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UPTAKE OF ISONIAZID PREVENTIVE THERAPY BY FEMALE SEX WORKERS ON HIV ANTIRETROVIRAL TREATMENT IN HARARE, ZIMBABWE, 2020

BY

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Abstract

To mitigate the dual burden of HIV/AIDS and TB, the World Health Organization recommended the use of Isoniazid Preventive Therapy (IPT) in people living with HIV, household contacts and other people at risk. Despite this recommendation, there is low uptake of IPT globally while data is scarce on the uptake of IPT by female sex workers (FSWs), a key population group among people with HIV in Zimbabwe. The uptake of IPT by FSWs living with HIV has not been assessed in Harare. This study determined the proportion of IPT uptake and the associated factors in the FSW key population group at PSI Zimbabwe New Africa House Clinic. This mixed methods study reviewed electronic medical records of 296 randomly selected FSWs initiated on HIV antiretroviral treatment between 2017 and 2020 and triangulated the findings with qualitative interviews of the same FSWs. Nine key informant healthcare providers were purposively selected for interviews. Univariate and multivariate logistic regression analyses in Epi Info 7 were performed to determine the factors associated with IPT uptake. The overall uptake was 60.1% (n=178). Knowledge of the benefits of the IPT prophylaxis, 54.5% (n = 97) was the most cited reason for taking it up whilst the reasons cited for poor IPT uptake included lack of IPT information provision, lack of IPT awareness and IPT prophylaxis not offered, reported by 64.4% (n = 76). From the key informants' thematic analysis, outcome of low IPT uptake status was caused by erratic supply and absence of adequate pyridoxine stocks for the IPT side effects management, lack of IPT awareness to the public as a whole as well as fear of pill burden and IPT side effects by the FSWs. On univariate analysis, demographic variables statistically significant were marital status [OR = 0.3928 *p* 0.01], level of education [OR = 0.6673 *p* 0.0473] and employment status [OR = 1.2539 *p* 0.04]. Antiretroviral status variables including WHO stage [OR = 0.5688 *p* 0.01], latest viral load result [OR = 0.8410 *p* 0.03], TB screened [OR = 2.7689 *p* 0.00] and tested for MTB [OR = 2.1164 *p* 0.00] were statistically significant. Health service delivery variables namely heard about IPT [OR = 25.3066 *p* 0.00], IPT information source [OR = 2.3024 *p* 0.00], definition of IPT [OR = 4.3510 *p* 0.00], information known about IPT course duration [OR = 14.1218 *p* 0.00], offered IPT [OR = 104.0407 *p* 0.00] and IPT side effects [OR = 0.0033 *p* 0.00] had a statistically significant association with IPT uptake. On multivariate analysis, latest viral load result [aOR = 0.1025 *p* 0.04] and IPT side effects [aOR = 0.0002 *p* 0.00] respectively were statistically significant predictors of uptake of IPT services. These findings indicate the need to strengthen IPT uptake by female sex workers in Harare. Health education provision demystifying IPT side effects and the importance of reporting of any IPT side effects to both the FSWs and community at large is a crucial measure in ensuring improvement in IPT uptake.

Key Words: Isoniazid Preventive Therapy, Tuberculosis, New Africa House, Harare,

Zimbabwe

Declaration Page

I declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree.

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List of Acronyms and Abbreviations

ART Antiretroviral Treatment

CDC Centres for Disease Control and Prevention

FSW Female sex worker

HIV Human Immunodeficiency Virus

IC Infection Control

ICF Intensified Case Finding

INH Isoniazid

IPT Isoniazid Preventive Therapy

LTBI Latent Tuberculosis Infection

NAH New Africa House

NSC New Start Centre

PLHIV People Living With HIV

TB Tuberculosis

WHO World Health Organization

UNAIDS United Nations Program on HIV and AIDS

Definitions of Key Terms

Tuberculosis is an infectious bacterial disease caused by *Mycobacterium tuberculosis (MTB)* that mainly affects the lungs.

Latent tuberculosis infection is defined as the state of persistent immune response to stimulation by M tuberculosis antigens with no evidence of clinically manifest of active TB.

Preventive therapy is the chemoprophylaxis with isoniazid which reduces the risk of TB occurring in people exposed to infection or with latent TB infection.

Female sex workers are women who receives money or goods in exchange for sexual services and who consciously define those activities as income generating even if they do not consider sex work as their occupation.

Key populations are defined as female sex workers, men having sex with men, transgender, and high-risk men.

New Africa House New Start Centre is a nongovernmental organisation health clinic which provides voluntary counseling and testing services with provision of antiretroviral treatment and care, and TB program is integrated.

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CHAPTER 1 INTRODUCTION

1.1 Introduction

This chapter introduces the study, outlining the context of the study, the rationale, problem statement, research questions, research objectives, the research hypothesis and delimitation of the study.

Globally, 10 million people were estimated to have TB in 2019 and 1.4 million died from the disease, of these 208 000 (15%) were HIV co-infected. The proportion of the 10 million people estimated was highest in the World Health Organisation African regions exceeding 25% in parts of Southern Africa including Zimbabwe (World Health Organisation [WHO], 2020). Tuberculosis (TB) remains a leading cause of morbidity and mortality in Sub-Saharan Africa among HIV infected persons. Tuberculosis incidence rate increases in countries with high HIV prevalence. HIV is the strongest risk factor for Tuberculosis disease.

In Sub-Saharan Africa, nearly 2.5 million people contracted TB in 2017 and 665 000 of them died from the disease (WHO, 2019). As part of reducing incidence of active TB, Isoniazid (INH) was recommended to prevent latent TB infection from progressing to TB disease. Isoniazid (INH) Preventive therapy has shown to reduce incidence of Tuberculosis by 60% hence morbidity in Africa setting also greatly reduced but IPT implementation remains very poor (Tram et al., 2017).

The WHO (1998), recommended a 6-month course of IPT for people living with HIV (PLHIV) in TB endemic countries in 1998. Although policies for IPT are present in many high HIV/TB burden countries, implementation is slow in in most of these countries (Briggs, Courtney, & Surbhi, 2015). Years after the recommendation, the WHO reported that the provision of IPT remains very low (Briggs, Courtney, &

Surbhi, 2015). Of the 33 million people estimated to be infected with HIV globally in 2015, only 27056 (less than 0.1%) were treated with IPT (Briggs, Courtney, & Surbhi, 2015). Zimbabwe is one of the countries who had started IPT program in 2013, well after the WHO recommendation.

1.2 Background to the study

The risk of developing TB in people living with HIV (PLHIV) is 20 to 30 times greater than among those who do not have HIV infection (WHO, 2011). Zimbabwe is a high TB-HIV prevalence country. The United States Centers for Disease Control and Prevention (CDC) (2019) estimated TB incidence of 221 cases per 100 000 populations in 2017 and 70% co-infection rate. If not adequately managed and properly addressed, TB remains a leading cause of preventable morbidity and mortality in people living with HIV undermining the great strides made globally in HIV care and treatment.

