.

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Dedication

I dedicate this dissertation to my daughters, Kabelo, Khanyisa and Lehlogonolo as well as my grandson, Letago Jordan.

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LIST OF ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immune-deficiency Syndrome
ART	Anti-Retroviral Therapy
CHC	Community Health Centre
DNA	Deoxyribonucleic Acid
DHIS	District Health Information System
DHMIS	District Health Management Information System
DR-TB	Drug Resistant-TB
DS-TB	Drug Sensitive-TB
ELISA	Enzyme Linked Immunosorbent Assay
eMTCT	Elimination of Mother-to-Child Transmission
ETR.net	Electronic TB register
FPD	Foundations for Professional Development
HAST	HIV/AIDS, STI and TB
HIV	Human Immunodeficiency Virus
HTS	HIV Testing Service
INH	Isoniazid
IPT	Isoniazid Preventive Therapy
IRIS	Immune reconstitution inflammatory syndrome
MDR-TB	Multidrug-resistant TB
N	Capital letter “N” will represent the total number of respondents
n	Small letter “n” will represent the number of responses on each item
NCDs	Non communicable diseases
NIDS	National Indicator Data Sets
PCR	Polymerase Chain Reaction
PHC	Primary Health Care
PHIS	Provincial Health Information Systems Committee
PLHIV	People living with HIV
PTB	Pulmonary TB
SANAC	South African National AIDS Council
SANC	South African Nursing Council
SPSS	Statistical Package for the Social Sciences
TB	Tuberculosis
TIER.net	Three Interlinked Electronic Register (HIV electronic register)
TST	Tuberculin sensitive test
UNAIDS	United Nations Programme on HIV/AIDS
WHO	World Health Organization
XDR-TB	Extensively drug resistant TB
%	the sign % will represent the percentage

CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

This chapter gives a brief overview of the study. The background of the study, its research problem, purpose and objectives, key concepts, research approach and design, methodology and layout of the research are described

1.2 BACKGROUND TO THE RESEARCH PROBLEM

The Department of Health in South Africa states that according to the 2013 UNAIDS report, an estimated 35.3 million people globally were living with Human Immunodeficiency Virus (HIV) in 2012. Sub-Saharan Africa remains the epicentre of the epidemic and accounts for nearly 70% of the world burden of HIV and Acquired Immune Deficiency Syndrome (AIDS). South Africa is the worst affected country with an estimated 6.3 million people living with HIV, which is the largest number of people living with HIV and AIDS in the world (South Africa 2015c:1).

From the beginning of the HIV epidemic in South Africa in 1990, the effort to track the epidemic has relied mainly on the antenatal sentinel surveillance to monitor the HIV prevalence trends at national, provincial and district spheres of government. The prevalence of infection gives a snapshot of the magnitude of the disease burden. (South Africa 2015c:4). The target sample for the antenatal sentinel survey is the pregnant women presenting for their first antenatal visits to public health clinics for the first time in their current pregnancy, during October each year (South Africa 2015c:12). The purpose of conducting the annual antenatal sentinel HIV point prevalence survey is to assess the HIV sero-prevalence amongst first time antenatal clinic attendees. They are seen as a particularly suitable “sentinel” group to represent most closely the HIV prevalence of the generally sexually active part of the population. It is also used to assess trends in HIV prevalence over time (South Africa 2015c:12).

The South African National HIV prevalence for 2013 was 29.7%, a slight increase of 0.2% from the 29.5% in 2012. In the same time, three provinces reported a higher HIV prevalence and six provinces a decrease in prevalence (South Africa 2015c:23).

According to the World Health Organization's (WHO) estimates, South Africa ranks the third highest in the world in terms of TB burden (0.4–0.59 million), after India (2.0–2.5 million) and China (0.9–1.2 million). HIV fuels the TB epidemic with more than 70% of TB patients also living with HIV (SANAC 2011:24).

Once infected with TB, the progression to active disease is dependent on the immune status of the individual (South Africa 2014:8). In those with normal immunity, 90% will not progress and only 10% will develop the active disease. People with suppressed immunity are more likely to develop active TB than those with normal immunity; 50–60% of HIV positive people infected with TB will go on to develop the active disease. The annual risk of TB in an HIV positive person is 10% compared to a lifetime risk of 10% in a healthy individual (South Africa 2014:8).

HIV and TB influence each other as infection with HIV increases the risk of progression of recent Mycobacterium tuberculosis infection and of reactivation of latent Mycobacterium tuberculosis infection by 5–15% annually. HIV also increases the rate of relapse and re-infection. HIV infection suppresses the body's immune system by reducing the number of CD4 cells. TB disease can result in the reduction of the CD4 cells and an increase in viral load thereby accelerating the progression of HIV infection to AIDS. Patients with active TB who are HIV-positive have a higher risk of dying from TB than those without HIV (South Africa 2014:10).

In South Africa TB preventive therapy is implemented at all public health facilities – primary health care clinics, health centres and hospitals – through the administration of Isoniazid (INH) medication and is called Isoniazid Preventive Therapy (IPT).

The health system in South Africa is made up of five levels: the national; provincial; district; sub-district and health facility levels. The latter refers to hospitals, community health centres and primary health care clinics. South African health data flows from the health facility level to the sub-district level, from there to the district level and then to the province level. From province level it finally moves to the national level, which is the

National Department of Health (NDoH). IPT implementation is captured and reported through the District Health Information System (DHIS) that collects, captures, stores, analyses and reports routine data.

The South African National Strategic Plan (NSP) on HIV, STI and TB 2012–2016 (The NSP 2012–2016) estimates that 80% of the South African population is infected with the TB bacillus; however, not everyone who is infected will progress to active TB disease. Certain populations are at higher risk of TB infection and re-infection, including health professionals, miners, prisoners, prison officers and household contacts of confirmed TB patients. In addition, certain groups are particularly vulnerable to progressing from TB infection to TB disease. These include children, people living with HIV, persons with diabetes, smokers, alcohol and substance users, people who are malnourished or have silicosis, mobile, migrant and refugee populations and people living and working in poorly ventilated environments. These groups are considered 'key populations' for TB (SANAC 2011:27).

Strategic Objective 2 (SO 2) of the NSP is focused on primary strategies to prevent sexual and vertical transmission of HIV and STIs and to prevent TB infection and disease, using a combination of prevention approaches (SANAC 2011:39).

Sub-objective 2.6 of SO 2 reads: "Prevent TB infection and disease through intensified TB case finding, TB infection control, workplace/occupational health policies on TB and HIV, Isoniazid preventive therapy (IPT), immunisation, prevention of multidrug-resistant TB (MDR-TB), and reducing TB-related stigma, alcohol consumption and smoking" (SANAC 2011:43).

Limpopo Province has established the Provincial Health Information Systems Committee (PHIS) to monitor the District Health Management Information System (DHMIS) policy implementation and the National Indicator Data Sets (NIDS) collection as well as receive reports from provincial health facilities. PHIS Committees ensure that all health information systems adhere to national guidelines and specifications (South Africa 2011:19).

According to DHIS 2014–2017, Limpopo Province has not reached the target of 90% in terms of IPT initiation. Comparing the annual statistics for the financial years 2014/2015

to 2016/2017, Limpopo Province achieved 75%, 68% and 75% respectively, while Capricorn district reported the lowest during financial year 2015–2016 at 57% and Waterberg district the highest at 78%.

In December 2013 the UNAIDS Programme Coordinating Board called on UNAIDS to support country- and region-led efforts to establish new targets for HIV treatment scale-up beyond 2015. The UNAIDS Stakeholders established the following target towards ending the AIDS epidemic: by 2020 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy and 90% of all people receiving antiretroviral therapy will have viral suppression (UNAIDS 2014). This is known as the 90-90-90 strategy. The South African National Department of Health is supporting the development of 52 costed and prioritised district implementation plans that will move South Africa towards achieving the 90-90-90 targets for TB and HIV by 2020.

Progress against these targets is closely monitored through a set of cascades, tracer indicators, district and facility level targets and dashboards. The district and facility level targets are a disaggregation of the national level targets. This is modelled on the highly successful approach adopted by South Africa to achieve the Global Plan for elimination of Mother-to-Child Transmission (eMTCT) of HIV (South Africa 2015a:1). To achieve the 90-90-90 targets for TB and HIV by 2020, all health care facilities should initiate 90% eligible HIV positive patients on IPT.

1.3 RESEARCH PROBLEM

Continued IPT initiation below the set target of 90% has a negative effect on the finances, material resources and human resources of the Limpopo Province and ultimately on National level. When IPT initiation is low, patients will ultimately develop TB disease; this will lead to more of the available budget, material and human resources being channelled to TB treatment so as to cope with the increased number of TB patients. It further defeats the NDoH's initiatives to improve the quality of life of all citizens in South Africa.

This research focused on the implementation of the IPT initiation amongst eligible HIV positive adult patients at Polokwane, which is the sub-district of the Capricorn district in

the Limpopo Province. Polokwane sub-district was selected for the study because according to the DHIS 2014–2017 statistics, Polokwane sub-district reported the lowest statistics: 64%, 50% and 83% with regards to IPT initiation amongst the five sub-districts of the Capricorn district (Limpopo 2014–2017).

An investigation of the IPT initiation at Polokwane sub-district is a starting point to address the problem of not meeting the National target for IPT in the Polokwane sub-district.

1.4 THEORETICAL GROUNDING OF THE RESEARCH

A quantitative view is described as being “realist” or sometimes “positivist”.

Realists take the view that research uncovers an existing reality, that the world works according to fixed laws of cause and effect and that it is the job of the researcher to use objective research methods to uncover that truth. This means that the researcher needs to be as detached from the research as possible and use methods that maximise objectivity and minimise the involvement of the researcher in the research (Muijs 2012:3). Quantitative research “[explains] phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics)” (Brink, Van der Walt & Van Rensburg 2012:112). The data produced are always numerical, and they are analysed using mathematical and statistical methods (Brink, Van der Walt & Van Rensburg 2012:112).

The researcher used the quantitative research approach to investigate the practice of IPT initiation in the Polokwane sub-district. The existing reality of IPT initiation amongst HIV positive patients was uncovered through the administration of structured questionnaires to health professionals responsible for the implementation of IPT. The truth about IPT initiation in Polokwane sub-district was out there and needed to be uncovered.

1.5 DEFINITION OF TERMS

Isoniazid prevention therapy refers to the administration of Isoniazid (INH), a drug used in the fight against tuberculosis, to individuals with latent infection of

Mycobacterium tuberculosis in order to prevent progression to active tuberculosis disease (South Africa 2010:2).

Initiation refers to the action of beginning something (Oxford Advanced Learner's Dictionary 2015) and in this study it means the action of administering drugs or giving the patients the required medication, namely IPT.

Eligible means having the right to do or obtain something (Oxford Advanced Learner's Dictionary 2015). In this study it refers to the rights of individuals diagnosed as HIV positive to be initiated on IPT according to the South African National Strategic Plan on HIV, STI and TB.

HIV positive individuals refer to those persons whose blood tested reactive to the Human Immunodeficiency Virus.

Knowledge refers to facts, information and skills acquired through experience or education; the theoretical or practical understanding of a subject (Oxford Advanced Learner's Dictionary 2015). In this study it refers to the facts, information and skills acquired by health professionals for dealing with IPT initiation, as found in the official guidelines: *Guidelines for tuberculosis preventive therapy among HIV infected individuals in South Africa*.

Practice refers to the actual application or use of an idea, belief or method, as opposed to theories relating to it (Oxford Advanced Learner's Dictionary 2015). In this study it refers to the way in which health professionals apply the official guidelines contained in *Guidelines for tuberculosis preventive therapy among HIV infected individuals in South Africa*.

1.6 AIM OF THE STUDY

The study investigated the IPT initiation process amongst eligible HIV positive patients at health facilities in the Polokwane sub-district to identify key features in the knowledge and practice of health professionals as well as available resources at the health facilities.

1.6.1 Purpose of the study

The findings of this study may be used by the HIV/AIDS, STI and TB (HAST) directorate to contribute to the body of knowledge and also be used to increase the IPT initiation to meet the national target.

1.6.2 Objectives of the study

The objectives of this study were to determine and describe the

- knowledge of health professionals on the initiation of IPT
- practice of IPT initiation at the health facilities
- resources at the health facilities to initiate and capture IPT

1.7 RESEARCH QUESTIONS

Research question 1: Do the facility health professionals (the doctors, operational managers and registered nurses) have knowledge on the policy and procedures of IPT initiation?

Research question 2: What are the practices of IPT initiation to eligible HIV positive patients at the health facility?

Research question 3: What are the available health facility resources to initiate and capture IPT?

1.8 RESEARCH DESIGN AND METHOD

Research authors describe a research design as an overarching, procedural plan that provides a framework for the methods of selecting respondents, collecting, measuring and analysing data adopted by the researcher to answer questions validly, objectively, accurately and economically (Kumar 2012:94; Creswell 2014:12; Bryman 2012:46; Gray 2014:128). This study followed a non-experimental, descriptive, cross-sectional design.

The following sections give a brief overview of the research methodology. The detailed description of each section is given in chapter 3.

1.8.1 Setting and population of the study

The study setting was the public health facilities in the Polokwane sub-district of the Limpopo Province. The sub-district has 34 health facilities, namely one district hospital, one community health centre (CHC) and 32 primary health care (PHC) clinics where HIV/AIDS services are offered. The health professionals directly involved with the HIV/AIDS units in these health facilities were relevant to the study: they were the operational managers, registered nurses and medical doctors.

1.8.2 Sample and sampling methods

Kumar (2012:193) defines a sample as a subgroup of the population one is interested in and sampling as the process of selecting a few from a bigger group to become the basis for estimating the prevalence of an unknown piece of information, situation or outcome regarding the bigger group. In this study, however, all the health professionals working in the HIV/AIDS units were included. This is known as a census and thus no sampling was done (Polit & Beck 2012:324).

1.8.3 Data collection methods and procedures

Polit and Beck (2012:725) describe data collection as the gathering of information needed to address a research problem. In this study data was collected using a self-developed structured questionnaire that investigated the knowledge of the health professionals and the practice of IPT at the health facility as well as the availability of resources for the initiation of IPT (refer to Annexure G). The researcher took measures to ensure that the data collection tool was valid and reliable.

1.8.4 Data management and analysis

Data analysis entails categorising, ordering, manipulating and summarising the data and then describing them in meaningful terms (Brink et al 2012:177). Data was captured and analysed using the Statistical Package for the Social Sciences (SPSS) Version 24.

Percentages and frequencies were used to interpret the data. Chi-square test was used to compare groups; the p-values less than 0.05 were considered statistically significant. Data analysis was done in consultation with a qualified statistician.

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1.8.5 Ethical considerations

Ethical clearance for the study was obtained from the University of South Africa's Department of Health Studies Research Ethics Committee (refer to Annexure A). Permission to conduct the study was obtained from the Limpopo Department of Health, at provincial and district levels (refer to Annexure B, C, D and E). A letter to introduce the researcher and the study together with approval to conduct the study were given to all potential respondents. Written informed consent was obtained from respondents who voluntarily took part in the study (refer to Annexure F).

Polit and Beck (2012:150) state that when humans are used as respondents in scientific investigations, great care must be exercised in ensuring that the rights of those humans are protected. Ethical guidelines seek to work towards protecting the individuals, communities and environments involved in the studies against any form of harm, manipulation or malpractice (Adams 2013).

The following principles were adhered to in this study: beneficence, respect for human dignity, justice, informed consent and researcher integrity.

1.9 SIGNIFICANCE OF THE STUDY

The outcome of the study will be shared with the relevant stakeholders including facilities where the study was conducted. The study will contribute to the body of knowledge of the HIV/AIDS, STI and TB (HAST) directorate. The findings may be useful for the management of the Limpopo Department of Health and to the health professionals who seek to solve problems in the IPT initiation. It will thus contribute to meeting the target for initiation set by the NDoH.

1.10 STRUCTURE OF THE DISSERTATION

Chapter 1 presents an overview of the study.

Chapter 2 discusses the literature review.

Chapter 3 describes the research design and method.

Chapter 4 covers the data analysis, interpretation and results.

Chapter 5 concludes the study, describes its significance and limitations and makes recommendations.

1.11 SUMMARY

This chapter described the research problem, aim of the study, defined the key terms research design and method, ethical considerations and significance of the study.

Chapter 2 discusses the literature review conducted for the study

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter describes the literature review that was undertaken for and during the study.

Brink et al (2012:70, 71) define literature as the source that is effective in providing the in-depth knowledge that the researcher needs to study the elected problem. They further provide the following reasons for conducting a literature review: to identify the research problem and refine the research question, obtain clues to the methodology and instruments, place the study in the context of the general body of knowledge and compare the findings of existing studies with those of the study at hand (Brink et al 2012:70, 71).

Through the assistance of a Unisa librarian, literature was searched using the following key words: TB preventive therapy, Isoniazid preventive therapy, HIV infection, tuberculosis and TB & HIV. Literature was sourced from Unisa online library, internet, journal articles, internal medicine textbooks, various books and the policy guidelines released by the South African Department of Health.

Literature indicates that HIV is the strongest risk factor recognised in the reactivation of latent tuberculosis infection to active tuberculosis disease (FPD 2015:6). This implies that all HIV patients should be screened for TB then initiated on TB treatment or TB preventive therapy, depending on the outcome of the TB screening. TB preventive therapy and Isoniazid preventive therapy will be used interchangeably throughout this study.

2.2 IPT POLICY GUIDELINES IN SOUTH AFRICA

The South African National Department of Health has developed various guidelines to give health care professionals guidance on how to manage patients. South Africa`s

policy guidelines on IPT initiation recommend TB screening once an individual is diagnosed HIV positive then followed by IPT initiation if eligible. Therefore, HIV diagnosis is the point of entry for IPT initiation.

2.2.1 TB preventive therapy

According to the WHO (2016:3), South Africa accounted for the largest share (45%) of people living with HIV who received TB preventive treatment for latent TB infection in 2015, followed by Malawi, Mozambique and Kenya. The WHO (2016:1) further recommended that access to TB preventive treatment needs to be expanded. TB preventive treatment reduces the occurrence of TB infection in HIV patients.

The IPT guidelines (South Africa 2010:2) state that TB is the commonest cause of morbidity and mortality amongst HIV-infected persons in South Africa and studies have shown that tuberculosis accelerates HIV disease progression. Therefore, preventing tuberculosis should be offered as an option to people living with HIV/AIDS. While TB preventive therapy may not reduce the incidence of tuberculosis in the community, it prevents morbidity and mortality attributable to TB at an individual level (South Africa 2010:2). The South African HIV and TB guidelines suggest that all HIV positive patients be screened for TB, through interview, and that all TB patients be tested for HIV (South Africa 2010:2; 2015b:106).

TB screening is defined as a method to intensify TB case finding among HIV positive patients. It involves asking questions about TB symptoms to identify TB suspects and to find out if the patient may have active TB. TB screening is done routinely by trained lay counsellors or health care professionals using the TB screening tool. The counsellors or the health care professionals systematically inquire about the presence of signs and symptoms of active TB disease. The lay counsellor will refer the patient with signs and symptoms of TB to the professional nurses for further investigation (South Africa 2010:2; 2015b:106) (see Annexure H for a copy of the TB screening tool for adults).

TB preventive therapy is the administration of one or more anti-tuberculosis drugs to individuals with latent infection of Mycobacterium tuberculosis in order to prevent progression to active TB disease (South Africa 2010:2). In South Africa TB preventive therapy is implemented at all public health facilities, namely primary health care clinics,

health centres and hospitals, through the administration of the Isoniazid (INH) drug; this is referred to as Isoniazid preventive therapy (IPT).

The South African National Department of health recommends that TB preventive therapy should only be offered if the following prerequisites have been met: high quality voluntary counselling and rapid testing for HIV was available; patients were screened for active TB disease before initiation of TB preventive therapy; health care professionals are able to follow up and monitor patients monthly to encourage adherence, address side effects and exclude active TB disease; the HIV/AIDS programme takes responsibility for implementing TB preventive therapy and there is strong collaboration between HIV/AIDS and TB programmes (South Africa 2010:3).

Recent studies on IPT were done in Ethiopia. A study conducted in Addis Ababa, Semu, Fenta, Medhin and Assefa (2017:[1]) reported that IPT significantly reduced tuberculosis incidence by 96.3% compared to IPT non-exposed patients. Assebe, Reda, Wubeneh, Lerebo and Lambert (2015:[1]) found that IPT use was associated with 50% reduction in new cases of tuberculosis and the probability of developing TB was higher in the non-IPT group. In another study conducted by Yirdaw, Jerene, Gashu, Edginton, Kumar, Letamo, Feleke, Teklu, Zewdu, Weiss and Ruff (2014:[1]) IPT was found to be effective in reducing TB incidence, independently and with concomitant ART, under programme conditions in resource-limited settings. Implementing the widespread use of IPT has the potential to reduce TB rates substantially among HIV-infected individuals, in addition to other tuberculosis prevention and control efforts in resource limited settings. These studies show that implementing IPT initiation amongst eligible patients reduces the incidence of TB.

Systematic reviews on the use of IPT revealed similar findings. Briggs, Emerson, Modi, Taylor and Date (2015: [1]) reviewed literature on the evidence for the use of IPT in adults living with HIV, published from 1995 to 2013. Eligible articles included data on mortality, morbidity or retention in care related to the provision of IPT to adults with HIV in low- or middle-income countries. They stated that while there was little evidence to demonstrate that IPT reduced mortality in people living with HIV (PLHIV), there was substantial evidence that IPT reduced TB incidence. Ayele, Mourik, Debray and Bonten (2015:[2]) also reported that IPT use substantially contributes in preventing TB in persons with HIV in general and in tuberculin sensitive test (TST) positive individuals in

particular. Churchyard, Fielding, Lewis, Coetzee, Corbett, Godfrey-Faussett, Hayes, Chaisson, Grant and Thibela Study Team (2014:301) reported the successful use of Isoniazid in preventing tuberculosis during treatment.

Mindachew, Deribew, Memiah and Biadgilign (2014:1) conducted a study to assess the perceived barriers to the implementation of Isoniazid preventive therapy for people living with HIV in resource constrained settings in Addis Ababa, Ethiopia. The study revealed lack of patient information, patient empowerment and proper counselling on IPT by the health care officials. They recommended provision of training or capacity building and awareness creation mechanisms for the health workers. Moolphate, Lawpoolsri, Pungrassami, Sanguanwongse, Yamada and Kaewkungwal (2013:60) also cited the lack of training for health care workers as resulting in a lack of confidence in providing IPT as a barrier to implementation of IPT. In contrast, Tikuye (2013:46) indicated that health care workers (71.2%) have demonstrated high level of knowledge in IPT initiation.

The above evidence strengthens the need for improved IPT practices and the need for this study. Improved IPT practices will make the 90/90/90 strategy achievable and reduce TB/HIV related morbidities and mortalities.

2.2.2 Eligibility for TB preventive therapy

The IPT guidelines suggest that all HIV positive people with no signs or symptoms suggestive of active TB are eligible for TB preventive therapy (South Africa 2010:4; 2015b:110).

The South African National Department of health classifies the following populations as being at particularly high risk of developing TB and likely to benefit from IPT: miners, prisoners, TB contacts, health care workers and children. Patients with signs and symptoms suggestive of TB must be investigated for TB. If they are found not to have TB (that is, their sputum smear and culture are both negative), they should be reassessed in three months and, if no longer symptomatic, should be offered TB preventive therapy (South Africa 2010:4).

2.2.3 Non-eligibility for TB preventive therapy

The IPT guidelines exclude the following patients from initiated on the TB preventive therapy: those with signs and/or symptoms of TB, those with active liver disease or who are actively abusing alcohol, those with peripheral neuropathy, patients with history of adverse reaction to Isoniazid and people who have completed treatment of MDR or XDR-TB (South Africa 2010:5; 2015b:110).

2.2.4 Exclusion of active tuberculosis

The IPT guidelines recommend exclusion of active tuberculosis in every patient prior to starting TB preventive therapy. This is critical in order to avoid giving a single anti-tuberculosis drug to patients with TB disease who require a full treatment regimen (South Africa 2010:3; 2015b:110).

Prior to initiation of TB preventive therapy, patients should be screened for signs and symptoms of active TB disease that include current cough (24 hours or longer), fever, loss of weight and drenching night sweats (South Africa 2010:3; 2015b:106).

All patients with one or more sign or symptom are considered TB suspects and must be further investigated for active TB disease as per national TB guidelines. They are not eligible for TB preventive therapy until active TB disease has been excluded on the basis of sputum smear microscopy and mycobacterial culture (South Africa 2010:3).

2.2.5 IPT and pregnancy

The IPT guidelines indicate that research has shown that HIV positive TB cases cause 10% of maternal deaths in Africa. Active TB during pregnancy is associated with spontaneous abortions and adverse perinatal outcomes (South Africa 2010:4).

The IPT guidelines state that the benefits of TB preventive therapy for eligible pregnant women, after exclusion of active tuberculosis disease, outweigh the risks of TB preventive therapy. The guidelines further recommend the starting of TB preventive therapy at any time during pregnancy and that IPT should be completed if a woman falls pregnant while taking IPT (South Africa 2010:4).

In their study conducted in India, Kapoor, Gupta and Shah (2016:[1]) indicated that IPT given to HIV positive pregnant women is highly cost-effective for TB prevention.

2.2.6 IPT and anti-retroviral therapy (ART)

The IPT guidelines indicate that although ART dramatically reduces the risk of developing TB, patients on ART are still at increased risk of developing TB compared to HIV-negative people. The IPT guidelines state that the risk of developing TB is highest in the first six months after initiating ART, when a patient will develop immune reconstitution inflammatory syndrome (IRIS). IRIS occurs in patients with confirmed or unconfirmed active TB who were not screened for TB prior to receiving ART. As soon as the patient is initiated on ART, the immune system begins to recover but then responds to previously acquired opportunistic infection with an overwhelming inflammatory response (South Africa 2010:4; 2015b:110; Maartens, Cotton, Wilson, Venter, Meyers & Bekker 2012:526). It is therefore critical to ensure regular TB screening before initiating ART and more especially during the first six months of ART initiation.

