

**KNOWLEDGE, ATTITUDES AND PRACTICES OF HEALTH CARE
PROVIDERS TOWARDS ISONIAZIDE PREVENTIVE THERAPY (IPT)
PROVISION IN ADDIS ABABA, ETHIOPIA**

by

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submitted in accordance with the requirements for the degree of

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DECLARATION

I declare that **KNOWLEDGE, ATTITUDES AND PRACTICES OF HEALTH CARE PROVIDERS TOWARDS ISONIAZIDE PREVENTIVE THERAPY (IPT) PROVISION IN ADDIS ABABA, ETHIOPIA** 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 and that this work has not been submitted before for any other degree at any other institution.



AZMERA MOLLA TIKUYE

AUGUST 22, 2013

DATE

**KNOWLEDGE, ATTITUDES AND PRACTICES OF HEALTH CARE
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ABSTRACT

This study assessed healthcare providers' knowledge, attitudes and practices towards IPT provision for people living with HIV (PLHIV) in Addis Ababa, the capital city of Ethiopia.

A quantitative, descriptive, cross-sectional study design was used for the study and data was collected using a self-administered questionnaire from 104 clinicians working in ART clinics.

The findings show that healthcare providers who participated in this study had a mean value of high knowledge, positive attitude and good practice towards IPT provision for PLHIV. Significant association was found between knowledge and attitude ($P=0.000$) but no significant associations were found between knowledge and practice, attitude and practice as well as between the type of facility (public/private) and level of practice.

This implied that, the low level of IPT implementation in Addis Ababa doesn't seem due to health care providers' lack of knowledge and resistance to provide IPT for people living with HIV. As a result, the researcher recommends for further researches of other possible factors like; the reliability of IPT information/data management, drug supply and the leadership and governance of the health system that IPT program is a direct concern.

KEY CONCEPTS

Attitude, health care provider, isoniazid preventive therapy, knowledge, people living with HIV, practice.

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LIST OF ABBREVIATIONS

ART	Antiretroviral therapy
CDC	Centres for Disease Control and Prevention, USA
EFHAPCO	Ethiopia Federal HIV/AIDS prevention and control office
EFMoH	Ethiopian Federal Ministry of Health
HBC	High burden countries
HIV	Human immunodeficiency virus
ICF	Intensified case finding
IPT	Isoniazid preventive therapy
GP	General practitioner
KAP	Knowledge, attitude and practice
PLHIV	People living with HIV
TB	Tuberculosis
THAC	TB/HIV advisory committee
UNAIDS	Joint United Nations Program on HIV/AIDS
UNISA	University of South Africa
WHO	World Health Organization

CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

The Human Immunodeficiency Virus (HIV) pandemic presents a massive challenge to the control of tuberculosis (TB). In high HIV prevalence populations, TB is a leading cause of morbidity and mortality, and HIV is fuelling the TB epidemic. HIV increases susceptibility to infection with mycobacterium tuberculosis, the risk of progression to TB disease, and the incidence and prevalence of TB. It also increases the likelihood of re-infections and relapses of TB. It has also been found that latent TB-infection in HIV-positive persons reactivates at a rate of 5 to 15% per year as compared to 5 to 10% over a lifetime for HIV-negative persons. HIV-positive persons are prone to re-infection with new strains of TB from the community and drug resistance may occur more frequently (Ethiopian Federal Ministry of Health (EFMoH) 2008:3).

According to the World Health Organization (WHO) factsheet on TB/HIV, almost one in five deaths of among people living with HIV (PLHIV) is due to TB. In 2010, of the 1.8 million HIV-related deaths, 350,000 were due to TB (WHO 2011a). In the same year, WHO estimated 8.8 million incident cases of TB globally, of which 2.3 million were HIV positive. Among the total HIV positive TB patients globally, 82% live in sub-Saharan Africa (WHO 2011b:61).

TB/HIV co-infection is profound in resource-limited countries with high TB prevalence and HIV infection rates. Africa is facing the worst TB/HIV burden in the world. In 2010, of the 2.3 million TB/HIV incident cases, 900,000 (39%) were living in the African region (WHO 2011b:70).

In response to the dual epidemics of HIV and TB, WHO has recommended 12 collaborative TB/HIV activities as part of core HIV and TB prevention, care and treatment services. These include interventions that reduce the morbidity and

mortality from TB in people living with HIV (PLHIV), such as the provision of antiretroviral therapy (ART) and the three I's for HIV/TB: intensified case-finding of TB (ICF), isoniazid preventive therapy (IPT) and infection control for TB (WHO 2011c:8). IPT was first recommended by WHO and Joint United Nations Program on HIV/AIDS (UNAIDS) in 1998 (WHO 1998:225).

Isoniazid is given to individuals with latent infection with *Mycobacterium tuberculosis* in order to prevent progression to active disease. Exclusion of active TB is critically important before IPT is started. The absence of all of current cough, night sweats, fever, or weight loss can identify a subset of adolescents and adults living with HIV who have a very low probability of having TB disease that can reliably be initiated on IPT. This screening rule has a negative predictive value of 97.7% (95% CI [confidence interval] 97.4–98.0) at 5% TB prevalence among people living with HIV (Getahun, Granich, Kittikraisak & Varma 2011). In children, the absence of poor weight gain, fever and current cough can identify children who are unlikely to have TB. Isoniazid is given daily as self-administered therapy for at least 6 months as part of a comprehensive package of HIV care for all eligible people living with HIV irrespective of degree of immunosuppression, ART use, previous TB treatment and pregnancy. Information about IPT should be made available to all people living with HIV (WHO 2011c:10-16).

IPT is efficacious and is recommended for all people living with HIV in countries where tuberculosis is common and in all those with documented co-infection, regardless of where they live (WHO 1998:211). But yet, this global recommendation has not been widely implemented in the world. In 2010, only 12% of the reported number of people living with HIV newly enrolled in HIV care was put on IPT worldwide. Intensified efforts are needed to approach the global targets of providing screening for TB for all those enrolled in HIV care and providing IPT to all those attending HIV care services who are eligible for IPT by 2015 (WHO 2011b:66).

Ethiopia is one of the highly affected countries by the TB/HIV co-epidemic and one of among the 22 high burden countries (HBC) in Tuberculosis. According to the WHO TB incidence estimation, Ethiopia ranked 9th in the world and 3rd in Africa in 2010. The incidence and prevalence of TB burden for the same year was estimated at 261 and 394 per 100,000 populations, respectively (WHO 2011b:54). On the same fact, the national HIV/AIDS factsheet indicates that about 1,216,908 Ethiopians were living with HIV/AIDS and 28,073 individuals have died as a result of infection with the virus in 2010. The national HIV prevalence rate in adults (15-49 years) was 2.4%, with marked variation between urban (7.7%) and rural populations (0.9%) (Ethiopia Federal Ministry of Health HIV/AIDS prevention and control office (EFMOH-HAPCO) 2010).

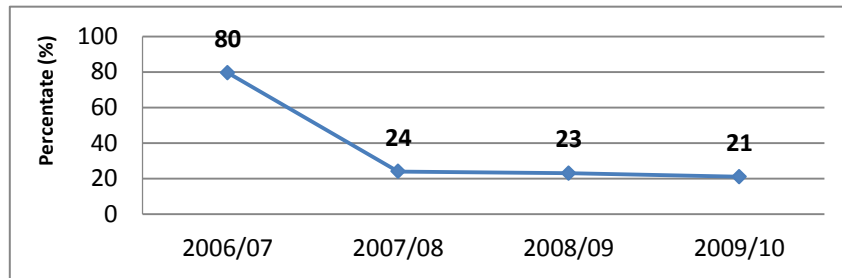
Recognizing the high prevalence of TB and HIV in the country and following the WHO's interim policy recommendations on IPT in 2004, the EFMoH launched a policy to implement the collaborative activities between TB and HIV/AIDS programs since 2005 (EFMoH 2008:17). The major objectives of the collaborative activities were to decrease the burden of TB among PLHIV and vice versa to decrease the burden of HIV among TB patients through regular screening of HIV patients for TB in HIV clinics and providing HIV counselling and testing services for TB patients in TB clinics. PLHIV who is found to be free from active TB after the standard screening for TB symptoms will be given Isoniazid for prevention treatment. Some of the major advantages of IPT are: prevention of progression of latent TB into active TB, improve quality of life, decrease mortality in children and prevention of further transmission of TB in the community, at large (EFMoH 2008:17).

To support this collaborative effort, Ethiopia adopted the international IPT guideline and developed the first national TB/HIV implementation guideline in 2005; where IPT is one of the key component in the guideline. Consecutively, TB/HIV working group was established at national and regional levels to accelerate the implementation of collaborative TB/HIV activities through effective collaboration between National TB and AIDS Control programs and other stakeholders (EFMoH 2008: iv).

1.2. BACKGROUND INFORMATION TO THE RESEARCH PROBLEM

1.2.1 The source of the research problem

Despite the fact that Ethiopia exerts effort to widely scale up the implementation of IPT, reports reveal a very low performance at the national level. According to the EFMoH TB control program report, the trend of IPT utilization rate among eligible PLHIV is decreasing since it started in 2006 and was consistently less than 30% for the last three years. As shown in Figure 1.1 below, only 21% of PLHIV who were negative from TB were put on IPT in 2009/10 (EFMoH 2011:22).



Source: FMoH of Ethiopia annual TB bulletin, March 2011. Issue No 4

Figure 1.1 Proportion of eligible HIV positive clients put on IPT: 2006/07-2009/10-FMoH

The study conducted in Addis Ababa also showed that the proportion of PLHIV provided with IPT was as low as 32.0% and the proportion of having information about IPT among study participants was 29.8% (Wesen & Mitike 2012).

In 2010, the Stop TB Department of WHO assessed the implementation of IPT for PLHIV worldwide and reviewed the critical health system barriers for its nationwide implementation. The results revealed that, barriers to the implementation of IPT were diverse and can occur from global to facility levels. The fear of development of drug-resistant TB among program managers and service providers was commonly cited as one of the reason for limited scaling up (Getahun, Granich, Sculier, Gunneberg, Blanc, Nunn & Raviglione 2010).

A study conducted in Thailand on physicians' adherence to the IPT guideline showed that only 19% of the surveyed physicians provided IPT for PLHIV (Hiransuthikul, Hiransuthikul, Nelson, Jirawisit, Paewplot & Kasak 2005).

Another study in South Africa also powerfully suggested that doctors' resistance to prescribe IPT for their TB-negative HIV patients has a contribution on TB epidemic. The study states that there has been significant anecdotal evidence about clinician resistance across the country to use the WHO-recommended preventive TB therapy and the study concluded that a change in health care worker perception is needed if IPT was to be widely used in the public sector (Bateman 2011).

1.2.2 Research problem

EFMoH (2011:22) persistently reported an under achievement of IPT implementation in the country. For the last three years (2007/8 - 2009/10), less than 30% of PLHIV who were free from TB were put on IPT; this is far beyond the target set by the Global Stop TB plan which is to achieve 100% of eligible people living with HIV to be put on IPT by 2015.

The problem of low IPT implementation in Ethiopia has been recognized since before and various studies conducted in the related areas. However, all previous studies were focused on patients' perception and adherence rate but no study was conducted on the perspective of healthcare providers towards their perception and practice on IPT provision for PLHIV.

In contrast, various studies conducted worldwide identified that healthcare providers' perception and non-compliance with the WHO IPT recommendations were cited as the common barriers for the wide use of IPT in many countries. It has also been reflected that the reason for barriers were because of lack of knowledge, experience and clarity on the benefits of IPT by the health care workers (Getahunet al 2010). In addition, Bateman (2011) explains that perceived operational barriers included a number of practical issues that clinicians were prohibitive to the use of IPT; one was that using isoniazid without

other TB medications would induce drug resistance. Another perception barrier was the belief that exclusion of active TB would be difficult in settings with a high prevalence of TB and HIV infection.

1.2.3 Statement of the research problem

EFMoH has in place the national TB/HIV implementation guideline since 2005 to guide healthcare providers on effective delivery of TB/HIV collaborative activities, including IPT. Nevertheless, the proportion of IPT utilization among PLHIV remained low (< 30%) in Ethiopia since 2007/8(EFMoH2011:22).

Despite the low implementation of IPT in Ethiopia, there seem to be no previous studies conducted to know how healthcare providers perceive and practice IPT according to the national guideline and WHO recommendations.

1.3 AIM OF THE STUDY

The aim of this study is to widely scale up IPT implementation in Addis Ababa and in the country, as appropriate by identifying the level of knowledge, attitude and practice of healthcare providers towards IPT provision and determining if significant associations exist between IPT practice and their level of knowledge and attitude.

1.3.1 Research purpose

The purpose of the study is to assess healthcare providers' knowledge, attitude and practice towards IPT provision for people living with HIV in Addis Ababa, Ethiopia.

1.3.2 Research objectives

The specific objectives of this research were to:

- Assess the level of healthcare providers' knowledge regarding IPT implementation and its treatment management.

- Assess healthcare providers' attitude towards IPT efficacy or its benefit for PLHIV.
- Assess level of healthcare providers' practice towards IPT provision for eligible PLHIV.
- Determine if relationship exist between healthcare providers' IPT practice and their level of knowledge and attitude.
- Determine if a relationship exists between healthcare providers' IPT practice and their working settings (private vs public health facilities).

1.4 SIGNIFICANCE OF THE STUDY

The finding of this research is anticipated to promote effective implementation of IPT in Ethiopia by further improving the knowledge, attitude and practice of healthcare providers' towards IPT provision for their eligible HIV patients. The study will benefit for the people living with HIV to get access of INH as appropriate as possible and prevent them from the risk of active TB development. It will also contribute for researchers by identifying the areas of gap for further researches.

1.5 DEFINITIONS OF KEY CONCEPTS

The key terms used in this study were defined and explained as applied throughout the dissertation so that the readers can share the intended meaning with the researcher.

Attitude:

Attitude is a state of mind involving beliefs, feelings, values and dispositions to act in certain ways (Medical dictionary. [s.a.]).

In this study attitude refers to the perception or feeling of healthcare providers on the benefit/effectiveness of IPT and any preconceived ideas they may have towards it.

Clinician: A health professional, such as a physician, psychiatrist, psychologist, or nurse, involved in clinical practice, as distinguished from one specializing in research (Medical dictionary. [s.a.]). In this study clinicians include: physicians, health officers and nurses.

Healthcare provider: is an individual or an institution that provides preventive, curative, promotional, or rehabilitative health care services in a systematic way to individuals, families or communities (Wikipedia. [s.a.]).

Isoniazid: also known as isonicotinyldiazine (INH) is an organic compound that is the first-line medication in prevention and treatment of TB (Bateman 2011).

Isoniazid Preventive Therapy (IPT): is the provision of the drug isoniazid to people at high risk of developing active tuberculosis (TB) (Bateman 2011).

Knowledge;

Knowledge is defined as ‘facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject’ (Oxford dictionary. [s.a.]).

In this study ‘knowledge’ refers how healthcare providers are informed or understood regarding the benefit of IPT and its risk management.

Practice:

Practice is defined as ‘the actual application or use of an idea, belief, or method, as opposed to theories relating to it’ (Oxford dictionary [Sa]).

In this study practice refers to the prescription or provision of IPT by healthcare providers for people living with HIV based on the set WHO recommendations.