Some of the factors that influence TB epidemiology are socio-economic development, living conditions and nutritional status. Due to the high unemployment rate in Zimbabwe, most Zimbabweans live in congested high-density areas where ventilation and spacing issues are minimal (Nyathi et al., 2019). Tuberculosis transmission risk is high in enclosed, poorly ventilated environments. High density congregate living environments are high risk locations for TB transmissions (Makoni et al., 2015).

Key populations, including female sex workers also live and work in these squatted and congested environments-poor housing qualities, poverty and under nutrition hence exposure to TB is very high. Tuberculosis is regarded as a disease of poverty and economic distress (WHO, 2020).

Female sex workers are vulnerable, marginalized and often face stigma and discrimination. With HIV co-infection, the latent TB infection progression to TB disease is very high. Female sex workers have a high HIV prevalence. They are 13 times more at risk, thus placing them at increased risk of TB. In addition, the criminalization of the sex work results in limited health care access driving the low uptake of treatments.

To mitigate the dual burden of TB-HIV, WHO (2008), recommended the use of 'three I`s' guidelines-Infection control (IC), isoniazid preventive therapy (IPT) and intensified case findings (ICF) with antiretroviral (ART) aimed to reduce TB prevalence in people living with HIV. Tuberculosis latent infection can be prevented from progressing to TB disease through infection control. Unfortunately, implementation of effective infection control policies like administrative, environment protection is enforced in institutional environments such as hospitals, care home and prisons leaving out our communities where people live and socialize.

Isoniazid Preventive Therapy alone can reduce the risk of TB in people living with HIV by up to 46% (Grant, Charalambous, & Fielding, 2005) while intensified case finding (ICF) is defined as a systematic screening of HIV positive patients for TB symptoms with prompt evaluation and investigation of TB suspects. ICF is recommended at HIV diagnosis, before IPT and or ART initiation and at every visit at the health facility (WHO, 2010). TB infection control measures are important to reduce TB transmission within the health center as ART and TB programs are integrated.

New Start Centre clinic is a voluntary counseling and testing site with integrated antiretroviral treatment and care clinic and TB program. It focuses more on key

populations, providing health care service delivery through a 'one-stop shop' strategy. In addition to general cleanliness encouragements sessions done at the site as part of environmental measures to control TB, there is also the human control arm targeting female sex workers, a key population group with multiple factors to consider regarding IPT TB Preventive therapy drug uptake, adherence and completion.

There is evidence from several studies conducted of the effectiveness of IPT and its benefits in PLHIV in reducing the risk of TB and re-activation of latent TB in both developed and developing countries. IPT uptake as a public health intervention has remained significantly low especially in the key population groups. To the knowledge of the researcher, no studies have been done in Zimbabwe to assess the uptake of IPT by eligible female sex workers. Therefore, this study seeks to determine the factors associated with IPT uptake among female sex workers at NAH NSC clinic in Harare.

1.3 Statement of the problem

New Africa House New Start Centre in Harare, a key population health care clinic reported an increase in TB new cases among HIV negative and HIV positive persons from 14% in the period January–June 2019 to 20% between July and December 2019 (Population Service International Zimbabwe [PSI-Zimbabwe], 2019). The bulky of these cases were HIV positive. IPT uptake status at New Africa House New Start Centre was low as presented in table 1 (PSI- Zimbabwe, 2020).

Table 1: IPT uptake status at New Africa House New Start Centre Clinic

Year	Total # FSWs eligible for IPT	Total # initiated on IPT (%)	Total # FSWs completed IPT course (%)
2017	832	312 (37.5)	198 (63.5)
2018	498	112 (22.9)	21(18.8)
2019	684	178(26.0)	17(9.6)

2020	524	153(29.2)	12(7.8)

IPT= Isoniazid Preventive Therapy; FSW = Female Sex Workers

Female sex workers have multiple TB risk factors including socioeconomic, marginalization, crowded workplaces, limited health care access and high HIV infection risk. There is no documented assessment of factors associated with IPT uptake among female sex workers at NAH NSC clinic. Zimbabwe will not achieve its 90% reduction target of active TB incidence by 2035 if IPT uptake is minimal.

Therefore, this study seeks to establish the factors associated with the observed low IPT uptake at the clinic despite WHO recommendation and current Zimbabwe HIV/AIDS & TB guidelines of use of Isoniazid to reduce the TB incidence in female sex workers, a key population group living with HIV.

1.4 Research Objectives

1.4.1 Broad Objective

The main objective of the study was to determine the factors associated with Isoniazid Preventive Therapy uptake among female sex workers living with HIV and on antiretroviral treatment in prevention of tuberculosis disease at New Africa House New Start Centre clinic in Harare from January 2017-December 2020.

1.4.2 Specific Objectives

The study sought to:

i. To determine the IPT uptake among female sex workers on ART at NAH NSC in Harare for the period January 2017 – December 2020.
ii. To describe the demographic characteristics of female sex workers on ART at NAH NSC in Harare for the period January 2017-December 2020.

iii. To determine the level of IPT awareness and knowledge among female sex workers at NAH NSC in Harare for the period January 2017-December 2020.

iv. To determine enabling and constraining factors associated with IPT uptake among female sex workers on ART at NAH NSC in Harare for the period January 2017-December 2020.

1.5 Research Questions

i. What is the IPT uptake rate among female sex workers on ART at NAH NSC in Harare?

ii. What are the demographic characteristics of female sex workers on ART at NAH NSC in Harare?

iii. What is the awareness and knowledge level of IPT among female sex workers seeking ART services at NAH NSC clinic in Harare?

iv. What are the enabling factors and constraining factors associated with IPT uptake among female sex workers on ART at NAH NSC in Harare?

1.6 Assumption

All eligible female sex workers living with HIV on ART are enrolled on IPT to prevent them from developing active TB.

1.7 Significance of the study

The WHO (2016), had cited that female sex workers are 13.5% more likely to be living with HIV on HIV health topics on sex work. Zimbabwe is one of the countries who had adopted the IPT policy to decrease the burden of TB in PLHIV following the release of the WHO (2016), guidelines that recommended strengthening intensified

TB, ICF and scale-up of INH IPT among people living with the PLHIV who were enrolled in ART clinics.

Despite this recommendation, uptake of IPT had been minimal (WHO, 2020). Several studies on effectiveness and benefits of IPT had been carried out in the general population and documented overwhelming evidence. However, Zimbabwe is one of the countries who had started IPT program in 2013, well after the WHO recommendation.

Therefore, this study aims to determine the factors associated with IPT uptake in one of the key population group, female sex workers living with HIV and on ART. The study is carried out at New Africa House New Start Centre in Harare as it has got an established integrated service of key population groups since 2013.