The guidelines further state that patients who receive IPT and who are eligible for ART should complete their IPT while taking ART. IPT should not be stopped because they have started ART (South Africa 2010:4); refer to Figure 2.4.

The IPT guidelines report that IPT is well tolerated in patients on ART; it also indicates that retrospective cohort studies indicate additional benefits of providing IPT to patients during ART, namely reduced occurrence of IRIS, reduced incidence of developing TB and reduced mortality rate due to TB. Once TB has been excluded, IPT can be provided to patients during ART (South Africa 2010:4).

Studies show that people living with HIV treated by the IPT plus ART had a lower rate of severe illness, lower likelihood of mortality, delayed time to death and low TB incident rate when compared to patients treated by ART alone (Edessa & Likisa 2015:[2]; Maharaj, Gengiah, Yende-Zuma, Naidoo & Naidoo 2017:542; Danyuttapolchai, Kittimunkong, Nateniyom, Painujit, Klinbuayaem, Maipanich, Maokamnerd, Pevzner,

Whitehead, Kanphukiew & Monkongdee 2017:[1]; Rangaka, Wilkinson, Boulle, Glynn, Fielding, Van Cutsem, Wilkinson, Goliath, Mathee, Goemaere & Maartens 2014:[9].) Churchyard et al (2014:339) further suggested that scaling up continuous IPT targeted at HIV-positive persons, when used in combination with other treatment and prevention strategies, may substantially improve TB control.

It is thus important to investigate the implementation of IPT to ensure the benefits of such interventions to the communities in the sub-district.

2.2.7 IPT in patients previously treated for TB

The IPT guidelines states that IPT benefits patients who successfully completed TB treatment. Therefore, IPT can be started after successful completion of TB treatment or at any time after a previous episode of TB, provided that active TB disease is excluded (South Africa 2010:4).

In the study conducted by Hermans, Grant, Chihota, Lewis, Vynnycky, Churchyard and Fielding (2016: [1]) on the timing of tuberculosis after IPT, the durability of protection by IPT was lost within 6–12 months. This simply means that patients could develop active TB 6-12 months after completion of IPT.

2.2.8 Recommended regimen

South Africa has adopted a standardised treatment regimen used by all provinces for the prevention of TB in HIV-positive patients (South Africa 2010:5). The standard regimen for TB preventive therapy is shown in Table 2.1.

Table 2.1 The standard regimen for TB preventive therapy

Category	**Dose/kg**
Adults	Isoniazid (**INH**) 5 mg/kg/day (maximum **300 mg per day**)
Children	Isoniazid (**INH**) 10 mg/kg/day (maximum **300 mg per day**)

(South Africa 2010:5)

2.2.9 When and how to start TB preventive therapy

In South Africa, information about tuberculosis, including preventive therapy, is made available to all people living with HIV/AIDS during their follow-up visits at health facilities. The IPT guidelines indicate that experiences from trials and operational research have stressed the importance of relevant information for the patients including the issue of adherence (South Africa 2010:6).

The IPT guidelines recommend discussion and adequate planning of TB preventive therapy by health care professionals to ensure full understanding and adherence by the patients. For the health care professional to adequately plan for TB preventive therapy, they should know and understand the interpretation of the IPT guidelines. If the IPT guidelines are not known or incorrectly interpreted, the implementation will not be accurate or effective (South Africa 2010:6).

During post-test counselling following diagnosis of HIV, the patient should be informed about the benefits of TB preventive therapy, and should be invited to return to the clinic for IPT services. The IPT guidelines discourage immediate initiation of TB preventive therapy after informing a patient of his/her HIV status (South Africa 2010:6).

2.2.10 Follow-up visits

During on-going counselling sessions, patients receiving TB preventive therapy are informed about HIV, symptoms of active TB, adherence to the treatment and side-effects of Isoniazid. Patients are screened for TB and checked for side effects at every follow up visit. Possible side-effects of IPT are nausea and vomiting, jaundice, dark urine, right upper quadrant abdominal pain, convulsions, severe rash, psychosis and peripheral neuropathy (South Africa 2010:7; 2015b:110; Maartens et al 2012:241).

Patients starting TB preventive therapy are given a one-month supply at a time. They are expected to complete the six months of therapy within a period of nine months. This means that they are given nine months to complete the treatment that should ideally be completed within six months; this allows for a grace period in case one missed or failed to take treatment. The missed period of treatment should be recovered within the 9 months of starting treatment (South Africa 2010:6).

Patients are screened for Tuberculosis at every follow up visit. Patients who are found to be symptomatic during TB screening must be investigated according to TB guidelines: If TB is confirmed, they should start TB treatment and receive Cotrimoxazole prophylaxis. This means IPT will be stopped and the patient will be initiated on TB treatment (South Africa 2010:6).

2.2.11 Monitor adherence

The IPT guidelines recommend that, in order to monitor adherence, if the patient interrupts therapy, the healthcare professional should inquire about the reasons for treatment interruption and should counsel the patient on the importance of adherence. Isoniazid may be restarted after the healthcare professional has verified that the patient has no symptoms suggestive of active TB disease and that obstacles to adherence have been addressed. The healthcare professional should make sure that the six months of therapy is taken within a nine-month period. If the patient interrupts TB preventive therapy for a second time, the healthcare professional should consider stopping the therapy (South Africa 2010:7).

Studies conducted by Yotebieng, Edmonds, Lelo, Wenzi, Ndjibu, Lusiama and Behets (2015:2055) and Shayo, Moshiro, Aboud, Bakari and Mugusi (2015: [1]) found that patients on ART at IPT initiation were found to be more likely to complete IPT on time. However, Makanjuola, Taddese and Booth (2014: [12]) argue that adherence to IPT in people living with HIV and AIDS (PLWHA) is influenced by the interactions of multiple factors. During adherence counselling the health professionals should advise patients to adhere to and complete the course of treatment in order to receive the benefits of IPT.

For health professionals to effectively implement the IPT guidelines, knowledge on HIV and TB is essential. HIV testing is the entry point for IPT initiation. Sections 2.3 and 2.4 briefly discuss HIV and TB respectively

2.3 HUMAN IMMUNE VIRUS (HIV)

The Foundation for Professional Development (FPD) (2015:6) states that “in 2014, there were 36.9 million people living with HIV worldwide with 2 million who were newly infected and that 1.2 million people died with AIDS-related causes.”

HIV is transmitted horizontally via sexual contact and via infected body substances that come into contact with mucous membranes, non-intact skin or the bloodstream. HIV is transmitted vertically, from mother to child (FPD 2015:12; Maartens et al 2012:11). When HIV enters the body, it attaches itself to the cells with CD4 receptors that include cells such as CD4 cells of the immune system. HIV paralyses the immune system of an individual by attacking the CD4 cells (FPD 2014:37; Maartens et al 2012:21). CD4 count serves as a useful indictor of the severity of HIV infection (FPD 2015:78).

Viral load is the amount of virus in the blood stream or the concentration of free virus in the blood. Viral load is best used to monitor the ART treatment response (FPD 2015:80; South Africa 2015b:55; Maartens et al 2012:48).

2.3.1 HIV prevalence in South Africa

Many countries have introduced HIV surveillance systems based on anonymous voluntary or unlinked testing of samples from sentinel populations to determine the prevalence rate. South Africa and other African countries are examples that use anonymous approaches to determine the country`s HIV prevalence (FPD 2015:6).

The Department of Health of South Africa performs a national HIV sero-prevalence survey each year to pregnant women aged 15−49 years of age attending public health antenatal clinics. The survey is conducted on pregnant women because they can be used to represent the sexually active population. The pregnant women who attend the antenatal clinic are requested to participate in the HIV sero-prevalence survey anonymously. Blood is drawn from each pregnant woman`s veins into the laboratory specimen tubes; these are then sent to a laboratory for HIV and syphilis investigations. The findings of the survey are generalised to the entire population. In South Africa the survey is conducted annually, during October, with the pregnant women who attend the public antenatal clinic for the first time. The survey is conducted in 1 500 clinics, in the

52 districts of the nine provinces of South Africa. These data have been crucial in describing the progression of the HIV epidemic nationally and by province as well as by age category (FPD 2015:10, South Africa 2015c:1).

In the nine provinces of SA, there is fluctuation and significant heterogeneity in HIV prevalence trends between districts every year. Currently South Africa uses the 2013 HIV sero-prevalence survey results that were released in 2015. In 2013 the highest provincial HIV prevalence was recorded in KwaZulu-Natal (KZN) which increased from 37.4% in 2012 to 40.1% in 2013. Other provinces with 'higher' HIV prevalence estimates compared with 2012 are the Eastern Cape (from 29.1% in 2012 to 31.4% in 2013), Mpumalanga (increased from 35.6% in 2012 to 37.5% in 2013). These small increases fell within the expected sampling variability. The provinces with 'lower' HIV prevalence estimates were North West (from 29.7% in 2012 to 28.2% in 2013) and Free State (which decreased from 32.0% in 2012 to 29.8% in 2013) (South Africa 2015c:23). The South African progression of the HIV from 2011 to 2013 is shown in figure 2.1.

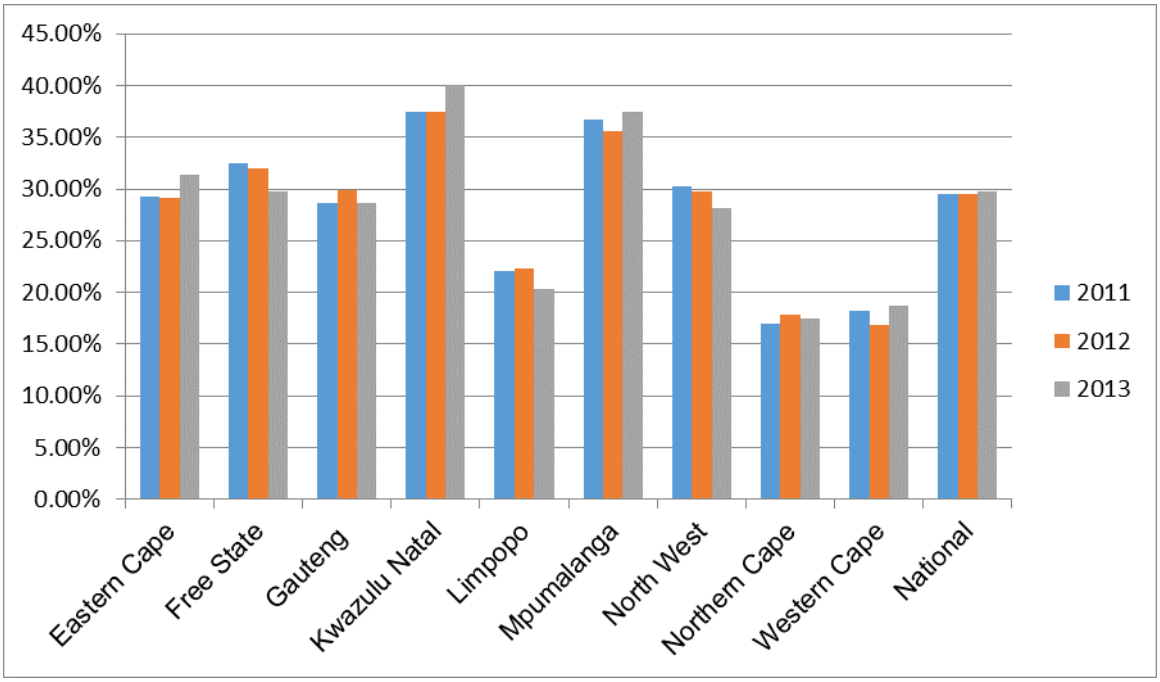

Figure 2.1 HIV prevalence trends among antenatal women by province, South Africa 2011–2013

(South Africa 2015c:24)

2.3.2 HIV Prevalence in Limpopo Province

Limpopo Province, like other provinces, has designated sites where the surveillance is conducted. The designated sites are in all five districts of the province.

In Limpopo province, Waterberg district continues to record the highest HIV prevalence, although a notable decrease of 3% from 30.3% in 2011 to 27.3% in 2013 was noted. Vhembe district has consistently recorded the lowest HIV prevalence, from 14.6.0% in 2011 to 15.0% in 2013 (South Africa 2015c:55). This implies that a large number of people are to be screened for TB and be given IPT if found eligible, e.g. in the Capricorn district, 21.1% of the population is expected to be living with HIV and should therefore be screened for IPT eligibility (South Africa 2015c:55).

The Limpopo province progression of the HIV from 2011 to 2013 is shown in Figure 2.2.

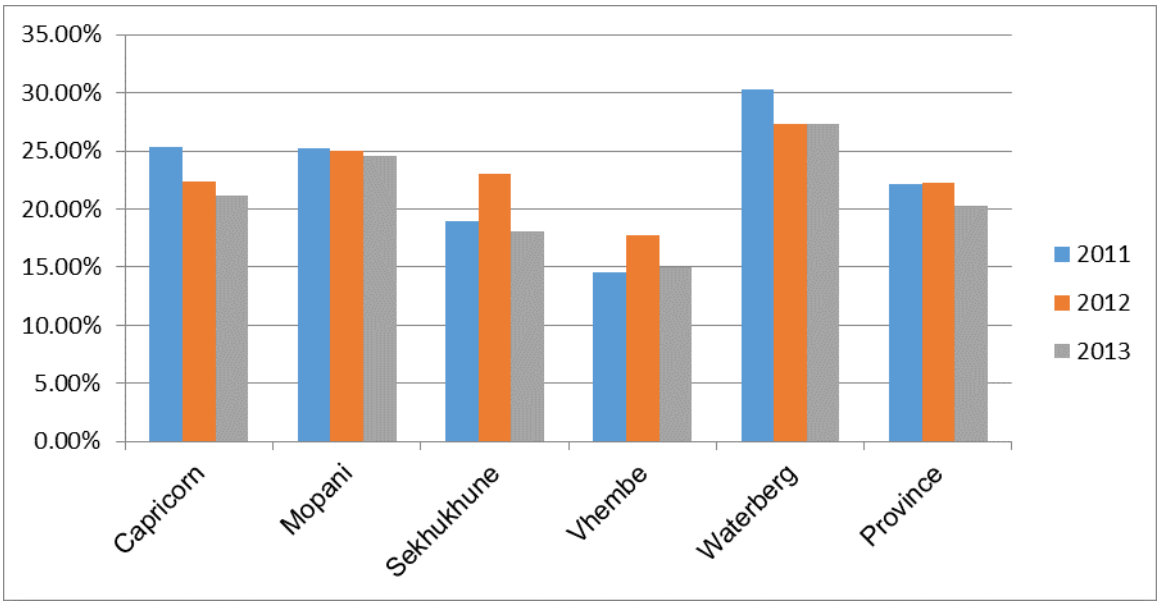

Figure 2.2 HIV prevalence trends among antenatal women by district, Limpopo province 2011−2012

(South Africa 2015c:55)

2.3.3 Diagnosis of HIV

Diagnosis refers to the identification of the nature of an illness or other problem by examination of the symptoms (Oxford Advanced Learner's Dictionary 2015).

In South Africa, HIV is diagnosed using three types of tests: the Rapid Blood Test and Enzyme Linked Immunosorbent Assay (ELISA) for adults and children above 18 months of age; and Polymerase Chain Reaction (PCR) for children below 18 months of age. The Rapid Blood Test and the ELISA test detect the presence of antibodies to HIV whereas PCR detects the DNA of the virus (South Africa 2016:18). The standard HIV blood test used at all South African health facilities is the Rapid Blood Test. The ELISA test is a reflex laboratory test used in case of repeat discrepant results (South Africa 2016:18; FPD 2015:59; Maartens et al 2012:42).

The South African National Department of health has developed the HIV testing algorithm to be followed when testing the patient or client for HIV through finger prick. The HIV test algorithm is shown in Figure 2.3.

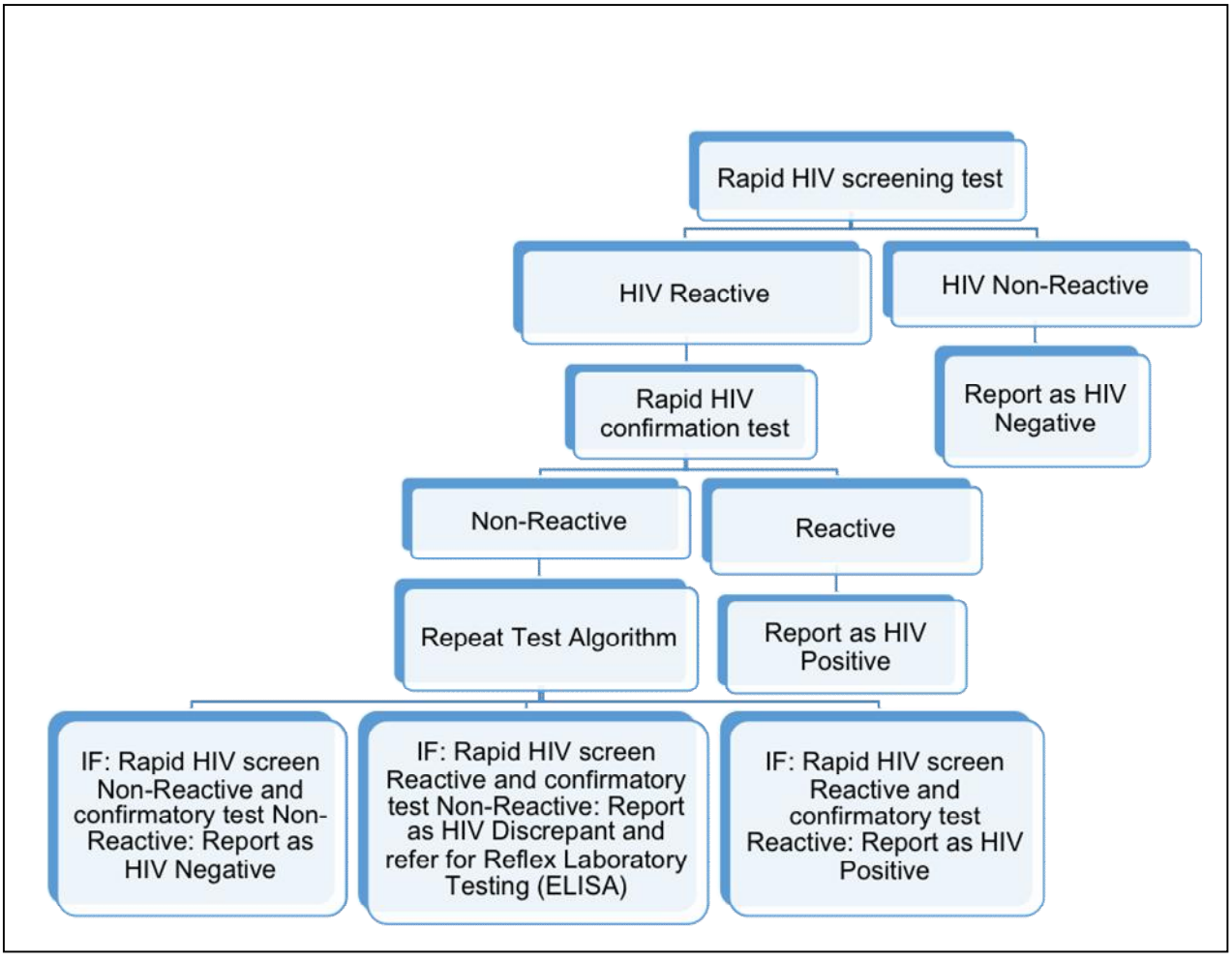

Figure 2.3 HIV testing algorithm

(South Africa 2016:18).

South Africa has adopted the use of two different Rapid HIV test kits at all public health facilities, namely the screening test kit and the confirmatory test kit. These two HIV test kits are from two different manufacturers. The confirmatory test kit as the name implies is used to confirm the reactive results given by the screening test. When the confirmatory test gives different results to the screening test (discrepant results), the procedure is repeated. ELISA test is used in case of repeat discrepant results. Failure to follow the algorithm will lead to giving the patient inaccurate results, which can end up in litigation.

There are HIV Testing Service (HTS) registers where HIV testing data are recorded. From the HTS registers HIV testing data are captured on DHIS. It is important to capture all health facility data on DHIS for accuracy.

It is important for health professionals to have knowledge on diagnosis and data capturing of HIV because this is the entry point for IPT initiation. For a patient to be considered eligible or not eligible for IPT, HIV testing should first be offered.

2.4 TUBERCULOSIS (TB)

TB is an infectious disease caused by the bacillus Mycobacterium tuberculosis (M. tuberculosis). It typically affects the lungs (pulmonary TB) but can affect other sites as well (extra-pulmonary TB). The disease is spread in the air when people who are sick with pulmonary TB expel bacteria, for example by coughing (WHO 2015:4; Maartens et al 2012:232).

TB diagnosis depends on symptom screening of all patients (including HIV positive patients) presenting to the health facility and contacts of people with laboratory confirmed pulmonary TB disease. In all South African health facilities, all patients attending the public health facilities are screened for TB infection; irrespective of their presenting illness, e.g. patients coming for respiratory and non-respiratory ailments are all screened for TB infection routinely. All those who have symptoms of TB disease must be investigated for TB (South Africa 2014:12; Maartens et al 2012:232).

2.4.1 Pulmonary TB

Pulmonary TB (PTB) refers to the disease that involves the lung. The main symptoms of pulmonary tuberculosis are persistent cough for two weeks or more, or any duration if HIV positive; fever for more than two weeks; drenching night sweats and unexplained weight loss of more than 1.5 kg in a month (South Africa 2014:12; WHO 2015:4; Maartens et al 2012:232).

According to the South African TB guideline, a productive cough, often accompanied by systemic symptoms such as fever, night sweats or loss of weight is the commonest presentation of pulmonary tuberculosis. Every patient with a positive symptom screen must be investigated appropriately. Not all those with TB will have a cough; therefore, a high index of suspicion is required, particularly in people who are HIV positive who may only have one of the above symptoms. A history of contact with a person with PTB increases the likelihood of a TB diagnosis (South Africa 2014:12).

Some patients may present with chest pains due to muscle strain; breathlessness due to extensive lung disease or concomitant pleural effusion; localised wheeze due to local tuberculous bronchitis, or because of external pressure on the bronchus by an enlarged lymph node (South Africa 2014:12).

2.4.2 Diagnosis of TB

The diagnosis of TB depends on numerous factors, namely self-presentation of persons with TB symptoms to a health care facility, high index of TB suspicion among health care professionals, TB screening practices in health facilities and the capacity to trace people with positive results and start them on treatment (South Africa 2014:19).

The South African National Department of Health recommends that all patients diagnosed with TB should be started on TB treatment within 2−5 days after confirmation of TB disease (South Africa 2014:27).

It is important for health professionals to have knowledge on signs and symptoms suggestive of TB diagnosis. This knowledge will enable them to effectively screen and exclude TB prior to initiating patients on IPT.

2.5 TB/HIV CO-INFECTION

According to the South African TB guideline, infection with HIV increases the risk of progression of recent M. tuberculosis infection and of reactivation of latent M. tuberculosis infection by 5–15% annually (South Africa 2014:10). The guideline further states that HIV also increases the rate of relapse and re-infection. HIV is responsible for a large increase in the proportion of patients with smear-negative pulmonary and extra-pulmonary TB. These patients have lower treatment outcomes, including excessive early deaths. Therefore rapid diagnoses of not only smear positive pulmonary TB (PTB) but smear-negative pulmonary and extra-pulmonary TB and early initiation of treatment is vital to reduction of TB deaths in people living with HIV (South Africa 2014:10).

HIV infection suppresses the body's immune system by reducing the number of CD4-T cells. This in turn results in the loss of the body's ability to fight the TB infection. Quick progression from initial infection to TB disease may also occur in patients with lowered immune system. TB disease can result in the reduction of the CD4 cells and increase in viral load thereby accelerating the progression of HIV infection to AIDS. Patients with active TB who are HIV-positive have a higher risk of dying from TB than those without HIV (South Africa 2014:10).

The National Department of Health (South Africa 2014:18) states that tuberculosis and HIV/AIDS are the drivers of morbidity and mortality in the country. Therefore, more effort must be put into strategies that help to reduce transmission of infection in the communities, diagnose Drug Sensitive-TB (DS-TB) and Drug Resistant-TB (DR-TB), initiate treatment in all patients diagnosed with TB, retain patients in treatment and care until completion of treatment, and prevent TB in people living with HIV by initiating all eligible HIV positive people on ART and Isoniazid preventive therapy.

The National Department of Health (South Africa 2016:16) states that HIV testing services (HTS) must integrate screening for TB symptoms, STIs and non-communicable diseases (NCDs) into the pre-test information session at health facilities and in community settings. The HIV and TB screening algorithm is shown in Figure 2.4.