1.6 CONCEPTUAL FRAMEWORK

A framework is the structure of the idea or concept and how it is put together. It guides the researcher during the development of the study and enables the

researcher to link the findings to the body of knowledge (Burns & Grove 2005:37).

Based on the IPT guidelines and literatures reviewed, the researcher developed a conceptual framework for this study shown below (Figure 1.2). The structure depicts that the practice behaviour of healthcare providers towards IPT provision could be directly or indirectly affected by the socio-demographic characteristics (such as, age, sex, professional level, experience, training), knowledge of IPT (such as; screening for IPT eligibility, identifying eligible groups, managing INH preventive drug dose and its side effects) and the attitude they have towards IPT efficacy as well as the confidence on the screening tools to exclude active TB among PLHIV. As tried to show using the arrows, associations may exist between the practice behaviour of healthcare providers towards IPT provision and their socio-demographic characteristics, level of knowledge and attitude.

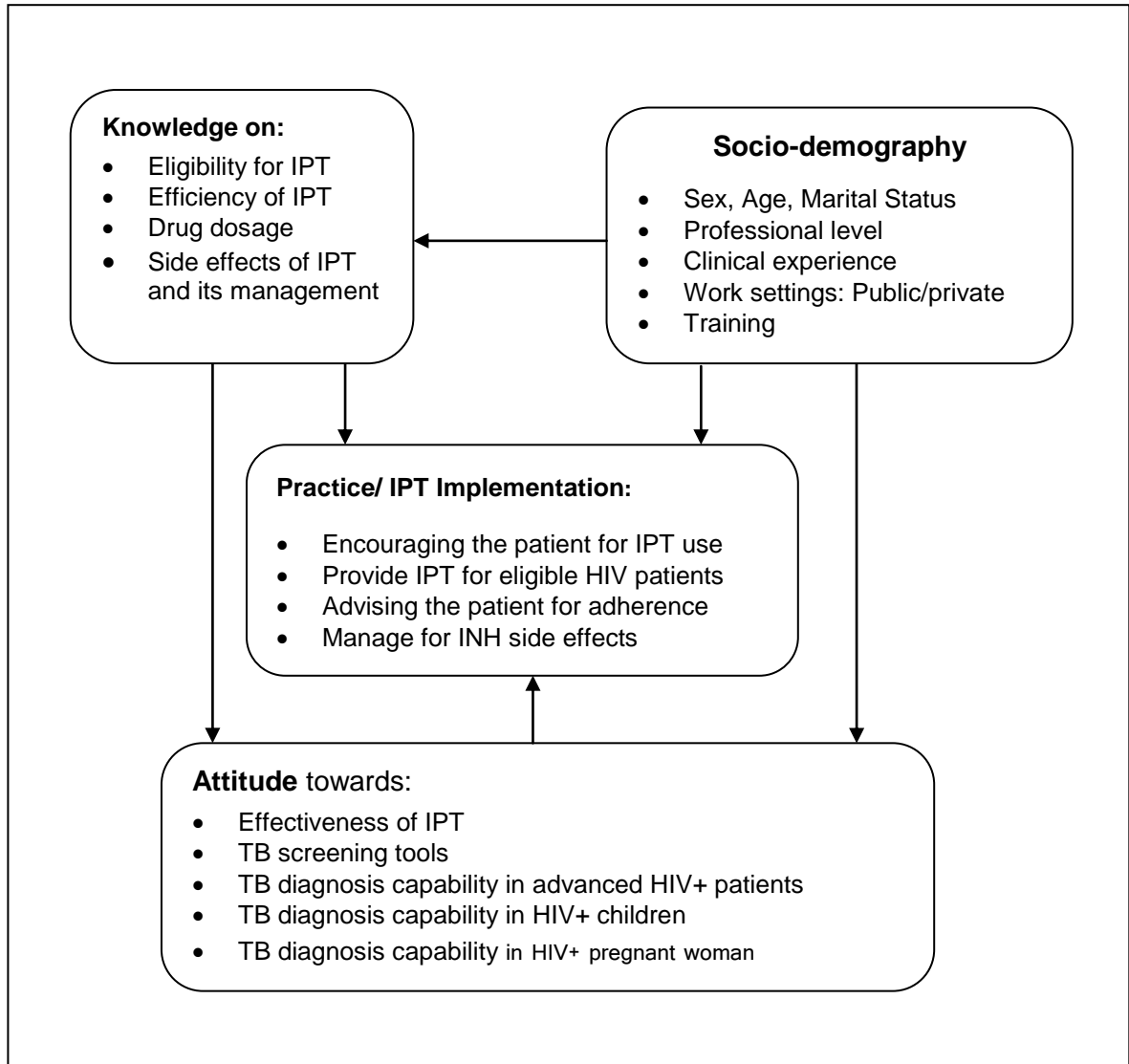
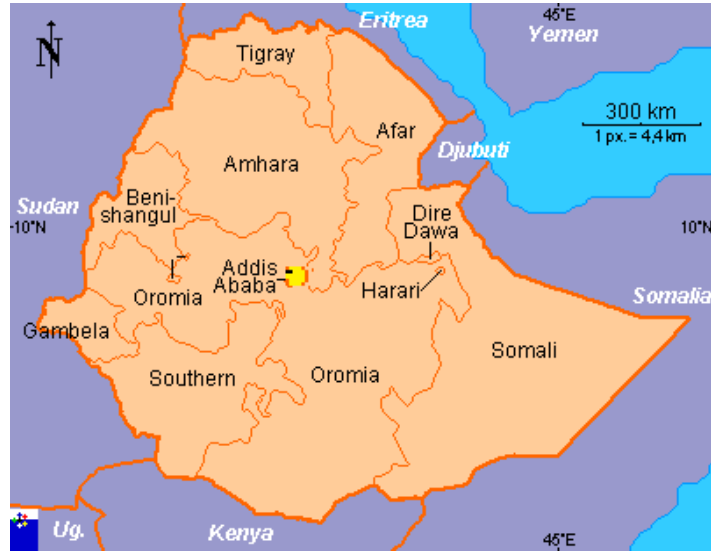


Figure 1.2 Conceptual framework of the study

1.7 RESEARCH SETTING

The study was facility-based at 22 ART clinics in Addis Ababa, the capital city of Ethiopia. Addis Ababa is the largest city and geographically located at the heart of the country (Figure 1.3). According to the population and housing census in 2007, Addis Ababa has an estimated population of 2.74 million (1.43 male and 1.31 female) and it is divided into ten sub-cities of administrative units (Central Statistical Agency (CSA) of Ethiopia 2008: 8)



(Source: Clickable [n.d.]: [1])

Figure 1.3 Regional map of Ethiopia

According to the health bureau of the city administration, there were a total of 68 health facilities providing ART services in Addis Ababa as of June 2012. Of these, 47 were public, six non-government organizations (NGO) and 15 private health facilities. Table 1.1 shows the number of ART site distribution by sub-city and type of facility in Addis Ababa.

Table 1.1 Distribution of facilities providing ART services in Addis Ababa.

Sub-city	Type of Facility				Total Existing ART sites
	Public * hospitals	Public health centres	NGO health centres	Private hospitals	
Addis Ketema	1	2	0	3	6
Akaki-Kality	0	3	0	1	4
Arada	2	3	1	1	7
Bole	0	4	1	5	10
Gulele	2	6	0	0	8
Kirkose	2	3	0	2	7
Kolfe-Keranio	1	4	1	2	8
Lideta	1	6	0	0	7
Nifas-Silk Lafto	0	3	0	0	3
Yeka	1	3	3	1	8
Total	10	37	6	15	68

1.8 RESEARCH DESIGN AND METHOD

1.8.1 Design

A quantitative, descriptive cross-sectional design was used to assess the level of healthcare providers' knowledge, attitude and practice (KAP) towards IPT provision as well as to identify the possible relationships between practice behaviour and the level of knowledge and attitude.

1.8.2 Methods

1.8.2.1 Population

As defined by Burns & Grove (2005:342), a population is the total set of study individuals or elements; in this case all healthcare providers who were working in ART clinics and providing clinical care and treatment services for people living with HIV were the population of this study. On estimation, around 413 total healthcare providers were expected working in Addis Ababa ART clinics (on average, seven clinicians in each 47 public and four clinicians in each 21 NGO and private ART clinics).

1.8.2.2 Sample and sampling techniques

A stratified cluster random sampling technique was employed to interview a total of 140 healthcare providers from the selected twenty-two ART service providing health facilities in Addis Ababa.

1.8.2.3 Data collection instrument

A structured and self-administered questionnaire was used to collect the required data for this study (see annexure A). The questionnaire was comprised of four sections;

- Section-I: socio-demographic characteristics,
- Section-II: Knowledge on IPT
- Section-III: Attitude towards IPT efficiency and,
- Section-IV: Practice of IPT provision for PLHIV.

1.8.2.4 Data analysis

Data was entered using Epi-Info (windows version 3.5.4) which is a public domain statistical software developed by Centres for Disease Control and Prevention (CDC), Atlanta, USA. The data was then exported to a statistical package for social scientists (*SPSS V21.0*) for descriptive statistical analysis and association test between the study variables, as appropriate.

1.9 ETHICAL CONSIDERATIONS

All principles of ethical consideration were maintained throughout the study.

Rights to participants

Ethical consideration in this study was ensured through respecting the right of each respondent to self-determine for participation in the study, keeping respondents' information anonymous and confidential – accessible only by the researcher. Since the study used only a self-administered instrument, no risk was associated during the data collection process and no harm was generated throughout the research process.

Integrity

Records on data collection were kept under lock for safety. No unauthorised person had access the information. All sources of information were acknowledged.

Institutional rights

Ethical approval was obtained from both, the Higher Degrees Committee of the Department of Health Studies at the University of South Africa (UNISA) (annexure B) and Addis Ababa City Administration Health Bureau (annexure D) before data collection commenced.

1.10 SCOPE AND LIMITATIONS OF THE STUDY

The study was conducted in the selected health facilities of Addis Ababa that would be problematic to generalize the findings of the study to all clinicians who work outside the study sites in Addis Ababa and in Ethiopia, in general. Since the data collection instrument was self-reported, responses might be biased of respondents' feeling at the time they filled out the questionnaire.

1.11 STRUCTURE OF THE DISSERTATION

For ease of reading, this research report is structured as follows:

Chapter 1: Orientation to the study

Chapter 2: Literature review

Chapter 3: Research design and method

Chapter 4: Analysis, presentation and discussion of research findings

Chapter 5: Conclusions and recommendations

1.12 CONCLUSION

This chapter briefly highlighted the background of the research, the research problem, research objectives and its significance for the population. The researcher also used this chapter to describe the design and method of the research that was used to collect the data and address the validity of the study.

The researcher believed that this research is of most importance in identifying levels of knowledge, attitude and practice of healthcare providers towards the provision of IPT for PLHIV in the study area.

Chapter 2 contains the literature review on which this study is based.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter gave an introduction to the overall research contents; description to the research problem, purpose of the research, the research design and methods, significance of the research and the ethical considerations during the study. This chapter reviews literatures that are relevant to the implementation of IPT and its barriers focusing on the healthcare providers' perspective worldwide and particularly in Ethiopia. A literature study provides a review of what others have done on the topic under this study.

Burns & Grove (2005:37) explain that reviewing of literature is necessary because it provides insights on how others have investigated similar research problems. It orients the researcher to what has already been done about the topic. It helps the researcher to obtain adequate knowledge on the topic of interest, to know what has already been done about the topic and to understand the key information on the methods used by previous researchers.

Therefore, several sources were consulted before the conduct of this study, including research books, medical and research journals, policy documents and guidelines. Documents related to the topic were reviewed such as; TB, HIV, TB/HIV collaborative activities and specifically, on the situation of isoniazid preventive therapy implementation in country and globally. The summary of all the literatures reviewed is shown in this section as follows.

2.2 OVERVIEW OF TUBERCULOSIS AND HIV/AIDS

An infectious disease is a disease that arises from the infestation of pathogenic microbial agents such as bacteria of humans or animals. For much of human history these diseases were the major causes of deaths worldwide. Even though communicable diseases have been on the fall in the major economies, the

contagious maladies such as tuberculosis and HIV/AIDS remain the most prevalent killers in the developing world. Especially, their co-infection forms the most deadly combination that negatively impacts not just the health but also the social, economical, political and security fabrics of the developing nations (Schlipkötter & Flahault 2010).

2.2.1 Tuberculosis

TB is caused by *Mycobacterium tuberculosis*, a wide spread bacterial pathogen capable of prolonged survival within individuals in a state of latency or inactivity. This leads to an important distinction between latent TB infection, a state in which people are well, with normal medical investigations except for positive skin test reaction to injected TB purified protein derivative (PPD test) and TB disease. Individuals with TB disease usually have symptoms such as cough and weight loss as well as chest X-ray abnormalities and TB bacilli detectable at the site of tissue damage and disease (Churchyard & Corbett 2001).

TB is transmitted by airborne droplets from person to person, and infection can be acquired only from individuals with active pulmonary TB. The risk of developing active TB is increased in latent infected individuals compared to that of infected free individuals. Latent TB bacilli are metabolically inactive and relatively insensitive to anti-TB drugs, so that treatment of infection, as distinct from disease, requires prolonged therapy to avoid a high risk of developing active TB (Jeong & Lee 2008).

Under normal circumstances, the majority (90%) of those infected with TB will never become ill. Approximately, 10% of persons with normal immune systems who are infected with *M. tuberculosis* will develop TB disease at some point in their life. Conditions that are known to increase the risk of progression from TB infection to TB disease include; environmental factors including smoking, alcohol abuse, injection drug use, malnutrition and diet, socio-economic factors including overcrowding, poor ventilation, hunger and poor nutrition, and medical

conditions including, diabetes mellitus, malignancies, measles, cortico-steroid therapy, immunosuppressive treatment and HIV infection (CDC. [s.a.]).

According to Ringold, Lynn & Glass (2008:464), TB infection typically occurs after repeated or prolonged exposure to the coughing of an actively infected person. Individuals with HIV infection are at particularly high risk for contracting TB due to a lowered resistance to disease-causing organisms. TB can affect any organ in the body, but the lungs are the most common sites of infection.

2.2.2 HIV/AIDS

HIV infects cells in the immune system and the central nervous system. One of the main type of cells that HIV infects is the T helper lymphocyte. These cells play a crucial role in the immune system, by coordinating the actions of other immune system cells. A large reduction in the number of T helper cells seriously weakens the immune system. HIV infects the T helper cell because it has the protein CD4 on its surface, which HIV uses to attach itself to the cell before gaining entry. This is why the T helper cell is sometimes referred to as a CD4+ lymphocyte. Once it has found its way into a cell, HIV produces new copies of itself, which can then go on to infect other cells.

Over time, HIV infection leads to a severe reduction in the number of T helper cells available to help fight disease. The number of T helper cells is measured by having a CD4 test and is referred to as the CD4 count. It can take several years before the CD4 count declines to the point that an individual needs to begin antiretroviral treatment. Without treatment, the CD4 count continues to decline to very low levels, at which point the individual is said to have progressed to AIDS.

HIV infection can generally be broken down into four distinct stages: primary infection, clinically asymptomatic stage, symptomatic HIV infection, and progression from HIV to AIDS.