New Africa House New Start Centre uses the one stop shop strategy which helps the female sex workers to feel at home while receiving health services including voluntary HIV testing services, ART treatment and care, sexual reproduction health services (family planning), sexual transmitted infections (STI) treatment, voluntary male circumcision, and laboratory services. The New Africa New Start Centre female sex workers cohort is very big and is justified to represent the female sex workers in Harare.

The knowledge of the factors associated with IPT uptake at the site will greatly contribute to the alignment of HIV/AIDS&TB policy and programming to get higher IPT coverage thus progress work towards the Sustainable Development Goal TB target of getting to zero new infections by 2030 HIV.

1.8 Delimitation of the study

The study was affected by participates non-response and recall bias that may result in bias of the measures of the outcome. However, the researcher had used face to face interviewer administered questionnaires and reviewed participates electronic records at the site.

1.9 Limitations of the study

Finance, time constraints as well as Covid-19 lockdown and movement restrictions were the limitations of the study. It was very difficult to complete data collection in the shortest possible time interval of 2 weeks. The study participates were not paid except bus fare reimbursement. Most FSWs were not motivated to participate in the study because of absence of monetary immediate benefit. The Covid-19 lockdown and restrictions resulted in low turnout of the FSWs at the clinic as they would encounter problems in reaching the clinic due to transport associated problems.

1.10 Chapter Summary

In this chapter, the rationale and the problem statement of the study had been elaborated and had deemed the need to study the reasons of the low IPT uptake among the female sex workers at NAH NSC clinic.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction and methodology

This chapter presents information gathered from literature on TB disease epidemiology and IPT uptake among female sex workers and other vulnerable groups globally, regionally, and locally. Special focus is given to what other studies have reported as potential risk of low IPT uptake on various vulnerable sub-groups. The methodology of this literature review is based on the materials and information gathered from research articles, books, reports and grey literature (unpublished data, government documents, data and books) on free websites on internet.

2.2 TB Epidemiology

Tuberculosis, (TB) is a communicable disease ranked in the top ten causes of death worldwide (WHO, 2020). Globally, it is estimated that nearly 2 billion people are infected with Mycobacteria Tuberculosis, the bacilli bacterium that causes TB disease. Every year, about 10 million people develop TB disease with 1.6 million people die of it (CDC, 2019). TB is a preventable and treatable disease.

There is also emergence of multi-drug-resistant tuberculosis (MDR TB) in sub-Saharan Africa that poses a major risk to further destabilization of regional TB control programs. Note that fewer than half of the 46 countries in the WHO African Region have provided representative drug-resistance data and only 10 have reported data since 2007 (Metcalfe et al., 2014). Healthcare providers are required by law to report TB cases to the relevant authorities in their respective countries, as TB is a notifiable communicable disease. Collected data of all notifiable TB cases will be used to monitor national TB trends, identify priority needs and create annual surveillance report.

TB spreads when people who are sick with TB expel into the air for example by coughing and 90% of people developing TB disease are adults (WHO, 2020). The disease typically affects the lungs (pulmonary) and sometimes affects other sites (extra-pulmonary).

Nationwide TB reporting began in 1953 and the WHO (1997), had started publishing global TB reports every year since 1997 with the aim of providing a comprehensive and up-to date TB epidemic assessments as well as progress in prevention, diagnosis and treatment of the disease at global, regional and country level.

There was a slow decline in TB burden globally as shown by the figure below (Glaziou, 2013).

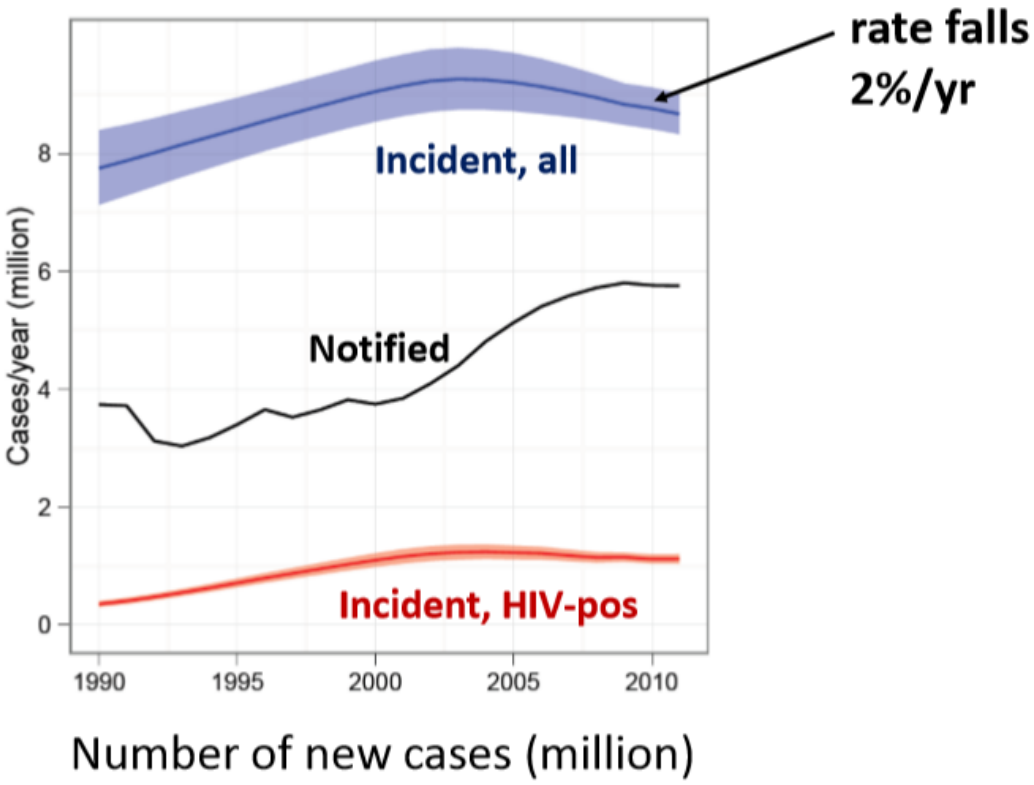

Figure 1: Global TB Burden

TB disease has been with us for a very long time with HIV as the main risk factor for TB disease as shown in the table below for selected determinants of TB (Glaziou, 2013).

Table 2: Selected TB Determinants

Risk factor	Relative Risk
HIV infection	20-35
Under nutrition	3.1-3.3
Diabetes	2.3-4.3
Alcohol abuse	1.9-4.6
Cigarette smoking	1.6-2.5

Zimbabwe is one of the Sub-Saharan countries with high HIV/AIDS & TB burden as shown in the figure below accounting for 80% TB burden globally, (Glaziou, 2013).

Figure 2: Map of Global TB Burden Overview (Adapted from Glaziou, 2013)

2.3 TB control strategies

TB control strategies had been implemented following the TB control principles in order to reduce TB incidence.