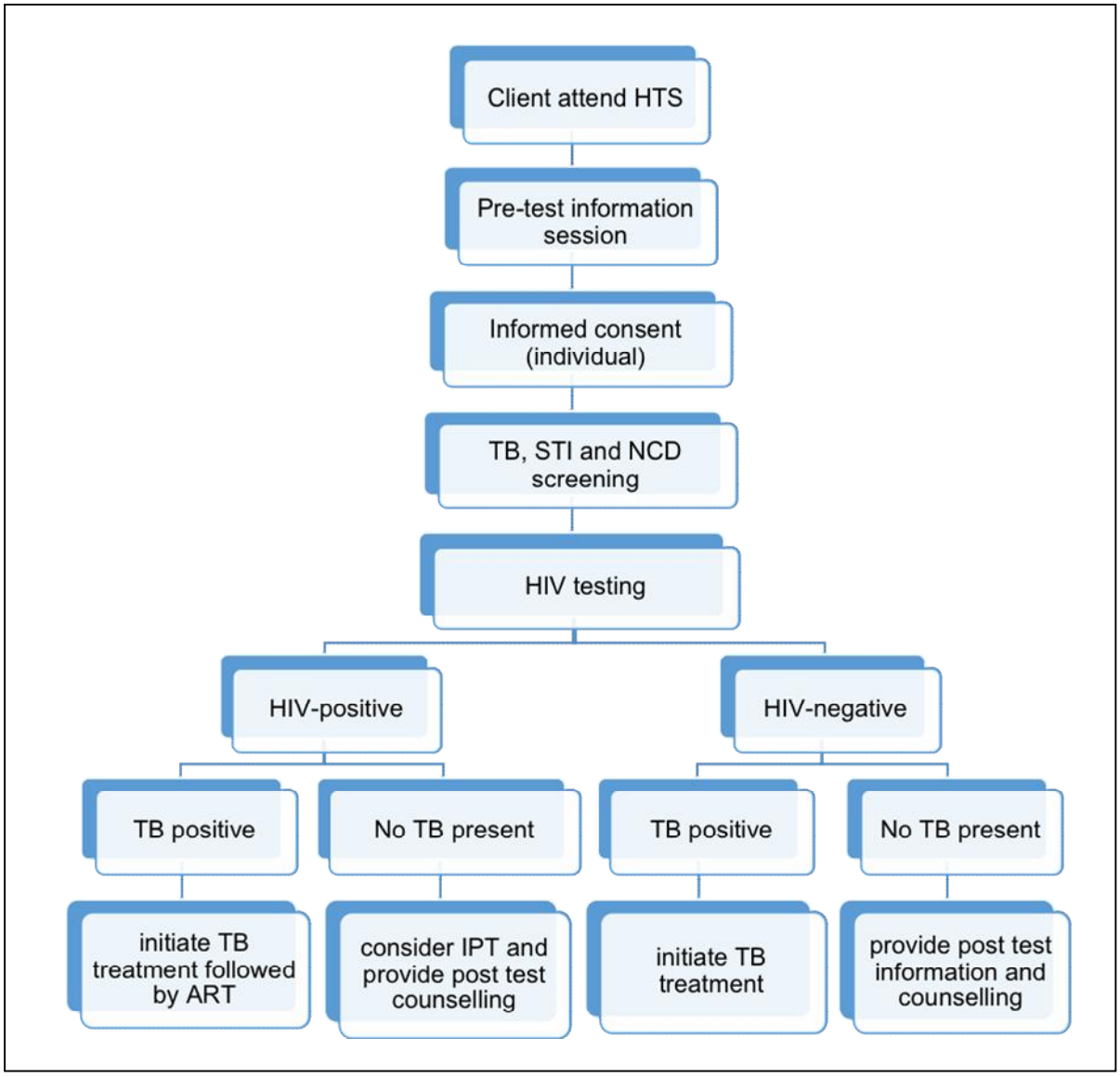

Figure 2.4 HIV/TB screening algorithm to increase TB case finding in HTS

(South Africa 2016:16)

A patient who visits a public health facility for consultation is offered HTS. Pre-test counselling is conducted and written consent to perform HIV testing is obtained by the health professional before the testing is performed. TB, STI and NCD (Hypertension and diabetes) screening are conducted using the department of health screening tools. The patient who tested HIV positive is initiated on IPT in the absence of active TB disease or TB treatment if active TB is diagnosed. The patient who tests HIV negative is initiated on TB treatment if active TB disease is diagnosed or provided with post-test counselling in the absence of active TB disease. It is of paramount importance that the

health professionals are knowledgeable of TB preventive therapy and effectively implements the IPT guideline.

In public health facilities and other high volume HTS settings, pre-test information and education sessions may be conducted in a group rather than individually. In settings with low HTS volumes individual pre-test counselling sessions may be conducted. Information sessions and print materials should be available in the local language of all clients who are considering taking the HIV test (South Africa 2016:17).

2.6 IPT IN LIMPOPO PROVINCE

According to DHIS 2014–2017, Limpopo Province has not reached the target of 90% in terms of IPT initiation. Comparing the annual statistics for the financial years 2014/2015, 2015/2016 and 2016/2017, Limpopo Province achieved 75%, 68% and 75% respectively, with the Capricorn district reporting the lowest during financial year 2015/2016 at 57%, and Waterberg district reporting the highest at 78%. There is thus a fluctuation in IPT initiation in Limpopo Province and its districts between 2014 and 2017 (Limpopo DHIS 2014–2017 statistics). Figure 2.5 shows the 2014–2017 IPT initiation rates in Limpopo Province per district:

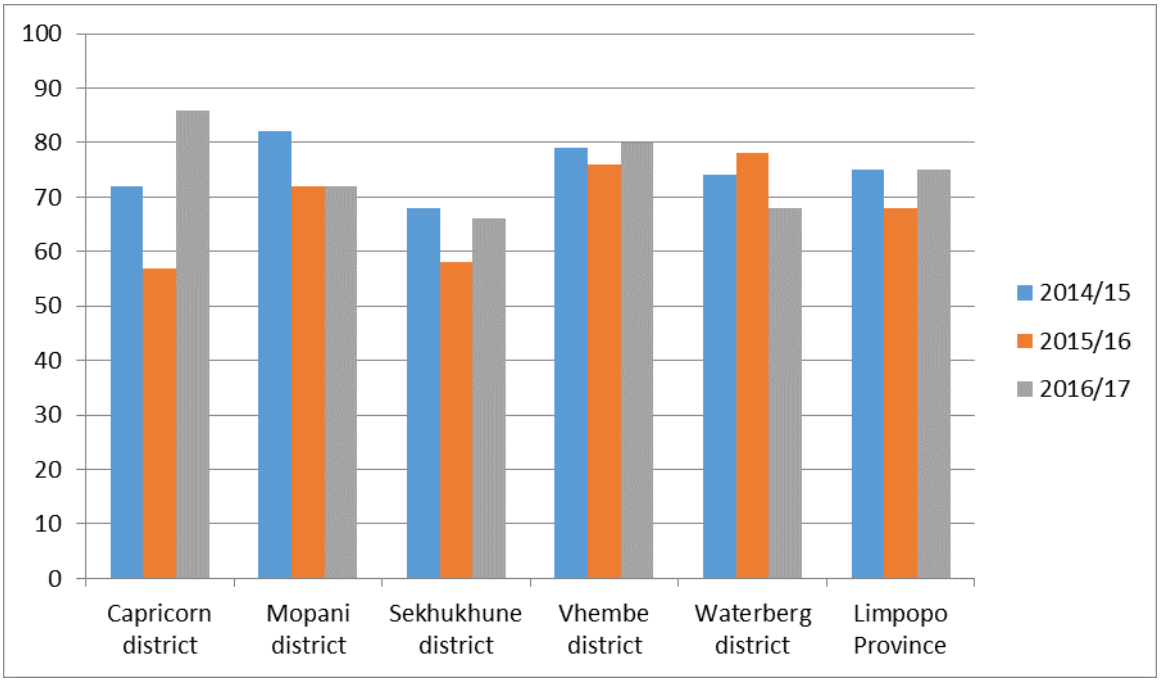

Figure 2.5 Limpopo Province IPT initiation rate by districts

(Limpopo DHIS 2014-2017)

None of the districts in Limpopo province achieved the 90% target from 2014 to 2017, which poses a concern for the HIV/TB programme. This simply implies that the province is not doing well in terms of preventing the occurrence of active TB in HIV positive patients.

Figure 2.6 shows the 2014-2017 IPT initiation rates in Capricorn per sub-district:

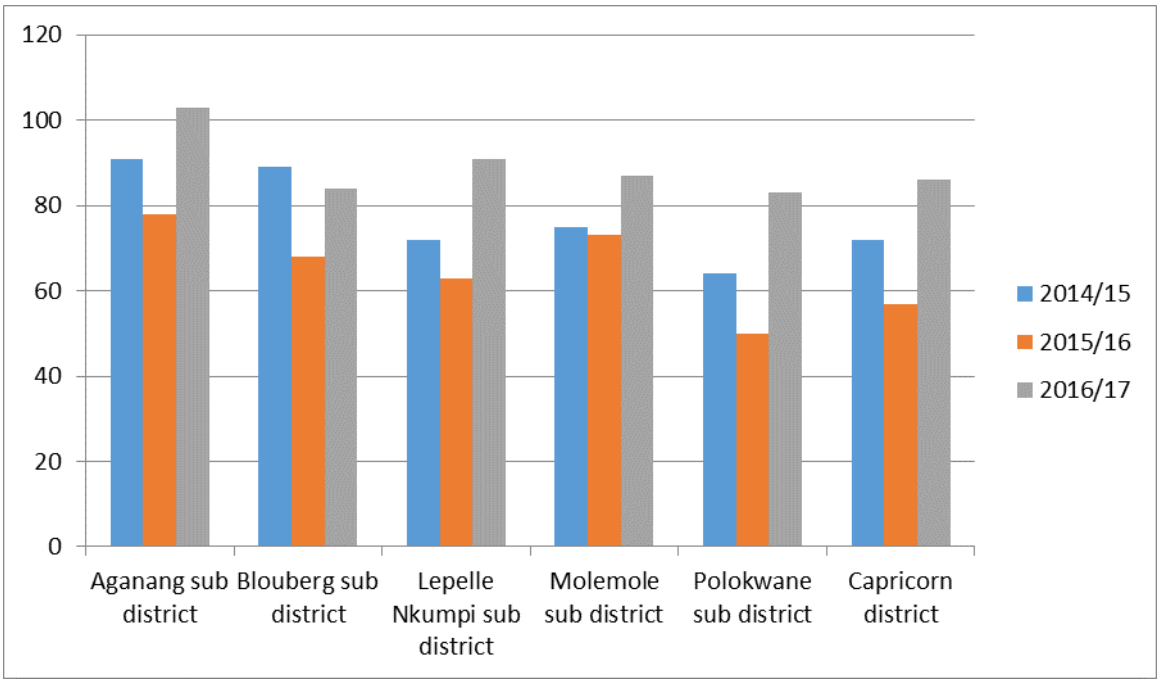

Figure 2.6 Capricorn district IPT initiation rate by sub-districts

(Limpopo DHIS 2014–2017)

Based on the IPT initiation, Figure 2.5 above, the Polokwane sub-district performed far below the district performance.

The Polokwane sub-district reported the lowest IPT initiation according to DHIS information for the 2014 to 2017 financial years compared to other sub-districts in Capricorn. The low IPT initiation in Polokwane sub-district could be attributed to the lack of health professionals' knowledge on IPT initiation, the IPT implementation process or unavailability of resources required for IPT initiation.

In South Africa it is expected that in all public health facilities, patient IPT information be recorded in the facility records (IPT register), in patient's files and also electronically in a computer. Some of the health facilities have moved from manual recording of patients'

information on the IPT register to a computer; this simply means that IPT information is only recorded in the patient's file and on computers. There are two types of computer systems that are used to capture HIV and TB information, including IPT. These systems are the Electronic HIV & AIDS register (TIER.net) and Electronic TB register (ETR.net). Data from both TIER.net and ETR.net are important to give a complete analysis and complete statistics on HIV and TB. TIER.net captures HIV patients screened for TB and those initiated on IPT while ETR.net captures TB patients who are screened for HIV. HIV patients who are TB diagnosed will not be initiated on IPT; therefore, they are captured on both TIER.net and ETR.net.

It is the responsibility of the professional nurses to ensure that information from facilities is recorded and accurately captured on TIER.net and ETR.net for statistical purposes and planning effective programmes.

2.7 SUMMARY

This chapter discussed the literature review undertaken for the study. The literature covered the IPT policy guideline in South Africa; HIV prevalence in South Africa and Limpopo and HIV diagnosis; pulmonary tuberculosis and TB diagnosis; TB/HIV co-infection; and IPT in Limpopo province.

Chapter 3 describes the research design and methodology.

CHAPTER 3

RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

This chapter describes the methods and procedures that were applied to obtain the data required for the study. It discusses the research design, the population, sampling method and sample, data-collection instrument, pretesting of data collection instrument, data collection, data analysis and ethical considerations.

3.2 RESEARCH DESIGN

Research design refers to the set of logical steps taken by the researcher to answer the research question (Brink et al 2012:96). Brink et al (2012:96) further state that the research design forms the blueprint of the study and determines the methodology used by the researcher to obtain information, such as respondents, elements and unit of analysis; to collect and analyse data; and to interpret the results. Polit and Beck (2012:741) define research design as the overall plan for addressing a research question, including specifications for enhancing the study`s integrity.

This study followed a non-experimental, descriptive cross-sectional design. A non-experimental design entails no manipulation of the independent variable and, therefore, no intervention; nor is the setting controlled. The study is carried out in a natural setting and phenomena were observed as they occurred (Brink et al 2012:112; Polit & Beck 2012:735).

Polit and Beck (2012:725) describe descriptive research as research that typically has as its main objective the accurate portrayal of people`s characteristics or circumstances and/or the frequency with which certain phenomena occur. According to Brink et al (2012:112), descriptive designs may be used to develop theories, to identify problems with current practice, to justify current practice, to make judgements or determine what other professionals in similar situations are doing.

Cross-sectional studies are used to examine data at one point in time, that is, the data are collected on only one occasion from different participants, rather than from the same participants at several points in time (Brink et al 2012:115; Polit & Beck 2012:725).

This study is non-experimental, descriptive and cross-sectional in nature because the researcher intended to describe the practice of IPT initiation in health facilities in Polokwane sub-district as it occurred, without manipulation, at one point of time. Data were collected during March and April 2018.

3.3 RESEARCH METHOD

Polit and Beck (2012:741) describe the research methods as the techniques used to structure a study, gather and analyse information in a systematic fashion. Brink et al (2012:199) state that research methodology informs the reader of how the investigation was carried out, in other words, what the researcher did to solve the research problem or to answer the research question.

3.3.1 Setting and Population

Capricorn district has five sub-districts or local municipalities: Blouberg, Molemole, Aganang, Polokwane and Lepelle-Nkumpi. The district has hundred and two (102) health care facilities, all the health care facilities provide HIV & AIDS and TB services. Brink et al (2012:131) and Flick (2011:71) describe a population as the entire group of persons or objects that are of interest to the researcher; in other words, they are the people or things that meet the criteria that the researcher is interested in studying. The entire set of elements about which the researcher would like to make generalisations is called the “target population”. In this study the target population refers to the health care professionals (operational managers, registered/professional nurses and doctors) working at the HIV/AIDS units in the Capricorn district. A map of Capricorn is shown in Figure 3.1.

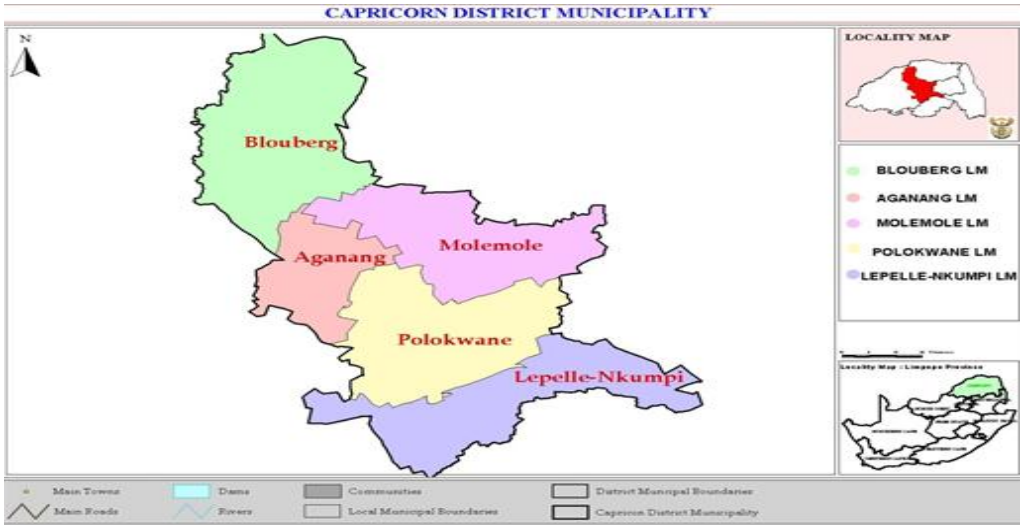

Figure 3.1 Local Municipalities in Capricorn District Municipality

(CDM Spatial Development Framework 2007)

The accessible population for this study was the health care professionals, namely operational managers, registered nurses and doctors working at the 34 HIV/AIDS units of the Polokwane sub-district. These health care professionals were selected because they are directly responsible for the initiation and capturing of IPT. Operational managers, registered nurses and doctors are all responsible for initiating IPT among patients; in other words, they prescribe the medication and do follow-ups with the patients. The operational managers and registered nurses are also responsible for ensuring the availability of stock at the health facilities and capturing the data of IPT initiation in the facility records and eventually in the DHIS reports.

Each primary health care clinic has at least two to eight registered nurses, one of whom, depending on their workload, is the operational manager of the primary health clinic, but there are no doctors. The hospital and Community Health Centre (CHC) have one to two registered nurses and one to three doctors.

3.3.2 Sampling and sample size

The sample for this study was all the health care professionals that work in the HIV/AIDS units of the Polokwane sub-district; a census was conducted. All the operational managers, registered nurses and doctors of the 34 public health facilities who were at work during questionnaire distribution, were asked to participate; they totalled 139. The breakdown of the sample is as follows:

- Thirty-two PHC clinics, each with two to eight registered nurses, including operational manager = 130; no doctors
- One district hospital with two registered nurses and three doctors = five
- One CHC with three registered nurses and one doctor = four
- In total, 34 health facilities with a total of 139 health care professionals included

From the 139 health care professionals who were included in this study, only 124 completed and returned the questionnaire.

3.3.3 Sampling method

Polit and Beck (2012:742) and Brink et al (2012:132) describe sampling as the process of selecting a portion of the population in order to obtain information regarding a phenomenon in a way that represents the population of interest. In this study all health care professionals from all 34 health facilities in the Polokwane sub-district who were at work during questionnaire distribution were requested to participate in the study, thus no sampling was done; instead a census was conducted.

The final sample for this study consisted of 139 health professionals, namely four doctors, 34 operational managers and 101 registered nurses.

3.3.4 Ethical issues related to sampling

- **Sampling error**

Brink et al (2012:133) and Polit and Beck (2012:742) describe sampling error as the difference between a sample statistic and a population parameter. They further state that a large sampling error indicates that the sample fails to provide a precise picture of the population.

To avoid sampling error, the researcher recruited all health professionals that work at the HIV/AIDS units of all health facilities in the Polokwane sub-district.

- **Sampling bias**

Polit and Beck (2012:742) describe sampling bias as distortions that arise when a sample is not representative of the population from which it is drawn. Brink et al (2012:133) state that sampling bias occurs when samples are not carefully selected. In this study there was no sample selection; all health professionals who met the inclusion criteria were requested to participate in the study.

The inclusion criteria for respondents were that they:

- work in the health facilities with HIV/AIDS units in the Polokwane sub-district;
- are health professionals, namely operational managers, registered nurses or doctors;
- are involved in the IPT initiation of eligible patients.

The duration of work at the unit in years was not used as criteria for inclusion in this study because health care professionals are rotated from one unit to the other and others are transferred from one institution to the other, this movement does not have an impact on the health care professional`s IPT initiation experience.

3.3.4 Data collection

Polit and Beck (2012:725) and Brink et al (2012:147) describe data collection as the gathering of information needed to address a research problem.

The researcher used a structured data collection method. To establish a standard for competent IPT practitioners, the researcher consulted with operational managers of three PHC clinics at the Aganang sub-district and three doctors from the two tertiary hospitals. The consensus was that show competence in rendering the service, respondents were expected to answer at least seventy five percent (75%) of the knowledge questions correctly. The reason for setting the bar at 75%, which means passing with distinction, was that IPT initiation is a health issue that can result in mortality if not initiated with eligible patients. As such, health care professionals are expected to provide quality service delivery to patients. Put differently, average knowledge could result in compromised service delivery and this would pose a risk to the lives of the patients.

3.3.4.1 Development and testing of the data collection instrument

- **Development of data collection instrument**

The researcher developed the data collection instrument after studying literature relevant to the study topic and objectives (refer to Annexure G). The data collection instrument was sent to the statistician for scrutiny before it was submitted to the supervisor and the scientific review committee in the Department of Health Studies at UNISA for comment. The terms “registered nurse” and “professional nurse” are used interchangeably in the field of nursing. The South African Nursing Council uses the term “registered nurse” whereas at health care facility level, health care professionals use the term “professional nurse”. To match the terminology used at the health care facilities, the researcher used the term “professional nurse” in the questionnaire.

- **Testing of the data collection instrument**

Prior to data collection, the data collection instrument was pre-tested. The purpose of the pre-test was to investigate for possible flaws in the instrument, such as ambiguous instructions and wording as well as inadequate time limits (Brink et al 2012:175). The data collection instrument was pre-tested with respondents that met the inclusion criteria but were not part of the sample.

Pre-testing of the questionnaire took place at the Aganang sub-district of the Capricorn district. Here two operational managers and six professional nurses from primary health care clinics were requested to complete the questionnaire. The feedback given from the questionnaire pilot was that the tool is simple and understandable. However, there was an indication that patients’ facility files are used to record IPT information. The researcher therefore added the question on recording IPT initiation in patients’ file to the questionnaire (refer to Annexure G: C5 and E5).

- **Validity of the questionnaire**

According to Brink et al (2012:218), Joubert, Ehrlich, Katzenellenbogen and Karim (2012:117) as well as Polit and Beck (2012:745), validity refers to the extent to which a

measurement instrument actually measures what it is meant to measure. The definition of validity has two aspects: that the instrument actually measures the concept in question and that the concept is measured accurately.

To guarantee validity, the researcher ensured that the questions were short and clear and provided adequate coverage of the topic under study by doing a literature review, which in this case included all relevant official health policies and programmes. The researcher further asked experts in the practice field in the Provincial Department of Health of Limpopo Province to check the content and judge how well or accurately the questions represented the concepts of the study. She finally selected the appropriate sample: those respondents who were indeed involved in the initiation of IPT.

- **Reliability**

Reliability is the degree of consistency with which an instrument measures the attribute it is supposed to be measuring. Reliability of the instrument can be equated with the stability, consistency and dependability of a measuring tool (Polit & Beck 2012:331; Brink et al 2012:216).

Reliability of the questionnaire in this study was ensured by involving the statistician in the development of the questionnaire; by ensuring consistent administration of the questionnaire to all respondents; by ensuring that questions were carefully formulated to avoid ambiguities, negative questions or double-barrelled questions; and by pre-testing the data collection instrument.

3.3.4.2 Characteristics of the data collection instrument

The data collection instrument was structured into the following five sections:

Section A: This section contained the demographic profile, including level of education, employment category, period worked and training received. It also asked participants how long they had been providing HIV/AIDS and TB services.

Section B: This section tested respondents' knowledge of IPT initiation; questions were based on the National Department of Health's guidelines for Tuberculosis Preventive Therapy among HIV infected individuals (South Africa 2010).
Section C: This section contained questions on the practice of IPT initiation, including the process followed before and after IPT initiation.

Section D: This section contained questions on the available resources to initiate IPT at the health clinic.

Section E: This section contained general challenges experienced with IPT initiation.

3.3.4.3 Data collection process

After permission for the study was granted by the Limpopo Provincial Department of Health and the Capricorn district (refer to Annexure C and Annexure E), an information letter, explaining the study was circulated to the potential respondents (refer to Annexure F). The researcher obtained informed consent and distributed the questionnaires to respondents during the monthly sub-district primary health care meeting (refer to Annexure F and Annexure G). The reason for choosing the sub-district meeting as the point of distribution was that all the operational managers from the 34 health care facilities are usually represented at this meeting. The researcher was available throughout to provide clarity if questions were raised and to collect the questionnaire as it was completed. The researcher personally delivered the questionnaires to the remaining operational managers, registered nurses and doctors who did not attend the meeting. They were requested to complete them during tea or lunch breaks so as not to disturb the operations at the health care facility. The researcher collected completed questionnaires and checked for completeness before proceeding with data analyses.

3.3.4.4 Data Management

Data will be in safe keeping and will not be available for any purposes other than this research. The researcher will ensure that data storage and disposal adhere to the values and principles expressed in the UNISA Policy on Research Ethics.

3.3.5 Data analysis

Polit and Beck (2012:725) describe data analysis as the systematic organisation and synthesis of research data. Data analysis entails categorising, ordering, manipulating and summarising the data, and describing them in meaningful terms (Brink et al 2012:177).

Data was captured and analysed using the Statistical Package for the Social Sciences (SPSS) Version 24. Percentages and frequencies were used to interpret the data. The Chi-square test was used to compare groups and the p-values less than 0.05 were considered statistically significant. Data analysis was done in consultation with a qualified statistician.

The option of “certificate” in question A1 (level of education) should not have been included because the target population did not include people with a certificate qualification. When the researcher checked for completeness of the questionnaire, an error was realised; she then sought clarity from the respondents (professional nurses) about their qualifications. Although the analysis of this particular question is not 100% correct, the fact that the relevant respondents are professional nurses means the remaining answers are indeed provided by a professional nurse with a diploma qualification. This means there was no negative impact on the information provided through the rest of the questions.

Data for knowledge on IPT initiation, practice of IPT initiation and resource availability were analysed separately; therefore, no link or correlation was determined.

Data for knowledge on IPT initiation responses were measured as a scale variable using scores based on the correctness of responses to the researcher’s conceptual knowledge of the IPT policy guidelines. Descriptive statistics of overall knowledge and knowledge stratified by demographic characteristics (employment category, educational level, years of service in facility, years of service in providing HIV/AIDS services, training on TB/HIV collaborative activities and IPT initiation) using measures of dispersion (mean, standard deviation, skew, kurtosis and median) were employed.

Data for IPT initiation practice responses were categorised as collected and descriptive frequency tables for each question were employed.

Description of resource availability is categorical and hence nominal in terms of measurement scales. Frequency tables were used to depict the relative availability of resources.

3.4 INTERNAL AND EXTERNAL VALIDITY OF THE STUDY

3.4.1 Internal validity

Brink et al (2012:109) and Polit and Beck (2012:157) refer to internal validity as the degree to which the outcome of an experiment can be attributed to the manipulated, independent variable rather than to controlled irrelevant factors. The researcher ensured that the outcome of the study represent a true reflection of reality by not exerting influence on the respondents and by including all potential respondents who met inclusion criteria.

3.4.2 External validity

Brink et al (2012:111) define external validity as the degree to which the results of a study can be generalised to other people and other settings. In this study external validity was enhanced because all the health care facilities in the Polokwane sub-district were included in the study; therefore, the findings of the study can be generalised to the whole sub-district.