STAGE 1: Primary HIV infection

During this stage there is a large amount of HIV in the peripheral blood and the immune system begins to respond to the virus by producing HIV antibodies and cytotoxic lymphocytes. This process is known as sero-conversion. If an HIV antibody test is done before sero-conversion is complete then it may not be positive.

STAGE 2: Clinically asymptomatic stage

This stage lasts for an average of ten years and, as its name suggests, is free from major symptoms, although there may be swollen glands. The level of HIV in the peripheral blood drops to very low levels but people remain infectious and HIV antibodies are detectable in the blood, so antibody tests will show a positive result.

STAGE 3: Symptomatic HIV infection

Over time the immune system becomes severely damaged by HIV and antiretroviral treatment is usually started once an individual's CD4 count (the number of T helper cells) drops to a low level, an indication that the immune system is deteriorating. Treatment can stop HIV from damaging the immune system; therefore, HIV-infected individuals on treatment usually remain clinically asymptomatic. However, in HIV-infected individuals not receiving treatment or on treatment that is not working, the immune system fails and symptoms develop. Initially many of the symptoms are mild, but as the immune system deteriorates the symptoms worsen.

Symptomatic HIV infection is mainly caused by the emergence of certain opportunistic infections (most commonly TB) that the immune system would normally prevent. This stage of HIV infection is often characterised by multi-system disease and infections can occur in almost all body systems.

STAGE 4: Progression from HIV to AIDS

As the immune system becomes more and more damaged the individual may develop increasingly severe opportunistic infections and cancers, leading

eventually to an AIDS diagnosis. A clinical criteria is used by WHO to diagnose the progression to AIDS, this differs slightly between adults and children under five, and depending on the guidelines of individual countries (WHO 2007b:8).

2.3 BURDEN OF TUBERCOSIS AND HIV/AIDS

As Martinson, Hoffmann & Chaisson (2011:290) state, the synergy between TB and HIV/AIDS is well established and is strong. It is found that in high HIV prevalence populations, TB is a leading cause of morbidity and mortality and HIV is attributed to fuel the TB epidemic.

HIV infections is also noted to increase TB transmission rate at the community level thereby increasing the risk of HIV-negative people contacting the disease and viciously contributing to the incidence and prevalence of TB in a given nation. The risk of developing TB is estimated to be between 20- 37 times greater in people living with HIV than among those without HIV infection (WHO 2011c:8).

2.3.1 Global burden of Tuberculosis

Lönnroth & Raviglione (2008:481) state that about one third of the world's population, or about 2 billion is estimated to be infected with the tuberculin bacilli and hence at risk of developing and transmitting the active disease anytime, especially so when the immune system gets compromised by other pathologic agents. According to the WHO (2011b:11) report, there were an estimated 8.8 million incident cases of TB (range, 8.5 million-9.2 million), equivalent to 128 cases per 100 000 population globally in 2010. Not surprisingly, over 85% of the incidences are reported to occur in the developing world with Asia taking 59% of the cases and Africa's 26%; smaller proportions of cases were also reported in the eastern Mediterranean region (7%), the Europe (5%) and the Americas (3%). Overall, 81% of the global TB cases were estimated to occur in the 22 HBCs that have been given highest priority at the global level since 2000. Of the 22 HBCs, nine countries were in the African continent namely; South Africa,

Nigeria, Ethiopia, Kenya, Mozambique, the Democratic Republic of the Congo, Uganda, the United Republic of Tanzania and Zimbabwe (WHO 2011b:10).

2.3.2 TB/HIV co-epidemic

HIV is reported to accelerate the likelihood of re-infections and relapses of TB. Studies indicate that latent TB-infection in HIV-positive persons tend to reactivate at a faster rate of 5 to 15% per year as compared to 5 to 10% over a lifetime for HIV-negative persons. HIV-positive persons are prone to re-infection with new strains of TB from the community and drug resistance may occur more frequently (Sculier, Getahun & Lienhardt 2011:5).

According to the WHO (2011a) factsheet, TB continues to be a serious health risk and is a leading cause of morbidity and mortality among people living with HIV. Of the 1.8 million HIV-related deaths in 2010, 350,000 were due to TB. On the other hand, among the newly 8.8 million incident cases of TB globally in 2010, 1.1 million (13%) were among people living with HIV and 82% of those HIV positive TB patients live in sub-Saharan Africa (WHO 2011b:61).

The correlation between the dual TB and HIV infestation and poverty is pronounced in sub-Saharan Africa, especially in southern and east Africa. In 2010, of the 2.3 million TB/HIV incident cases, 900,000 (39%) were living in the African region (WHO 2011b:70).

2.3.3 National burden of TB and HIV/AIDS

In Ethiopia, TB is the leading cause of death among PLHIV and the second in the general population (EFMoH 2009/10:32); Gele, Bjune & Abebe 2009:5). The country has seen a TB case increase of 2.6% annually, making it the most heavily afflicted country in the horn of Africa (WHO 2007a:19). In 2010, the incidence and prevalence of all forms of TB in the country was estimated at 261 and 394 per 100,000 populations respectively, that makes Ethiopia to rank 9th among the list of 22 HBCs in the world and 3rd in Africa. Furthermore, mortality

due to TB (excluding deaths among HIV-positive TB cases) in the same year was estimated to be 35 per 100,000 populations (WHO 2011:12).

The problem in the country is even more pronounced due to the existence of an already high HIV infection. According to EFMOH-HAPCO (2010) annual report, HIV prevalence rate in adults (15-49 years) was 2.4% in 2010, with marked variation between urban (7.7%) and rural populations (0.9%) that a total of 1,216,908 people were living with HIV and 28,073 died due to HIV. In the same year, the proportion of TB patients infected with HIV was 15% (EFMOH 2011:22). From the study carried out in the Oromia regional state, the result showed that prevalence of HIV infection was significantly associated with the incidence of TB ($r= 0.69$, $p<0.01$) across the region (Bekele, Fleming, Habitamu and Fogarty 2009:65). These findings corroborate that TB, its co-morbidity with HIV/AIDS in particular, remain a disabling combination that warrant especial attention on the diagnosis, treatment and overall management in the country. In fact, several hospital-based cross sectional studies have reported that most of tuberculosis patients were co-infected with HIV, with recent estimates ranging from 46% to 65% (Kassu, Mengistu, Ayele, Diro, Mekonnen & Ketema 2007:118).

2.4 RESPONSE TO TB-HIV/AIDS DUAL EPIDEMIC

Control of TB in HIV infected individuals represent a multi-factorial challenge both for the individual and for the nation in question. Since prevention is better than treatment, TB prophylactic therapy has been strongly recommended for people living with HIV/AIDS.

2.4.1 Global response to the TB/HIV dual epidemic

The wide presence of latent mycobacterium tuberculin in the global populace and the immune suppression ability of HIV create a perfect opportunity for the rapid development of active TB disease in HIV infected individuals. Hence to reduce the burden of TB in HIV infected individuals, WHO recommended TB preventive therapy back in 1998 along with other key intervention strategies

(WHO 2011c:11). Subsequently, in 2004 WHO issued a policy on TB/HIV collaborative activities to accelerate implementation of the twelve recommended guidelines. One such recommendation was that the significance of IPT to reduce the impact of TB/HIV co-infection (WHO 2004). Further, WHO (2011c: 11) has revised its policy on IPT in 2010 reiterating the importance of IPT as a core function of services provided to PLHIV and as a primary responsibility of National AIDS Programs. Since then a number of scientific studies have come up in supporting the beneficial effect of IPT both in the control of TB and improving in the quality of life for people living with HIV/AIDS. Although there is a global consensus on the policy of TB/HIV, many countries have been slow to adopt the IPT recommendations and its nationwide implementation. WHO global TB control report indicates that of the reported number of people living with HIV in 2010, only 12% have started IPT; much less than the global target of providing IPT to all those eligible PLHIV attending HIV care services by 2015 (WHO 2011b:66).

2.4.2 National response to TB/HIV dual epidemic

Ethiopia has begun responding to the dual epidemics since 2001. After an expressed commitment of the FMoH of Ethiopia to WHO's call, the TB/HIV Advisory Committee (THAC) has been established in 2002 with key involvement of international and government stakeholders. The main objective of THAC is to coordinate and provide technical supports for the implementation of TB/HIV collaborative activities at national and sub-national levels. In 2004, the national TB/HIV collaborative activities strategy has been developed and started implementation in nine pilot sites of four regions in the country. In 2005, national implementation guideline for TB/HIV collaborative activities developed and the collaborative services have been scaled up including IPT (EFMoH 2008:5). Though IPT implementation has been started since 2005, the rate of its uptake among newly enrolled HIV patients showed a decreasing trend (see Figure 1.1). In 2010, according to the EFMoH (2011:22) TB/HIV routine surveillance data, only 21% of PLHIV were put on IPT in the country and 19% in Addis Ababa city administration.

2.5 ISONIAZID PREVENTIVE THERAPY (IPT)

Isoniazid preventive therapy (IPT) is the use of isoniazid to sterilize latent infection with *Mycobacterium tuberculosis* and thus prevent progression to active disease. Prophylaxis with isoniazid (INH) has been shown to reduce the incidence of TB in HIV infected persons either by eradicating latent infection or preventing progression of new infection to active TB (WHO 2011c:26). Not only does HIV increase the risk of developing active TB in PLHIV it also increases the likelihood of re-infections and relapses of TB. In a population where HIV/TB is common, health services struggle to cope with the large and rising number of TB. In response to this challenge, WHO recommends the provision IPT to PLHIV after active TB is excluded. Some of the major advantages of Isoniazid Preventive Therapy (IPT) are:

- Prevention of progression of latent TB into active TB.
- Help improve the quality of life.
- Decrease mortality of children and
- Prevention of further transmission of TB in the community, at large (EFMoH 2008:17).

2.5.1 Efficacy of isoniazid preventive therapy (IPT)

The efficacy of IPT in the prevention of a first episode of TB among persons with HIV infection or AIDS has been well demonstrated in various studies. A meta-analysis from the Cochrane controlled trials register shows that provision of IPT to persons with HIV infection or AIDS in the absence of ART reduced TB incidence by 33% overall and by 64% among individuals with positive tuberculin skin test results, compared with placebo (Woldehanna & Volmink 2004). An observational study also suggests that IPT reduces the risks of TB and death among PLHIV during early ART. Moreover, IPT and ART in combination result in a greater reduction in TB risk than does either treatment alone (Golub, Pronyk, Mohapi, Thsabangu, Moshabela, Struthers, Gray, McIntyre, Chaisson & Martinson 2009).

Despite such evidences, implementation of IPT in HIV care and treatment programs in resource-constrained environments has been limited for several years. One reason for this includes concerns about emergence of isoniazid resistance because of difficulty to exclude active TB; however findings from a systematic review suggesting that the effect of IPT on isoniazid resistance is likely to be small (Balcells, Thomas, Godfrey-Faussett & Grant 2006). Other concerns raised include the limited durability of isoniazid's protective benefit and the need to provide adherence support to achieve high rates of adherence and treatment completion (Churchyard, Scano, Grant & Chaisson 2007)

The guidelines group of WHO reviewed evidences from various studies on the provision of IPT and drug-resistant TB. The result of the meta-analysis concluded that INH resistance is not significantly associated with the provision of IPT. The relative risk of developing INH-resistant TB among all of those receiving isoniazid and found no statistically significant increased risk of resistance was (RR 95% CI= 1.87 [0.65–5.38]) (WHO 2011b:11).

In addition, the result from a case series study conducted in South Africa showed no risk of development of drug resistance after provision of IPT to gold miners with HIV/AIDS. The study concluded that “concerns about generating drug resistance should not impede implementation of isoniazid preventive therapy” (Halsema, Fielding, Chihota, Russell, Lewis, Churchyard & Grant 2010).

A systematic review of 12 randomized controlled trials with a total of 8,578 participants from the Cochrane database also found out that preventive therapy versus placebo was associated with a lower incidence of active TB (RR 0.68, 95% CI 0.54 to 0.85) (Akolo, Adetifa, Shepperd & Volmink 2010).

Another study conducted on children in South Africa found out that prophylaxis with isoniazid has an early survival benefit and reduces incidence of tuberculosis in children with HIV (Heather, Mark, Stanzi, Janine, Gregory, Simon, Helena & Carl 2007:136).

Evidence from a clinical trial in Botswana also proved that HIV-infected patients who received isoniazid preventive therapy as part of a clinical trial had low rates of incident tuberculosis (Mosimaneotsile, Mathoma, Chengeta, Nyirenda, Agizew, Tedla, Motsamai, Kilmarx, Wells & Samandari2010).

2.5.2. Healthcare providers' barrier to provide IPT for PLHIV

Despite the strong evidence that isoniazid preventive therapy (IPT) reduces incidence of tuberculosis among people living with HIV, implementation of IPT remains low worldwide including Ethiopia.

As stated in 2.5.1 above, healthcare providers usually resist prescribing IPT for their TB-negative HIV patients for fear of developing drug-resistant TB. According to the study in Thailand, physicians' non-adherence to IPT guideline is found to be one of the limitations to the wide use of IPT. Among the 300 participants of the study, who provided medical care for HIV-infected patients, only 19.3% of them provided IPT (Narin, Pornthip, Kenrad, Mayuri, Rawadi & Supawan 2005).

A qualitative study was also conducted in South Africa to describe barriers to IPT implementation from healthcare providers and patients perspectives. From the study, it has been found out that primary barrier to IPT use was lack of knowledge and experience by health care workers. The health care workers were not aware of the benefits of IPT and unclear about guidelines. No patients had heard of IPT (Lester, Hamilton, Charalambous, Dwadwa, Chandler, Churchyard & Grant 2010:46).

In 2010, Stop TB and HIV/AIDS departments of WHO assessed the progress in the implementation of isoniazid preventive therapy for people living with HIV worldwide. The study used a combination of systematic review of WHO data collection, document analysis and global expert opinions. The study concluded that barriers to the implementation of IPT are diverse and can occur from global to facility levels. Among the barriers, lack of experience, knowledge, and clarity on the benefits of IPT and existing guidelines by health care workers were cited

as important barriers for IPT provision rather than patient-related factors (Getahun et al 2010).

Studies in Ethiopia also showed similar findings. The result from a cross-sectional study undertaken in Addis Ababa hospitals showed that non-adherence was observed among respondents who were not provided with sufficient information about IPT (Mesele, Amare, Fasil & Sibhatu 2011). Another facility-based cross-sectional survey was conducted to assess the status of IPT provision and awareness among PLHIV in Addis Ababa. The results were presented as the proportion of PLHIV ever had been provided with IPT were 74 of 231 TB free PLHIV (32.0%) and the proportion of having information about IPT among study participants was 29.8% (Wesen & Mitike 2012). A prospective cohort study was also carried out in Hawassa, southern region of Ethiopia, to determine compliance to IPT and its effectiveness in children who have contact with TB patients. The study concluded that compliance to IPT in children is poor and this was associated with the parents' perception of the low importance of chemoprophylaxis and healthcare providers were not providing adequate information while they put the patient on treatment (Kefyalew, Mohammed & Luis 2011).