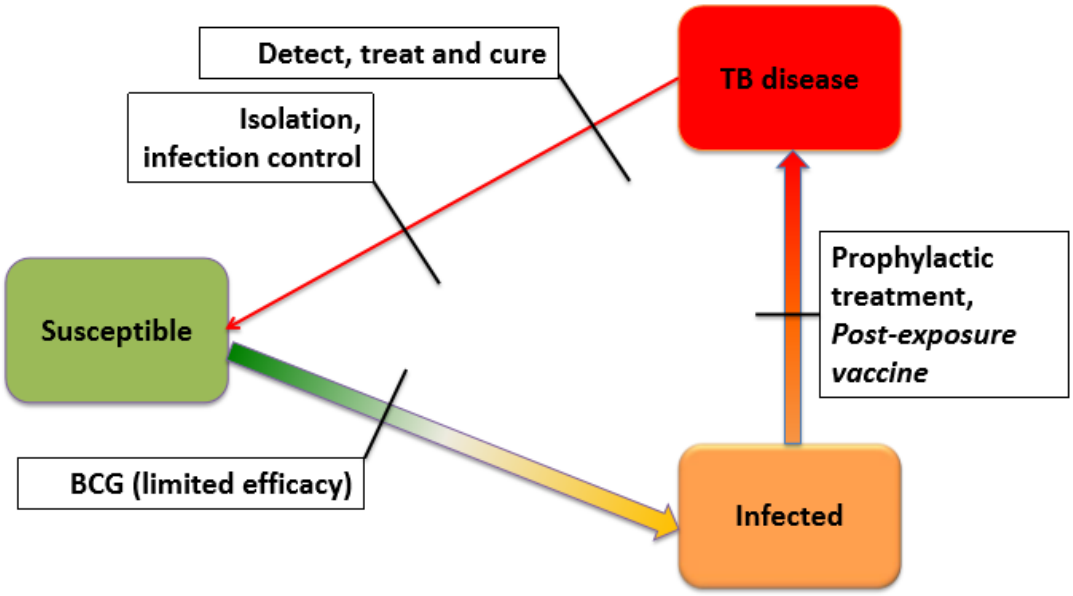

Figure 3: TB Control Strategies (Glaziou, 2013).

The WHO (1997) recommended, and instituted TB control guidelines and Zimbabwe had adopted these guidelines. The TB control strategy in Zimbabwe includes The Stop TB Strategy (2005-2015) that paves way to control TB and beyond towards the eliminating TB long term goal (Ministry of Health and Child Care [MOH], 2017). The Stop TB Strategy six components are:

i. pursue high quality DOTS expansion and enhancement

ii. Address TB/HIV, MDR-TB and other special challenges.

iii. Contribute health system strengthening

iv. Engage all care providers

v. Empower people with tuberculosis and communities

vi. Enable and promote research

In 2011, the WHO released the WHO End TB Strategy in order to curb the TB burden with set targets in addition to the use of 'three I`s' guidelines-Infection control (IC), isoniazid preventive therapy (IPT) and intensified case findings (ICF) with

antiretroviral (ART) aimed to reduce TB prevalence in people living with HIV. Target progress is illustrated below by the WHO TB Report 2020 (WHO, 2020).

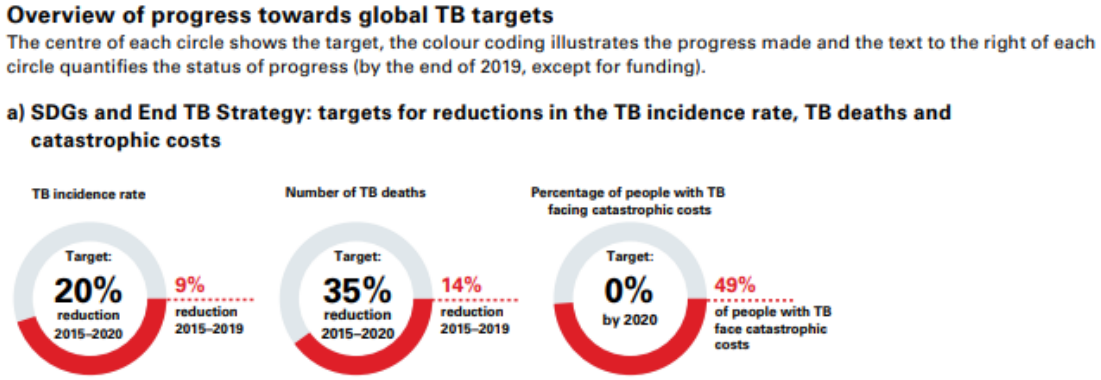

Figure 4: Global TB Targets Overview (Adapted from Global TB report 2020).

The global reduction in the number of TB death from 2015 – 2019 was 14% and this overall decline can be attributed to increase in resources used to strengthen TB control strategies (WHO, 2020). A total of 78 countries are on track to reach the 2020 milestone of a 20% reduction in TB incidence. Zimbabwe is one of the three on track to reach the milestone and the other two countries are Lesotho and Myanmar. Seven countries have already reached the milestone among the 30 high TB burden countries, and these are Cambodia, Ethiopia, Kenya, Namibia, the Russian Federation, South Africa and the United Republic of Tanzania.

Trends of Zimbabwe TB incidence is shown from 2000 to 2015 (WHO, 2016).

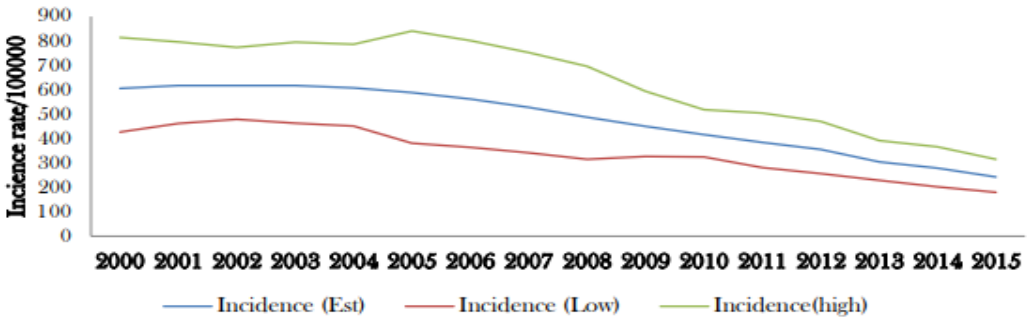

Figure 5 : Zimbabwe TB Incidence

2.4 Theoretical Framework

The study conceptual framework by Wambiya et al., (2018) in IPT acceptability study was adapted and modified to suit the context and objectives of this study (Wambiya, Atela, Eberoime, & Ibisomi, 2018).