3.5 Ethical considerations

Polit and Beck (2012:727) describe ethics as a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal and social obligations to the study participants. Brink et al (2012:32) state that the researcher is responsible for conducting research in an ethical manner from the conceptualisation and planning phases, through the implementation phase, to the dissemination phase. The researcher adhered to the following ethical principles:

- **Protection of the rights of the institution**

Permission to conduct research was obtained from the Limpopo Department of Health and the Capricorn district (refer to Annexure C and Annexure E respectively). Information from all health care facilities was kept confidential and no information was used against a particular institution or respondents. Respondents completed the questionnaires during break times to avoid interfering with service delivery.

- **Beneficence**

Beneficence refers to the obligation on the part of the investigator to maximise benefits for the individual respondents and/or society, while minimising risk of harm to the individual *(*Adams 2013*).* Brink et al (2012:35) state that to adhere to this principle, the researcher needs to secure the well-being of the participant, who has a right to protection from discomfort and harm, be it physical, psychological, emotional, spiritual, economic, social or legal.

The researcher ensured that the respondents were not subjected to any harm. The researcher explained to the respondents that they could terminate their participation at any stage without any punishment and that all the information would be kept confidential and never be used against them. All respondents were identified by a number for anonymity so that no information could be traced back to the respondent. Furthermore, the researcher's purpose with the study was to increase the IPT initiation to meet the national target, thus maximising benefits to the citizens of the sub-district.

- **Respect for human dignity**

The principle of respect for human dignity includes the right to self-determination and the right to full disclosure.

❖ *The right to self-determination*

Humans should be treated as autonomous agents, capable of controlling their own activities and destinies. The principle of self-determination means that respondents have the right to voluntarily decide whether or not to participate in a study, without the

risk of incurring any penalties or prejudicial preference. It also means that respondents have the right to terminate their participation, to refuse to give information or to ask for clarity about the purpose of the study (Polit & Beck 2012:154; Brink et al 2012:35).

The researcher informed the respondents of their right to participate voluntarily in the study, to ask clarity about the study and to terminate their participation; this was indicated on the consent form.

❖ *The right to full disclosure*

Full disclosure means that the researcher has fully described the nature of the study, the respondents' right to refuse participation, the researcher`s responsibility as well as the likely risks and benefits that could be incurred (Polit & Beck 2012:154; Brink et al 2012:35).

The study posed no physical risks to participants. However, there was the possibility that staff may feel intimidated and worry that the researcher may report them as incompetent. The participants were assured on the consent form that both participants and their health facility would remain anonymous in the study and that the completed questionnaire would be in the researcher's safe keeping and would not be made available for any purposes other than this study.

Even though all health professionals were invited to participate, they could still choose if they wanted to participate or not.

- **Justice**

Individual respondents may withdraw at any time during the study if there is reason to suspect that continuation would result in harm or undue distress to them (Polit & Beck 2012:155; Brink et al 2012:35).

The respondents were assured that neither their participation nor the information they might provide to the researcher would be used against them in any way. The principle of justice includes the right to fair treatment and the right to privacy.

❖ *The right to fair treatment*

Respondents have the right to fair and equitable treatment both before and after their participation in the study. Fair treatment includes the fair and non-discriminatory selection of respondents such that any risks and benefits are equitably shared (Polit & Beck 2012:155; Brink et al 2012:36).

Respondents' selection was based on contribution in initiation and capturing of IPT and not on convenience or compromised position of certain types of people.

❖ *The right to privacy*

Respondents have the right to expect that any information collected during the course of the study will be kept in strictest confidence. This should occur through anonymity and confidentiality procedures (Polit & Beck 2012:156; Brink et al 2012:35).

Anonymity was ensured by not writing names on the questionnaire to avoid identification of respondents. Respondents were ensured that information they shared would be kept confidential and only reported on in combination with the responses of other respondents in the final report. Data collection instruments would be kept under lock and key and made available to the researcher, statistician and research supervisor only.

- **Informed consent**

Informed consent means that respondents have adequate information regarding the research; are capable of comprehending the information; and have the power of free choice, enabling them to voluntarily consent to or decline participation in the research (Polit & Beck 2012:157; Brink et al 2012:38). The following aspects were included in the consent form for their information: the study title, purpose and objectives of the study, data collection method, time they would spend completing the questionnaire and the ways in which the findings would be used (refer to Annexure F).

- **Researcher integrity**

The researcher has demonstrated respect for the scientific community by protecting the integrity of scientific knowledge. The researcher has ethical responsibilities associated with the conduct and reporting of the research (Brink et al 2012:43).

Ethical clearance to conduct the study was obtained from the Research Ethics Committee of the Department of Health Studies at Unisa (refer to Annexure A). Thus, the study proposal was scrutinised by a Scientific Review Committee and the Ethics Committee.

In order to preserve honesty, the researcher avoided the following activities: falsification of the report, manipulation of design and methods, manipulation of data and plagiarism (Brink et al 2012:43). The researcher reported data as it was collected.

3.6 SUMMARY

This chapter discussed the research design and methods used in the study. The issues reflected on here included population, sampling, ethical issues related to sampling, sample, data collection and analysis, internal and external validity of the study.

Chapter 4 discusses the analysis, presentation and description of the research findings.

CHAPTER 4

DATA PRESENTATION AND DESCRIPTION OF FINDINGS

4.1 INTRODUCTION

This chapter presents the analysed data and description of the findings to an evaluation of the Isoniazid Preventive Therapy initiation in Limpopo Province. The responses to a structured questionnaire, as completed by 124 respondents who met the inclusion criteria, were analysed and are discussed.

4.2 DATA MANAGEMENT AND ANALYSIS

Data analysis entails categorising, ordering, manipulating and summarising the data and describing them in meaningful terms (Brink et al 2012:179). Descriptive and analytic statistics were used to describe and synthesise the data. The researcher engaged the services of a statistician who analysed the data, using the Statistical Package for the Social Sciences (SPSS) Version 24. The analyses of data were described in detail in chapter three; refer to section 3.3.5.

4.3 REPORT OF THE FINDINGS

The findings are described below, according to sections A–E of the questionnaire. The information in section 4.3.1 describes the demographic profile of the respondents. Where applicable, this information is used in the rest of the report to relate the findings to specific characteristics of the respondents, for example by cross tabulation of information.

For each of sections 4.3.2, 4.3.3, 4.3.4 and 4.3.5 a concluding summary of the main findings is provided. These summaries can be found in the following sections: 4.3.2.7 Overall score per knowledge Question; 4.3.3.10 Overall IPT practice response; 4.3.4.7 Overall resource availability and 4.3.5.12. Overall general challenges.

In sections 4.3.4 and 4.3.5 the description of the findings of each item is also described in terms of responses by the category of employment.

In the discussion of the results the following will apply:

- N: Capital letter “N” will represent the total number of respondents.
- n: Small letter “n” will represent the number of responses on each item.
- %: The sign % will represent the percentage from either “n” or “N”, where applicable.

4.3.1 Demographic profile of the respondents (Section A)

In this section the researcher determined the profile of the respondents. The respondents were asked to indicate their employment category, educational level, years of service in facility, years of experience in offering HIV/AIDS and TB services, the extent of training received and the type of training. The findings are reported accordingly.

4.3.1.1 Employment category (item A4)

The respondents for this study were doctors, operational managers and registered nurses. Figure 4.1 shows the employment category of respondents.

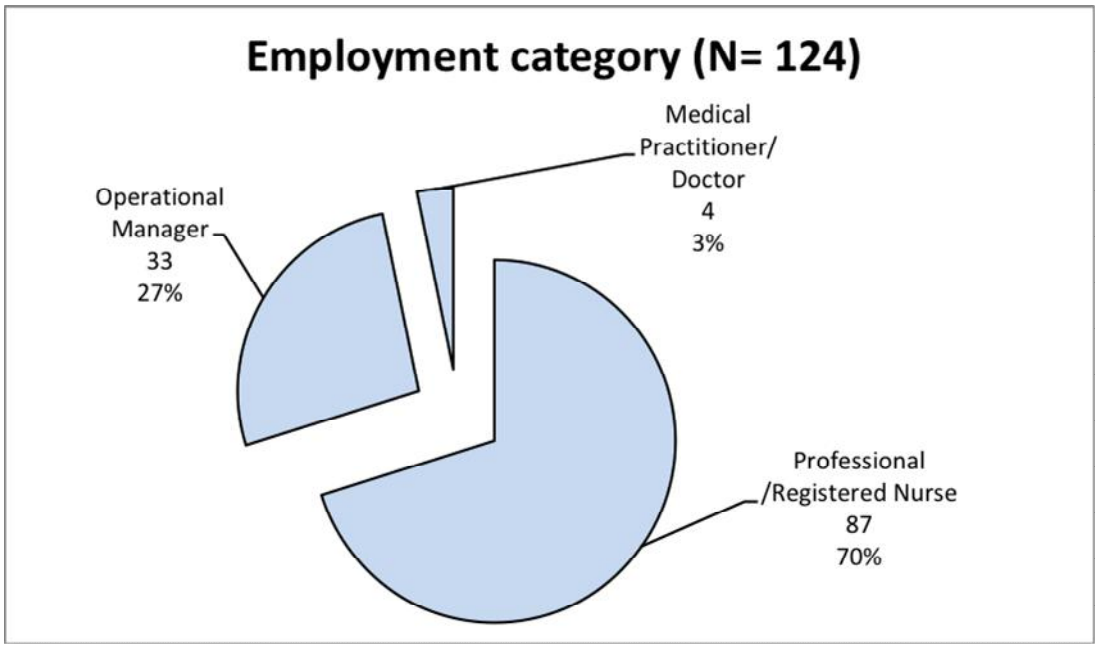

Figure 4.1 Employment category

The larger percentage of the respondents was the registered nurses, which constituted 70% (N=124) of the respondents. The operational managers constituted 27% (N=124) of the respondents and the doctors formed 3% (N=124) of the respondents.

4.3.1.2 Level of education (item A1)

The respondents hold different levels of education, from diploma to PhD degree (for certificate respondents refer to section 3.3.5). The education level of respondents is shown in Figure 4.2.

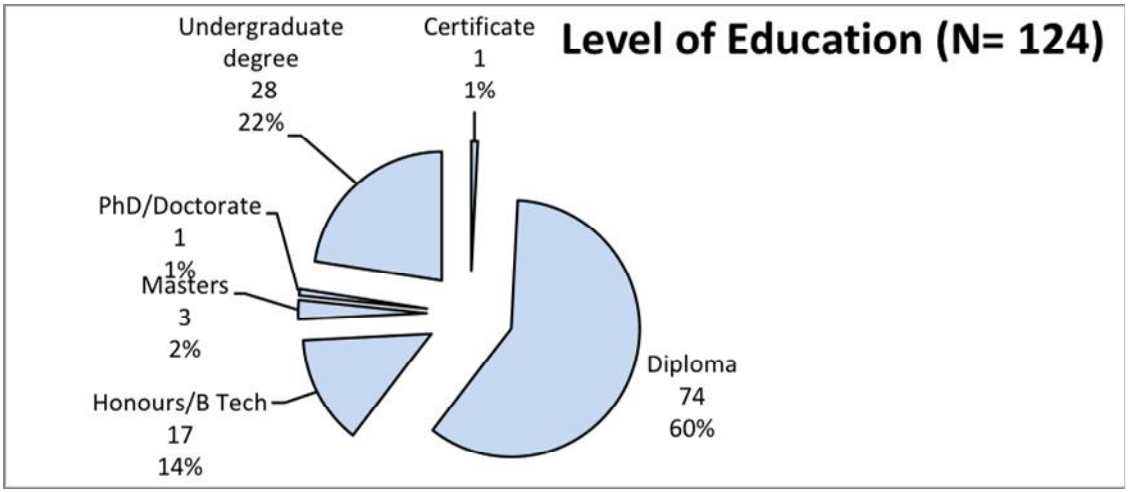

Figure 4.2 Level of education

Sixty percent (n=74) of respondents indicated that they possess a diploma qualification. The other respondents indicated that they possess either an undergraduate degree 22% (n=28), an Honours/B Tech degree 14% (n=17), a Master's degree 2% (n=3) or a PhD/Doctoral degree 1% (n=1).

4.3.1.3 Years of service in facility (item A2)

The respondents for this study were asked how many years they have worked in their specific facility. The time varied from less than one year to more than five years. The years of service in facility for the respondents is shown in Figure 4.3.

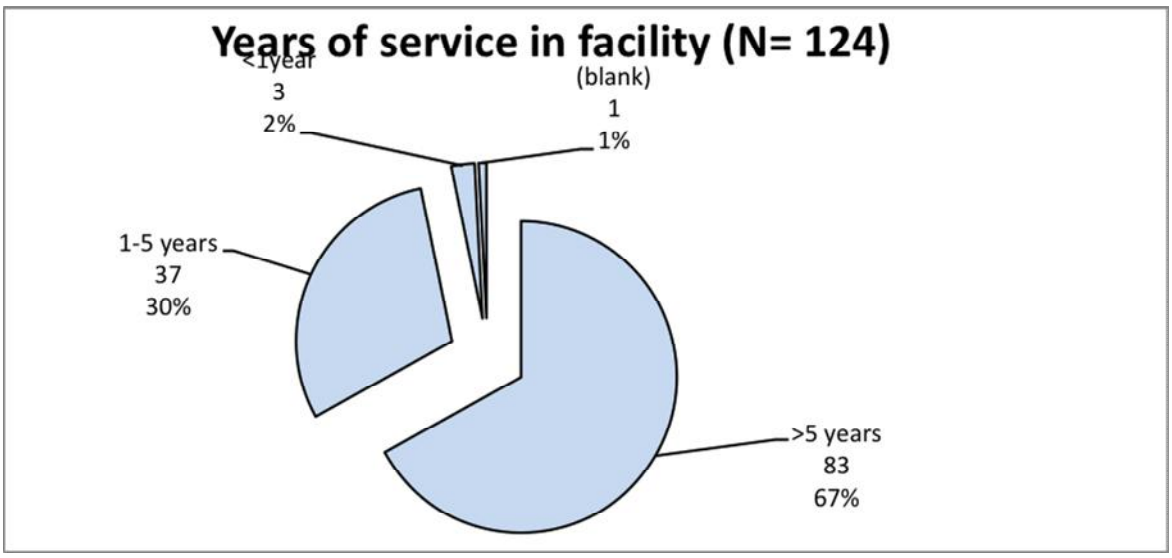

Figure 4.3 Years of service in facility

The majority of respondents 67% (n=83) have worked in their facilities for more than 5 years. The other respondents 30% (n=37) indicated that they have one to five years of service, 2% (n=3) have less than a year of service in their facilities and one (1) respondent did not indicate the length of service in the relevant facility.

4.3.1.4 Years of service providing HIV/AIDS and TB services (item A3)

The respondents of this study were asked how many years they had been providing HIV/AIDS and TB services. The time span varied from two years to 16 years and above. The years of service providing HIV/AIDS and TB is shown in Figure 4.4.

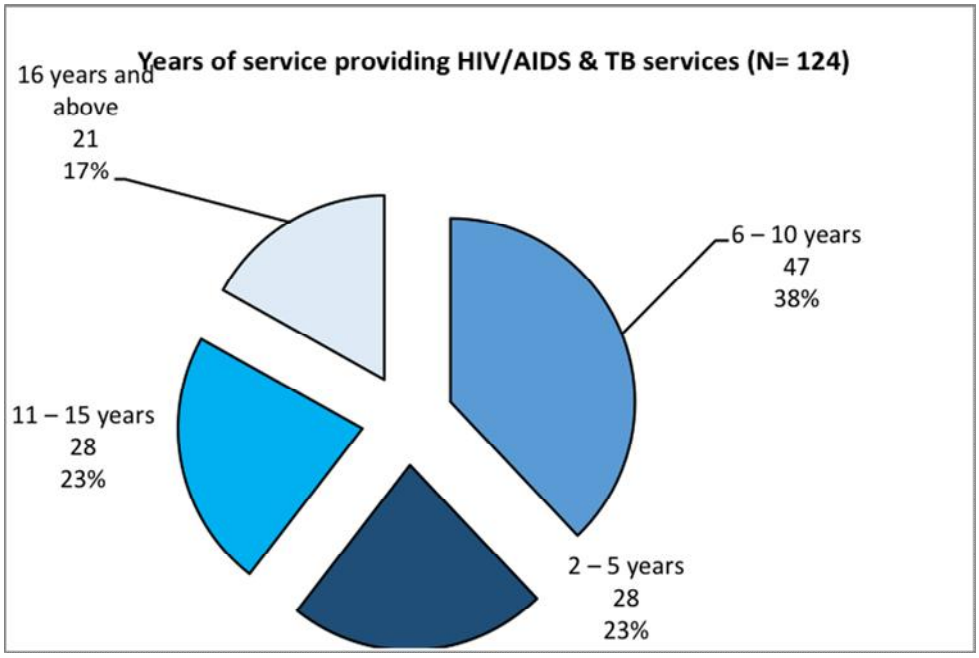

Figure 4.4 Years of service providing HIV/AIDS and TB services

Thirty-eight percent (N=124) of respondents had been providing HIV/AIDS and TB services for six to 10 years. Twenty-three percent (N=124) of respondents have been doing it for 11 to 15 years, while another 23% (N=124) have been doing it for two to five years. Those who have been doing it for 16 years and above are 17% (N=124).

4.3.1.5 Training on TB/HIV collaborative activities (item A5)

Most of the respondents, 90% (N=124), were trained on TB/HIV collaborative activities. Table 4.1 illustrates the training in relation to the employment categories (item A4).

Table 4.1 Training on TB/HIV collaborative activities

Have you ever been trained on TB/HIV collaborative activities? * What is your employment category? Cross tabulation						
			What is your employment category?			**Total**
			Medical Practitioner/ Doctor	**Operational Manager**	**Registered Nurse**	
Have you ever been trained on TB/HIV collaborative activities?	No	Count	1	3	9	13
		% within What is your employment category?	25%	9%	10%	10%
	Yes	**Count**	**3**	**30**	**78**	**111**
		% within What is your employment category?	75%	91%	90%	90%
	Total	**Count**	**4**	**33**	**87**	**124**
		% within What is your employment category?	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Seventy-five percent (n=4) of doctors, 91% (n=33) of operational managers and 90% (n=87) of registered nurses are trained on TB/HIV collaborative activities. Opposed to that, 25% (n=4) of doctors, 9% (n=33) of operational managers and 10% (n=87) of registered nurses are not trained on TB/HIV collaborative activities.

4.3.1.6 Type of training on TB/HIV collaborative activities (item A6)

One hundred and eleven (n=111) respondents received training on TB/HIV collaborative activities in different modalities. The respondents' type of training on TB/HIV collaborative activities is shown in Table 4.2.

Table 4.2 Type of training on TB/HIV collaborative activities

Type of HIV/AIDS & TB training	Frequency	(%)
Workshop	99	89
From a colleague	4	4
Job orientation	8	7
Grand Total	**111**	**100**

Eighty-nine percent (n=111) of the respondents who received training on TB/HIV collaborative activities attended a workshop. Four percent (n=111) received training from a colleague, 7% (n=111) received training through job orientation.

4.3.1.7 Training on IPT initiation (item A7)

The respondents for this study were asked if they had received training on IPT initiation. Eighty-one percent (81%, N=124) of respondents indicated that they were trained on IPT initiation. Table 4.3 illustrates the training on IPT initiation in relation to the employment categories (item A4).

Table 4.3 Training on IPT initiation

Have you ever been trained on IPT initiation? * What is your employment category? Cross tabulation						
			What is your employment category?			**Total**
			Medical Practitioner/ Doctor	**Operational Manager**	**Registered Nurse**	
Have you ever been trained on IPT initiation?	No	Count	1	6	16	23
		% within What is your employment category?	25%	18%	18%	19%
	Yes	**Count**	**3**	**27**	**71**	**101**
		% within What is your employment category?	75%	82%	82%	81%
	Total	**Count**	**4**	**33**	**87**	**124**
		% within What is your employment category?	**100%**	**100%**	**100%**	**100%**

Seventy-five percent (n=4) of doctors, 82% (n=87, n=33) of operational managers and registered nurses, respectively received training on IPT initiation. Opposed to that, 25% (n=4) of doctors, 18% (n=33) of operational managers and 18% (n=87) of registered nurses indicated that they were not trained on IPT initiation.

4.3.1.8 Type of training on IPT initiation (item A8)

One hundred and one (n=101) respondents received training on IPT initiation in different modalities. The types of training on IPT initiation is shown in Table 4.4.

Table 4.4 Type of training on IPT initiation

Type of IPT initiation training	Frequency	(%)
Workshop	71	70
From a colleague	21	21
Job orientation	9	9
Grand total	**101**	**100**

Seventy percent (n=101) of the respondents attended a workshop, 21% (n=101) received training from a colleague and 9% (n=101) received training through job orientation.

4.3.2 Health care professionals` knowledge on IPT initiation (section B)

The knowledge on IPT initiation questions were derived from the current South African National Department of Health IPT policy guidelines 2010. Respondents answered a total of 26 closed-ended, multiple-choice questions regarding IPT implementation. The questions included the following topics: exclusion of active TB, eligibility for IPT, when and how to start IPT, IPT and pregnancy, IPT in patients previously treated for TB and follow up (South Africa 2010:3–7). For the respondents to be declared knowledgeable on IPT initiation, s/he should have obtained 75% (19.5/26) in answering the knowledge questions; refer to section 3.3.4. One mark was allocated per correct answer; therefore, 19.5 was rounded off to 20 since there were no half marks.

4.3.2.1 Exclusion of active TB

The exclusion of TB is critical in order to avoid giving one anti-tuberculosis drug to patients with TB disease who require a full treatment regimen (South Africa 2010:3; 2015a:110). The presence of TB is ruled out before IPT is initiated.

In this study knowledge on exclusion of TB before IPT initiation comprised five questions. Respondents had to answer them to demonstrate that they were able to exclude TB before initiation of IPT. The five questions included these topics:

- Screening a patient for specific signs and symptoms (item B1)
- Criteria to declare a patient a TB suspect (items B2 and B10)
- Frequency of screening HIV positive patient for TB (item B7)
- Procedure to follow if active TB is identified (item B24)

A score out of the five questions was calculated for each respondent and these individual scores were used to determine the mean and median score for each employment category

Table 4.5 shows the response to knowledge on exclusion of TB per employment category.

Table 4.5 Exclusion of TB

		Exclusion of active TB score							
		Mean	**Count**	**Maximum**	**Median**	**Minimum**	**Percentile 75**	**Percentile 25**	**Standard Deviation**
What is your employment category?	Medical Practitioner/Doctor	4.25	4	5.00	4.00	4.00	4.50	4.00	.50
	Operational Manager	3.00	33	4.00	3.00	2.00	3.00	3.00	.50
	Registered Nurse	3.03	87	5.00	3.00	1.00	3.00	3.00	.72

The above table shows that operational managers' average knowledge on exclusion of TB (3.00) was less than that of registered nurses (3.03). Medical practitioners had more knowledge on the subject, with their average knowledge score being 4.25. The median scores show that generally registered nurses and operational managers had the same knowledge.

4.3.2.2 Eligibility for IPT

Eligibility for IPT deals with ascertaining whether the patient qualifies for IPT or not based on certain aspects as stipulated by the South African National Department of Health IPT Policy (South Africa 2010:4; 2015a:110).

In this study, knowledge on eligibility for IPT comprised of 8 questions. Respondents had to answer 8 questions to demonstrate that they are able to identify patient who are eligible for IPT before initiation. The 8 questions were as follows:

- Whether TB suspect is eligible for TB (item B3)
- Eligibility criteria (items B8, B9 and B13)
- Exclusion criteria for IPT (items B4, B11, B12 and B26)

A score out of the 8 questions was calculated for each respondent and these individual scores were used to determine the mean and median score for each employment category. Table 4.6 shows the response to knowledge on eligibility for IPT.

Table 4.6 Eligibility for IPT

		Eligibility for IPT							
		Mean	**Count**	**Maximum**	**Median**	**Minimum**	**Percentile 75**	**Percentile 25**	**Standard Deviation**
What is your employment category?	Medical Practitioner/Doctor	7.25	4	8.00	7.50	6.00	8.00	6.50	.96
	Operational Manager	6.97	33	8.00	7.00	5.00	8.00	6.00	1.05
	Registered Nurse	6.92	87	8.00	7.00	3.00	8.00	6.00	1.03

From the above table one can deduce that medical practitioners' knowledge on eligibility for IPT (mean=7.25) was more than that of operational managers (mean=6.97) who in turn were a bit more knowledgeable than registered nurses (mean=6.92). The median scores show that generally registered nurses and operational managers had the same knowledge.

4.3.2.3 When and how to start IPT

The information includes educating the patient on IPT, explaining the importance of IPT and adherence to treatment after commencing (South Africa 2010:6).

In this study knowledge on when and how to start IPT comprised five questions. Respondents had to answer them to demonstrate that they know when to start IPT and the procedure to be followed. The five questions covered these topics:

- Prerequisite for initiating IPT (item B5)
- Information to be given to patient on IPT initiation (items B17, B18, B19 and B20)

A score out of the five questions was calculated for each respondent and these individual scores were used to determine the mean and median scores for each employment category. Table 4.7 shows the responses to when and how to start IPT.

Table 4.7 When and how to start IPT

		When and How to start IPT							
		Mean	**Count**	**Maximum**	**Median**	**Minimum**	**Percentile 75**	**Percentile 25**	**Standard Deviation**
What is your employment category?	Medical Practitioner/Doctor	3.75	4	4.00	4.00	3.00	4.00	3.50	.50
	Operational Manager	3.73	33	5.00	4.00	2.00	4.00	3.00	.84
	Registered Nurse	3.91	87	5.00	4.00	2.00	5.00	3.00	.86

From the above table it is clear that registered nurses' knowledge on when and how to start IPT (mean=3.91) was greater than that of medical practitioners (mean=3.75) who in turn were a bit more knowledgeable than operational managers (mean=3.73). The median scores show that generally registered nurses, medical practitioners and operational managers have the same knowledge.

4.3.2.4 IPT and pregnancy

Active TB during pregnancy is associated with spontaneous abortions and adverse perinatal outcomes (South Africa 2010:3). Respondents' knowledge was tested to check if they know how to manage an HIV positive pregnant woman.