2.6 CONCLUSION

This chapter has reviewed some of the literatures that were available regarding the burden of Tuberculosis and HIV/AIDS, the co-epidemic nature of TB and HIV, the effectiveness of isoniazid preventive therapy, and its implementation status worldwide and in Ethiopia. From the review, isoniazid preventive therapy has been shown to be safe and can significantly reduce the risk of active tuberculosis and death in HIV-infected persons. However it has been also presented that IPT is under-utilized and the implementation status is low throughout the world including Ethiopia. Various reasons are mentioned contributing for low utilization of IPT where healthcare providers' perception that IPT develops drug resistance is the one hindering its wider uses.

Chapter 3 describes the research design and method that was used in this study.

CHAPTER 3

RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

The previous chapter discussed literature review regarding the TB/HIV co-epidemics and the use of isoniazid preventive therapy to reduce TB infection among HIV positive patients. It further described about IPT recommendations and when clinicians are expected to consider IPT for PLHIV. This chapter describes the approach which was used to assess the knowledge, attitude and practice of healthcare providers towards IPT provision for people living with HIV in Addis Ababa. It therefore includes description of the research design, population and sampling methods, research instrument, validity and reliability, data collection, data analysis, ethical considerations and finally the conclusion about the chapter.

3.2 RESEARCH DESIGN

Research design is the “architecture” of the study or the structured approach to be followed by the researcher to answer the questions raised by the research objective (Joubert & Katzenllenbogen 2007:77). Burns & Grove (2011:253) also state that a research design is a blueprint for conducting a study that maximizes control over factors that could interfere with the validity of the findings. It is a plan guide for providing sound answers to a research questions.

A quantitative, descriptive cross sectional research design was used in this study; the choice of research design depends on the problem and purpose of the study and on the researcher's desire to generalize the findings (Brink, Walt & Rensburg 2006:53).

3.2.1 Quantitative research

As described by Burns & Grove (2011:20), "quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world". This study used quantitative research because numerical values are collected from respondents to assess systematically the level of knowledge, attitude and practice of healthcare providers towards IPT provision. This design was also chosen because of its ability to control the study through imposing conditions on the research situation so that biases are minimized and precision and validity are maximized (Polit & Beck 2004:15).

3.2.2 Descriptive design

Descriptive study is designed to gain more information about characteristics within a particular field of study (Burns & Grove 2011:256). Its purpose is to provide a picture of situations as it naturally happens. Polit & Beck (2008:192) concur, stating that the purpose of descriptive research design is to observe, describe and document aspects of a situation as it naturally occurs and sometimes to serve as a starting point for hypothesis generation or theory development. In this case, the researcher described the information as gathered from the healthcare providers' response regarding their perception and practice towards IPT provision for PLHIV and findings were documented as to be used for IPT scale up interventions and for further research idea.

3.2.3 Cross-sectional study

A study design in which the data is collected at one particular point in time is called a cross-sectional research design (Polit & Beck 2008: 751). Cross sectional research design was used in this study because data were collected only once from the sampled group within a brief span of time. As stated in Bowling (2002:197), cross-sectional study is also less costly in terms of time and resource as a large sample can be studied within a relatively short period of time.

3.3 RESEARCH METHOD

Research method is a way by which researchers use to structure their study in order to achieve their objectives (Polit & Beck 2008: 15). The following sections describe and discuss each of the following components of the research method employed in this study: the population, sample and sample size, method of data collection and data analysis.

3.3.1 Sampling

Sampling is the process of selecting a portion of the population to represent the entire population (Joubert & Katzenellenbogen 2007:94). According to Burns & Grove (2011:290), key concepts of sampling theory include populations, target population, sampling or eligibility criteria, accessible population, representativeness, sampling frames, and sampling plans or methods. Each of these components are discussed below.

3.3.1.1 Population

Population is a particular group of individuals or elements who are the focus of the research. The *target population* is the entire set of individuals or elements who meet the sampling criteria. An *accessible population* is the portion of the target population to which the researcher has reasonable access (Burns & Grove 2011:290). In this study, the population comprised all healthcare providers who were involved in clinical practice in Addis Ababa health institutions and the target population was healthcare providers who are clinicians and met the following inclusion criteria.

Inclusion criteria:

- Clinicians in ART clinics who deliver care and treatment services for people living with HIV and,
- Had previous experience in ART/HIV clinics for at least six months.

Joubert & Katzenellenbogen (2007:95) describe that a sampling frame is a list of or some representation of the study population, either individuals or groups of individuals. As it was difficult to find list of healthcare providers by name, the sampling frame in this study comprised the list of ART clinics in Addis Ababa.

Sample frame of the ART clinics were further stratified by the type of health facilities they are belonging; public and private sectors so that respondents of healthcare providers from both public and private sectors were adequately represented in the study. Stratification ensures that all levels of the identified variables are adequately represented in the sample (Burns & Grove 2011:301).

3.3.1.2 Sample and sampling

Polit & Beck (2008: 765) define a *sample* as a subset of a population selected to participate in a study and *sampling* is the process of selecting a portion of the population to represent the entire population.

Sampling involves selecting a group of people, events, behaviours, or other elements with which to conduct a study. Researchers select study subjects from the sampling frame which is the list of every member of the population using a sampling plan or methods (Burns & Grove 2011:290).

3.3.1.2.1 Sampling procedures

The sampling method is designed to increase representativeness and decrease systematic variation or bias (Burns & Grove 2011:298). The researcher used stratified cluster random sampling method to select the total number of healthcare providers, the study participants.

Based on Burns & Grove (2011:302), "in cluster sampling, a researcher can develop a sampling frame that includes a list of all the states, cities, institutions, or organization with which elements of the identified population can be linked", in this case the health institutions or ART clinics was taken as a sampling frame.

Stratified random sampling is used in situations in which the researcher knows that some of the variables in the population are critical for achieving representativeness (Burns & Grove 2011:301). To ensure that both the public and private sectors of health institutions are represented in the sample, the sample frame was first stratified in to public and private stratum then sample ART clinics were selected randomly from each stratum in which all eligible clinicians in the selected ART clinics were participants of this study.

3.3.1.2.2 Sample size

Sample size is the number of respondents who are necessary for the achievement of a statistically valid conclusion (Polit & Beck 2008: 348). This requirement dictates the minimum number of participants who have to be included in the sample (Polit & Beck 2008: 413). The sample size was calculated using the minimum sample size determination for population proportion (Joubert & Katzenellenbogen 2007:347) as:

$$n = \frac{P(1-P) * (Z^2)}{D^2}$$

Where:

n= Sample size,

P = Expected frequency value that healthcare providers had good knowledge, attitude and practice towards IPT provision was taken as 50%, since the prevalence was not known.

Z = the reliability coefficient; Z=1.96 at 95% CI and

D= relative precision or the precision required on either side of the proportion is taken as 10% (d = 0.1).

Calculating the formula above, it returns n= 96.

To correct for the difference in design effect due to cluster sampling, the sample size is again multiplied by the design effect (D=1.2). Therefore, n x D = 96 x 1.2 = 115

And considering 10% contingency for recording error or non-responses, the total sample size that the researcher considered to be necessary in order to obtain statistically significant results was, $n= 126$.

From the experience, on average, seven and four clinicians work in a single ART clinic of public and private health facilities, respectively. Therefore, considering the number of existing functional ART clinics and the probability proportional to size (PPS) technique, a total of twenty-two ART clinics; sixteen from the public and six from the private health facilities were selected randomly that 96 and 30 clinicians were contacted during data collection in the selected public and private ART clinics, respectively.

3.3.2 Data collection

Burns & Grove (2005:430) describe data collection as "the process of selecting subjects and gathering data from these subjects".

3.3.2.1 Data collection instrument

A self-administered structured questionnaire (annexure A) was developed specifically for this study in order to collect the data from respondents. As stated in Burns & Grove (2005: 398), "questionnaires can be designed to determine facts about the subject or persons known by the subject; facts about events or situations known by the subject; or beliefs, attitudes, opinions, levels of knowledge or intentions of the subject".

The data collection instrument or the questionnaire was prepared in consulting with TB/HIV program managers, literatures reviewed and referring the recent guidelines on IPT implementation and intensified TB case-finding in resource-constrained settings (WHO 2011c:10-26). The instrument comprised the following sections:

Section I: Socio-demographic data

There were eight questions in this part. The questions include sex, age, marital status, religion, professional level, clinical experience in HIV clinics and whether trainings on TB/HIV as well as IPT were provided or not.

Section II: Knowledge on IPT provision and its management

There were ten questions in this part and were asked to know the knowledge of healthcare providers on IPT eligibility criteria, IPT provision and its management. Nine of the questions were multiple choices while one was an open ended question that allows respondents to express their ideas on the implementation situation of IPT in their working area. A correct answer for each close ended questions was given 1 score and 0 score for a wrong answer. The score varied from 0 - 9 points and was classified into 3 levels according to the Blooms' (1956) cut off point, 60-80% as follows:

High level (80-100%)	7 - 9 scores
Moderate level (60-79%)	5 - 6 scores
Low level (less than 60%)	0 - 4 scores

Section III: Attitude towards IPT provision for PLHIV

This part includes the attitude of healthcare providers towards IPT provision for people living with HIV in the aspect of its efficiency and side effects. There were a total of ten questions; one open ended question and nine positive statements with Likert scale options of choice ranging from strongly agree to strongly disagree. The rating scale was measured as follows:

Strongly agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

The scores varied from 9 to 45 and all individual answers were summed up for total and calculated for means. The scores were classified in to 3 levels (Positive Attitude, Neutral Attitude and Negative Attitude).

Positive Attitude	36 - 45 scores (80%-100%)
Neutral Attitude	27 - 35 scores (60%- 79%)
Negative Attitude	09 - 26 scores (Less than 60%)

Section IV: Practice towards IPT provision for PLHIV

Ten questions have been included in this part. The eight questions ask about how often the healthcare providers provide IPT for PLHIV and monitor the treatment as per the national guideline, while two questions were open ended asked about major interventions required for the successful implementation of IPT in their working areas. Most of the eight closed ended questions had three choices and those that were responded to have more than three answers were re-coded into three frequencies of IPT practice. The rating scale of responses was measured as follows:

Yes, always	2
Yes, sometimes	1
No	0

Hence the scores in measuring the practice of healthcare providers towards IPT provision and its treatment management was varied from 0 to 16, and were classified into 3 levels according to the Bloom's cut off point, 60-80% (Bloom 1956). The levels of practice were:

Good (80-100%)	12 - 16 scores
Fair (60-79%)	9 - 11 scores
Poor (Less than 60%)	0 - 8 scores

3.3.2.2 Pre-testing data collection instrument

Burns & Grove, (2007:549) defines a pilot study as a smaller version of a proposed study conducted to develop and refine the methodology, such as the treatments, instruments, or data collection process to be used in the later study.

The data collection instrument was pre-tested on five experienced clinicians (two physicians and three nurses) at Zewditu Memorial hospital ART clinic which were not included in the actual study. The shortcomings identified during the pre-testing such as; ambiguity, relevance and consistency of the questions were corrected and additional points; like IPT recommendation period for HIV patients with previous history of TB, was included.

3.3.2.3 Data collection procedure

Burns & Grove, (2007:536) define data collection as “identification of subjects and the precise, systematic gathering of information (data) relevant to the research purpose or the specific objectives, questions, or hypothesis of a study”.

Data was collected by the researcher and two research assistants (one health officer and one nurse). Research assistants were trained regarding the purpose and objectives of the study, data collection instruments, data collection procedures and the ethical considerations during data collection. To accomplish the data collection process, each data collectors (the researcher and research assistants) were allocated to work on one facility each per day. Before the start of the data collection activity, each selected ART clinics were communicated for their convenience day and time with in the period of data collection, September to October 2012.

Respondents were provided with brief orientation on the purpose of the study and its significance then self-administered questionnaires were provided for those consented to participate in the study. The completed questionnaires were collected from each healthcare providers within 5-10 days from the date of

questionnaire was distributed and data quality check was done at the time of collection.

3.3.3 Data analysis

The purpose of data analysis is to organize, provide structure to, and elicit meaning from research data (Polit & Beck 2008). Before any analysis is done, the data set must be carefully checked to identify any strange values and errors which might have occurred in the original source documents, during transcription or during data entry (Joubert & Katzenllenbogen 2007:127).

The data collected for this study was coded and entered into the database designed with Epi-Info (windows version 3.5.4) which is a public domain statistical software developed by CDC, Atlanta, USA. The data set have been checked before the data analysis using the frequency tables and graphical displays that able the researcher to re-enter the missed values and fix data entry errors. The error cleaned data were then exported for analysis to a statistical package for social scientists (SPSS-version 21 IBM Corporation, USA). Descriptive statistics such as; frequency, percentage, mean and standard deviations were used primarily to summarize and describe the data. A chi-square test was also used where appropriate to identify if relationships exists between categorical variables.

Frequency distribution in terms of:

- Socio-demographic characteristics
- Levels of knowledge
- Attitude towards IPT efficacy
- Practice on IPT provision

Cross-tabulations:

Level of IPT practice behaviours with:

- Socio-demographic variables; age, sex, marital-status and profession.
- Level of clinical experience in HIV clinics.
- Training condition on TB/HIV and IPT, in specific.

Association between:

- Socio-demographic characteristics and practice
- Knowledge and attitude
- Knowledge and practice
- Attitude and practice

3.4 VALIDITY AND RELIABILITY OF THE STUDY

According to Burns & Grove (2011:332-334), the validity of an instrument is a determination of how well the instrument reflects the abstract concept being examined, whereas, reliability is concerned with the consistency of the measurement method.

3.4.1 Validity

Validity refers to the extent to which a measurement instrument actually measures what it is meant to measure (Joubert & Katzenllenbogen 2007:117). It is the ability of a data collection instrument to measure what it was formulated to measure. Content validity of the data collection tool for this study was based on recent guidelines for intensified TB case finding and IPT for PLHIV in resource-limited settings, literature reviewed and experts' feedback. In addition, both the content and face validity was checked during the pilot study and by the experts in the related field; TB/HIV program managers.

3.4.2 Reliability

According to Joubert & Katzenllenbogen (2007:117), reliability or precision refers to the degree of similarity of the results obtained when the measurement is repeated on the same subject or same group.

To address the reliability of this research instrument, the researcher referred guidelines such as; a guide to developing knowledge, attitude and practice surveys (WHO 2008), questionnaire annexes of guidelines for intensified TB case finding and IPT for people living with HIV in resource constrained settings

(WHO 2011d) as well as many different standard questionnaires of previous health research KAP assessments like; HIV/AIDS knowledge, attitudes, practices and perceptions of rural nurses in South Africa (Delobelle, Rawlinson, Ntuli, Malatsi, Decock & Depoorter 2009), Knowledge and attitudes of nurses regarding patients with acquired immunodeficiency syndrome (Eckstein 1987). KAP survey on professional nurses working at primary health care level in KwaZulu Natal (Mariani, Gcaba & Dalton 2003), Knowledge, attitude and practice of private practitioners regarding TB-DOTS in a rural district of Sindh, Pakistan (Ahmed, Fatmi, Ali, Ahmed & Ara 2009) and assessment of IPT outcome among HIV infected adults in public hospitals, the case of East Shewa zone of Oromia regional state in Ethiopia (Kumsa 2010).

Basically, reliability was also assessed during the pilot test that the researcher was able to evaluate the instrument's precision or consistency from the response of healthcare providers. As a result, some appropriate corrective measures like; rephrasing and reordering of question items, adding more relevant questions and removing less relevant, were taken to enhance the reliability of the instrument.