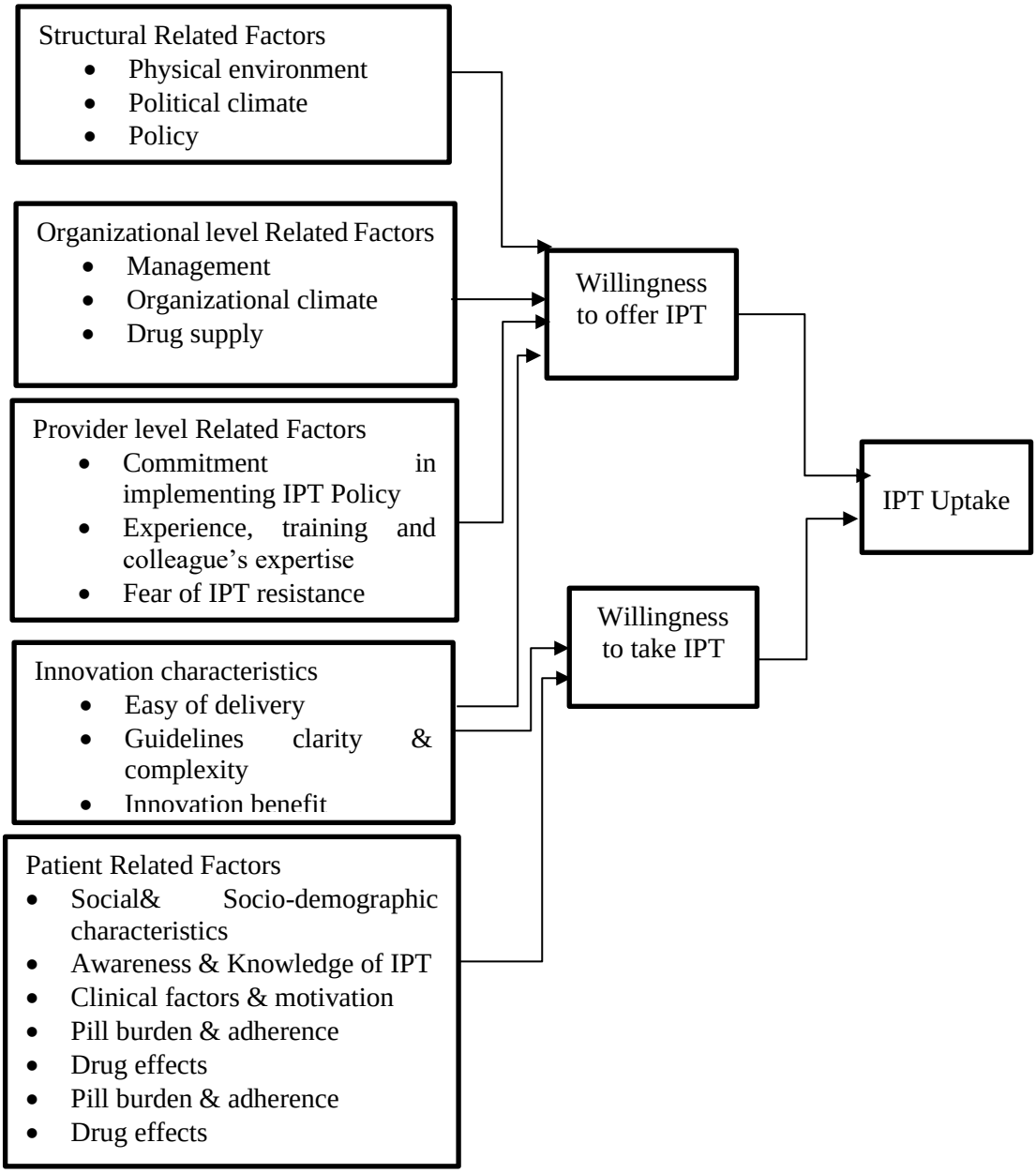

Figure 6: The study conceptual framework (Wambiya et al., 2018)

According to the above conceptual framework, IPT uptake results from factors that can be categorized as structural, organizational level, provider, innovative characteristics, and patient related factors.

2.4.1 IPT uptake

The global implementation of interventions like IPT to reduce TB burden among PLHIV was unacceptably low with disconnect between policy and implementation in many countries (Getahun, 2008). According to Briggs et al. (2015), WHO had reported that although IPT policies were present in most of the countries in the Sub-Saharan Africa, provision of IPT remains low. The reported numbers treated with IPT reached 27 056 only in 2006-equivalent to less than 0.1% of the estimated 33 million people estimated to be infected with HIV globally (Briggs et al., 2015).

In Sub-Saharan, among 10.4 million new TB cases, HIV co-disease was the highest in 2015 and IPT implementation was very low (LaCourse et al., 2017). Low IPT uptake was also a result of a gap in the earlier WHO policy and guidelines, resource constraints at country level and reluctance of policy makers and program implementers due to technical and operational issues (Chaudoir, Dugan, & Barr, 2013). A study carried out in India, Karnataka showed that of the 3 780 (94%) who were eligible for IPT, only 1 496 (40%) were initiated on IPT with the main reason of non-initiation as drug stock-outs (Reddy et al., 2020).

According to reports submitted to CDC by tuberculosis control programs in United States, less than 60% of infected contacts of persons with newly diagnosed tuberculosis were being started on preventive therapy (USA CDC, unpublished data) and several missed opportunities were cited by investigators in a study to determine why TB is not prevented (USA Centres for Diseases Control and Prevention [CDC], 2010).

In the several studies in Sub Saharan countries, IPT implementation had been reported to be low. IPT coverage in Ethiopia Tigray region was estimated to be at 20% with Isoniazid stock outs, fear of creating resistance, lack of commitment of program managers as IPT barriers to implementation (Teklay, Teklu, Legesse, Tedla, & Klinkenberg, 2016).

In Kenya, IPT implementation started in 2012 while country wide scale up started in 2015 and provider acceptability of IPT was influenced by organizational context, provider training factors and perceptions of IPT efficacy, length, and clarity on IPT guidelines and standard operating procedures as well as the structural factors such as policy, physical and work environment. The study reveals barriers of implementation as in adequate commitment and support from program managers and policy makers making IPT implementation slow (Wambiya, Atela, Eberoime, & Ibisomi, 2018).

In a mixed quantitative and qualitative study in Kenya, IPT uptake was 68% in children living with HIV in the Kenyatta National Hospital Comprehensive Care Centre and completion rate was 82%. Main facilitators of IPT uptake and completion were IPT health education and counselling whilst fear of drug adverse reactions, pill burden and lack of integrated monitoring and evaluation system were the noted barriers (Ngugi, Muiruri, Odero, & Gachuno, 2020).

Challenges encountered in implementing IPT in Zambia included policy and management level factors, supply chain factors, health worker perspective about IPT, monitoring and evaluation factors as well as limited demand creation activities for IPT scale up. Only 18% of PLHIV enrolled in care were initiated on IPT in 2017 (Kagujje, Mubiana, Mwamba, & Muyoyeta, 2019). Gender, residence area, employment status,

WHO baseline stage and CD4 count were identified as risk factors of TB incidence and determines IPT uptake (Semu et al., 2017).