In this study knowledge on IPT and pregnancy comprised two questions. Respondents had to answer them to demonstrate that they know how to manage HIV positive pregnant women. The two questions covered the following topics:

- When to start IPT during pregnancy (item B21)
- How to manage a woman who falls pregnant while taking IPT (item B22)

A score out of the two questions was calculated for each respondent and these individual scores were used to determine the mean and median scores for each employment category. Table 4.8 shows the responses to IPT and pregnancy.

Table 4.8 IPT and pregnancy

		IPT and Pregnancy							
		Mean	**Count**	**Maximum**	**Median**	**Minimum**	**Percentile 75**	**Percentile 25**	**Standard Deviation**
What is your employment category?	Medical Practitioner/Doctor	2.00	4	2.00	2.00	2.00	2.00	2.00	.00
	Operational Manager	1.70	33	2.00	2.00	1.00	2.00	1.00	.47
	Registered Nurse	1.60	87	2.00	2.00	.00	2.00	1.00	.60

From the above table it is clear that medical practitioners' knowledge on IPT and pregnancy (mean=2.00) was more than that of operational managers (mean =1.7) who in turn were a bit more knowledgeable than registered nurses (mean=1.6). The median scores show that generally registered nurses, medical practitioners and operational managers have the same knowledge.

4.3.2.5 IPT in patients previously treated for TB

IPT provides benefit to patients who successfully complete TB treatment. IPT can be started after successful completion of TB treatment or at any time after a previous episode of TB, provided that active TB disease is excluded (South Africa 2010:5).

In this study knowledge on IPT in patients previously treated for TB comprised two questions. Respondents had to answer them to demonstrate that they know how to manage patients who were previously treated for TB. The topics were as follows:

- When to start IPT in patients previously treated for TB (item B23)
- Rationale for initiating IPT in patient previously treated for TB (item B25)

A score out of the two questions was calculated for each respondent and these individual scores were used to determine the mean and median scores for each employment category. Table 4.9 shows the response to IPT in patients previously treated for TB.

Table 4.9 IPT in patients previously treated for TB

		IPT in previously treated for TB							
		Mean	Count	Maximum	Median	Minimum	Percentile 75	Percentile 25	Standard Deviation
What is your employment category?	Medical Practitioner/Doctor	2.00	4	2.00	2.00	2.00	2.00	2.00	.00
	Operational Manager	1.18	33	2.00	1.00	.00	2.00	.00	.85
	Registered Nurse	1.23	87	2.00	1.00	.00	2.00	1.00	.82

From the above it is clear that medical practitioners' knowledge on IPT in those previously treated for TB (mean=2.00) was more than that of registered nurses (mean=1.23) who in turn are a bit more knowledgeable than operational managers (mean=1.18). The median scores show that generally registered nurses and operational managers had the same knowledge.

4.3.2.6 Follow up of patients on IPT

Patients who are on IPT are given a one-month supply of treatment. They are expected to return to the facility on a monthly basis where the health care registered will continue to provide on-going counselling, assessing the presence of side effects or any other challenges (South Africa 2010:5; 2015a:110).

In this study knowledge on the follow up of patients on IPT comprised three questions. Respondents had to answer them to demonstrate that they are able to provide follow up services to patients receiving IPT. The topics covered were as follows:

- IPT drug supply to patients (item B14)
- Duration for taking IPT (item B15)
- TB screening for patients receiving IPT (item B16)

A score out of the three questions was calculated for each respondent and these individual scores were used to determine the mean and median scores for each employment category. Table 4.10 shows the responses to following up patients on IPT.

Table 4.10 Follow up of patients on IPT

		Follow-up							
		Mean	**Count**	**Maximum**	**Median**	**Minimum**	**Percentile 75**	**Percentile 25**	**Standard Deviation**
What is your employment category?	Medical Practitioner/Doctor	2.75	4	3.00	3.00	2.00	3.00	2.50	.50
	Operational Manager	2.45	33	3.00	3.00	1.00	3.00	2.00	.67
	Registered Nurse	2.37	87	3.00	2.00	.00	3.00	2.00	.67

From the above one can deduce that medical practitioners' knowledge on IPT follow-up (mean=2.75) was more than that of operational managers (mean=2.45) who in turn were a bit more knowledgeable than registered nurses (mean=2.37). The median scores show that generally medical practitioners and operational managers had the same knowledge.

4.3.2.7 Overall score summary per knowledge question

There were 26 knowledge questions. The average knowledge score of the respondents was 20.12. The average knowledge score was attained by adding the scores obtained by the individual respondents (N=124) and dividing the total score by the number of respondents (N=124). Fifty percent (N=124) of respondents obtained more than 20 correct marks out of the 26 questions, which means they obtained more than 75%. Twenty-five percent (N=124) of respondents obtained more than 22 correct marks (more than 84%). Opposed to that, 25% (N=124) of respondents obtained less than 18 correct marks. The maximum individual score was 25 correct marks (96%) and the minimum individual score, which was also an outlier, was 7 correct marks (26.9%). Figure 4.5 shows scores per knowledge question.

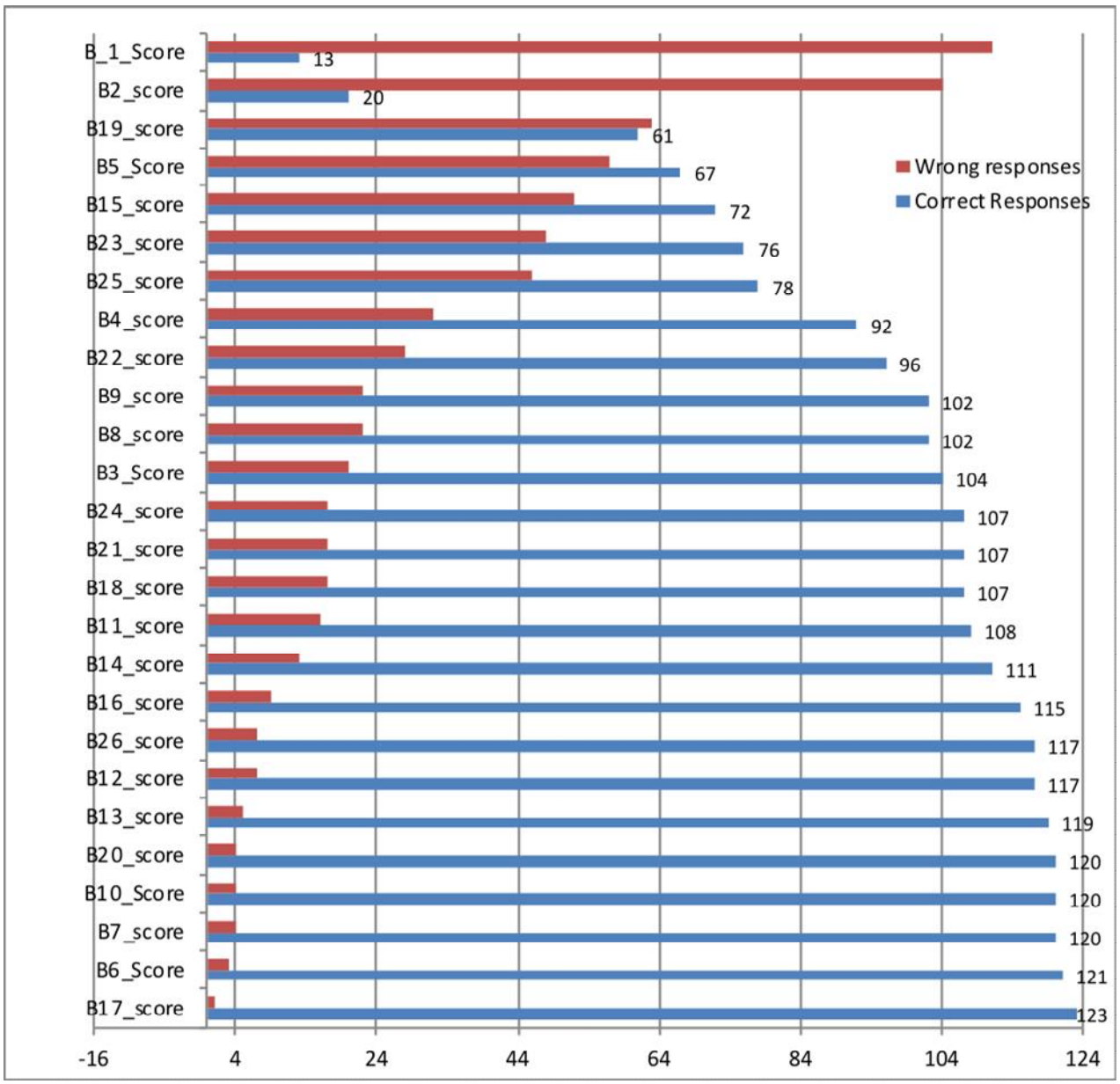

Figure 4.5 Scores per knowledge question

The most correctly answered knowledge question was “Information about TB, including preventive therapy, should be made available to all people living with HIV/AIDS” (B17) with 99.2% (n=123) of respondents answering it correctly. The most incorrectly answered question was the question on signs and symptoms to be screened prior to the initiation of IPT (B1), with only 10.5% (n=13) of respondents answering it correctly. Questions B 19 and B 5 almost had 50-50 splits in proportions of respondents getting it wrong or right. These questions were: “It is not recommended that IPT be initiated immediately after informing a patient of his/her HIV status” and “TB preventive therapy should only be offered if the following prerequisites can be met” respectively. Table 4.11 shows the overall knowledge score on IPT.

Table 4.11 Overall knowledge score on IPT

Statistic	Mean	Count	Maximum	Minimum	Median	Percentile 25	Percentile 75	Standard Deviation
Overall Knowledge Score	20,12	124	25,00	7,00	20,00	18,00	22,00	2,74

The median score was 20, which means fifty percent (N=124) of the respondents obtained 20 correct marks and 25% of the respondents obtained 22 or more correct marks. The other 25% (N=124) of respondents obtained fewer than 20 correct marks. There was an outlier: the respondent with a score of 7.

Table 4.12 Overall knowledge score

Statistics		
Overall knowledge score		
N	Valid	124
	Missing	0
Skewness		-.979
Std. Error of skewness		.217
kurtosis		3.018
Std. Error of kurtosis		.431
kurtosis		.431

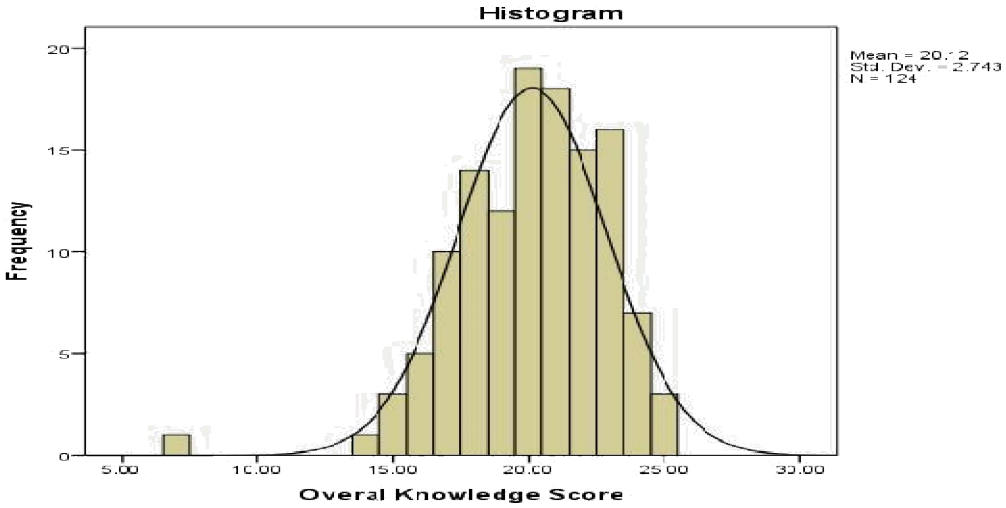

Figure 4.6 Overall knowledge score

A closer look at the shape of the histogram of the knowledge scores show that the scores are normally distributed. The kurtosis of 3.018 also verifies the assumption.

4.3.2.8 Overall knowledge score by educational level (item A1)

The educational levels of respondents were as follows: One percent of respondents (N=124) reported to have a certificate (refer to section 3.3.5), 60% (N=124) of respondents had a diploma, 23% (N=124) had an undergraduate degree, 14% (N=124) of respondents had an Honours degree, 3% (N=124) of respondents had a Master's degree and 1% (N=124) of respondents had a PhD degree. Most of the respondents were Diploma holders. Table 4.13 shows the respondents' knowledge score by educational level.

Table 4.13 Overall knowledge score by educational level

Educational level	Count	Mean	Minimum	Maximum	Median
Certificate	1	22	22.00	22.00	22.00
Diploma	74	19.68	7.00	25.00	20.00
Undergraduate degree	28	21	16.00	25.00	21.50
Honours/B Tech	17	20.29	15.00	24.00	21.00
Masters	3	21	17.00	23.00	23.00
PhD/Doctorate	1	21	21.00	21.00	21.00

The diploma holders had the lowest average knowledge score of 19.7; however, the diploma respondent who reported to be a certificate holder (refer to section 3.3.5) had the highest average knowledge score of 22. The minimum score of 7 was from a diploma holder and the highest score of 25 was from the same category of diploma holders. The highest median score of 23 was amongst the Master's holders and lowest median score of 20 was amongst diploma holders.

4.3.2.9 Overall knowledge score by years of service in facility

Figure 4.3 shows that sixty-seven percent (N=124) of respondents worked at their facility for more than five years, 30% (N=124) worked from one to five years and 2% (N=124) worked for less than a year. One percent (N=124) of respondents did not to respond to the question. Table 4.14 shows the respondents' knowledge score by years of service in a facility.

Table 4.14 Overall knowledge score by years of service in facility

		Count	Mean	Min	Max	Median	Percentile 25	Percentile 75	Standard Deviation
How long have you worked in this	Non-response	1.0	21.0	21.0	21.0	21.0	21.0	21.0	
	<1 Year	3.0	19.0	18.0	20.0	19.0	18.0	20.0	1.0
	1–5 Years	37.0	21.0	16.0	25.0	21.0	18.0	22.0	2.9
	>5 Years	83.0	19.8	7.0	25.0	20.0	18.0	22.0	2.9

Those who worked in the facility for less than one year had the lowest average knowledge score of 19 as well as the lowest median knowledge score of 19. The maximum score of 25 was co-obtained by staff whose service in the facility was between one to five years and above five years respectively. There was a greater variance of scores within those with above five years of service, judging by the relatively larger standard deviation. The results seem to suggest that the more one stays in a facility, the more knowledgeable s/he becomes on IPT initiation.

4.3.2.10 Overall knowledge score by years of service offering HIV/AIDS and TB services (item A3)

Figure 4.4 shows that thirty-eight percent (N=124) of respondents had offered HIV/AIDS and TB services for six to ten years, those who had offered these services for either 11 to 15 years or two to five years were equal in number 23% (N=124). However, the more experienced respondents who offered the service for 16 years and above were 17% (N=124).

Table 4.15 shows the knowledge score by years of service offering HIV/AIDS and TB service.

Table 4.15 Overall knowledge score by year of service offering HIV/AIDS and TB services

		Count	Mean	Min	Max	Median	Percentile 25	Percentile 75	Standard Deviation
Years of service providing HIV/AIDS and TB services	16 years and above	21.0	19.9	15.0	24.0	20.0	18.0	22.0	2.5
	11–15 years	28.0	20.3	7.0	25.0	20.5	18.5	23.0	3.8
	6–10 years	47.0	19.8	14.0	24.0	20.0	18.0	22.0	2.5
	2–5 years	28.0	20.7	16.0	23.0	21.0	20.0	22.0	1.9

The respondents who had between six to ten years' experience in offering HIV/AIDS and TB services had the lowest average knowledge score (19.8) on IPT initiation. Respondents with experience of between two to five years offering HIV/AIDS and TB services had the highest average knowledge score with the lowest variance from this average (standard deviation of 1.9). The median scores for all categories of experience offering HIV/AIDS and TB services were generally the same, between 20 and 21, although there was a greater variance between those in the 11–15 years of experience group (standard deviation of 3.8).

4.3.2.11 Overall knowledge score by employment category (item A4)

The researcher analysed the knowledge score by comparing the three categories of employment, namely doctors, operational managers and registered nurses. Table 4.16 shows the analysis of knowledge score by employment category.

Table 4.16 Overall knowledge score by employment category

Employment Category	Count	mean	min	max	median	Percentile 25	Percentile 75	Standard Deviation
Medical Practitioner/Doctor	4,0	23,0	21,0	25,0	23,0	22,0	24,0	1,6
Operational manager	33,0	20,0	15,0	25,0	20,0	18,0	22,0	2,6
Registered Nurse	87,0	20,0	7,0	25,0	20,0	18,0	22,0	2,8

Medical practitioners had the highest average score of 23 on knowledge of IPT initiation while operational managers and registered nurses both had an average knowledge score of 20. The mean score of all employment categories were the same as the median scores. All three employment categories had one or more members with the highest score of 25.

4.3.2.12 Overall knowledge score by training on HIV/TB collaboration activities (item A5)

Hundred and eleven respondents (n=111) were trained on HIV/TB collaboration activities. The respondents' knowledge was analysed by training on HIV/TB collaborative activities as shown in Table 4.17.

Table 4.17 Overall knowledge score by training on HIV/TB collaboration activities

		Count	Mean	Min	Max	Median	Percentile 25	Percentile 75	Standard Deviation
Trained on TB/HIV collaborative activities	No	13	20.10	16.0	23.0	21.0	18.0	21.0	2.1
	Yes	111	20.10	7.0	25.0	20.0	18.0	22.0	2.8

Average knowledge scores on IPT initiation did not differ between those trained on HIV/TB collaboration although the median score for those not trained on HIV/TB collaboration was higher (21) than those trained on HIV/TB collaboration. However, the maximum score was obtained from the category of staff trained on HIV/TB collaboration.

4.3.2.13 Overall Knowledge score by training on IPT initiation

One hundred and one respondents (n=101) were trained on IPT initiation. The knowledge score was analysed by training on IPT initiation as shown in Table 4.18.

Table 4.18 Overall knowledge score by training on IPT initiation

		Count	Mean	Min	Max	Median	Percentile 25	Percentile 75	Standard Deviation
Trained on IPT initiation	No	23	20.0	16.0	24.0	20.0	18.0	22.0	2.2
	Yes	101	20.2	7.0	25.0	20.0	18.0	22.0	2.9

The average knowledge of IPT initiation score was marginally higher (20.2) in the category of staff trained on IPT initiation than those not trained on IPT initiation (20). However, the median knowledge scores were the same (20). The maximum score was amongst staff category trained on IPT initiation. Generally, nothing significant separates those trained on IPT from those not trained on IPT in terms of their knowledge on IPT.

4.3.3 Health care professionals' IPT initiation practice (section C)

In this section the researcher determined the practice of IPT initiation at heath facilities. The response is categorised as strongly agree, agree, do not know, disagree and strongly disagree. The strongly agree response indicates the consistency in implementing the practice whereas strongly disagree implies non-compliance to the practice.

4.3.3.1 Knowledge of the official policy and procedures describing IPT initiation (item C1)

Respondents were asked if they know the policy and procedures describing IPT initiation. Respondents with strongly agree responses (46%; N=118) and agree responses (49%; N=118) were familiar with the official policy and procedures describing IPT initiation. Respondents with disagree responses (1%; N=118) reported that they did not have knowledge of the official policy and procedures describing IPT initiation. Of the respondents, 4% (N=118) reported ignorance or non-familiarity with the official policy and procedures, whereas six of the respondents did not respond to the question. Table 4.19 shows the response to knowledge of the official policy and procedures describing IPT initiation.

Table 4.19 Knowledge of the official policy and procedures describing IPT initiation

Response	Frequency	(%)
Strongly Agree	0	0
Disagree	1	1
Do not Know	5	4
Agree	58	49
Strongly Agree	54	46
Total	**118**	**100**

A closer look at those in the strongly agree and agree response groups shows these responses were offered by a greater proportion of medical practitioners, Masters' degree holders, those having worked in a facility for more than five years, those who had offered HIV/AIDS and TB services for 16 years and above, and those who had trained on both HIV/TB collaboration and IPT initiation.

4.3.3.2 Practice of eligibility screening of all HIV positive patients for IPT (item C2)

All respondents (N=124) agreed to the practice of screening all HIV positive patients for IPT eligibility. There were more strongly agree responses (72%; N=124) than agree responses (28%; N=124). This implies that there is a 100% chance of HIV patients being screened for IPT eligibility although there is an assurance probability of 72%. Table 4.20 shows the response to the practice of eligibility screening of all HIV positive patients for IPT.

Table 4.20 Practice of eligibility screening of all HIV positive patients for IPT

Response	Frequency	(%)
Strongly Agree	89	72
Agree	35	28
Do not know	0	0
Disagree	0	0
Strongly Disagree	0	0
Total	**124**	**100**

Respondents more likely to consistently (strongly agree response) screen HIV positive patients are medical practitioners, Masters' degree holders, those who had served in a facility between one to five years, those who had offered HIV/AIDS and TB services for 16 years and above, and those who had trained on both HIV/TB collaboration and IPT initiation.

4.3.3.3 Provision of IPT to eligible HIV positive patients (item C3)

Seventy-two percent (N=122) of respondents strongly agreed; this means that they were consistent in the provision of IPT to eligible HIV positive patients. The respondents who agreed to providing IPT to eligible HIV positive patients were 28% (N=122). This gives an estimated agreement in principle of 100% but a guaranteed consistency in issuing IPT of 72% amongst the sampled respondents. However, 2% (N=124) of respondents did not respond to the question. Table 4.21 shows the provision of IPT to eligible HIV positive patients.

Table 4.21 Provision of IPT to eligible HIV positive patients

Response	Frequency	(%)
Strongly Agree	88	72
Agree	34	28
Do not know	0	0
Disagree	0	0
Strongly Disagree	0	0
Total	**122**	**100**

Respondents more likely to consistently provide IPT to eligible HIV positive patients were both medical practitioners and registered nurses, Master's degree holders, those who had served in a facility between one to five years, those who had offered HIV/AIDS and TB services for any time period and those who had trained on both HIV/TB collaboration and IPT initiation.

4.3.3.4 Recording of patient IPT initiations in the registers or book (item C4)

One hundred and twenty-two (N=122) respondents gave answers to the question. Fifty percent (N=122) of respondents strongly agreed that they recorded IPT initiation in the facility registers or books. Both respondents who strongly agree and agreed combined

to make 91.8%. The respondents who strongly disagreed and disagreed combined to make 6.5%. This means that this latter group of respondents did not record IPT initiation in a register or book. The respondents who reported that they did not know whether they recorded IPT initiation in a register or book were 1.6%. Table 4.22 shows the recording of patient IPT initiation in a register or book.

Table 4.22 Recording of patient IPT initiation in registers or books

Response	Frequency	(%)
Strongly Agree	61	50
Agree	51	41.8
Do not Know	2	1.6
Disagree	7	5.7
Strongly Disagree	1	0.8
Total	**122**	**100.0**

Respondents more likely to consistently record IPT initiations in a register or book were registered nurses, undergraduate degree holders, those who had served in the facility between one to five years, those who had offered HIV/AIDS and TB services for 11−15 years and those trained on IPT initiation. There was no big distinction between those who were and were not trained on HIV/TB collaboration

4.3.3.5 Recording of information on IPT initiation in the patients' facility files (item C5)

One hundred and twenty-three respondents gave answers to the question. Sixty-eight (N=123) of respondents strongly agreed and 30% (N=123) agreed to the practice of recording IPT initiation in the patient files. The combination of respondents who recorded IPT initiation information in the patients` files was 98%. However, there were respondents who strongly disagreed (1%; N=123) and disagreed (1%; N=123) to the practice. Table 4.23 shows the recording of information on IPT initiation in the patients' files response.

Table 4.23 Recording of information on IPT initiation in the patients' facility files

Response	Frequency	(%)
Strongly Disagree	1	1
Disagree	1	1
Do not know	0	0
Agree	37	30
Strongly Agree	84	68
Total	**123**	**100**

Respondents more likely to consistently record IPT initiations in a patient file were medical practitioners, Master's degree holders, those who had served in the facility between one to five years, those who had offered HIV/AIDS and TB services for 16 years and above, and those not trained in either HIV/TB collaboration or IPT initiation.

4.3.3.6 Capturing of IPT initiated patients on a computer by a nurse or data capturer (item C6)

Respondents were asked whether the data capturers or nurses captured all HIV positive patients initiated on IPT on the computer. One hundred and twenty two (N=122) respondents answered the question. Of those respondents, 51.6% (N=122) strongly agreed and 37.7% (N=122) agreed to the practice of capturing IPT initiations on a computer.

However, 4.9% (N=122) of respondents were not sure about the capturing of IPT information on the computer. The respondents with strongly disagree and disagree answers combined to make 5.6% (N=122), meaning they reported no capturing of IPT initiated patients on a computer at their facilities. Table 4.24 shows the responses to capturing of IPT initiated patients on a computer by a nurse or data capturer.

Table 4.24 Capturing of IPT initiated patients on a computer by a nurse or data capturer

Response	Frequency	(%)
Strongly Disagree	2	1.6
Disagree	5	4.0
Do not Know	6	4.9
Agree	46	37.7
Strongly Agree	63	51.6
Total	**122**	**100.0**

Respondents more likely to ensure capturing of IPT initiation records in an electronic system were registered nurses, Master's degree holders, those who had served in a facility between one to five years, those who had offered HIV/AIDS and TB services from 6 to 15 years and those who were not trained on HIV/TB collaboration but were indeed trained on IPT initiation.

4.3.3.7 Follow-up of non-initiated patients (C7)

The respondents were asked if they gave a follow-up date to all HIV positive patients who were not immediately initiated on IPT. One hundred and twenty-one (N=121) respondents answered the question. Of the respondents, 63.6% (N=121) strongly agreed and 34.7% (N=121) agreed to the practice of giving the patients a follow-up appointment. Only 0.8% (N=121) of the respondents strongly disagreed to the practice and 0.8% (N=123) reported a lack of knowledge on the practice. Table 4.25 shows the responses to follow-up of non-initiated patients.