3.5 ETHICAL CONSIDERATIONS

The ethical principle of beneficence imposes a duty on researchers to minimize risks for respondents and to maximize possible benefits for both respondents and for the community as a whole (Polit & Beck 2008: 170). According to Burns & Grove (2011:107), three ethical principles are relevant to the conduct of researches involving human subjects: respect for persons, beneficence, and justice.

3.5.1 Protecting the right of the participants

All respondents in this research were given the right to self-determine to participate or to withdraw from the study at any time without the need for any explanation or justification. None of the questions included any kind of negative emotion or psychological trauma. No risk was associated with this research during the data collection process, and the results obtained from this study may

benefit for people living with HIV through improved provision of IPT by their healthcare providers.

Justice means that respondents have an inalienable right to fair treatment and that the information that they impart for the purpose of research needs to be kept completely private (Polit & Beck 2008: 173). All information obtained from the respondents was treated confidentially and no names were mentioned in the questionnaire.

3.5.2 Protecting the right of the institution

Approval of ethical clearance has been secured from Research and Ethics Committee of the Department of Health Studies of the University of South Africa (UNISA) (annexure B) and Addis Ababa city administration health bureau (annexure D). Permission and support letter, to conduct the study was then written by Addis Ababa city administration health bureau to the selected health facilities of study sites (annexures E&F).

3.5.3 Scientific integrity of the research

The researcher adhered to the principles of scientific integrity and honesty. All sources used in this study were acknowledged.

3.5.4 Ethics pertinent to the research topic

Ethical pertinence of this topic was evaluated and approved by the Research and Ethics Committee of the Department of Health Studies of UNISA and the city administration health bureau of Addis Ababa. Throughout the process of the study, the researcher had seriously supervised each step to address the expected ethical standards and kept the quality of research findings. The completed data was also checked for its completeness and consistency; any potential problems/shortcomings were addressed during the data collection.

3.6 LIMITATIONS OF THE STUDY

3.6.1 Study design

A descriptive study design was used to describe the knowledge, attitude and practices of healthcare providers toward IPT provision for PLHIV. Descriptive

designs do not attempt to generalize the findings to populations outside the study participants. Therefore, findings of this study could not be generalized beyond the participants of the study in Addis Ababa and the rest of clinicians working in the other regions.

3.6.2 Sampling method

Cluster sampling was used to select the respondents of the study subjects assuming that the numbers of clinicians within each cluster sites (health facilities) are equal. However, this might not be happened in the actual situation that might create sampling error (design effect) than the selection of study subjects from an equally and randomly un-clustered population.

3.6.3 Data collection tool

Another limitation of this study was that, it used a structured questionnaire to collect data from the study participants. This limited the responses that the respondents could choose from and did not have the capacity for in-depth answers.

3.7 CONCLUSION

This chapter described about the research design used in this study, the target population, the sample and sampling methods, the research instrument, data collection and data analysis methods. Reliability and validity issues as well as the ethical considerations have been also discussed.

Next chapter discusses about data analysis, presentation and description of research findings.

CHAPTER 4

ANALYSIS, PRESENTATION AND DISCUSSION OF RESEARCH FINDINGS

4.1 INTRODUCTION

Chapter 3 presented about the research design and research methods. This chapter provides a detailed description of the results obtained from the data analysis of the survey. Results are described as simple percentages, means and standard deviations as appropriate depending on the nature of the variables. It starts with the demographic data followed by the responses for each section of the questionnaire. The level of knowledge, attitude and practice score were then presented and discussed. Lastly chi-square test was used to see whether there is any association between socio-demographic and practice score, knowledge and attitude, knowledge and practice and attitude and practice scores among the respondents.

4.2 DATA MANAGEMENT AND ANALYSIS

Data was collected from September 03, 2012 to October 12, 2012 using a structured and self-administered questionnaire, comprised of four sections; socio-demographic, knowledge, attitude and practice. Epi-Info (v 3.5.4) was used for the data entry and exploratory analysis of data validation. Data was then exported to SPSS (v 21.0) for further analysis.

Descriptive statistics was used to describe the characteristics of the sample from which the data were collected and chi-square test was applied to test whether differences between variables were significant at a statistical significance value of 0.05 and 95% level of confidence. Graphs and tables were used to depict the results of analysis findings.

4.3. RESEARCH RESULTS

4.3.1. Sample characteristics

Self-administered questionnaires were distributed for a total of 126 clinicians who were available in the study sites during the data collection period. Among the distributed questionnaires, data were collected from 117 healthcare providers from which 104 of them were completed whereas 13 were incomplete for most of the survey questions. According to Burns & Grove (2011:373), subjects must be excluded from the analysis when data considered essential to that analysis are missing. As a result, 13 subjects were excluded from the analysis of the study.

Therefore, the data analysis and discussion was made based on the feedback from a sample of $n = 104$ respondents.

4.3.1.1 Gender

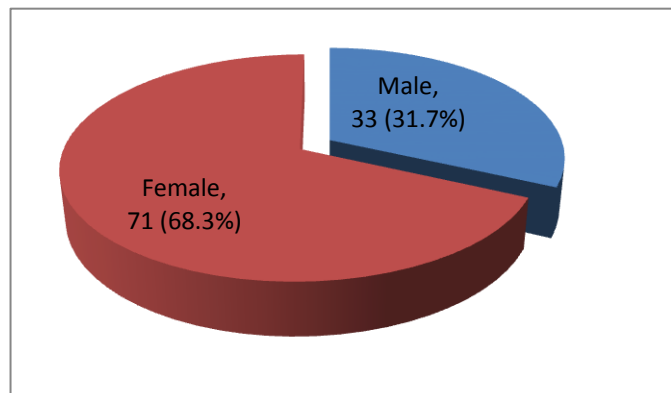


Figure 4.1 Number and percentage of study participants by gender

In this study, the majority of respondents ($n = 71$, 68.3%) were female whereas men encompassed only 31.7%.

4.3.1.2 Age

The mean age of the study subjects was 32 years with minimum age of 22 and maximum age of 52 years. Most of the respondents ($n = 94$, 89.5%) were

between 22 and 40 years and only one person (1%) was older than 50 years. (See Table 4.1 below)

4.3.1.3 Level of profession

The study was intended to target professionally qualified practitioners that are actively involved with the delivery of services for HIV/AIDS patients. In the present case, most of the respondents (n = 88, 84.6%) were nurses in profession out of which 59.6% (n = 62) had Bachelor degree whereas 25.0% (n = 26) were Diploma holders. The study also included Specialists (n = 4, 3.8%) and General Practitioners (GP: n = 2, 1.9%) as well as 8.7% of health Officers.

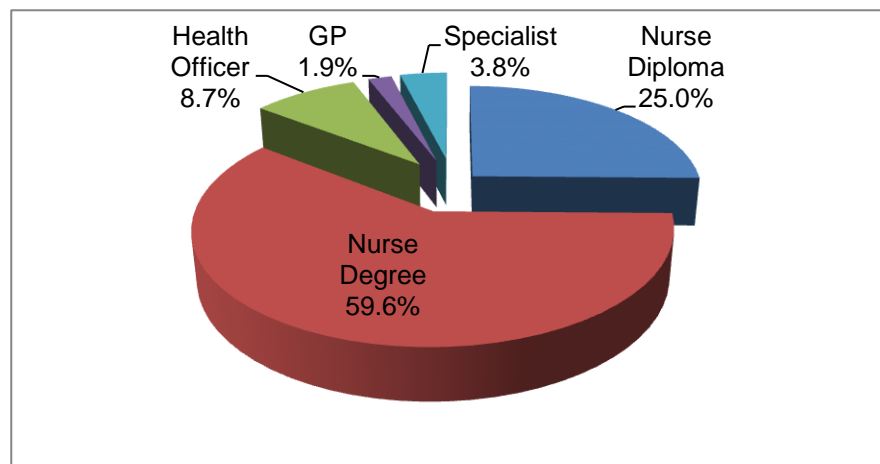


Figure 4.2 Percentage of study participants by professional level

4.3.1.4 Years of experience working in HIV/ART clinics

As shown in Table 4.1 below, most of the study participants had an experience of working in HIV clinics for more than a year. Respondents with minimum experience of less than a year (greater than 6 months) were 14.4% (n=15) whereas with maximum experience of more than five years were 16.3% (n=17).

4.3.1.5 Training on TB/HIV and IPT

Most of the respondents, except 10.6% (n=11) were trained on TB/HIV collaborative activities in which IPT was included as one of the training

component and n=33, 31.7% of the respondents were also trained on IPT implementation program, in particular.

Table 4.1: Distribution of the respondents by socio-demographic characteristics

Variables	Characteristics	Number (n=104)	Percentage (%)
Gender	Female	71	63
	Male	33	31.7
Age group (years)	22 – 30	48	46.2
	31 – 40	45	43.3
	41 – 50	10	9.5
	51 and more	1	1.0
	Mean= 32.55	SD=6.36	Min=22 Max=52
Marital status	Single	27	26.0
	Married	76	73.1
	Widowed	0	0.0
	Divorced	1	1.0
Religion	Christian	94	90.4
	Muslim	10	9.6
	Don't have any	0	0.0
	Other	0	0.0
Profession level	Nurse diploma	26	25.0
	Nurse B.Sc.	62	59.6
	Health officer	9	8.7
	GP	2	1.9
	Specialist	4	3.8
Experience in HIV clinic	½ to 1 year	15	14.4
	1 to 3 years	48	46.2
	3 to 5 years	24	23.1
	More than 5 years	17	16.3
Training on TB/HIV	Yes	93	89.4
	No	11	10.6
Training on IPT	Yes	33	31.7
	No	71	68.3

4.3.2 Health facility composition

To attain the number of targeted sample participants, a total of 22 ART clinics (annexure G) were visited, out of which 16 (72.7%) were from public and six (27.3%) were from private health facilities (Table 4.2). Among the sixteen public ART clinics, nine (56.2%) were found in health centers where as seven (43.8%) were in hospital settings. All private ART clinics were centered in hospital setting because ART service was approved only at the level of hospitals in case of a private facility.

Table 4.2 Number of health facilities involved in the study

		Facility Setting		Total
		Health Centre	Hospital	
Facility Type	Public	9 (56.2%)	7 (43.8%)	16 (72.7%)
	Private		6 (100%)	6(27.3%)
	Total	9 (40.9%)	13 (59.1%)	22 (100%)

4.3.2.1 Study participants by the type of health facility

Out of a total 104 respondents, 86 (82.7%) were from the public ART clinics while the remaining 18 (17.3%) clinicians were from private ART clinics (Figure 4.3).

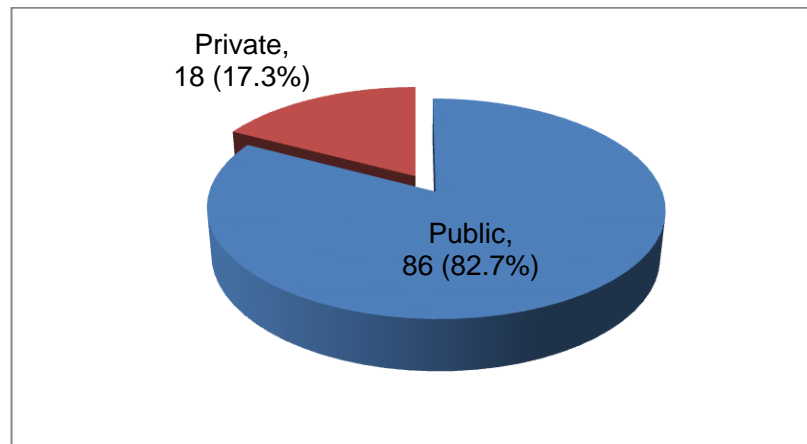


Figure 4.3. Composition of study participants by type of health facility

4.3.2.2 Study participants by settings of health facility

As depicted in Figure 4.4 below, 62.5% of the study participants were from public and private hospitals whereas the remaining were from the public health centers (primary care facilities).

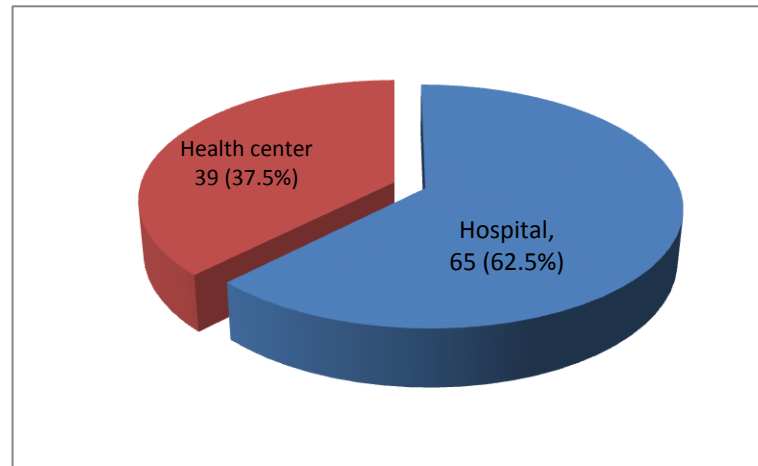


Figure 4.4 Number and percentage of study participants by their facility setting

4.3.3 Knowledge of Healthcare providers regarding IPT

Respondents answered a total of nine close-ended, multiple choice questions regarding IPT implementation and its efficacy. Each correct response was given one mark and 0 mark for wrong answers, with a total of nine marks. As shown in Table 4.3 below, the mean knowledge score for the respondents was 7.17 out of possible 9 points (SD = 1.16). Thirteen of the respondents were able to answer all the questions correctly while one respondent attained the minimum knowledge score of four. Most of the healthcare providers, who participated in the study (n = 74, 71.2%) had "high knowledge" and 27.9% (n = 29) of them had "moderate knowledge" while only one respondent had "low knowledge" regarding IPT efficacy and its implementation strategies. This finding, however, contrasts with a qualitative study conducted in South Africa that found out

healthcare providers' knowledge and experience were accounted as primary barriers for the wide implementation of IPT (Lester et al 2010:46).

Table 4.3 Distribution of healthcare providers' knowledge level on IPT

Level	Number (n =104)	Percentage (%)	
High (7-9 scores)	74	71.2	
Moderate (5-6 scores)	29	27.9	
Low (0-4 scores)	1	1.0	
Total	104	100.0	
Minimum =4	Maximum = 9	Mean =7.17	SD =1.16

Responses for all questions of knowledge part of the questionnaire were summarized in Table 4.4 below. Almost all (>95%) of the respondents knew that INH (300 mg/day) is the best preventive drug to reduce the risk of TB infection among PLHIV. 92.4% of them also knew that "current cough, fever, weight loss and night sweet" are the four combinations of TB screening symptoms used to identify HIV-positive patients for IPT eligibility. The questions with the least number of correctly answered were 44.8% and 55.2%, regarding chest radiography requirement for IPT eligibility (knowledge item 3) and identifying patient's criteria who is eligible to receive IPT (knowledge item 4), respectively. This indicates the work needed to further enhance the knowledge of the very practitioners as this might affect the start and follow-up of treatment.

Table 4.4: Number and percentage of healthcare providers who answered correctly on IPT knowledge questions (n=104).