A study of isoniazid preventive therapy uptake, incidence of TB and survival among PLHIV carried out in Bulawayo, Zimbabwe by Nyathi S and colleagues shows a low initiation of IPT as only 52% (214/408) were initiated on IPT with 94% (201/ 214) completed IPT. TB was not recorded in the IPT group but six persons in the non –IPT initiated group recoded giving an incidence of 9 cases/1000 person –years of follow up (Nyathi et al., 2019).

2.4.2 Factors affecting IPT uptake

According to Chaudoir et al (2013), factors affecting implementations of health innovations included organization, provider, innovation level, structural and patient level constructs. The organizational, provider and innovation level constructs have greatest number of measures available whilst the structural and patient level constructs have the least (Chaudoir, Dugan, & Barr, 2013). In addition, fidelity implementation outcome was associated with validity or reliability criterion demonstrated (Chaudoir et al., 2013).

An analytic cross -sectional study done at TB/HIV health facilities with electronic patient monitoring in Zimbabwe had shown that IPT uptake across all 205 facilities implementing IPT was 0.4%. The study shows that patient factors associated with IPT uptake were age, not pregnant, WHO Clinical Stage 1 and 2, clients between 4 – 7 years since enrolment into HIV care and clients that have been at least eight years since enrolment into HIV care (Khabo, 2017).

In a study in Zimbabwe, 425 190 HIV positive clients were reported to have been screened for TB from January 2013 –May 2014. Out of the screened clients, 206 121 (48%) were eligible for IPT but only 47 791 923%) were initiated on IPT. A total of 19 034 were reported to have completed the IPT (WHO, 2014). Of the 2831 (54%) eligible IPT PLHIV started on IPT in Shurugwi District, 700 (25%) completed the IPT 6 months course. It was noted that the program had no Information Education and Communication (IEC) materials, few advocacies and community sensitization meetings were done (Makoni et al., 2015).

2.4.3 Facility factors

A study in South Africa concluded that barriers to IPT implementation was the poor health workers fidelity to the IPT guidelines which had resulted in low IPT uptake despite the use of behavioural framework including training and participatory development of the IPT strategy. The main barrier as perceived by the health workers was low patient awareness of IPT, time needed to counsel the patients on IPT, burden to document IPT related activities and concerns regarding exclusion of active TB (Ginderdeuren, Bassett, Hanrahan, Matunga, & Van Rie, 2019).

In a Nigeria study of improving coverage and completion rate of IPT, the lowest IPT initiation contributing factors were poor tracking system for IPT eligible clients and poor documentation of IPT commencement in the patient care record cards and IPT registers (Ogunsola et al., 2019).

Facility factors that were associated with IPT uptake were referral facility- secondary level or higher, facilities with HIV caseloads of less than 1 000 patients in care, facilities in Harare province, Manicaland, Mashonaland Central, Mashonaland East, Masvingo, Matabeleland South, Midlands and urban setting (Khabo, 2017).

2.4.4 Personal factors

Globally, HIV is the main risk factor for TB disease. HIV pandemic has exacerbated tuberculosis disease especially in Sub-Saharan African countries. This has led the WHO and UNAIDS to recommend the use of Isoniazid Preventive Therapy (IPT) in people living with HIV to reduce the TB disease burden.

In an IPT assessing study in Ethiopia, TB incidence was observed in patients with low CD4 count at baseline (<200), they were 15 times more likely to develop TB than those with CD4 > 500 (AHR 15, CI=5.14-43.3). People living with HIV at WHO stage III or IV had a 3.22 higher risk of developing TB than those at WHO stage I or II (AHR =3.22, 95%CI = 1.07-9.7) (Tiruneh, Getahun, & Adeba, 2019).

Several studies had pointed that if the patient adheres to the IPT drug, thus taking them according to prescription, IPT reduces the TB incidence among the people living with HIV. IPT offers potential benefits to individuals living positively by reducing morbidity and mortality, but its uptake has been slow and was also been determined by patient willingness, IPT information known, fear of side effects and pill burden (Chaudoir et al., 2013). Modi and Dave (2019) noted that clinical trials have shown that IPT dramatically reduces the TB incidence among people living with HIV.

2.4 Chapter Summary

In this chapter, studies on IPT implementation and uptake were reviewed. Different countries commitments to IPT policy, patient, provider related factors, as well as health facility related factors were pointed out to be associated with poor implementation of IPT program despite the overwhelming evidence that it significantly reduces TB incidence and mortality among PLHIV. IPT uptake was more influenced by health care system services and provider related factors. The target of

IPT initiation is 100% according to WHO and National TB program. Therefore, this study tries to elaborate enabling factors and constraining factors associated with IPT uptake and association between these factors and IPT uptake.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter outlines the study setting, study design, study population, sampling criteria and methods, data collection methods, data analysis plan and ethical considerations.

3.2 Study setting

The researcher carried out the study at New Africa House New Start Centre clinic in Harare. The clinic is situated in the Harare central business district at number 40 Kwame Nkrumah Ave and has a large catchment area of all the residence suburbs in Harare. New Africa House New Start Centre is a voluntary counselling and testing site with antiretroviral treatment and care clinic with TB program integrated.

The clinic offers health care services to the general public with focus on key populations (female sex workers, men having sex with men, transgender, high risk men) through a 'one-stop shop' strategy. Clients include self-referred walk-ins while others are referred by the CBO`s, PSI mobilization team and other health care service providers in Harare.

3.3 Study Design

A cross-sectional study was carried out at New Africa House New Start Centre in Harare for the period January 2017-December 2020. Records for all female sex workers records enrolled on ART from January 2017-June 2020 were reviewed and all those eligible for IPT identified.

The cross-sectional study design was chosen because they are conducted on a smaller scale, typically requires less time to complete and are inexpensive. In addition, they are a best way to determine the associations of multiple exposures and outcomes. The cross-sectional study clearly shows the link between the multiple factors associated

with the IPT uptake and the outcome measure, IPT status among the female sex workers.

3.4 Population and Sampling

3.4.1 Study Population

The study population was the FSWs who were on ART at NAH NSC, ART & IPT records and NAH NSC health care providers as key informants. In December 2020, ART total treatment current was 2262 female sex workers (PSI-Zimbabwe, 2020).

Key Informants: Key informants' interviews were purposefully done to health care providers (clinicians and pharmacy staff) at NAH NSC who would have consented to participate.

3.4.2 Inclusion criteria

All HIV positive female sex workers aged 18 and above enrolled on ART program at New Africa House New start centre were considered for the study. Health workers participating in the provision of ART programme, willing to provide informed consent to participate in the study were included.

3.4.3 Exclusion criteria

All HIV positive males regardless of category (being sex workers posing as females) and female sex workers aged 17 and below, those not willing and those unable to give an informed consent were excluded from the study. Furthermore, female sex workers who were extremely ill and with mental challenges, past TB history, active TB, on TB treatment and FSWs whose activity status was otherwise inactive did not participate in the study. Ability to read and write was essential for the consent process therefore those who could not read or write were ineligible for the study.