Table 4.25 Follow up of non-initiated patients

Response	Frequency	(%)
Strongly Disagree	1	0.8
Disagree	0	0.0
Do not Know	1	0.8
Agree	42	34.7
Strongly Agree	77	63.6
Total	**121**	**100.0**

Respondents more likely to follow up on patients not initiated on IPT were medical practitioners, undergraduate degree holders, those who had served in the facility between one to five years, those who had offered HIV/AIDS and TB services from 11–15 years, those who had been trained on IPT initiation, more or less regardless of training status on HIV/TB collaboration.

4.3.3.8 IPT adherence counselling to patients (item C8)

Respondents were asked if they advised the patients to adhere to IPT treatment. One hundred and twenty-three (N=123) respondents answered the question. All respondents reported that they provided adherence counselling to the patients, with 72.4% (N=123) strongly agreeing and 27.6% (N=123) agreeing to the practice. Table 4.26 shows the responses to the IPT adherence counselling.

Table 4.26 IPT adherence counselling to patients

Response	Frequency	(%)
Strongly Agree	89	72.4
Agree	34	27.6
Do not Know	0	0.0
Agree	0	0.0
Strongly Agree	0	0.0
Total	**123**	**100.0**

Respondents more likely to offer consistent adherence counselling were the medical practitioners, registered nurses, Masters' degree holders, those who had served in a facility between one to five years, those who had offered HIV/AIDS and TB services for 16 years and above, and those trained on both HIV/TB collaboration and IPT initiation.

The respondents were asked to explain how they advised clients to adhere to IPT treatment. The explanation given was that patients were taught of the benefit of IPT and the importance of the follow-up date; they were reminded of the importance to take treatment at the same time every day and to complete the course of treatment. They were also advised not to mix treatment with indigenous medication.

4.3.3.9 Monitoring and management of IPT toxicity (item C9)

The respondents were asked if they always monitored and managed clients with IPT drug toxics. One hundred and twenty-two (N=122) respondents answered the question. The combination of strongly agree and agree respondents were 94.3% (n=115), with 49.2% (n=60) strongly agreeing to the practice. Of the respondents, 0.8% (N=122) strongly disagreed and 2.5% (N=122) disagreed to the practice of monitoring and managing IPT toxicity. The other 2.5% (N=122) of respondents reported a lack of knowledge regarding the practice. Table 4.27 shows responses to monitoring and management of IPT toxicity.

Table 4.27 Monitoring and management of IPT toxicity

Response	Frequency	(%)
Strongly Disagree	1	0.8
Disagree	3	2.5
Do not Know	3	2.5
Agree	55	45.1
Strongly Agree	60	49.2
Total	**122**	**100.0**

Respondents more likely to consistently monitor and manage the toxicity of IPT drugs were medical practitioners, Masters' degree holders, those who had served in the facility for more than five years, those who had offered HIV/AIDS and TB services between 11 and 16 years and those who were not trained on HIV/TB collaboration but were indeed trained on IPT initiation.

4.3.3.10 Overall IPT practice response

Table 4.28 shows the overall IPT practice responses.

Table 4.28 Overall IPT practice

	Response	5.Strongly Agree	4.Agree	3.Do not Know	2.Disagree	1.Strongly Disagree
C1	I know the official policy and procedures describing IPT initiation.	54	58	5	1	0
C2	I screen all HIV positive patients eligible for IPT.	89	35	0	0	0
C3	I provide IPT for eligible HIV positive patients.	88	34	0	0	0
C4	I record all patients initiated on IPT in the register or book.	61	51	2	7	1
C5	I record information on IPT initiation in the patients' facility file.	84	37	0	1	1
C6	The data capturer/nurse captures all HIV positive patients initiated on IPT in the computer.	63	46	6	5	2
C7	I give all HIV positive patients who were not immediately initiated on IPT a follow-up date.	77	42	1	0	1
C8	I advise clients to adhere to IPT treatment.	89	34	0	0	0
C9	I always monitor and manage clients with IPT drug toxics.	60	55	3	3	1

The most strongly agreed with practices were "advising patients to adhere to IPT, screening all HIV positive patients for IPT eligibility and providing or initiating eligible HIV positive patients on IPT". Recording of IPT information into the register or book received the least of the agreeing responses. Capturing of all HIV positive patients initiated on IPT by a nurse or data capturer gave the most ignored or non-compliant responses.

4.3.4 Resource availability (section D)

This section discusses the resources required for effective IPT initiation practice, namely a functional computer for capturing IPT initiation information, a register or book to record IPT initiation, TB screening questionnaires to screen HIV positive patients for

TB, policy guidelines on IPT initiation, shortage of the Isoniazid drug and electricity failure or power cuts.

4.3.4.1 Availability of functional computer (item D1)

Respondent were asked if there was a functional computer at their facility to capture IPT information. One hundred and twenty-three (N=123) respondents answered the question. Of the respondents, 95.9% (N=123) reported that there was functional computer in the facility; however, 4.1% (N=123) reported unavailability of a functional computer. The response to the availability of a functional computer is shown in Table 4.29.

Table 4.29 Availability of a functional computer

Response	Frequency	(%)
Yes	118	95,9
No	5	4,1
Total	**123**	**100,0**

Of the respondents who reported functional computers at their facilities, 3.5% (n=118) were doctors, 27.1% (n=118) were operational managers and 71.2% (n=118) were registered nurses. Of the respondents who reported the unavailability of functional computers, all (n=5) were registered nurses.

4.3.4.2 Availability of a register or book to record IPT (item D2)

Respondents were asked if there was a register or book to record IPT initiation. One hundred and twenty respondents answered the question. The respondents who reported the availability of a register or book to record IPT initiation were 71.7% (N=120), whereas 28.3% (N=120) reported unavailability of a register or book to record IPT initiation. Table 4.30 shows the responses to the availability of a register or book to record IPT initiation.

Table 4.30 Availability of a register or book to record IPT

Response	Frequency	(%)
Yes	86	71.7
No	34	28.3
Total	**120**	**100.0**

Of the respondents who reported the availability of a register or book to record IPT initiation, 3.5% (n=86) were doctors, 27.9% (n=86) were operational managers and 73.3% (n=86) were registered nurses. The respondents who did not respond to the question were from the operational managers and registered nurses categories.

4.3.4.3 Availability of TB screening questionnaires (item D3)

The respondents were asked if there were TB screening questionnaires at their facilities. The TB screening tools assist in asking the patients questions that would exclude those with active TB prior to initiation of IPT. One hundred and twenty-two (N=122) respondents responded to the question. Of the respondents, 95.9% (N=122) reported the availability of TB screening questionnaires at facilities; however, 4.1% (N=122) reported unavailability of the questionnaires. Table 4.31 shows the responses to the availability of TB screening questionnaires.

Table 4.31 Availability of TB screening questionnaires

Response	Frequency	(%)
Yes	117	95.9
No	5	4.1
Total	**122**	**100.0**

All doctors (n=4) agreed to the availability of questionnaires. Of the respondents who reported availability of TB screening questionnaires, 71.8% (n=117) were registered nurses and 24.8% (n=117) were operational managers. Of the respondents who reported a lack of guidelines, 60% (n=5) were registered nurses and 40% (n=5) were operational managers. The respondents who did not respond to the question were an operational manager and a registered nurse.

4.3.4.4 Availability of policy guidelines on IPT (item D4)

Respondents were asked if there were guidelines on IPT initiation at their facilities. The South African National Department of Health has developed a policy guideline for IPT initiation. The guideline gives directives on how to screen and manage patients who are eligible for IPT initiation.

One hundred and twenty-two (N=122) respondents responded to the question. Of the respondents, 96.7% (N=122) reported the availability of IPT guidelines at their facilities. However, 3.3% (N=122) of respondents reported the unavailability of IPT guidelines at their facilities. Table 4.32 shows the responses to the availability of the policy guidelines on IPT.

Table 4.32 Availability of policy guidelines on IPT

Response	Frequency	(%)
Yes	118	96.7
No	4	3.3
Total	**122**	**100.0**

Of the respondents who reported the availability of IPT guidelines, 72% (n=118) were registered nurses and 24.6% (n=118) were operational managers. Of the respondents who reported the unavailability of IPT guidelines, 75% (n=4) were operational managers and 25% (n=4) were registered nurses. The respondents who did not respond to the question were all registered nurses.

4.3.4.5 Shortage of Isoniazid medication (item D5)

The respondents were asked if they had experienced shortage of the drug Isoniazid at the facility in the past six months. One hundred and twenty-one (N=121) respondents answered the question. Of the respondents, 70.2% (N=121) reported that there was no shortage of Isoniazid medication. However, 29.8% (N=121) of respondents reported that they had experienced a shortage of Isoniazid medication in the past six months. Table 4.33 shows the responses to the shortage of Isoniazid medication.

Table 4.33 Shortage of Isoniazid medication

Response	Frequency	(%)
Yes	36	29.8
No	85	70.2
Total	**121**	**100.0**

All doctors (n=4) reported no shortage of Isoniazid medication. Of the respondents who reported no shortage of Isoniazid medication, 64.7% (n=85) were registered nurses and 30.6% (n=85) were operational managers. Of the respondents who reported a shortage of Isoniazid medication, 86.1% (n=36) were registered nurses and 13.9% (n=36) were operational managers. Two registered nurses and one operational manager did not respond to the question.

The respondents were given an open question to give an explanation on shortage of Isoniazid medication. The explanation given by those who responded was that the shortage had been a result of inadequate stock at the pharmaceutical depot.

4.3.4.6 Electricity failure or power cuts (item D6)

The respondents were asked if they had experienced electricity failure or power cuts at the facility in the past six months. One hundred and nineteen (N=119) respondents answered the question. Of the respondents, 59.7% (N=119) reported that they had never experienced electricity failure or power cuts. However, 40.3% (N=119) of respondents reported that they had experienced a power cut or electricity failure in the past six months. Table 4.34 shows the responses to electricity failure or power cuts.

Table 4.34 Electricity failure or power cuts

Response	Frequency	(%)
Yes	48	40.3
No	71	59.7
Total	**119**	**100.0**

Of the respondents who reported no electricity failure or power cuts, 63.4% (n=71) were registered nurses, 30.9% (n=71) were operational managers and 5.6% (n=71) were doctors. Of the respondents who reported electricity failure or power cuts, 20.8% (n=48)

were operational managers and 79.2% (n=48) were registered nurses. Five registered nurses did not respond to the question.

The respondents were given an open question to give an explanation on electricity failure or power cuts. The explanation given by those who responded was that the power cuts they had experienced occurred during municipal maintenance, that it did not take the whole day and that the health facility was issued with a notice beforehand.

4.3.4.7 Overall resource availability

Table 4.35 shows the responses to the overall resource availability.

Table 4.35 Overall resource availability

	Response	Yes	No
D1	A functional computer to capture IPT initiation	118	5
D2	A register or a book to record IPT initiation	86	34
D3	TB screening questionnaires to screen HIV positive patients for TB	117	5
D4	Guidelines on IPT initiation	118	4
D5	A shortage of Isoniazid medication	36	85
D6	Electricity failure or a power cut	48	71

The resources that were mostly reported to be available were: a functional computer to capture IPT initiation; guidelines on IPT initiation and TB screening questionnaires to screen HIV positive patients for TB. Some of the respondents reported electricity failure or a power cut and a shortage of Isoniazid medication.

4.3.5 General challenges experienced by health care professionals (section E)

In this section the researcher determined the challenges respondents experienced at facilities. The statements were formulated in a negative form and findings are reported accordingly.

4.3.5.1 Constant shortage of Isoniazid medication (item E1).

The respondents were asked if they experienced a shortage of Isoniazid medication most of the time. One hundred and twenty (N=120) respondents answered the question. Of the respondents, 48.3% (N=120) strongly disagreed that there was a constant shortage of Isoniazid, while 35% (N=120) of respondents disagreed with the statement. The combination of those respondents who strongly disagreed and those who disagreed were 83.3% (N=120) in total. In contrast, 14.2% (N=120) of respondents reported constant shortage of Isoniazid medication. There were 2.5% (N=120) respondents who reported that they do not know whether they have experienced constant shortage of Isoniazid medication or not. Table 4.36 shows the responses to the shortage of Isoniazid medication.

Table 4.36 There is always a shortage of Isoniazid medication

Response	Frequency	(%)
Strongly Disagree	42	35.0
Disagree	58	48.3
Do not Know	3	2.5
Agree	17	14.2
Strongly Agree	0	0.0
Total	**120**	**100.0**

Of the respondents who reported no shortage of Isoniazid medication (combination of strongly disagree and disagree), 69% (n=100) were registered nurses, 27% (n=100) operational managers and all doctors (n=4). From the respondents who reported a shortage of Isoniazid medication, 82.4% (n=17) were registered nurses and 17.6% (n=17) were operational managers.

4.3.5.2 Refusal of IPT initiation by some patients (item E2)

The respondents were asked if they had experienced any patients refusing IPT initiation. One hundred and twenty-two (N=122) respondents answered the question. The combination of respondents who strongly disagreed and disagreed, 94.2% (N=122), reported that no patients refused IPT initiation. However, 4.9% (N=122) of respondents reported that some patients did refuse IPT initiation (the combination of strongly agree and agree). Only 0.8% (N=122) of respondents reported that they did not

know whether some patients refused IPT initiation or not. Table 4.37 shows the responses to patients refusing IPT initiation.

Table 4.37 Some of the patients refuse IPT initiation

Response	Frequency	(%)
Strongly Disagree	58	47.5
Disagree	57	46.7
Do not know	1	0.8
Agree	4	3.3
Strongly Agree	2	1.6
Total	**122**	**100.0**

Of the respondents who reported that no patient refused IPT initiation, 80% (n=115) were registered nurses and 16.5% (n=115) were operational managers; all respondents who were doctors (n=4) reported patient refusal. Of the respondents who reported that some patients refused IPT initiation, 66.7% (n=6) were registered nurses and 33.3% (n=6) were operational managers. The respondent (0.8%, N=122) who did not know whether or not some patients refused IPT initiation was a registered nurse.

4.3.5.3 Occasional non-functional computer (item E3)

The respondents were asked if they had occasionally experienced their facility's computers being non-functional. One hundred and twenty-two (N=122) respondents answered the question. Most of the respondents (69.6%, N=122) reported that the facility computers were always functional (combination of strongly disagree and disagree responses). However, 27.8% (N=122) of respondents reported that facility computers were sometimes non-functional (combination of agree and strongly agree responses). Some respondents, 2.5% (N=122), reported that they did not know if the computers were sometimes non-functional. Table 4.38 shows the responses to the non-functionality of the computers.

Table 4.38 The computer is sometimes not functional

Response	Frequency	(%)
Strongly Disagree	39	31.9
Disagree	46	37.7
Do not Know	3	2.5
Agree	27	22.1
Strongly Agree	7	5.7
Total	**122**	**100.0**

Of the respondents that reported no challenge with the functionality of computers, 72.9% (n=85) were registered nurses and 22.4% (n=85) were operational managers. All respondents who were doctors (n=4) reported no challenge in this regard. Half of the respondents, 50% (n=34), who reported non-functional computers were operational managers and the other half, 50% (n=34), were registered nurses.

4.3.5.4 Lack of registers or books to record IPT initiation (item E4)

The respondents were asked if they had experienced a lack of registers or books in which to record IPT initiation. One hundred and twenty (N=120) respondents answered the question. Most of the respondents (71.7%, N=120) indicated that the lack of registers or books was not a challenge (combination of strongly disagree and disagree responses). There were however 27.5% (N=120) of respondents who reported that a lack of registers or books posed a challenge for recording IPT initiation (combination of strongly agree and agree responses). Table 4.39 shows the response to unavailability of registers or books to record IPT initiation.

Table 4.39 There are no registers or books to record IPT initiation

Response	Frequency	(%)
Strongly Disagree	51	42.5
Disagree	35	29.2
Do not Know	1	0.8
Agree	23	19.2
Strongly Agree	10	8.3
Total	**120**	**100.0**

Of the respondents who reported that a lack of registers or books to record IPT initiation was not a challenge, 73.2% (n=86) were registered nurses, 23.3% (n=86) were operational managers and 3.5% (n=86) were doctors. Of the respondents who reported a lack of registers or books as a challenge, 66.7% (n=33) were registered nurses, 30.3% (n=33) were operational managers and 3% (n=33) were doctors.

4.3.5.5 Lack of patients' facility files to record IPT initiation (item E5)

The respondents were asked if they had experienced a lack of patients` facility files to record IPT initiation. One hundred and twenty (N=120) respondents answered the question. Most respondents, 92.5% (N=120), reported that a lack of patients` files was not a challenge (combination of strongly disagree and disagree responses). There were, however, 6.6% (N=120) respondents who reported that a lack of patients' files posed a challenge for recording IPT initiation (combination of strongly agree and agree responses). Table 4.40 shows the responses to the challenge of lacking patients` facility files for IPT recording.

Table 4.40 There are no patients' facility files to record IPT initiation

Response	Frequency	(%)
Strongly Disagree	67	55.8
Disagree	44	36.7
Do not Know	4	3.3
Agree	7	5.8
Strongly Agree	1	0.8
Total	**120**	**100.0**

Of the respondents who reported the lack of patients' files as a challenge, 75% (n=8) were operational managers and 25% (n=8) were registered nurses. Of the respondents who reported that they did not know if the facility experienced the lack of patients' files to record IPT as a challenge, 50% (n=4) were operational managers and the other 50% (n=4) were registered nurses.

4.3.5.6 Postponement of IPT initiation by patients (item E6)

The respondents were asked if they had experienced the postponement of IPT initiation by patients as a challenge. One hundred and twenty-one (N=121) respondents

answered the question. Most of the respondents, 85.1% (N=121), reported that they had no challenge with patients postponing their IPT initiation (combination of strongly disagree and disagree responses). There were, however, 13.2% (N=121) of respondents who reported that postponement of IPT initiation by patients posed a challenge at the facility (combination of strongly agree and agree responses). Table 4.41 shows the responses to patients requesting time to think about IPT initiation.

Table 4.41 Patients sometimes request to be given time to think about IPT initiation

Response	Frequency	(%)
Strongly Disagree	42	34.7
Disagree	61	50.4
Do not Know	2	1.7
Agree	15	12.4
Strongly Agree	1	0.8
Total	**121**	**100.0**

Of the respondents who reported that postponement of IPT initiation by patients was not a challenge, 73.8% (n=103) were registered nurses, 22.3% (n=103) were operational managers and 3.9% (n=103) were doctors. The respondents who reported that they did not know were all operational managers. The three respondents who did not respond to the question were all from the registered nurses category.

4.3.5.7 Patients' failure to return for IPT initiation (item E7)

The respondents were asked if some patients ever failed to return for IPT initiation when given time to think about it. One hundred and twenty-one (N=121) respondents answered the question. Most of the respondents, 80.9% (N=121), reported that they did not agree with the assertion that patients never come back for IPT initiation when given time to think on it (combination of strongly disagree and disagree responses). However, 15.7% (N=121) of respondents reported that patients do not come back for IPT initiation (combination of strongly agree and agree responses). Of the respondents, 3.3% (N=121) reported that they did not know. Table 4.42 shows the responses to the assertion that patients never come back for IPT initiation.

Table 4.42 Some patients, when given time to think about IPT initiation, never come back for initiation

Response	Frequency	(%)
Strongly Disagree	41	33.8
Disagree	57	47.1
Do not Know	4	3.3
Agree	17	14.0
Strongly Agree	2	1.7
Total	**121**	**100.0**

Of the respondents who reported that patients come back for IPT initiation, 78.6% (n=98) were registered nurses, 18.4% (n=98) were operational managers and 3.1% (n=98) were doctors. Of the respondents who reported that some patients do not come back for IPT initiation, 63.2% (n=19) were operational managers, 31.6% (n=19) were registered nurses and 5.3% (n=19) were doctors. Of the respondents who reported that they did not know, 75% (n=4) were registered nurses and 25% (n=4) were doctors. Those who did not respond to the question were registered nurses.

4.3.5.8 Postponement of IPT initiation recording (item E8)

The respondents were asked if they ever recorded IPT initiation the following day when they had busy days. One hundred and twenty (N=120) respondents answered the question. Of the respondents, 67.5% (N=120) reported that they did not record IPT initiation the following day (combination of strongly disagree and disagree responses). However, 30.8% (n=37) of respondents reported that during busy days, they did indeed record IPT initiation the following day (combination of strongly agree and agree responses). The respondents who reported that they did not know were 1.7% (N=120). Table 4.43 shows the responses to postponement of IPT initiation recording.

Table 4.43 When we have a busy day we record IPT initiation on the registers /books/computer the following day

Response	Frequency	(%)
Strongly Disagree	33	27.5
Disagree	48	40.0
Do not Know	2	1.7
Agree	33	27.5
Strongly Agree	4	3.3
Total	**120**	**100.0**

Of the respondents who reported that they did not record IPT initiation the following day, 79% (n=81) were registered nurses, 18.5% (n=81) were operational managers and 2.5% (n=81) were doctors. Of the respondents who reported postponement of IPT initiation, 54.1% (n=37) were registered nurses, 40.5% (n=37) were operational managers and 5.4% (n=37) were doctors.

4.3.5.9 Insufficient time to screen patients for IPT (item E9)

Respondents were asked if, during busy days, there was enough time to screen patients for IPT initiation. One hundred and twenty-one (N=121) respondents answered the question. Of the respondents, 49.6% (N=121) and 39.7% (N=121) reported enough time (combination of disagree and strongly disagree responses). There were, however, 9% (N=121) of respondents who reported that at times there was not enough time to screen patients for IPT initiation (combination of strongly agree and agree responses). The respondents who reported that they did not know were 1.6% (N=121). Table 4.44 shows the responses to insufficient time to screen patients for IPT.

Table 4.44 During busy days there is not enough time to screen patients for IPT

Response	Frequency	(%)
Strongly Disagree	48	39.7
Disagree	60	49.6
Do not Know	2	1.6
Agree	9	7.4
Strongly Agree	2	1.6
Total	**121**	**100.0**

Of the respondents who reported enough time to screen patients for IPT, 70.4% (n=108) were registered nurses, 25.9% (n=108) and 3.7% (n=108) were doctors. From the respondents who reported insufficient time 81.8% (n=11) were registered nurses and 18.2% (n=11) were operational managers. Of the respondents who reported that they did not know, one was an operational manager and one a registered nurse. Three registered nurses did not respond to the question.

4.3.5.10 Inadequate recording of IPT due to shortage of staff (item E10)

The respondents were asked if recording of IPT was ever not done properly due to shortage of staff. One hundred and nineteen respondents answered the question. No shortage of staff was reported by 76.5% (N=119) of respondents (combined strongly disagree and disagree responses). However, 18.5% (N=119) of respondents did report a shortage of staff (combined strongly agree and agree responses). Five percent (N=119) of respondents reported that they did not know. Table 4.45 shows the responses to recording of IPT not done due to shortage of staff.

Table 4.45 Recording of IPT is not done properly due to shortage of staff

Response	Frequency	(%)
Strongly Disagree	35	29.4
Disagree	56	47.1
Do not Know	6	5.0
Agree	17	14.3
Strongly Agree	5	4.2
Total	**119**	**100.0**

From the respondents who reported no shortage of staff, 73.6% (n=91) were registered nurses, 22% (n=91) were operational managers and 4.4% (n=91) were doctors. From the respondents who reported shortage of staff 59.1% (n=22) were registered nurses and 40.9% (n=22) were operational managers. Of the respondents who reported that they did not know, 83.3% (n=6) were registered nurses and 16.7% (n=6) were doctors. Four registered nurses and one operational manager did not respond to the question.

4.3.5.11 Any other challenges or comments

Respondents were given an opportunity to indicate the challenges they might have experienced that were not listed on the questionnaire. The findings were: poor recording of IPT by staff members, shortage of IPT, lack of IPT guidelines in the facility and IPT is initiated but not recorded.

4.3.5.12 Overall general challenges

Table 4.46 shows the overall responses to the general challenges

Table 4.46 Overall general challenges

	Response	1.Strongly Agree	2.Agree	3.Do not Know	4.Disagree	5.Strongly Disagree
E1	There is always shortage of Isoniazid medication	0	17	3	58	42
E2	Some of the patients refuse IPT initiation	2	4	1	57	58
E3	The computer is sometimes not functional	7	26	3	46	40
E4	There are no registers or books to record IPT initiation	10	23	1	35	51
E5	There are no patients' facility files to record IPT initiation	1	7	1	44	67
E6	Patients sometimes request to be given time to think about IPT initiation	1	15	2	61	42
E7	Some patients, when given time to think about IPT initiation, never come back	2	17	4	57	41
E8	When we have a busy day we record IPT initiation on the registers/books/computer the following day	4	33	2	48	33
E9	During busy days there is not enough time to screen patients for IPT	2	9	2	60	48
E10	Recording of IPT is not done properly due to shortage of staff	5	17	6	56	35

The challenges agreed on most were: "when we have a busy day, we record IPT initiation on the registers/books/computer the following day; the computer is sometimes not functional and there are no registers or books to record IPT initiation". The

challenges that respondents agreed on least were: “Some of the patients refuse IPT initiation; there are no patients’ facility files to record IPT initiation and during busy days, there is not enough time to screen patients for IPT”.

4.4 SUMMARY

This chapter discussed the analysis, presentation and description of the research findings. The analysis focused on the health care professionals` knowledge on IPT initiation, health care professionals’ IPT initiation practice, resource availability and general challenges experienced by health care professionals. The statistical analysis of data allowed the researcher to answer the research questions and meet the objectives of the study.

Chapter 5 presents the conclusion and recommendations for the study.

CHAPTER 5

DISCUSSION, RECOMMENDATIONS, LIMITATIONS AND CONCLUSION OF THE STUDY

5.1 INTRODUCTION

This chapter discusses the interpretation of the research findings, contribution and limitation of the study, the recommendations and contribution of the study in relation to the research questions asked and the objectives set for the study.

The study investigated the IPT initiation process amongst eligible HIV positive patients at health facilities in the Polokwane sub-district to identify key features in the knowledge and practice of health professionals as well as available resources at the health facilities.