	Knowledge item	Number (n=104)	Percentage
1.	Do you think IPT reduces the risk of TB infection for HIV positive patients?	102	97.1
2.	Which combinations of TB screening symptoms do you use to identify whether PLHIV are eligible for IPT or not?	97	92.4
3.	Do you think chest radiography is a requirement for screening PLHIV for IPT eligibility?	47	44.8
4.	Who is eligible to receive IPT?	58	55.2
5.	Do you think current pregnancy is a contraindication for starting IPT?	79	75.2
6.	Can IPT be used as secondary prophylaxis for people with past history of TB?	89	84.8
7.	Which one is the best TB preventive treatment drug?	100	95.2
8.	Which one is the INH drug dose used for chemotherapy to prevent TB in adults living with HIV?	104	99.0
9.	How do you assess whether your patients are adherent to IPT or not?	69	65.7

Similarly, figure 4.5 below presents graphically the number of healthcare providers by the correctness of responses for each knowledge items of the survey questions.

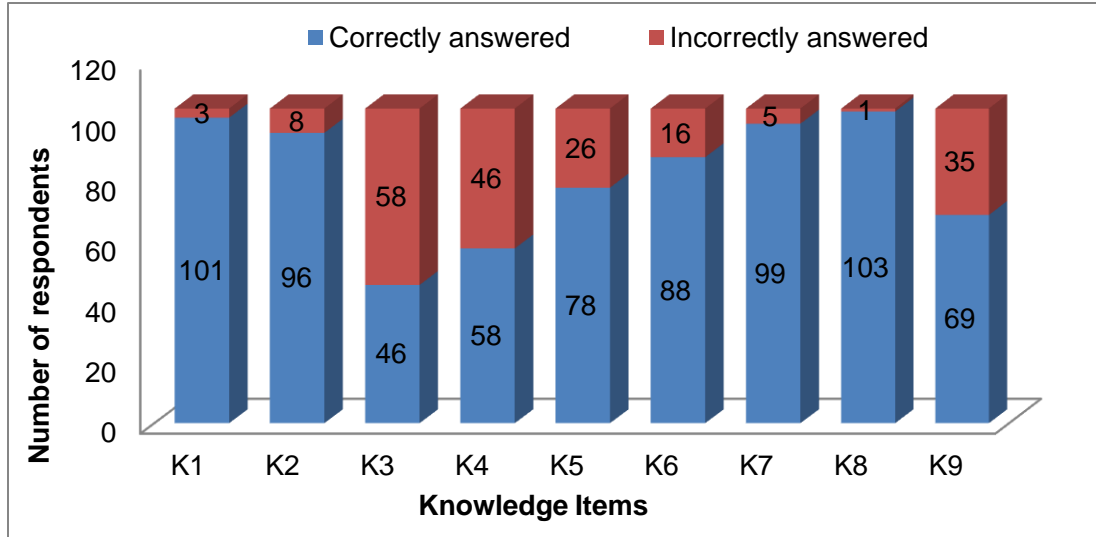


Figure 4.5: Number of respondents for each knowledge items of IPT.

K1-K9 denotes the knowledge questions listed on Table 4.4. The data clearly shows where the knowledge gap is apparent in regards to the eligibility and chest radiography requirement issues to initiate IPT therapy.

4.3.4. Attitude of healthcare providers towards IPT

Attitude to a given a treatment modality by the very practitioners of healthcare providers is known to influence the course and outcome of a given therapeutic regimen. To evaluate this, respondents were asked to answer a total of nine Likert-scale questions with a total score of 45. Distribution of respondents' attitude towards IPT is shown in Table 4.5. As is indicated in the table, more than half ($n = 72$, 69.2%) of the healthcare providers are found to have a "positive attitude" and 26.9% ($n = 28$) of them had "neutral attitude" while only 3.9% ($n = 4$) had "negative attitude" towards IPT provision. The mean attitude score for all respondents were 36.27 out of a possible 45 points ($SD = 4.25$).

The minimum and maximum range of attitude score was 25 and 43, respectively.

Table 4.5 Distribution of healthcare providers' attitude level towards IPT

Attitude level	Number (n=104)	Percentage	
Positive (36 - 45 scores)	72	69.2	
Neutral (27 - 35 scores)	28	26.9	
Negative (09 - 26 scores)	4	3.9	
Total	104	100.0	
Mean = 36.27	SD = 4.25	Min = 25	Max = 43

The data shown on Table 4.6 and Figure 4.6 shows that more than three-fourth of healthcare providers who participated in the study were in a position of either “strongly agree” or “agree” with the entire attitude questions; implied they had a positive attitude towards IPT provision for PLHIV. A total 94.3% (with 73.1%: strongly agree and 21.2% agree) of the respondents agreed with a statement "IPT is effective in reducing TB incidence and mortality among PLHIV" and a total of 91.4% (58.7% strongly agree, 32.7% agree) of the respondents agreed with the national and international recommendations of IPT implementation. On the other hand, a total of 23% of the respondents were not agree with the statements that "IPT won't significantly increase the risk of developing INH-resistance after excluding active TB " and "the longer the duration of IPT (>6 months), the longer the patient stays free from TB". However, the study trials from Botswana suggested that IPT benefit is increased with 36 months or longer duration than with a 6-month regimen (Samandari, Agizew, Nyirenda, Tedla, Sibanda, Shang, Mosimaneotsile, Motsamai, Bozeman, Davis, Talbot, Moeti, Moffat, Kilmarx, Castro & Wells 2011).

Table 4.6: The percentage of respondents and mean value of each attitude items

Attitude item	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Mean attitude
1 IPT is effective in reducing TB incidence and mortality among PLHIV.	73.1	21.2	1.9	3.8	0	4.6
2 PLHIV who do not have current cough, fever, weight loss or night sweats are unlikely to have active TB and should be offered IPT.	36.5	51.9	1.0	4.8	5.8	4.1
3 IPT should be given to all eligible PLHIV irrespective of their immune status.	30.8	51.9	2.9	11.5	2.9	4.0
4 After excluding active TB, IPT won't significantly increase the risk of developing INH-resistance.	17.3	59.6	4.8	15.4	2.9	3.7
5 Children < 1 year of age should be provided with IPT if they have a household contact history with a TB case.	7.7	71.2	8.7	7.7	3.8	3.7
6 Pregnancy is not a contraindication for IPT provision.	15.4	64.4	3.8	12.5	2.9	3.8
7 Past history of TB (>2 years) is not a contraindication for IPT provision.	27.9	61.5	0	7.7	2.9	4.0
8 The longer the duration of IPT (>6 months), the longer the patient stays free from TB.	51.0	26.0	5.8	11.5	5.8	4.0
9 On overall, how do you agree that you are complying with the national and international IPT recommendations?	58.7	32.7	1.9	0.0	4.8	4.4

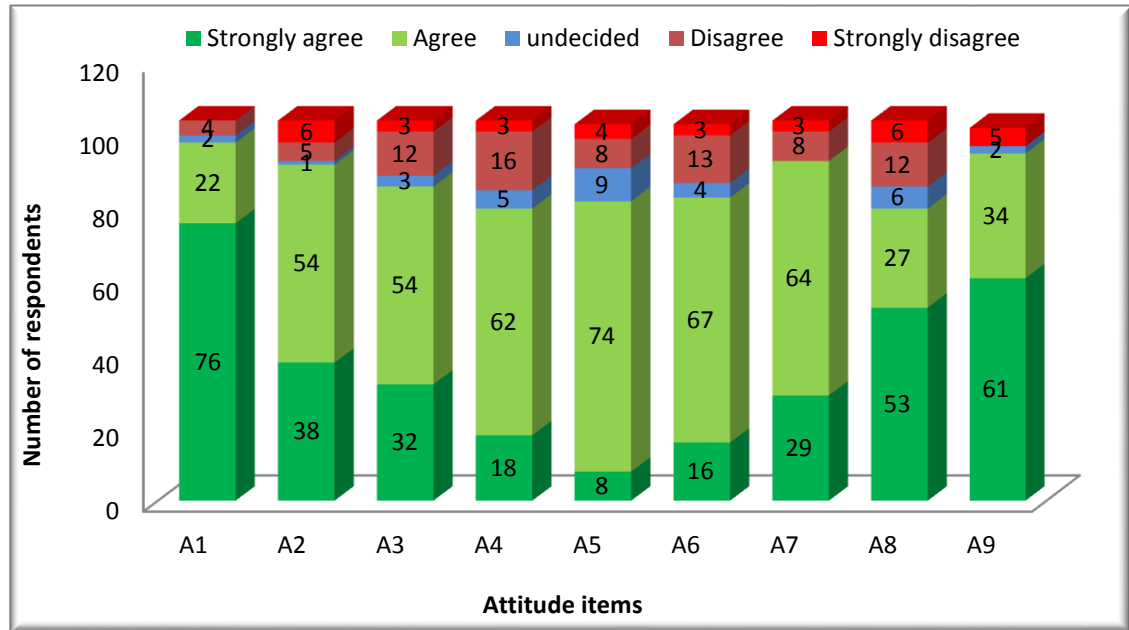


Figure 4.6: Number of respondents for each Likert-scale attitude items of IPT

4.3.5 Practice of healthcare providers towards IPT provision

In the survey questionnaire, there were ten questions that asked the practice behaviour of healthcare providers towards IPT implementation according to the national guideline. Of the ten questions, six items were analysable in terms of practice frequency that each response was ranked 0 to 2 with a total of 12 marks and the overall score was classified in to three levels of practice as, poor, fair and good.

The mean practice score of IPT provision among healthcare providers, participated in this study, was 10.5 out of possible 12 points (SD = 1.21). As presented in Table 4.7 below, most of the respondents (n = 85, 81.7%) had "good practice" and 18.3% (n = 19) of them had "fair practice", while no one had "poor practice" on IPT implementation. The Range of respondents' practice scores was 7 - 12.

Table 4.7 Distribution of healthcare providers' practice level towards IPT provision

Attitude level	Number (n=104)	Percentage	
Good (10 - 12 scores)	85	81.7	
Fair (7 - 9 scores)	19	18.3	
Poor (0 - 6 scores)	0	0.0	
Total	104	100.0	
Mean=10.5	SD =1.21	Min=7	Max=12

Data shown in Table 4.8 and Figure 4.7 summarizes response for the practice section of the questionnaire. All healthcare providers (85.6%: always, 14.4%: sometimes) were using the TB screening algorithm that basically relies on four clinical symptoms (current cough, fever, weight loss and night sweet) to identify patients for IPT eligibility. 61.5% of the respondents were always encouraging and providing advice for eligible patients to start IPT while 37.5% of them were advising their patients sometimes based on conveniences. More than half of the respondents (57.7%) were providing INH all the time once the patient was eligible while the rest of the respondents were providing sometimes depending on situations. Most of the respondents (90.4%) were advising patients who were put on IPT to adhere their treatment. This finding however contrasts with the previous study conducted in Addis Ababa that patients' non-adherence was observed due to the insufficient information about IPT by the healthcare providers (Mesele et al 2011).

Table 4.8: Number and percentage of respondents for each IPT practice items.

Practice item		Yes, always	Yes, sometimes	No, at all	Total
1 Do you use the TB screening tool (algorithm) to identify PLHIV eligible for IPT?	N	89	15	0	104
	%	85.6	14.4	0.0	100.0
2 Do you encourage PLHIV to start IPT once they are eligible?	N	64	39	1	104
	%	61.5	37.5	1.0	100.0
3 Do you provide INH for eligible HIV+ patients?	N	60	44	0	104
	%	57.7	42.3	0.0	100.0
5 If you are providing IPT for your patients, how frequent do you supply the INH drugs? *	N	96	8	0	104
	%	92.3	7.7	0.0	100.0
6 Do you advice clients on IPT to adhere their treatment?	N	94	10	0	104
	%	90.4	9.6	0.0	100.0
7 Do you monitor and manage clients with INH drug toxics	N	70	28	6	104
	%	67.3	26.9	5.8	100.0

* INH supply on monthly and less days is ranked "2", on three months and per patients' convenience is ranked "1" and ranked "0" for no supply.

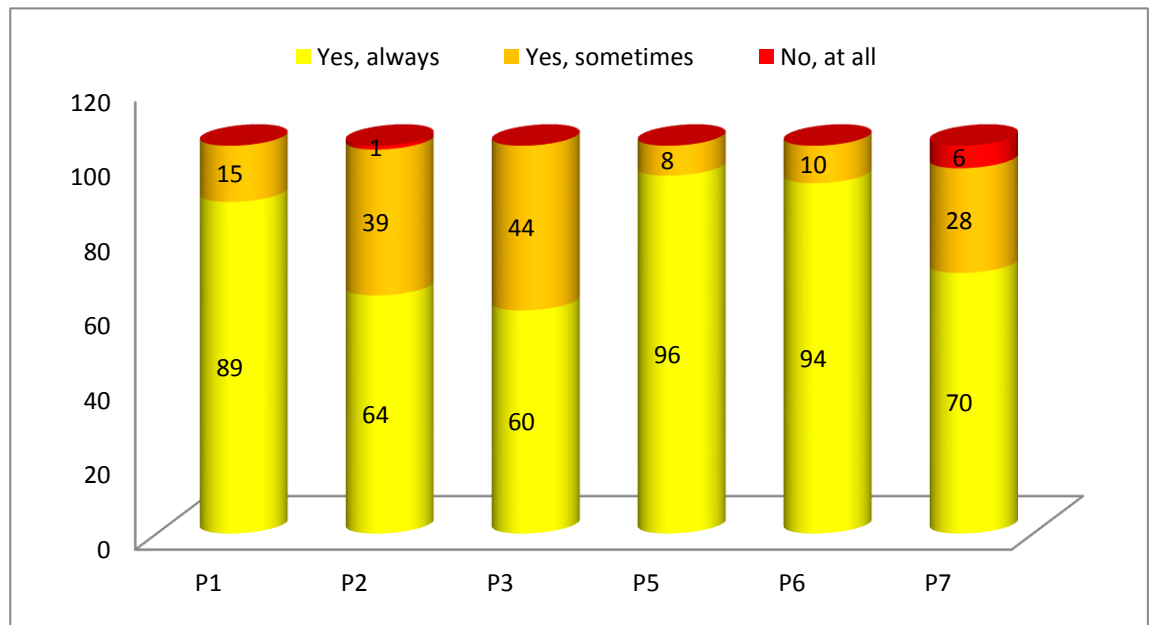


Figure 4.7: Number of respondents' response for each practice items of IPT

Among the ten questions of practice items in the questionnaire, two were asking about the number of PLHIV who started IPT by each respondent (P4) and if INH drug shortage was observed in their working site for the last one year (P8). Accordingly, Table 4.9 shows the summary of number of PLHIV who were put on IPT and only 55 of the respondents had answered to this practice item. Responses were grouped in to three levels as: less than 60% (low), 60 to 80% (moderate) and greater than 80% (high). Thirteen (23.6%) of the respondents had put their patients on IPT for more than 80% of PLHIV, while twenty-one (38%) of the respondents had put for less than 60% of their patients in the last one year. On average, 60% of eligible HIV positive patients were put on IPT by the respondents in the last one year which is better than what was observed in the study by Wesen & Mitike (2012) in Addis Ababa and the routine report of Elmo (2011:22).