3.4.4 Sample size

The sample size was calculated using the Cochran formula below:

$$\text{Sample size } n = \frac{Z_{1-\alpha/2}^2 p(1-p)}{d^2}$$

Where $Z1_{-\alpha/2}$ is 1.96 the standard normal variant at 5% type 1 error ($p<0.05$)

p is 26%, the average NAH proportion of IPT uptake for the period (PSI- Zimbabwe, 2020).

d is 0.05 the absolute error or precision

$$\text{Therefore, sample size } n = \frac{1.96^2 x 0.26 x 0.74}{0.05^2}$$

$$= 296$$

Using these assumptions, calculated sample size was 296 participants.

3.4.5 Sampling procedure

Simple random sampling technique was employed in this study to identify participants for the study. Participants were identified from the New Africa House New Start Centre electronic medical records (EMR) system, Bahmni. The total number of female sex workers from 2018 to 2020 in the ART treatment current category (tx-curr) was 2262. Using the random function in excel, a sample of 296 participants was randomly selected. If any of the selected participants had refused to participate or not found, the next subsequent participant from the extracted database was enrolled accordingly.

Health workers on duty and who had consented to participate in the study were purposefully selected. A non-probability sampling technique was used to select health care workers to be interviewed. The clinicians and pharmacy staff were the key information source. The clinicians sampled were those that routinely evaluate patients

for eligibility, counsel them and prescribe IPT whilst the pharmacy staff dispenses the medicine and do stock management.

3.5 Data collection instruments

An interviewer-administered structured questionnaire (Appendix 1 or 2) was used to collect socio-demographic data, factors associated with service utilization and health outcomes (TB screening & testing, ART status & latest viral load results). A key informant guide (Appendix 3) was used for the interview of health workers in the IPT implementation.

3.5.1 Dependent variable

The main study outcome variable was IPT uptake status, the dependent variable. This was ascertained by the electronic medical records at the clinic. Other dependent variables were the healthcare provider willingness to offer IPT and FSWs willingness to take IPT.

3.5.2 Independent Variables

The female sex workers related factors such as demographic, socioeconomic characteristics, awareness, and knowledge level of IPT, clinical factors and health system delivery related factors such as training and guidelines availability, supplies of IPT were the independent variables.

3.6 Pilot study

PSI evidence and research team were consulted to ensure correct wording and phrasing of the questionnaires and they were pre-tested to ensure reliability. Validity of the questionnaires was ensured by the inclusion of open-ended questions. The researcher ensured that the study population was well represented by conducting random. Ten female sex workers who had come for their routine visits at the clinic a week before

data collection began were randomly selected and interviewed to ascertain reliability and validity of the study questionnaires.

3.7 Data collection procedure

The researcher checked the electronic medical records, Bahmni and the scheduled clinic visits of FSWs selected in the sample. For those without any clinic visits scheduled within the data collection period, the researcher contacted each selected participant to book an appointment. Written informed consent was obtained from all participants willing to take part in the study.

Interviews were conducted in a private and confidential space using the interviewer administered structured questionnaire. The key informant interview guide was used to interview healthcare providers to explore barriers and enablers of IPT uptake, adherence and completion. All the participants study-relevant medical history such as the TB disease related outcome retrieved from their EMR, LIS, CIR and other registers as may be found relevant were reviewed.

All used questionnaires were stored according to the protected records of PSI-Zimbabwe document retention SOP (Appendix 8). All the information was individualized coded for anonymity and entered an excel sheet by the researcher.

3.8 Data Analysis and Organization

Completed questionnaires were coded, entered, cleaned, and analysed using Epi Info version 7 software. For quantitative data, descriptive statistics was used to summarize the cohort characteristics. Continuous variables were presented as means and medians and categorical as percentages. Uptake of IPT was presented as proportion. A modified Poisson regression model was used to estimate the prevalence ratio as a measure of association between the independent variables and the main study outcome.

For qualitative data, data from the in-depth interviews was analysed thematically using the Braun and Clarke`s six phase frameworks. Codes were generated to describe the content, themes identified, reviewed, and defined.

3.9 Dissemination of results

Study findings were shared with Africa University, program managers and PSI Zimbabwe leadership and staff. Efforts will be done to disseminate the findings to the rest of the HIV community and the public locally, nationally, and regionally. Detailed data dissemination plan matrix is outlined on the table below.

Table 3: Data Dissemination Plan

	Academic world	Study participants	Primary health care providers	Public health department/policy makers	Health funders	General public
Journal Articles e.g., PLoS ONE, PubMed, BMJ	■				■	
Conferences Workshops /Clinical meetings			■	■		
Newsletter		■	■			
Popular media e.g., internet, TB alert SMS on Facebook, WhatsApp		■	■			■
Public presentations			■	■		■

3.10 Ethical Consideration

The most critical ethical considerations for this study were permission to conduct the study, confidentiality and anonymity, informed consent, privacy, and avoidance of harm. Approval to carry out the research at the site and on that sensitive population was sort from PSI Zimbabwe Leadership (Appendix 6). The research proposal was presented to the Africa University Research Ethics Committee for approval (Appendix 7).

All study participants were furnished with an informed consent in their preferred language (Appendix 1 or 2) which they signed if they agree to take part in the study. No one was forced or coerced to take part in the study against their will. Participants were free to opt out of the study at any given time and are free not to answer any question in the questionnaire as they pleased. The research participants were fully informed about the purpose of the research and assured of their right and freedom to withdraw at any point without any prejudicial consequences.

The research participants were fully informed of their right of freedom and self-determination to either refuse to take part or withdraw from taking part in the research. The research achieved privacy by assuring participants that the data collected would be used for academic purposes only.

This study achieved confidentiality and anonymity by ensuring that participants did not write their name or any other personal details on questionnaires. The research used serial numbers or coding system to identify questionnaire participants instead of their names. Interviews were given pseudo names. The researcher assured participants that the information was for study purposes only.

This research achieved avoidance of harm by assuring research participants that they would be no breach of confidentiality and anonymity on the part of the researcher. Study participates were reimbursed their equivalent bus fare used from their respective residence.

3.11 Chapter Summary

This chapter looked at the study methodology in which a cross-sectional study design will be employed. The research design was justified by showing its relevance the

research problem. The rationale for such preference was also outlined. The research population was presented as constituting the female sex workers in Harare.

The sample size determination and ways of sampling which was used in the study were discussed. The chapter identified questionnaires and interviews as the data collection methods which were used for the study and the advantages were provided. The chapter discussed strategies used in this study to enhance validity and reliability based on the research approach and study design. Methods of data presentation and analysis were explicated. Ethical considerations observed by the research were outlined.

CHAPTER 4 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter describes and explains the findings from the data collected. Data was analysed using Epi Info version 7. Univariate and multivariate logistic regression analysis was done. Tables were used to show data focusing on socio-demographic characteristics, ART status, TB screening and testing, IPT awareness and knowledge, IPT status as well as enabling and constraining factors associated with IPT uptake. This chapter also presents the in-depth interviews with key informants, interpretation and discussion of key results of the study considering the study conceptual framework.