A quantitative, non-experimental, descriptive and cross-sectional design was adopted for this study. The sample for this study was all the health care professionals that work in the HIV/AIDS units of the Polokwane sub-district. All the operational managers, registered/professional nurses and doctors of the 34 public health facilities were requested to respond to the questionnaire. The total number of respondents was 124. Data was captured and analysed using the Statistical Package for the Social Sciences (SPSS) Version 24. Percentages, frequencies and measures or dispersion were used to analyse the data.

5.2 DEMOGRAPHIC DETAILS OF RESPONDENTS

The respondents for the study comprised doctors, operational managers and the registered nurses with qualifications ranging from diplomas to doctoral degrees. The respondents' years of service in the facilities and their years of experience in providing HIV/AIDS and TB services varied from less than a year to 16 years and above. Most of the respondents received specific training on TB/HIV collaborative activities and IPT initiation, namely 75% of the doctors, 91% of operational managers and 90% of

registered nurses, whereas 75% of doctors and 82% of both the operational managers and registered nurses received training on IPT initiation.

5.3 DISCUSSION OF THE RESEARCH FINDINGS

The summary and the interpretation of the significant study findings are discussed in line with the research questions and objectives of the study.

5.3.1 Health Care Professionals` knowledge on IPT initiation (section B)

Observation by the researcher, of the low IPT initiation described in section 1.3 led to the first research question: Do the facility health care professionals (the doctors, operational managers and registered nurses) have knowledge on the policy and procedures of IPT initiation? The following section discusses the answer to that question and shows that the first objective of the study, which was to describe the knowledge of health professionals on the initiation of IPT, was met.

One can assume that all the respondents have basic knowledge on TB and HIV, because the training and education syllabus of nurses and medical students, as stipulated in South African Nursing Council Training Regulation (R425) and Health Professions Act (Act No. 56 of 1974), include studying communicable diseases. Of more importance is the fact that there are specific policy guidelines to follow in practice in terms of the IPT initiation; refer to section 2.2. Knowledge of the IPT initiation policy guidelines will improve the quality of HIV and TB services that health professionals are offering and would eventually impact positively on the health status of the community.

This study determined the respondents` knowledge of key issues of this policy document and the noteworthy findings are summarised below.

5.3.1.1 Noteworthy knowledge questions

The most correctly answered questions were on providing IPT information to patients, benefits of IPT and screening of patients for IPT eligibility; refer to section 4.3.2.7. They included:

- B17: Information about TB, including preventive therapy should be made available to all people living with HIV/AIDS (99.2%).
- B6: IPT reduces the risk of TB infection among HIV positive patients (97.6%).
- B7: HIV positive patients should be regularly screened for TB using a clinical algorithm (96.8%).
- B10: Patients with one or more signs or symptoms are considered TB suspects and must be further investigated for active TB disease as per national TB guidelines (96.8%).
- B20: IPT must be discussed and adequately planned to ensure full understanding and adherence by the patients (96.8%).

This knowledge is vital in IPT initiation because it encourages patients to take informed actions and adhere to the IPT medication. Based on responses given to questions B17, B6, B7, B10 and B20 most of the respondents demonstrated more knowledge on policy and procedures regarding the implementation of IPT than on patient screening; this is similar to the findings of the study conducted by Tikuye (2013:46) in Ethiopia where the respondents demonstrated a high level of knowledge of the relevant policy and procedures for IPT initiation.

However, questions on signs and symptoms suggestive of TB were those most often answered incorrectly; refer section 4.3.2.7. They included:

- B1: Prior to the initiation of TB Prevention Therapy (IPT), a patient should be screened for the following signs and symptoms (89.5%).
- B2: A TB suspect is a person with two or more of the signs and symptoms listed above in B1 (83.9%).

Knowledge on signs and symptoms of TB is vital for IPT initiation because only eligible patients should be initiated. These findings suggest that there are health care professionals who lack information on who to do IPT initiation with, which is a crucial factor for IPT initiation. The findings are similar to the studies conducted by Mindachew et al (2014:1) in Addis Ababa and Moolphate et al (2013:60) in Northern Thailand. Both studies indicated a lack of health workers' knowledge of the signs and symptoms of TB, which are significant for IPT initiation.

5.3.1.2 Overall knowledge score

When the overall knowledge of respondents was analysed in terms of educational level and employment category, it was found that the mean and the median scores did not show significant differences. What is observed is the minimum score in each case.

Section 4.3.2.8 shows that the lowest knowledge score was reported amongst diploma respondents. The scope of this study cannot explain the finding, but such a low score is not acceptable in terms of the expected standard of service as referred to in the ideal clinic manual (South Africa 2018:27).

Section 4.3.2.11 shows the knowledge score per employment category. Although the maximum score is 25 in all three categories, the minimum score amongst the nurses of both categories is significantly lower than that of the medical doctors. Staffing needs are determined in line with Workload Indicator Staffing Needs (WISN) as indicated in the ideal clinic manual (South Africa 2018:248). In terms of nurses being the main category of professionals in health service (hospitals and clinics) in South Africa, the lack of knowledge shown by the low minimum scores is not ideal for the successful implementation of the IPT.

5.3.2 Health care professionals' IPT initiation practice (section C)

Observation by the researcher of the low IPT initiation described in section 1.3 led to the second research question: What are the practices of IPT initiation with eligible HIV positive patients at the health facility? The findings in this section relied on how respondents rated themselves in terms of IPT practice and the integrity with which they completed the questionnaire. The second objective of the study, to describe the practice of IPT initiation at the health facilities, was met as will be seen in the following sections.

5.3.2.1 Official policy and procedure for IPT initiation

Most of respondents (95%) reported that they are familiar with the policy and procedure for IPT initiation; refer to section 4.3.3.1. The high prevalence of HIV/TB in the sub-district of Polokwane, according to DHIS 2015/16 statistics (refer to sections 1.2 and 2.3.2), ask for 100% knowledge of the policy and procedures by all health care

professionals. Each health care professional forms a link in the quest for reaching the 90-90-90 target. The 5% of health professionals not familiar with the policy and procedures for IPT initiation is a weak link that cannot be afforded. Ideal clinic manual (South Africa 2018:114) recommends that when new policies and notifications are received, the operational manager should see that the relevant staff members understand the changes and determine if further training may be required.

5.3.2.2 The practice of screening patients for IPT eligibility

In section 4.3.3.2 all respondents agreed to the practice of screening patients for IPT eligibility; however, this is contradicted by the mostly incorrect responses given to the questions on signs and symptoms suggestive of TB; refer to section 5.3.1.1. From these findings one can assume that screening of patients is done but that there is nonetheless a lack of knowledge on how to do the screening correctly. The signs and symptoms suggestive of TB are the determining factor for the inclusion or exclusion criteria for IPT initiation. Reading the policy and guidelines will promote provision of quality health services (South Africa 2018:114)

5.3.2.3 Provision of IPT to eligible HIV positive patients

In section 4.3.3.3, except for the two respondents who did not respond to the question, all other respondents indicated that they provided the IPT to eligible HIV positive patients. The specific training on HIV/TB and IPT initiation reported in section 4.3.1.5 and 4.3.1.7 respectively seems significant to ensure consistent provision of IPT.

5.3.2.4 Recording of information and data capturing

Nurses are expected to record IPT initiation in the facility record and patient's file. The data capturer, if available, captures the recorded information in electronic format in a programme provided by the government.

Of the respondents, 6.5% did not make sure that recording of IPT initiation and treatment was done correctly in the facility registers and books; refer to section 4.3.3.4. If this the case, the information available to data capturers is thus incomplete and the data on HIV/TB that is reported at district level and then finally escalated to national

level is inaccurate. This has implications for future HIV/TB programmes and treatment. Information that is not recorded on facility records or patients' files cannot be captured.
Of those respondents who answered the question on the capturing of IPT information in the patient facility file (refer to section 4.3.3.5), 98% indicated that they recorded IPT initiation in the patients' facility files.

Although there are only 2% of respondents who indicated not recording IPT initiation in patients' files, this again points to missing data that cannot be traced at the facilities. This implies that data reporting is not accurate as data that is captured in the facility record is sourced from patients' files. The findings suggest that there is insufficient supervision by the operational managers in the clinics.
Ideal clinic manual (South Africa 2018:110) recommends that facilities should generate and record accurate information for their own use and submission to district, provincial and national levels.

5.3.2.5 Monitoring and management of IPT toxicity

Most of the respondents (94.2%) indicated that they monitored and managed IPT toxicity; refer to section 4.3.3.9. However, other respondents (5.8%) reported not exercising the practice as guided by IPT guideline. The lack of monitoring and management of IPT toxicity implies that there are patients with medicine side effects who are not properly managed and this compromises quality patient care.

It was found that medical practitioners were more likely to monitor and manage IPT toxicity than registered nurses. The operational managers should take note of this practice and encourage the registered nurses to implement it.

5.3.3 Resource availability (section D)

Observation by the researcher, of the low IPT initiation described in section 1.3 led to the second research question: What are the available health facility resources to initiate and capture IPT? The findings in this section relied on how respondents rated their facilities in terms of the resources required for IPT initiation and the capturing and the integrity with which they completed the questionnaire. The third objective of the study, to

describe the resources at the health facilities to initiate and capture IPT, was met as will be seen in the following sections.

5.3.3.1 TB screening questionnaires and IPT guidelines

Sections 4.3.4.3 and 4.3.4.4 show that most of the respondents reported the availability of screening questionnaires and IPT guidelines; however, one should also note that few respondents, 4.1% and 3.3% respectively, reported a lack of the resources. A lack of screening questionnaires can suggest that some of the patients are not screened for IPT, thus some eligible patients may not be on IPT. These findings show a lack of standardisation of service delivery in the district because the national mandates are not implemented the same across the country.

5.3.3.2 IPT medication

In section 4.3.4.5 most of the respondents indicated the availability of medication; however, there were a large number (29.8%) of respondents who indicated a shortage of medication. From these findings one can assume that there are eligible patients who are not initiated or maintained on IPT due to lack of medication. This is contrary to the maintenance of medicine minimum and maximum stock level as stipulated in the ideal clinic manual (South Africa 2018:56)

5.3.3.3 Data capturing resources

In sections 4.3.4.1 and 4.3.4.2 most of the respondents reported the availability of functional computers and IPT registers or books. Those who did not have functional computers available were 4.1%. However, there is a larger number (28.3%) of respondents who reported a lack of registers or books to record IPT initiation. A lack of registers or books suggests that clinics cannot accurately determine the patients initiated on IPT or those who are not initiated. This does not only affect the patients but also the management of the clinic in terms of ordering and use of stock. Substandard recording of information results in inaccurate data being reported at the sub-district, district, province and national levels, which result in skewed health statistics.

Although this was not determined in the questionnaire, the researcher realises that a lack of registers or books could also be due to integration of registers at primary health care facilities. The National Department of Health of South Africa introduced single comprehensive tick register, which has integrated all programmes. Some of the information that was in the specialised HIV/TB registers is now not available in the new comprehensive register.

The comprehensive tick register was not singled out in the questionnaire as it forms part of the facility records.

5.3.3.4 Electricity failure or power cut

The findings in section 4.3.4.6 show that 59.7% of respondents reported no electricity failure or power cuts at their health facilities, while 40.3% respondents reported that they have indeed experienced the situation. The explanation given was that power failures did not occur regularly or for long periods. However, nurses and data capturers will have to be watchful to remember to do capturing retrospectively should a facility experience power failure.

5.3.4 General challenges experienced by health care professionals (section E)

The findings in this section relied on how respondents rated their facilities in terms of the challenges they experienced in IPT initiation and the integrity with which they completed the questionnaire.

5.3.4.1 Refusal of IPT initiation by some patients

In section 4.3.5.2 most of the respondents (94.2%) reported that patients did not refuse IPT initiation. However, 4.9% of respondents reported patients' refusal of IPT initiation as a challenge. The respondents who reported refusal of IPT are two operational managers and four registered nurses. By strengthening the provision of appropriate information and counselling registered nurses can reduce the refusal rate.

5.3.4.2 Postponement of IPT initiation by patients

The findings in section 4.3.5.6 show that 85.1% of respondents reported no postponement of IPT initiation by patients. There were, however, 13.2% of respondents who reported postponement as a challenge. Operational managers must ensure that patients are counselled on IPT initiation at every visit until they are undergoing initiation as recommended by the South African IPT policy guidelines.

5.3.4.3 Patients' failure to return for IPT initiation

In section 4.3.5.7 most of the respondents (80.9%) reported having no challenge with patients failing to return for IPT initiation. However, 15.7% of respondents reported having this challenge. The failure of patients to return for IPT initiation was reported by respondents from all categories of employment. Strengthened counselling on the benefits of IPT and the effects of not undergoing IPT initiation must be given by all health professionals at facilities.

5.3.4.4 Postponement of IPT initiation recording

The findings in section 4.3.5.8 show that 67.5% of respondents record IPT initiation on the same day. However, 30.8% of respondents reported that during busy days IPT initiation was recorded the following day. Postponement of recording may lead to missed data capturing and inaccurate data reporting. Operational managers must supervise and monitor daily data capturing.

5.3.4.5 Insufficient time to screen patients for IPT

In section 4.3.5.9 most of the respondents (89.3%) reported having sufficient time to screen patients for IPT initiation. However, 9% of respondents reported having insufficient time to screen patients for IPT. The findings suggest that some of the eligible patients are missed due to the practice of not screening patients, which leads to low IPT initiation rate.

5.3.4.6 Inadequate recording of IPT due to shortage of staff

The findings in section 4.3.5.10 show that 76.5% of respondents reported no shortage of staff whereas 18.5% of respondents reported inadequate recording due to shortage of staff. Inadequate recording contributes to low IPT initiation rate because of missed data. Operational managers must monitor the daily recording of information to ensure accurate data capturing and reporting.

5.3.4.7 Any other challenges

Section 4.3.5.11 reported on the challenge of patients being initiated on IPT but not being recorded. According to SANC Acts and Omissions, failure to record means an action was not done. Based on these findings, one can assume that IPT data is sometimes missed due to inadequate recording.

5.4 RECOMMENDATIONS

Recommendations derived from the discussion are categorised to address the practice at facility level as well as further research.

5.4.1 Recommendations for practice

The topics covered under practice recommendations include knowledge levels, availability of medication, record keeping and data capturing.

5.4.1.1 Strategies to improve the knowledge levels of health care professionals

- The policy must be available and noticeable and contain a register to be signed by staff to prove that they have read it.
- New health professionals must read the policy when they first assume duty in the health facility and at least once every three months for which they should also sign a register.
- A well planned in-service programme on the policy guidelines that actively involves the health professionals (nurses) responsible for the IPT initiation must be implemented. The SANC includes teaching as one of the roles of the nurse.

Registered nurses can take turns to prepare and present an in-service session on one of the sections of the policy.

- The National Department of Health can develop electronic self-evaluation packages that health care professionals can use to monitor their knowledge on IPT initiation annually. Such results can be incorporated in the annual performance appraisal of health professionals.

5.4.1.2 Availability of medication

- The district pharmacist should ensure that there is proper management and supervision of the medicine procurement system to ensure the timeous procurement of medicines and to avoid interruption of service delivery of IPT.
- The district can delegate dedicated personnel who will ensure that health care facilities do not run-out of medicines, e.g. Assistant Pharmacists.
- The facility operational managers must supervise and ensure that the drug stock level is monitored on a weekly basis.

5.4.1.3 Strategies to improve record keeping and data capturing

- District HIV and TB Coordinators can present information sessions to health care professionals on the importance of accurate data collection and data capturing for planning effective health programmes.
- Operational managers must ensure that they get feedback on the statistics from the sub-district. This must then be communicated to the health care professionals to ensure that they understand the relevance and impact of the IPT service they deliver.
- Operational managers must supervise the record keeping and data capturing of their health care facilities.
- The National Department of Health can also consider training of lower categories of registered nurses on data collection and reporting to strengthen data capturing practices.
- District PHC managers must ensure the availability of equipment and stationery at all health facilities, such as computers, registers and screening questionnaires to ensure that health professionals can perform their duties.

5.4.2 Recommendations for further research

- The quantitative findings of this study can be followed up with a qualitative participatory observation design. The findings of such a study will confirm the actual practice of IPT initiation.
- Effective IPT initiation involves more than the knowledge and the practice of health care professionals. The attitude of health care professionals and the patients towards IPT initiation may also be explored and described.
- Comprehensive studies should be conducted in other sub-districts, districts and other provinces where the national IPT initiation targets have not been met in order to identify possible reasons for not meeting targets. Common findings may assist authorities to address those issues and ensure that targets are met.
- The research populations for future research can be defined differently so as to include even the data capturers to explore their knowledge and skills in ensuring the availability of valid and reliable IPT data reports.

5.5 CONTRIBUTIONS OF THE STUDY

No known scientific study has been conducted in the Polokwane sub-district to describe the health care professionals' knowledge, practice and the resources available for IPT initiation. This study focused on more than one aspect that may impact on IPT initiation programme for HIV positive persons in the Polokwane sub-district, namely knowledge and practice of health care professionals and availability of resources.

The researcher will share the study findings with the facilities, the district and the Provincial Department of Health through the Provincial Health Research Committee. This will enable the province and the district to act in terms of health care professionals' knowledge and more efficient drug supply management as well as to consider the recommendations of the researcher

The results will be uploaded to the Department of Health research data base and presented during the departmental research day. The researcher will present papers at academic conferences and report in peer reviewed professional journals.

5.6 LIMITATIONS OF THE STUDY

The researcher included only one sub-district, namely Polokwane, where the 2014/2015 DHIS indicated that the national target for IPT initiation was not met. The findings can thus not necessarily be generalised to the entire district or province.

The study used structured questionnaires that were limiting to the respondents who wished to elaborate more on certain aspects, especially aspects related to the practice of IPT initiation and resource availability.
The respondents of this study were the health care professionals involved in IPT initiation to eligible HIV patients. It may be that patient related factors, which are not included in this study, may impact on the IPT initiation.

The few medical doctors (only 4) may leave the impression that they scored much higher than the other category. This could be countered if inferential statistics using the Kruskal Wallis test was used in the data analysis.

5.7 CONCLUSION

The findings of the study provided the researcher with evidence to determine the health care professionals' knowledge, practice and resources available for IPT initiation in the sub-district of Polokwane. From the study findings the researcher concluded that not all health care professionals who are initiating eligible HIV positive patients on IPT are knowledgeable on IPT initiation, neither do they all provide the ideal IPT initiation practice. The researcher further concludes that not all health facilities have available resources required for IPT initiation and recording.

LIST OF REFERENCES

Adams, LA. 2013. Research ethics: *Ethics in medicine*. University of Washington School of medicine. [Online]. Available: http://depts.washington.edu/bioethx/topics/resrch.html [April 2016].

Assebe, LF, Reda, HL, Wubeneh, AD, Lerebo, WT & Lambert, SM. 2015. The effect of isoniazid preventive therapy on incidence of tuberculosis among HIV-infected clients under pre-ART care, Jimma, Ethiopia: A retrospective cohort study. *BMC Public Health,* 15(1).

Ayele, HT, Van Mourik, M, Debray, TP & Bonten, MJ. 2015. Isoniazid prophylactic therapy for the prevention of tuberculosis in HIV infected adults: A systematic review and meta-analysis of randomized trials. *PLoS one,* 10(11):e0142290.

Briggs, MA, Emerson, C, Modi, S, Taylor, NK & Date, A. 2015. Use of isoniazid preventive therapy for tuberculosis prophylaxis among people living with HIV/AIDS: A review of the literature. *JAIDS Journal of Acquired Immune Deficiency Syndromes,* 68:S297–S305.

Brink H, Van der Walt, C & Van Rensburg, G. 2012. *Fundamentals of research methodology for health care professionals.* 3rd edition. Cape Town: Juta.

Bryman, A. 2012. *Social research methods*. 4th edition. Oxford: Oxford University Press.

Churchyard, GJ, Fielding, KL, Lewis, JJ, Coetzee, L, Corbett, EL, Godfrey-Faussett, P, Hayes, RJ, Chaisson, RE & Grant, AD. 2014. A trial of mass isoniazid preventive therapy for tuberculosis control. *New England Journal of Medicine,* 370(4):301310.

Creswell, JW. 2014. *Research design: Qualitative, quantitative, and mixed methods approaches*. 4thedition. Thousand Oaks: Sage.

Danyuttapolchai, J, Kittimunkong, S, Nateniyom, S, Painujit, S, Klinbuayaem, V, Maipanich, N, Maokamnerd, Y, Pevzner, E, Whitehead, S, Kanphukiew, A and Monkongdee, P, 2017. Implementing an isoniazid preventive therapy programme for people living with HIV in Thailand. *PLoS one,* 2(9):e0184986.

Edessa, D & Likisa, J. 2015. A description of mortality associated with IPT plus ART compared to ART alone among HIV-Infected Individuals in Addis Ababa, Ethiopia: A cohort study. *PLoS one,* 10(9):e0137492.

Flick, U. 2011. *Introducing research methodology*: *A Beginner`s guide to doing a research project.* London: SAGE.

Foundations for Professional Development (FPD). 2015. *HIV/AIDS management course for healthcare professionals*. 7th edition. Lynwood Bridge: FPD.

Foundations for Professional Development (FPD). 2014. *Introduction of HIV/AIDS for caregivers, community workers, supporters and lay persons*. 3rd edition. Lynwood Bridge: FPD.

Gray, DE. 2014. *Doing research in the real world*. 3rd edition. University of Greenwich, United Kingdom: SAGE.

Hermans, SM, Grant, AD, Chihota, V, Lewis, JJ, Vynnycky, E, Churchyard, GJ & Fielding, KL. 2016. The timing of tuberculosis after isoniazid preventive therapy among gold miners in South Africa: A prospective cohort study. *BMC Medicine,* 14(1):45.

Joint United Nations Programme on HIV/AIDS and Joint United Nations Programme on HIV/Aids. 2014. 90-90-90: *An ambitious treatment target to help end the AIDS epidemic*. *Geneva: UNAIDS*. [Online]. Available: www.unaids.org [June 2017].

Joubert, G, Ehrlich, R, Katzenellenbogen, J & Karim, SA. 2012. *Epidemiology*: *A research manual for South Africa*. 2nd edition. Cape Town: Oxford.

Kapoor, S, Gupta, A & Shah, M. 2016. Cost-effectiveness of isoniazid preventive therapy for HIV-infected pregnant women in India. *The International Journal of Tuberculosis and Lung Disease,* 20(1):85-92.

Kumar, R. 2012. *Research methodology: A step-by-step guide for beginners.* 3rd edition. Los Angeles: SAGE.

Maartens, G, Cotton, M, Wilson, D, Venter, F, Meyers, T & Bekker, LG. 2012. *Handbook of HIV medicine*. 3rd edition. Cape Town: Oxford.

Maharaj, B, Gengiah, TN, Yende-Zuma, N, Gengiah, S, Naidoo, A & Naidoo, K. 2017. Implementing isoniazid preventive therapy in a tuberculosis treatment-experienced cohort on ART. *The International Journal of Tuberculosis and Lung Disease,* 21(5):537-543.

Makanjuola, T, Taddese, HB & Booth, A. 2014. Factors associated with adherence to treatment with isoniazid for the prevention of tuberculosis amongst people living with HIV/AIDS: A systematic review of qualitative data. *PLoS one* 9(2):e87166.

Muijs, D. 2012. *Doing quantitative research in education with SPSS.* 2nd edition. London. SAGE.

Mindachew, M, Deribew, A, Memiah, P & Biadgilign, S. 2014. Perceived barriers to the implementation of Isoniazid preventive therapy for people living with HIV in resource constrained settings. *Pan African Medical Journal*, 17(26):2641.

Moolphate, S, Lawpoolsri, S, Pungrassami, P, Sanguanwongse, N, Yamada, N & Kaewkungwal, J. 2013. Barriers to and motivations for the implementation of a treatment programme for latent tuberculosis infection using Isoniazid for people living with HIV, in Upper Northern Thailand. *Global Journal of Health Science,* 5(4):60–70.

Oxford Advanced Learner's Dictionary.
[Online]. Available: https://www.oxfordlearnersdictionaries.com [June 2016].

Polit, DF & Beck, CT. 2012. *Nursing research*: *Generating and assessing evidence for nursing practice*. 9th edition. Philadelphia: Wolters Kluwers/Lippincott Williams & Wilkins.

R425 – See South African Nursing Council.

Rangaka, MX, Wilkinson, RJ, Boulle, A, Glynn, JR, Fielding, K, Van Cutsem, G, Wilkinson, KA, Goliath, R, Mathee, S, Goemaere, E & Maartens, G. 2014. Isoniazid plus antiretroviral therapy to prevent tuberculosis: A randomised double-blind, placebo-controlled trial. *The Lancet,* 384(9944):682–690.

Semu, M, Fenta, TG, Medhin, G & Assefa, D. 2017. Effectiveness of isoniazid preventative therapy in reducing incidence of active tuberculosis among people living with HIV/AIDS in public health facilities of Addis Ababa, Ethiopia: a historical cohort study. *BMC Infectious Diseases,* 17(1):5.

Shayo, GA, Moshiro, C, Aboud, S, Bakari, M & Mugusi, FM. 2015. Acceptability and adherence to Isoniazid preventive therapy in HIV-infected patients clinically screened for latent tuberculosis in Dar es Salaam, Tanzania. *BMC Infectious Diseases,* 15(1):368.

South African National AIDS Council (SANAC). 2011. *National Strategic Plan on HIV, STIs AND TB: 2012–2016*. Pretoria: South African National AIDS Council.

South African Nursing Council (SANC). 1985. *Regulations relating to the approval of and the minimum requirements for the education and training of a Nurse (General, Psychiatric and Community) and Midwife leading to registration. Regulation R. 425, in terms of the Nursing Act, 1978 (Act No. 50, 1978, as amended*). Pretoria: Government Printer.

South Africa. 2009. *Health Professions Act, No. 56, 1974*. Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2010. *Guidelines for Tuberculosis Preventive Therapy among HIV infected individuals in South Africa*. Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2011. *District Health Management Information System Policy*. Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2014–2017. *District Health Information System*. Limpopo DHIS Pivot table statistics.