Table 4.9: Percentage of PLHIV who were put on IPT in the last one year

Percentage of PLHIV put on IPT	Number of respondents	Percentage of respondents
< 60%	21	38.2
60 - 80%	21	38.2
> 80%	13	23.6
Total	55	100.0
Mean= 60.4%		

Table 4.10 shows the summary of INH drug stock out status in the last one year of the assessment date. Most of the respondents (78%, n = 81) answered that INH shortage was not observed while 5.8% (n = 6) observed INH stock out for more than a month in their facility. This finding indicates that INH drug shortage possibly couldn't be a factor for the low implementation of IPT in Addis Ababa.

Table 4.10: INH drug stock out status in the last one year

INH Stock out status	Number of respondents	Percentage of respondents
No shortage	81	77.9
Yes, for less than a month	17	16.3
Yes, for more than a month	6	5.8
Total	104	100.0

4.3.6 Comparison of practice score between grouping variables

The chi-square (X^2) test of independence determines whether two variables are independent or related; the test can be used with nominal or ordinal data (Burns & Grove 2011:401). In this study, associations between the study variables were assessed by X^2 test and a probability two-sided value of $p < 0.05$ were used as the definition of significance to compare groups.

4.3.6.1 Association between health facilities and IPT practice

The practice behaviour of healthcare providers to provide IPT for PLHIV had no association with either of the facility types (public/private) or facility settings (hospital/health centre) where they work.

4.3.6.1.1 Association between type of health facility and IPT practice

The X^2 test ($p = 0.251$) in Table 4.11 indicates that the association between type of health facility and level of IPT practice was not statistically significant. This implied that significant evidence was not found from this study to say the level of IPT practice differs between the public and private type of health facilities.

Table 4.11: Association between type of health facility and IPT practice

		Level of Practice			Chi-square	df	P value
		Fair	Good	Total			
		No. (%)	No. (%)	No. (%)			
HF* type	Public	14 (16.3)	72 (83.7)	86 (100)	1.318	1	.251
	Private	5 (27.8)	13 (72.2)	18 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			

*HF = health facility

4.3.6.1.2 Association between health facility settings and IPT practice

Association between facility setting and level of practice was insignificant ($p=0.477$) that implied there is probably no difference in IPT practice of health care providers working in hospitals and health centre (primary care); or the difference in proportions of practice was observed only due to chance

Table 4.12: Association between health facility settings and IPT practice

		Level of Practice			Chi-square	df	P value
		Fair	Good	Total			
		No. (%)	No. (%)	No. (%)			
HF*setting	Hospital	10 (15.4)	55 (84.6)	65 (100)	.507	1	.477
	Health center	9 (23.1)	30 (76.9)	39 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			

*HF = health facility

4.3.6.2 Association between socio-demographic variables and IPT practice

Socio-demographic variables of respondents; gender, age, marital status, religion, profession, experience hold in HIV clinics and whether he/she had been trained on IPT were tested to see the association they might have with the practice behaviour of the respondent towards IPT provision. The result is shown in Table 4.13 below and it indicated that no statistically significant difference was found between any of the groups.

Table 4.13: Association between respondents' socio demographic characteristics and IPT practice

Socio-demographic characteristics		Level of Practice			Chi-square	df	P value
		Fair	Good	Total			
		No. (%)	No. (%)	No. (%)			
Gender	Male	7 (21.2)	26 (78.8)	33 (100)	.280	1	.596
	Female	12 (16.9)	59 (83.1)	71 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			
Age group	20-30	8 (16.7)	40 (83.3)	48 (100)	4.917	3	.178
	31-40	9 (19.6)	37 (80.4)	46 (100)			
	41-50	1 (11.1)	8 (88.9)	9 (100)			
	>50	1 (100)	0 (0.0)	1 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			
Marital status	Single	5 (18.5)	22 (81.5)	27 (100)	.226	2	.893
	Married	14 (18.4)	62 (81.6)	76(100)			
	Divorced	0 (0.0)	1 (100)	1 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			
Religion	Christian	18 (19.1)	76 (80.9)	94 (100)	.507	1	.477
	Muslim	1 (10)	9 (90)	10 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			
Profession	Nurse Diploma	5 (18.5)	22 (81.5)	27 (100)	.369	3	.947
	Nurse Degree	12 (19.4)	50 (80.6)	62 (100)			
	Health Officer	1 (11.1)	8 (88.9)	9 (100)			
	Doctor/Specialist	1 (16.7)	5 (83.3)	6 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			
Experience	< 1 year	3 (20.0)	12 (80.0)	15 (100)	.625	3	.891
	1 to 3 years	9 (18.8)	39 (81.3)	48 (100)			
	3 to 5 years	5 (20.8)	19 (79.2)	24 (100)			
	> 5 years	2 (11.8)	15 (88.2)	17 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			
Training	Yes	18 (19.4)	75 (80.6)	93 (100)	.694	1	.405
	No	1 (9.1)	10 (90.9)	11 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			

4.3.6.3 Association between healthcare providers' knowledge, attitude and practice of IPT

From the results of bivariate association test between knowledge, attitude and practice behaviour of healthcare providers towards IPT provision, significant difference ($X^2 = 23.14$, $P=0.000$) was found only between knowledge and attitude of respondents. The following tables (Table 4.11 to 4.13) provide details of these tests.

4.3.6.3.1 Association between knowledge and attitude level of IPT

Knowledge had highly statistically significant association with level of attitude towards IPT provision among the respondents ($P=0.000$). As level of knowledge increases (Table 4.14), proportion of respondents with positive attitude increases among respondents.

Table 4.14: Association between knowledge and attitude level of IPT

Level	Attitude				X^2	df	P value	
	Negative	Neutral	Positive	Total				
	No. (%)		No. (%)	No. (%)				
Knowledge	Low	0 (0.0)	0 (0.0)	1 (100.0)	1 (100)	23.14	4	.000
	Moderate	2 (6.9)	17 (58.6)	10 (34.5)	29 (100)			
	High	2 (2.7)	11 (14.9)	61 (82.4)	74 (100)			
	Total	4 (3.8)	28 (26.9)	72 (69.2)	104 (100)			

4.3.6.3.2 Association between knowledge and practice level of IPT

The statistic $P=0.368$ in Table 4.15 indicated that significant association was not found between knowledge and practice behaviour of respondents in the study. It implied that, the level of IPT practice was most likely the same among healthcare providers with moderate and high level of knowledge regarding IPT (except one, all respondents had knowledge level of moderate and above).

Table 4.15: Association between knowledge and practice level of IPT

Level	Practice			χ^2	df	P value	
	Fair	Good	Total				
	No. (%)	No. (%)	No. (%)				
Knowledge	Low	0 (0.0)	1 (100.0)	1 (100)	2.00	2	.368
	Moderate	3 (10.3)	26 (89.7)	29 (100)			
	High	16 (21.6)	58 (78.4)	74 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			

4.3.6.3.3 Association between attitude and practice level of IPT

The test result ($\chi^2 = 2.72$, $P = 0.257$) indicated that the level of attitude had no significant association with the level of healthcare providers' practice behaviour towards IPT provision.

Table 4.16: Association between attitude and practice level of IPT

Level	Practice			χ^2	df	P value	
	Fair	Good	Total				
	No. (%)	No. (%)	No. (%)				
Attitude	Negative	0 (0.0)	4 (100.0)	4 (100)	2.72	2	.257
	Neutral	3 (10.7)	25 (89.3)	28 (100)			
	Positive	16 (22.2)	56 (77.8)	72 (100)			
	Total	19 (18.3)	85 (81.7)	104 (100)			

4.4 OVERVIEW OF RESEARCH FINDINGS

The findings of this study show that the practice behaviour of healthcare providers towards IPT provision was not statistically significant on the level of knowledge and attitude they had regarding IPT efficacy. However, the attitude of healthcare providers towards IPT provision was significantly associated with the level of knowledge on IPT. In addition, the socio and demographic

characteristics of healthcare providers didn't depict significant association with the level of practice behaviour on IPT implementation.

4.5 CONCLUSION

This chapter has provided a detailed description of the study findings. The results from the survey questionnaire were presented and discussed according to the individual items and overall scores of the knowledge, attitude and practice questions. The overall score of IPT practice behaviour was then tested for any statistically significant relationship between the major demographic characteristics as well as the overall scores of knowledge and attitude of the study participants.

In the next chapter, significance of the study findings, limitations of the study, implications for practice and recommendations for further researches will be presented.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Effective and efficient delivery of a professional societal service demands the rigorous scientific understanding and practical implementation by the practitioners of the profession. That is especially so in the area of health service delivery. With this in mind, this study was initiated to assess the level of healthcare providers' knowledge, attitude and practice towards IPT provision in Addis Ababa, Ethiopia. In this chapter, a brief description of the major findings, significance of the study and its limitations as well as researcher's recommendations for practice and further researches will be discussed.

5.2. RESEARCH DESIGN AND METHOD

A quantitative, descriptive cross-sectional research design was employed in this study in which numerical data were collected at one point in time to describe the characteristics of the study variables. The data was obtained from a facility-based study conducted at twenty-two antiretroviral therapy treatment centres. The sources for the study were healthcare providers working at the study sites who had at least six months experience in providing treatment for people living with HIV.

A total of 140 healthcare providers from the randomly selected public and private health facilities were communicated to participate in this study and provided the self-administered structured questionnaire. Out of which, 104 (74%) health care providers have returned the completed form of questionnaire that the entire analysis was based on these numbers of study participants.

5.3 SUMMARY AND INTERPRETATION OF RESEARCH FINDINGS

The findings from this study are discussed according to the objectives of the study as follows. The study objectives were:

- Assess the knowledge, attitude and practice level of healthcare providers towards IPT provision for people living with HIV.
- Determine if significant relationships exist between healthcare providers' IPT practice and their working settings (private vs. public).
- Determine if significant relationships exist between healthcare providers' IPT practice and the level of their knowledge and attitude on IPT.

5.3.1 Assess healthcare providers' knowledge, attitude and practice towards IPT provision for PLHIV.

5.3.1.1 Level of healthcare providers' knowledge regarding IPT

The result on the level of healthcare providers' knowledge about IPT shows that, out of a total 104 healthcare providers, 74 (71%) had high knowledge and 29 (28%) had moderate knowledge while only one respondent (1%) had low knowledge. The mean score was found to be 7.17 out of the possible 9 points with a standard deviation of 1.16. Clearly this shows that the mean knowledge level of respondents who participated in this study were high. This might be because most of the respondents had been trained on TB/HIV collaborative activities, including IPT (89.4%) and had an experience of working in HIV clinics for more than a year (85.6%).

More than 90% of the respondents had correctly answered for the questions on the combinations of TB screening tools to identify whether PLHIV are eligible for IPT, the type of TB preventive drug and its dosage. This implies that healthcare providers who participated in this study had good knowledge of screening people living with HIV to identify them for IPT eligibility as well as the type of

drug and dosages used to prevent HIV patients (without active TB) from TB infection.

On the other hand, more than half of the respondents (55.2%) incorrectly answered the question on the necessity of chest radiography for screening PLHIV for IPT eligibility. According to the revised WHO IPT guideline (2011b:8), chest radiography is no longer a mandatory investigation before starting IPT. I.e. chest radiography can be done if available, but is not required to classify patients into TB and non-TB groups. Nearly half of the respondents (45.8%) were also missed to answer correctly on the question about who can be eligible to receive IPT. Though WHO (2011b:11) recommends that IPT should be provided for all community groups of HIV positive patients who don't have active TB and all children and infants less than one year of age in contact with smear positive TB case, respondents of this study were more in favour of only the community group of HIV positive patients without active TB. These results therefore indicate that program managers need to devise interventions that will target healthcare providers' knowledge regarding the option of chest-radiography for TB screening to put patients on IPT and on the general criteria of IPT eligibility for paediatric groups.

Another important area that 34.3% of respondents lacked the knowledge was the way how healthcare providers assess their patients' adherence to IPT (refer to Table 4.4). Patient adherence to INH therapy is a key factor in determining the effectiveness of IPT intervention. Therefore, it is necessary that healthcare providers need to know how to assess patients' adherence level and provide them adequate information on the pros and cons of poor IPT adherence.

5.3.1.2 Level of healthcare providers' attitude towards IPT provision

On the level of healthcare providers' attitude towards IPT provision, the finding of this study revealed that 69% of healthcare providers who participated in this study had positive attitude whereas 27% of them were neutral; in a position of neither supporting nor opposing the provision of IPT for PLHIV. The mean

survey score of respondents' attitude was found to 36.27 from a possible 45 points with a standard deviation of 4.25. Evidently, this shows that those healthcare providers who participated in this study had on average a positive attitude towards IPT provision and this could be because of most respondents had high level of knowledge on IPT efficacy. This finding however contrasts with a study of Getahun et al. (2010) on global IPT implementation barriers and solutions that found out as the lack of experience, knowledge and clarity on the benefits of IPT by health care workers were among barriers of IPT implementation globally.

5.3.1.3 Level of healthcare providers' practice towards IPT provision

The study to assess the level of healthcare providers' practice towards IPT provision shows that 81.7% of the respondents had good practice and 18.3% of them had fair practice on IPT. The mean score of IPT practice was 10.5 out of possible 12 points with a standard deviation of 1.21. This indicates that healthcare providers who participated in this study had on average good practice of IPT implementation that includes activities like; the screening of people living with HIV for TB, encouraging eligible patients to start IPT, providing INH for eligible persons and monitoring the side effects on a follow up time.

5.3.2 Association between healthcare providers' working settings and level of IPT practice

The results on the impact of healthcare providers' working settings and level of IPT practice study demonstrated that there were no significant differences in the practice behaviour of healthcare providers on the basis of their working settings. Respondents who worked either in public or private health facilities had on average positive attitude and good practice of IPT and the same was true in health centres and hospital settings. Therefore, as per this finding, there is no need to devise interventions that will target healthcare providers in different

working settings; as hospital vs. health centre and public vs. private types of health facilities.

5.3.3 Association between healthcare providers' knowledge, attitude and level of IPT practice

Lastly, the association between healthcare providers' knowledge, attitude and level of IPT practice was examined and the data suggest that there exist a significant relationship between knowledge and attitude ($P=0.000$). It means that, increasing the knowledge level of healthcare providers will impress their attitude behaviour. On the other hand, the result demonstrated that knowledge and attitude had no significant association with practice score of IPT. This might be because there were no significant differences of knowledge and attitudes within the groups of participants.

5.4 CONCLUSION

Overall, the results of this study revealed that healthcare providers who participated in this study had on average a high level of knowledge, positive attitude and good practice towards IPT provision for people living with HIV. This implies, therefore, the low level of IPT utilization in Ethiopia and in particular, Addis Ababa, could not be due to the clinician's resistance to provide IPT for people living with HIV.

5.5 RECOMMENDATIONS

Based on the findings, some recommendations are suggested for practice to effectively implement IPT in healthcare settings and increase its uptake among people living with HIV. In addition, the researcher highlights areas of gaps recommended for further research in the perspective of healthcare providers' knowledge, attitude and practice towards IPT provision.

5.5.1 Practice

The Health Bureau and the Ministry of Health together with the existing health partner organizations need to:

- Conduct training to improve clinicians' knowledge on the updated recommendations of IPT and the identified knowledge gaps like; chest radiography for IPT start up, IPT for children, IPT for pregnant women and patient assessment for IPT adherence.
- Organize refresher courses or awareness promotion workshops to promote the attitude of healthcare providers towards the belief that INH increases the risk of drug-resistant, IPT contra-indication with pregnancy, IPT initiation irrespective of the immune and/or ART status, and other controversial issues of IPT.
- Distribute the updated national guideline for clinical and programmatic management of TBL and TB/HIV (integrated national guideline including IPT) as much as possible to all health facilities, especially ART clinics for the use by healthcare providers as a reference.
- Monitor and follow up the actual implementation of IPT through providing supportive supervision and in-placing effective information management system so that IPT implementation activities are well kept and reported in a standard system to the regional health bureau.

5.5.2 Further research

Finally, in order to answer fully for the problem why Ethiopia reports low level of IPT implementation every year, further researches need to be conducted on the following topics:

- Conduct similar studies in the other regions of Ethiopia. Due to time and resource limitation, the study has been conducted only in Addis Ababa and hence it might not be a representative of the country as a whole. In future, more studies should be conducted in other regions to find out the

pattern of healthcare providers' knowledge, attitude and practice towards IPT provision for people living with HIV.

- Review the medical records of HIV positive patients and identify the rate of IPT provision among eligible persons so that practice level of healthcare providers is measured from their action and,
- Assess the information management system of TB/HIV collaborative activities along with the reliability of data recording and reporting system from health facility up to the national level.

5.6 CONTRIBUTIONS OF THE STUDY

This study contributes towards healthcare authorities and partner organizations, who implement TB/HIV collaborative activities, as an input during intervention plans and operational research to widely scale up IPT implementation in Addis Ababa and in the country, as appropriate. In addition, findings of this study contribute as reference to individual researchers on IPT assessment in the perspective of healthcare providers which had been rarely conducted before in Addis Ababa.

5.7 LIMITATIONS OF THE STUDY

Because this study was conducted only in selected health facilities of Addis Ababa, it may not be applicable to generalize the findings to the whole country. Another limitation is, even though the data was collected using a structured questionnaire, it was self-reported and one cannot discount the existence of a personal desirability bias that respondents might not have reported their actual perception and practice behaviour.

5.8. CONCLUDING REMARK

The present study assessed healthcare providers' level of knowledge, attitude and practice towards IPT provision for PLHIV in Addis Ababa. The findings and recommendations should serve to further improve knowledge and attitude of

healthcare providers that ultimately increases the wide implementation of IPT not only in Addis Ababa, but also in the entire country. The researcher also believes this study will contribute significantly to open a door for further researches on clinicians' perception and practice towards IPT provision for PLHIV in other regions of the country.

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ANNEXURES

Annexure A: Questionnaire

Data Collection Form

Dear respondent, you are invited to participate in this research voluntarily and kindly requested to respond to the following questions that asks about your socio-demography, knowledge, attitude and practice towards IPT provision for people living with HIV. The result of this study will be important to plan activities for the wide implementation of IPT in Addis Ababa, and in the country in general.

Understanding that your honest and genuine response will have significant contribution to the success of this study, please take your time to respond to all questions. No name is going to be on the questionnaire and the information you give will be kept strictly confidential.

Thanks in advance!

(General items to be filled by the researcher or research assistant)

Respondent number: ____|____|____ Name of health facility:

Facility setting: 1. Hospital 2. Health centre 3. Higher clinic

Facility type: 1. Public 2. Private

Instruction for respondents: *for each of the following sections, please circle one of your best choice or answer as appropriate to the specific item of the question.*

SECTION 1: SOCIO-DEMOGRAPHIC DATA

- 1.1 Gender 1. Male 2. Female
- 1.2 Age (in years): _____
- 1.3 Marital status 1. Single 2. Married 3. Widowed 4. Divorced
- 1.4 Religion 1. Christian 2. Muslim 3. Don't have any 4. Other,
- 1.5 Professional level 1. Nurse-Diploma 2. Nurse-Degree
3. Health Officer 4. General practitioner
5. Specialist 6. Other: _____
- 1.6 How long have you worked in HIV clinic? 1. Less than 1 year
2. 1 to 3 years 3. 3 to 5 years 4. More than 5 years
- 1.7 Have you ever been trained on TB and HIV collaborative activities?
1. Yes 2. No
- 1.8 Have you ever been trained specifically, on IPT?
1. Yes 2. No

SECTION 2: KNOWLEDGE ABOUT IPT

2.1	In your opinion, do you think that IPT reduces the risk of TB infection for HIV positive patients?	1. Yes 2. No
2.2	Which combinations of TB screening symptoms do you use to identify whether PLHIV are eligible for IPT or not?	1. Current cough, rash, weight loss, fever 2. Fever, current cough, night sweat, rash 3. Current cough, fever, weight loss, night sweat 4. Weight loss, nausea, fever, rash
2.3	Do you think chest radiography is a requirement for screening PLHIV for IPT eligibility?	1. Yes 2. No
2.4	In your opinion, who is eligible to receive IPT?	1. All infants of mother with pulmonary TB 2. All children <5 yrs in contact with smear positive TB patient 3. All HIV positive patients who don't have active TB 4. All above cases 5. Only 2 & 3

2.5	Do you think current pregnancy is a contraindication for starting IPT?	1. Yes 2. No
2.6	Can IPT be used as secondary prophylaxis for people with past history of TB?	1. Yes 2. No
2.7	Which one is the best TB preventive treatment drug?	1. Isoniazid (INH) 2. Rifampicin (RIF) 3. Pyrazinamide (PZA) 4. None
2.8	Which one is the INH drug dose used for chemotherapy to prevent TB in adults living with HIV?	1. 100 mg/day 2. 200 mg/day 3. 300 mg/day 4. 150 mg/day 5. None of the above
2.9	How do you assess whether your patients are adherent to IPT or not?	1. Patient self-report 2. Detailed interview 3. Pill counts 4. Pharmacy refill data 5. All above 6. None of the above
2.10	In your opinion, mention the major barriers for successful implementation of IPT in your area?	1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

SECTION 3: ATTITUDE TOWARDS IPT EFFICIENCY AND PROVISION

Please select only one response that best suits among the likert-scale measurements of your attitude.

3.1	IPT is effective in reducing TB incidence and mortality among PLHIV.	1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree
3.2	PLHIV who do not have	1. Strongly agree

	current cough, fever, weight loss or night sweats are unlikely to have active TB and should be offered IPT.	<ol style="list-style-type: none"> 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree
3.3	IPT should be given to all eligible PLHIV irrespective of their immune status.	<ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree
3.4	After excluding active TB, IPT won't significantly increase the risk of developing INH-resistance.	<ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree
3.5	Children < 1 year of age should be provided with IPT if they have a household contact history with a TB case.	<ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree
3.6	Pregnancy is not a contraindication for IPT provision	<ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree
3.7	Past history of TB (>2 years) is not a contraindication for IPT provision	<ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree
3.8	The longer the duration of IPT (>6 months), the longer the patient stays free from TB.	<ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree
3.9	On overall, do you agree that you are complying with the national and international IPT recommendations?	<ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree

3.10	If not agree for Q3.9, mention your major beliefs preventing you from complying the recommendations?	1. _____ 2. _____ 3. _____ 4. _____ 5. _____
SECTION 4: PRACTICE ON IPT PROVISION		
4.1	Do you use the TB screening tool (algorithm) to identify PLHIV eligible for IPT?	1. Yes, always 2. Yes, sometimes 3. No
4.2	Do you encourage PLHIV to start IPT once they are eligible?	1. Yes, always 2. Yes, sometimes 3. No
4.3	Do you provide INH for eligible HIV+ patients?	1. Yes, always 2. Yes, sometimes 3. No
4.4	If your answer for Q4.3 is 'Yes', how many of the ten newly enrolled HIV+ patients started IPT in the last one year?	_____ of ten patients started IPT.
4.5	If you are providing IPT for your patients, how frequent do you supply the INH drugs?	1. Daily 2. Weekly 3. Monthly 4. Every 3 months 5. Per patients convenience
4.6	Do you advice clients on IPT to adhere to their treatment?	1. Yes, always 2. Yes, sometimes 3. No
4.7	Do you monitor and manage clients with INH drug toxics?	1. Yes, always 2. Yes, sometimes 3. No
4.8	If your answer for Q4.3 is 'No', what hinders you from putting the patient on IPT?	1. Fear of INH-resistance 2. Fear of developing side effects 3. Difficult to exclude active TB 4. Not sure on the benefit of IPT 5. No adequate knowledge on IPT

	(Multiple answer is possible)	6. Patients refuse to take IPT 7. Patients' poor adherence 8. TST is unavailable 9. Chest x-ray is unavailable 10. INH is unavailable 11. Other, specify _____
4.9	Did you experience INH stock out in the last one year?	1. Yes, for less than a month 2. Yes, for more than a month 3. No shortage 4. N/A
4.10	Please mention the major interventions required for the successful implementation of IPT in your area.	1. _____ 2. _____ 3. _____ 4. _____ 5. _____

Thank you for your patience and genuine response!

**Annexure C: Addis Ababa City Administration Health Bureau application
to conduct research**

To: Addis Ababa City Administration Health Bureau
P.o. Box 30738
Addis Ababa

August 24, 2012

**Subject: request for permission to carry out a research for academic
purposes**

Dear Sir/Madam

I am a student at the University of South Africa (UNISA) in Master of Public Health (MPH). As mentioned above, I want to carry out a research for the partial fulfilment my study on the topic “knowledge, attitude and practice of healthcare providers towards isoniazid preventive therapy (IPT) provision for people living with HIV in Addis Ababa in selected public and private ART clinics as listed on the attachment.

The objectives of my study are:

- To assess and describe the knowledge, attitude and practice of healthcare providers towards IPT provision for people living with HIV.
- To determine if significant relationships exist between healthcare providers' IPT provision and their level of knowledge and attitude.
- To determine if significant relationships exist between healthcare providers' IPT provision and their working setting (private or public institution).

When the study completed, I will submit the result for subsequent use of the findings for it may help to improve the wide use of IPT in Addis Ababa and the country, at large. Therefore, I kindly request your esteemed organization to allow me to conduct this research as part of my academic requirements. Annexed are the ethical approval letter from UNISA, research instrument, respondents' consent form and the proposal for further review.

Sincerely,

AzmeraMollaTikuye

Annexure D: Addis Ababa City Administration Health Bureau ethical review committee research approval

ETHICAL REVIEW COMMITTEE

Tel: + 251 115 513911

P.O. Box 30738

Fax No. +251 115 515689

Research title: "Knowledge, Attitude and Practice of Health care providers towards Ionized Preventive Therapy [IPT] Provision in Addis Ababa "

Principal Investigator Azmera Molla

CRITERIA/ITEM	RATING
10. consent form a. Does the consent contain all the necessary information that the subject should be aware of?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Requires revision <input type="checkbox"/> No <input type="checkbox"/> Not applicable <input type="checkbox"/> Not attached
11. Are the objectives of the study clearly stated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
12. Are provisions to overcome risks well described and accepted? a. Justice b. Beneficence c. Respect for a person	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not well described <input type="checkbox"/> Not applicable
13. Are the safety procedures in the use of vaccines, drugs and other biological products acceptable?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not applicable
14. Are the procedures to keep confidentiality well described?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N <input type="checkbox"/> Not applicable
15. Are the proposed researchers competent to carry out the study in a scientifically sound way?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable <input type="checkbox"/> Unable to assess
16. Does it have material transfer agreement?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not applicable
17. Recommendation	<input checked="" type="checkbox"/> Approved with condition
18. Remarks	

Ethical Clearance Committee Members;

Name

Signature

Name

Signature

1. Ato Alemu Haile mariam

2. Dr. Addis Akalu

3. Ato Ezra Muluneh

4. Ato Tadesse Wordoffa



Annexure E: Addis Ababa City Administration Health Bureau letter to the study public-health facilities to conduct approved research



Reference AAHB/952/227

Date August 27/2012

የአድድላ ከተማ አስተዳደር ጤና ቢሮ
የአድድላ ከተማ አስተዳደር ጤና ቢሮ
The Addis Ababa City Administration
Health Bureau

To

Tikur Anbessa Hospital
Menilik 2nd Hospital
Gandhi Hospital
Saint Peter Hospital
Woreda 09 Health Center
[Kolfe Sub city]
Arada Health center
Addis Ababa

Yeka Health center
Kolfe Health Center
Lideta Health center
Kazanchis Health center
Selam Health center
N/S/L No. 1 Health center

Subject; Request to access Health facilities to conduct approved research

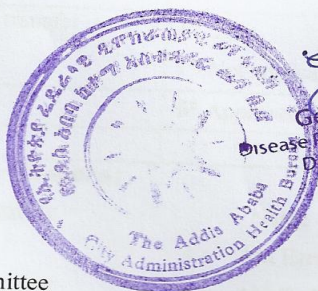
This letter is to support Azmera Molla to conduct research, which is titled as “Knowledge, Attitude and Practice of Health care providers towards Ionized Preventive Therapy [IPT] Provision in Addis Ababa “

The study proposal was duly reviewed and approved by Addis Ababa Health Bureau IRB, the Principal investigator is informed with a copy of this letter to report any changes in the study procedures and submit an activity progress report to the Ethical committee as required.

Therefore we request the health facilities to provide support to the principal investigators.

Cc:-

To
→ Azmera Molla
Addis Ababa
Ethical clearance committee
Health Bureau



With Regard

Getachew Teshome
Getachew Teshome
Disease Prevention & Health Promotion
Deputy Bureau Head

Annexure F: Addis Ababa City Administration Health Bureau letter to the study private-health facilities to conduct approved research



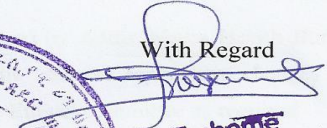
Reference AAHB / 952 / 227
Date August 27 / 2012

To
Hayat Hospital
MCM Hospital
Saint Gebriel Hospital
Saint Yared General Hospital
Addis Ababa
National Hospital
Betheszata Hospital
Subject; Request to access Health facilities to conduct approved research

This letter is to support Azmera Mollato conduct research, which is titled as “Knowledge, Attitude and Practice of Health care providers towards Ionized Preventive Therapy [IPT] Provision in Addis Ababa “

The study proposal was duly reviewed and approved by Addis Ababa Health Bureau IRB, the Principal investigator is informed with a copy of this letter to report any changes in the study procedures and submit an activity progress report to the Ethical committee as required.

Therefore we request the health facilities to provide support to the principal investigators.

With Regard

Getachew Teshome
Disease Prevention & Health Promotion
Deputy Bureau Head

Cc:-
To
→ Azmera Molla
Addis Ababa
Ethical clearance committee
Health Bureau

Annexure G: List of study health facilities

No.	Facility Name	Facility setting	Facility type
1	Arada health center	Health centre	Public
2	Bole health center	"	"
3	Kasanchis health center	"	"
4	Kolfae health center	"	"
5	Lideta health center	"	"
6	Selam health center	"	"
7	Wereda 09 health center	"	"
8	Wereda 19 (Nifassilk No.1) health center	"	"
9	Yeka health center	"	"
10	Ghandi hospital	Hospital	"
11	Minilik hospital	"	"
12	Rasesta hospital	"	"
13	St Peter hospital	"	"
14	TikurAnbessa hospital	"	"
15	Yekatit 12 hospital	"	"
16	Zewditu hospital	"	"
17	Bethezata hospital	"	Private
18	Hayat hospital	"	"
19	MCM hospital	"	"
20	National hospital	"	"
21	St .Gabriel hospital	"	"
22	St .Yared general hospital	"	"