South Africa (Republic). Department of Health. 2014. *National Tuberculosis management guidelines*. Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2015a. *District Implementation Planning Process: Fast Track 90-90-90.* Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2015b. *National Consolidated Guidelines for the prevention of mother-to-child transmission of HIV and the management of HIV in children, adolescents and adults.* Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2015c. *The 2013 National Antenatal Sentinel HIV and Herpes Simplex type-2 prevalence Survey*. South Africa: Government Printer.

South Africa (Republic). Department of Health. 2016. *National HIV Testing Services Policy.* Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2018. *Ideal clinic manual*. Pretoria: Government Printer.

Tikuye, AM. 2013 *Knowledge, attitudes and practices of health care providers towards Isoniazid Preventive Therapy (IPT) provision in Addis Ababa*, Ethiopia. MPH dissertation. Unisa. Pretoria.

UNAIDS – See Joint United Nations Programme on HIV/AIDS and Joint United Nations Programme on HIV/Aids.

Yirdaw, KD, Jerene, D, Gashu, Z, Edginton, ME, Kumar, AM, Letamo, Y, Feleke, B, Teklu, AM, Zewdu, S, Weiss, B & Ruff, A. 2014. Beneficial effect of isoniazid preventive therapy and antiretroviral therapy on the incidence of tuberculosis in people living with HIV in Ethiopia. *PLoS One,* 9(8):e104557.

Yotebieng, M, Edmonds, A, Lelo, P, Wenzi, LK, Ndjibu, PT, Lusiama, J, Kabuayi, JP & Behets, F. 2015. High completion of isoniazid preventive therapy among HIV-infected children and adults in Kinshasa, Democratic Republic of Congo. *AIDS*, 29(15):2055–2057.

WHO see World Health Organization.

World Health Organization. 2015. *Global Tuberculosis Report 2015.* Geneva: WHO.

World Health Organization. 2016. *Global Tuberculosis Report 2016.* Geneva: WHO.

ANNEXURES

ANNEXURE A

Unisa Ethical Clearance

UNISA university of south africa

RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES

REC-012714-039 (NHERC)

2 August 2017

HSHDC/697/2017
Mrs MJ Khota
Student: 3162-375-1

Supervisor: Mrs HS du Toit
Qualification: MCur
Joint Supervisor: -

Dear Mrs MJ Khota

Decision: Ethics Approval

Name: Mrs MJ Khota

Proposal: An evaluation of the Isoniazid Preventive Therapy initiation in Limpopo Province.

Qualification: MPCHS94

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted from 2 August 2017 to 2 August 2019.

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on 2 August 2017.

The proposed research may now commence with the proviso that:

1) *The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*

2) *Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Research Ethics Review Committee, Department of Health Studies. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*

Open Rubric

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

3) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*

4) *[Stipulate any reporting requirements if applicable].*

Note:

The reference numbers [top middle and right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Research Ethics Committee: Department of Health Studies.

Kind regards,

Prof JE Maritz
CHAIRPERSON
maritje@unisa.ac.za

Prof MM Moleki
ACADEMIC CHAIRPERSON
molekmm@unisa.ac.za

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
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ANNEXURE B

Letter requesting permission from the Department of Health: Limpopo Province

PO Box 11504
Bendor Park
0713
11 August 2017

Ms. Shamilla Latif
The Research Unit
Limpopo Department of Health
18 College Street
Office D36 Old Building
Polokwane
0700

Dear Madam

REQUEST FOR APPROVAL TO CONDUCT RESEARCH IN THE DEPARTMENT

I, Mmankhuma Joyce Khota, am a student at UNISA registered for a Master's Degree in Public Health. I hereby request permission to conduct research in the Polokwane sub-district of the Limpopo Province. My research study is as follows:

Research Title: An evaluation of the Isoniazid Preventive Therapy initiation in Limpopo Province.

The study aims to investigate the IPT initiation amongst eligible HIV positive patients at health facilities in the Polokwane sub-district to identify key features in the knowledge and practice of health professionals as well as available resources at the health facilities. The significance of the study is that findings may be used by the HIV&AIDS, STI and TB (HAST) directorate to contribute to the body of knowledge and may be used to increase the IPT initiation to meet the national target.

Data will be collected from respondents namely the operational managers/registered nurses and doctors who are directly involved in the initiation of IPT, by means of a

questionnaire. The normal operation of health services on health facility level will not be interrupted as respondents will complete the questionnaires either during the monthly sub district primary health care and HIV&AIDS and TB integrated meetings or at the clinics, during their tea breaks and lunch times. Participation will be voluntary after respondents signed an informed consent.

Research ethics will be adhered to at all times and this includes anonymity and confidentiality of respondents and health facilities.

The proposal has been approved by the University of South Africa, Department of Health Studies Research Ethics Committee. A copy of the ethical clearance certificate number HSHDC/697/2017 is attached.

Please find the attached the complete research proposal detailing the study. You may also contact my study supervisor Mrs. HS du Toit during office hours at 012 429 6305 or dtoiths@unisa.ac.za
and the Chairperson of the University of South Africa, Department of Health Studies, Research Ethics Committee Professor JE Maritz at 012 429 6534 or maritje@unisa.ac.za

Your favorable consideration will be appreciated.

Yours sincerely

Khota MJ
Unisa Student Number: 31623751
Contact number: 082 674 3048

ANNEXURE C

Letter of approval: Department of Health: Limpopo Province

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Stols M.L (015 293 6169) Ref:4/2/2

Khota MJ
P.O. Box 11504
Bendor Park
0713

Greetings,

RE: An evaluation of the Isoniazid Preventative Therapy Initiation in Limpopo Province

The above matter refers.

1. Permission to conduct the above mentioned study is hereby granted.
2. Kindly be informed that:-
   - Research must be loaded on the NHRD site (http://nhrd.hst.org.za) by the researcher.
   - Further arrangement should be made with the targeted institutions, after consultation with the District Executive Manager.
   - In the course of your study there should be no action that disrupts the services.
   - After completion of the study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
   - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
   - The above approval is valid for a 3 year period.
   - If the proposal has been amended, a new approval should be sought from the Department of Health.
   - Kindly note, that the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated.

Head of Department

12/09/2017
Date

18 College Street, Polokwane, 0700, Private Bag x9302, POLOLKWANE, 0700
Tel: (015) 293 6000, Fax: (015) 293 6211/20 Website: http/www.limpopo.gov.za

ANNEXURE D

Letter requesting permission from the Department of Health: Capricorn District

PO Box 11504
Bendor Park
0713
15 September 2017

The District Executive Manager
Department of Health Capricorn District
34 Hans Van Rensburg Street
Office D36 Old Building
Polokwane
0699

Dear Madam

REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT POLOKWANE SUB-DISTRICT

I, Mmankhuma Joyce Khota, am a student at UNISA registered for a Master's Degree in Public Health. I hereby request permission to conduct research in the Polokwane sub-district. My research study is as follows:

Research Title: An evaluation of the Isoniazid Preventive Therapy initiation in Limpopo Province.

The study aims to investigate the IPT initiation amongst eligible HIV positive patients at health facilities in the Polokwane sub-district to identify key features in the knowledge and practice of health professionals as well as available resources at the health facilities. The significance of the study is that findings may be used by the HIV&AIDS, STI and TB (HAST) directorate to contribute to the body of knowledge and may be used to increase the IPT initiation to meet the national target.

Data will be collected from respondents namely the operational managers/registered nurses and doctors who are directly involved in the initiation of IPT, by means of a

questionnaire. The normal operation of health services on health facility level will not be interrupted as respondents will complete the questionnaires either during the monthly sub district primary health care and HIV&AIDS and TB integrated meetings or at the clinics, during their tea breaks and lunch times. Pre-testing of the questionnaire will take place at Aganang sub district where 3 operational managers from 3 primary health care clinics will be requested to complete the questionnaire.
Participation will be voluntary after respondents signed an informed consent.

Research ethics will be adhered to at all times and this includes anonymity and confidentiality of respondents and health facilities.

The proposal has been approved by the University of South Africa, Department of Health Studies Research Ethics Committee. A copy of the ethical clearance certificate number HSHDC/697/2017 is attached. Permission to conduct the study at the province is granted by the Head of Department, copy attached.

You may also contact my study supervisor Mrs HS du Toit during office hours at 012 429 6305 or dtoiths@unisa.ac.za and the Chairperson of the University of South Africa, Department of Health Studies, Research Ethics Committee Professor JE Maritz at 012 429 6534 or maritje@unisa.ac.za

Your favourable consideration will be appreciated.

Yours sincerely

Khota MJ
Unisa Student Number: 31623751
Contact number: 082 674 3048.

ANNEXURE E

Letter of approval: Department of Health: Capricorn District

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH
CAPRICORN DISTRICT

Enq : **Mashao M.E**

Tel : **015 290 9025**

From : **Primary Health Care**
Date : **16 November 2017**

To : **Kota MJ**
PO Box 11504
Bendor Park
0713

Subject : **An evaluation of the Isoniazid Preventative therapy initiation in Limpopo Province.**

The above matter refers

1. Permission to conduct the above mentioned research is hereby granted.

2. Kindly be informed that :
   - In the course of your consultation there should be no action that disrupts the services.
   - After completion of the research, it is mandatory that the findings should be submitted to the Department to serve as a resource.
   - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
   - Kindly note, that the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated.

.....
Acting Director PHC

2017-11-20
.....
Date

ANNEXURE F

Informed consent by participants

STUDY TITLE: An evaluation of the Isoniazid Preventive Therapy initiation in Limpopo Province

RESEARCHER: Khota Mmankhuma Joyce
Masters of Public Health – University of South Africa (UNISA)

I am a student at UNISA, studying towards a Master's Degree in Public Health. I would like to conduct research on the initiation of IPT amongst eligible HIV positive adult patients, at Polokwane sub district.

The study will contribute to the body of knowledge of the HIV/AIDS, STI and TB (HAST) directorate. The findings may be useful for the management of the Limpopo Department of Health and the health professionals to solve problems in the IPT initiation and thus contribute to meet the target for initiation set by the NDoH.

The objectives of this study are to: describe the knowledge and practice of IPT initiation at the health facilities as well as the available resources to initiate and capture IPT.

The study and its procedures have been approved by the University Of South Africa Department Of Health Studies Research Ethics Committee and permission was granted by the Limpopo Province's Department of Health Office.

As you are directly responsible for the initiation and capturing of IPT in your health facility, I request you to consider it to participate in the study. Your participation is voluntary and you have the choice of opting out of the study at any point in time, with no negative consequences to you or the health facility.

You will have to complete a questionnaire that will take approximately 30 minutes. The completed questionnaires will be in confidential safekeeping and will not be available for any purposes other than this research.

Both you and your health facility will remain anonymous in this study as no names will appear on the questionnaires. Findings of the study will be reported in a dissertation and may be presented at conferences and published in professional journals.

The study procedures do not involve any physical risk or harm to you or the health facility. Although there is no incentive for participating, you will also not face any financial expenses.

You are free to ask the researcher or study supervisor for clarification regarding the study and the questionnaire. You will find contact details at the end of this document.

If you consider this invitation positive I want to thank you for your time to participate and now request you to sign consent below.

I have read this consent form, understand the content and voluntarily consent to participate in this study.

_____	_____
Respondent's signature	Date
_____	_____
Witness (Researcher)	Date

Contact details:

Researcher:
Mrs. Khota M.J
Cell number: 082 674 3048.

Study supervisor:
Mrs HS du Toit
Tel number 012 429 6305
E-mail dtoiths@unisa.ac.za

Chairperson of the University of South Africa, Department of Health Studies, Research Ethics Committee:
Professor JE Maritz
Tel number 012 429 6534
E-mail: maritje@unisa.ac.za

ANNEXURE G

Data collection tool

For office use: ID | | | |

QUESTIONNAIRE ON IPT

STUDY TITLE: An evaluation of the Isoniazid Preventive Therapy initiation in Limpopo Province

RESEARCHER: Khota, Mmankhuma Joyce

Masters of Public Health – University of South Africa (UNISA)

Thank you for your willingness to participate in the research and to complete this 30 minute questionnaire. Please complete Sections A – E.

SECTION A: DEMOGRAPHIC PROFILE

Instructions: Please put a cross **(X)** in the box alongside your response.

A1	Level of education		Certificate
			Diploma
			Undergraduate degree
			Honours/B Tech
			Masters
			PhD/Doctorate
A2	How long have you worked in this facility?		<1year
			1-5 years
			>5 years
A3	How long have you provided HIV/AIDS and TB services?		0 – 1 year
			2 – 5 years
			6 – 10 years
			11 – 15 years
			16 years and above
A4	What is your employment category?		Medical Practitioner/Doctor
			Operational Manager
			Professional Nurse
A5	Have you ever been trained on TB/HIV collaborative activities?		Yes
			No
A6	What was the type of training?		Workshop
			Job orientation
			By a colleague

A7	Have you ever been trained in IPT initiation?		Yes
			No

A8	What was the type of training?		Workshop
			Job orientation
			By a colleague

SECTION B: KNOWLEDGE OF IPT INITIATION

Health facilities should implement the National Department of Health's guidelines for Tuberculosis Preventive Therapy among HIV infected individuals – document on IPT published in 2010.

This above document explains, amongst other things, the screening algorithm for TB prophylactic therapy (PT) and the tuberculosis screening tool for adults. Its aim is to guide health professionals in the field of practice to implement IPT.

To determine your knowledge on the content of this document, please answer all the following questions (1-26) to the best of your ability. Indicate your answer by placing an X in the applicable box:

B1 Prior to the initiation of TB Prevention Therapy (IPT), a patient should be screened for the following signs and symptoms:

A Current cough for the last 24 hours
B Current cough for the last three weeks
C Fever
D Loss of weight
E Night sweats
F Loss of appetite

1	A C D
2	A D E F
3	B C D E
4	A B C D E
5	A B C D E F

B2 A TB suspect is a person with two or more of the signs and symptoms listed above in B1.

1	True
2	False

B3 A TB suspect is eligible for TB Prevention Therapy (IPT):

1	True
2	False

B4 Taking a history from a patient during the first visit is important and a patient can be found not eligible for IPT due to:

A Alcohol abuse
B Active liver disease
C Pregnancy in the case of women
D Having been previously treated for TB

1	A B C D
2	A C D
3	B C D
4	A B
5	C D

B5 TB preventive therapy should only be offered if the following prerequisites can be met:

A High quality voluntary counselling and rapid testing for HIV is available.
B Patients are screened for active TB disease before the initiation of TB preventive therapy.
C Providers follow up and monitor patients monthly to encourage adherence, address side effects and exclude active TB disease.
D The HIV/AIDS programme takes responsibility for implementing TB preventive therapy.
E There is strong collaboration between HIV/AIDS and TB programmes.

1	A B C D
2	A C D
3	B C D
4	A B
5	A B C D E

NB: For Questions B6 to B 26, please mark one box only with an X:

No	Item	True (2)	False (1)
B6	IPT reduces the risk of TB infection among HIV positive patients.		
B7	HIV positive patients should be regularly screened for TB using a clinical algorithm.		
B8	HIV positive patients who do not have a current cough, fever, weight loss or night sweats are unlikely to have active TB and should be offered IPT.		
B9	Chest radiography is a requirement for screening HIV positive patients for IPT eligibility.		
B10	Patients with 1 or more signs or symptoms are considered TB suspects and must be further investigated for active TB disease as per national TB guidelines.		
B11	Patients with 1 or more signs or symptoms are not eligible for IPT until active TB disease has been excluded on the basis of a sputum smear microscopy and mycobacterial culture.		

B12	If there is any suspicion that the patient has active TB, the patient should not be initiated on IPT.		
B13	All HIV-infected people with no signs or symptoms suggestive of active TB are eligible for IPT.		
B14	Patients starting IPT should be given a one-month supply at a time.		
B15	Patients on IPT are expected to complete the 6 months of therapy within a period of 9 months.		
B16	Patients on IPT should be screened for TB at every follow-up visit.		
B17	Information about TB, including preventive therapy, should be made available to all people living with HIV/AIDS.		
B18	During post-test counselling following the diagnosis of HIV, the patient should be informed about the benefits of IPT, and should be invited to return to the clinic for this service.		
B19	It is not recommended that IPT be initiated immediately after informing a patient of his/her HIV status.		
B20	IPT must be discussed and adequately planned to ensure full understanding and adherence by the patients.		
B21	IPT can be started at any time during pregnancy.		
B22	IPT should be completed if a woman falls pregnant while taking IPT.		
B23	IPT can be started after successful completion of TB treatment or at any time after a previous episode of TB, provided that active TB disease is excluded.		
B24	If active TB is confirmed, patients should start TB treatment and receive Cotrimoxazole prophylaxis.		
B25	IPT provides benefit to patients who successfully complete TB treatment.		
B26	Patients with active liver disease or who are actively abusing alcohol should not be offered TB preventive therapy because of the risk of hepatotoxicity.		

SECTION C: PRACTICE OF IPT INITIATION

NB: Please mark one box only with an X, and, where applicable, give a brief description to explain your choice:

No	Item	Strongly Agree (5)	Agree (4)	Do not know (3)	Disagree (2)	Strongly Disagree (1)
C1	I know the official policy and procedures describing IPT initiation.					
C2	I screen all HIV positive patients eligible for IPT.					
C3	I provide IPT for eligible HIV positive patients.					
C4	I record all patients initiated on IPT in the register or book.					
C5	I record information on IPT initiation in the patients' facility file.					
C6	The data capturer/nurse captures all HIV positive patients initiated on IPT in the computer.					
C7	I give all HIV positive patients who were not immediately initiated on IPT a follow-up date.					
C8	I advise clients to adhere to IPT treatment.					
C9	I always monitor and manage client with IPT drug toxics.					
	Briefly explain how (or C8): _____ _____ _____ _____					

SECTION D: AVAILABLE RESOURCES TO INITIATE IPT AT THE HEALTH CLINIC

NB: Please mark one box only with an X and give a brief description to explain your choice where applicable (D5 and D6):

No	Item	Yes (2)	No (1)
My health facility has:			
D1	A functional computer to capture IPT initiation.		
D2	A register or a book to record IPT initiation.		
D3	TB screening questionnaires to screen HIV positive patients for TB.		
D4	Guidelines on IPT initiation.		
For the past six months, has your health facility ever experienced:			
D5	A shortage of Isoniazid drug/medication?		
	Explain _____ _____ _____		
D6	Electricity failure or a power cut?		
	Explain: _____ _____ _____ _____		

SECTION E: GENERAL CHALLENGES

NB: Please mark one box only with an X and give a brief description to explain your choice where applicable as it relates to your facility:

No	Item	Strongly Agree (5)	Agree (4)	Do not know (3)	Disagree (2)	Strongly Disagree (1)
E1	There is always shortage of Isoniazid drug/medication.					
E2	Some of the patients refuse IPT initiation.					
E3	The computer is sometimes not functional.					
E4	There are no registers or books to record IPT initiation.					
E5	There are no patients` facility files to record IPT initiation.					
E6	Patients sometimes request to be given time to think about IPT initiation.					
E7	Some patients, when given time to think about IPT initiation, never come back for initiation.					
E8	When we have a busy day, we record IPT initiation on the registers /books/computer the following day.					
E9	During busy days, there is not enough time to screen patients for IPT.					
E10	Recording of IPT is not done properly due to shortage of staff.					
	Any other challenges or comments:					

Thank you very much for your cooperation and for the time taken to fill in this questionnaire.

ANNEXURE H

TB screening tool for adults

Department:
Health
REPUBLIC OF SOUTH AFRICA

TUBERCULOSIS SCREENING TOOL FOR ADULTS

Surname_____ First Name_____

Address_____

Contact number_____

Date_____

Patient record or Folder Number: _____

Reason for screening:

TB contact ☐

MDR/XDR TB Contact ☐

HCT/PMTCT/VCT/CCMT/ART ☐

Answer "yes" or "no" on the following questions

Symptoms	Yes	No
Do you have a cough (24 hours or more)?		
Do you have loss of weight?		
Do you sweat a lot at night?		
Do you have fever?		

If "yes" to one or more of the questions, suspect TB
Clinically evaluate the patient using national guidelines for diagnosing TB. If required refer for further investigations including a sputum for microscopy and culture

If "no" to all questions, inform the patient on the benefit of IPT (TB preventive therapy) and assess patient eligibility or refer the patients for IPT eligibility

	Yes	No
TB Suspect?		
Sputum collected?		
IPT started / referred for IPT		

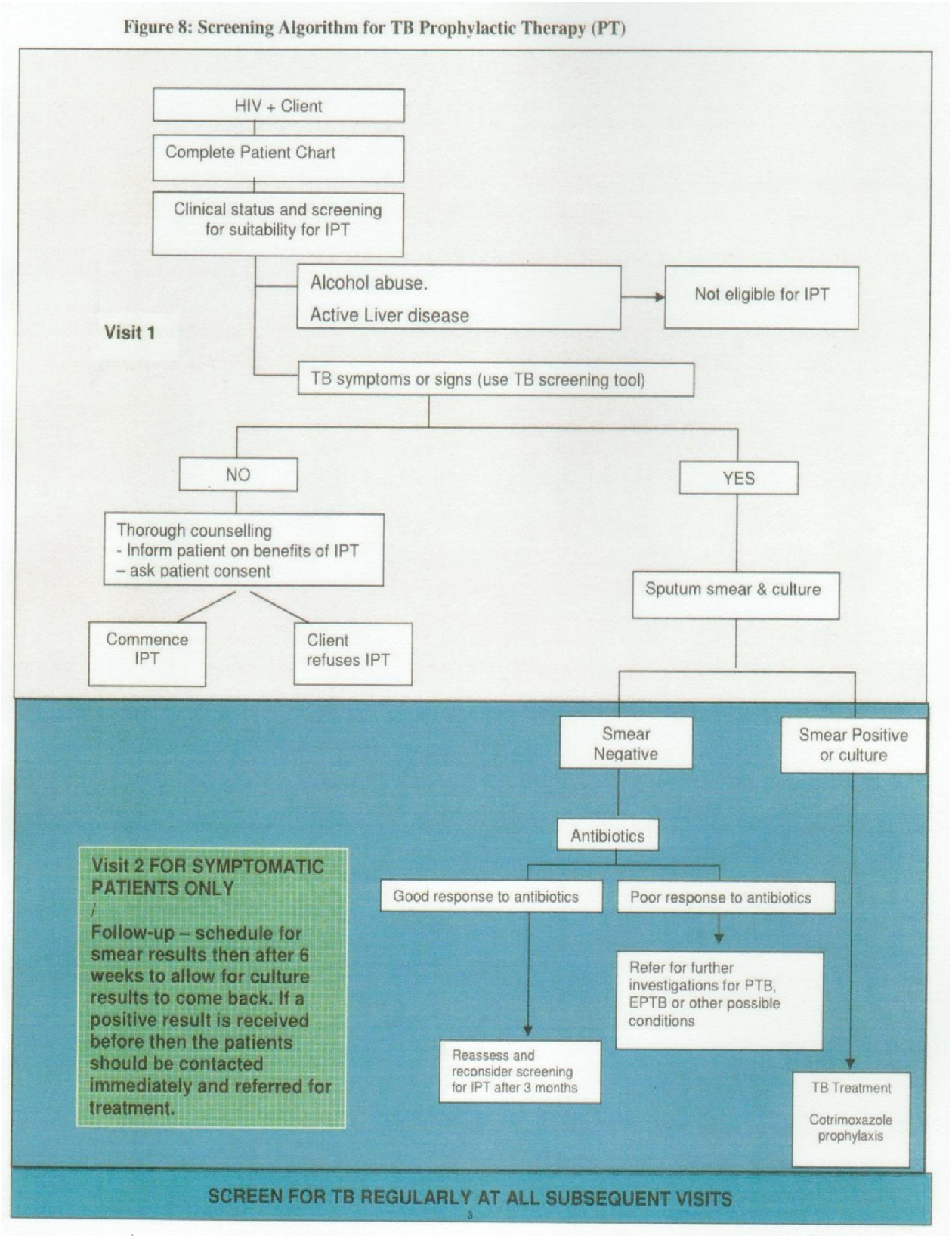
Patients referred to the clinic _____

Name of counsellors / health care worker_____

Facility / contact details _____

ANNEXURE I

Screening algorithm for IPT



ANNEXURE J

Letter from the editor

A|A
COMMUNICATIONS

DECLARATION

Glenvista 13
Leather Oak Street
Oak Glen
Bellville
7530

22 October 2018

To whom it may concern

LANGUAGE EDITING OF MA DISSERTATION

I hereby declare that I assisted Mrs Mmankhuma Khota (student number: 31623751) with her MA dissertation by providing technical formatting, copy-editing and content editing, which included:

* corrections with regard to formatting;
* advice on referencing;
* advice on grammar;
* advice on punctuation; and
* advice on maintaining consistency of language style and conventions.

Yours faithfully

Alexa Anthonie

0632532717 www.alexaanthonie.com alexa@alexaanthonie.com

ANNEXURE K

Letter from the statistician

Unit 09, Letaba View
22 Essenhout Street
Arbor Park
Tzaneen 0850

To Whom it May Concern

RE: Letter of acknowledgement in involvement in Statistical Analysis of Research project

This serves as a formal acknowledgement that I, Barry Mutasa , ID Number 8007276391189 have assisted Ms MJ Khota to analyze data that she had collected in line with the objectives of her research. The support included analysis of the data in SPSS using the consultatively agreed ideal statistical approaches with her.

I have an Honours Degree in Statistics obtained from Unisa and I am also registered as a certified Natural Scientist in Mathematical Sciences with the South African Council of Natural Scientific Professionals (SACNASP).

For more details and clarity on me and my profile, please feel free to contact me on 0835757654.

Yours Sincerely

Barry Mutasa *(Hons Stats)*
Stat-tech Consultants

ANNEXURE L

Turnitin originality report

An Evaluation of the Isoniazid Preventive Therapy initiation in Limpopo Province

by Mmankhuma Joyce Khota

Submission date: 01-Nov-2018 09:25PM (UTC+0200)
Submission ID: 1031157337
File name: Khota_Dissertation_31_October_2018.doc (4.01M)
Word count: 32770
Character count: 196694

An Evaluation of the Isoniazid Preventive Therapy initiation in Limpopo Province

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