4.2 Data Presentation and Analysis

4.2.1 Demographic characteristics of FSWs on ART at New Africa House NSC and IPT uptake

Total respondents were 296 female sex workers with age ranges categorized into seven age bands. The age bands of 30-34 years and 35-39 years had the highest respondents of 80 (27.0%) and 81 (27.4%) respectively. FSWs who took up IPT were 43 (24.2%) and 54 (30.3%) in the age bands of 30-34 years and 35-39 years respectively with 37 (31.4%) and 27 (22.9%) not exposed to IPT in the same age bands.

The total respondents who had accepted IPT and were exposed to IPT were 178 with mean age of 33.6 and the inter-quartile range IQ1 = 29 and IQ3 = 38. Total respondents who had not accepted the IPT drug were 118 with mean age of 32.5, IQ1 = 29 and IQ3 = 37. The table 6 below shows the summarized mean age of the respondents.

Table 4 : Demographic characteristics stratified by IPT uptake

Variable (N=296)	Category	IPT Exposure Yes Frequency (%)	IPT Exposure No Frequency (%)	Total Frequency (%)
Age	18-24	14(7.9)	7(5.9)	21(7.1)
	25-29	37(20.8)	32(27.1)	69(23.3)
	30-34	43(24.2)	37(31.4)	80(27.0)
	35-39	54(30.3)	27(22.9)	81(27.4)
	40-44	20(11.2)	13(11.0)	33(11.2)
	45-49	6(3.4)	2(1.7)	8(2.7)
	50+	4(2.2)	0(0.0)	4(1.4)
Marital Status	Single/never married/separated/cohabitation/widowed	161(90.5)	93(78.8)	254(85.8)
	Married	17(9.6)	25(21.2)	42(14.2)
Level of Education	no formal education/primary	43(24.2)	17(14.4)	60(20.3)
	Secondary	111(62.4)	80(67.8)	191(64.5)
	Tertiary	24(13.5)	21(17.8)	45(15.2)
Employment status	Unemployed	69(38.8)	58(49.2)	127(42.9)
	Informal	47(26.4)	33(28.0)	80(27.0)
	full time sex worker*going to the bars/or working at least 5 days a week	30(16.9)	11(9.3)	41(13.9)
	formally employed	32(18.0)	16(13.6)	48(16.2)

IPT = Isoniazid Preventive Therapy

Most of the respondents, 254 (85.8%) were single, never married, widowed, separated or cohabitants with 161 (90.5%) exposed to IPT and 93 (78.8%) not exposed. A total of 191 (64.5%) had attended school up to secondary level and among them, 111 (62.4%) had taken up IPT whilst 80 (67.8%) did not. Majority of the female sex workers, 127 (42.9%) were unemployed and of these, 69 (38.8%) were exposed to IPT whilst 58 (49.2%) were not exposed. A total of 80 (27.0%) respondents were informally employed with 41 (13.9%) engaged in full time sex work and 48 (16.2%) were formally employed.

Majority of the respondents, 177 (59.8%) resides in the high-density suburbs in Harare and a few, 6 (2.0%) were from the rural areas as shown in table 4b. Of those residing in the high-density suburbs, 106 (59.6%) had taken up IPT whilst 71 (60.2%) did not. Most of the respondents, 291 (98.3%) have at least 2 meals per day with 166 (56.1%) not using any substance. A total of 101 (34.1%) uses alcohol only, 11 (3.7%) using tobacco only and 8 (2.7%) using other illegal drugs. Of the 130 (43.9%) respondents using substances, 10 (3.4%) were using at least 2 of the substances, either alcohol & tobacco; tobacco & other illegal drugs or alcohol & alcohol & another illegal drug.

Table 5 : Socio demographic characteristics stratified by IPT uptake

Variable (N=296)	Category	IPT Exposure Yes Frequency (%)	IPT Exposure No Frequency (%)	Total Frequency (%)
Residence	Rural areas	3(1.7)	3(2.5)	6(2.0)
	High density	106(59.6)	71(60.2)	177(59.8)
	Medium density	34(19.1)	25(21.2)	59(19.9)
	Low Density	12(6.7)	15(12.7)	27(9.1)
	CBD	23(12.9)	4(3.4)	27(9.1)
#Meals per family	1 meal or nothing per day	2(1.1)	3(2.5)	5(1.7)
	at least 2 meals a day	176(98.9)	115(97.5)	291(98.3)
Substance Use	None	95(53.4)	71(60.2)	166(56.1)
	alcohol only	64(36.0)	37(31.4)	101(34.1)
	tobacco only	8(4.5)	3(2.5)	11(3.7)
	other drugs e.g glue, *mutoriro*	5(2.8)	3(2.5)	8(2.7)
	at least 2 substances	6(3.4)	4(3.4)	10(3.4)

Table 6 : Age summary stratified by IPT uptake

	Observations	*Total*	*Mean*	*Variance*	*Std Dev.*	
No IPT Exposure	118	3845	32.6	30.1	5.5	
	Minimum	25%	Median	75%	Maximum	Mode
	20	29	32	37	46	29
Yes IPT Eexposure						
	Observations	*Total*	*Mean*	*Variance*	*Std Dev.*	
	178	5989	33.6	44.9	6.7	
	Minimum	25%	Median	75%	Maximum	Mode
	18	29	34	38	54	36

4.2.2 IPT awareness and knowledge of New Africa House New Start Centre clinic FSWs

Awareness and knowledge of the IPT as represented in table 7 was above the average, with 167 (56.4%) and 118 (62.3%) screened for TB among the respondents who had been exposed to IPT and 49 (41.5%) in the non-IPT exposed group. Among those not exposed to IPT (n=118), 69 (58.5%) were not screened for TB.

For those screened for TB, 58 (34.7%) among the IPT exposed respondents (n= 178) were tested for TB with 51 (28.7%) receiving MTB negative results, five (2.8%) MTB positive results and two (1.1%) didn't remember their results. Only 21 (12.6%) in the non-IPT exposed group were tested for TB with 20 (17.0%) testing MTB negative and one (1.0%) testing MTB positive respectively.

Majority of the respondents, 174 (97.8%) in the IPT exposed group had heard about IPT prophylaxis and 64 (54.2%) in the non-IPT exposed had also heard about IPT. Of these, 166 (93.3%) in the IPT exposed and 48 (46.7%) non-IPT exposed respectively, had got information

about IPT from the clinician at the clinic. A total of 97 (54.5%) IPT exposed and 99 (83.9%) non-IPT exposed didn't know the IPT definition respectively.

Most of the respondents, 145 (81.4%) among the IPT exposed and only 28 (23.7%) non-IPT exposed knew information about IPT prophylaxis duration. A total of 90 (76.3%) non-IPT exposed respondents didn't know the duration for taking the IPT prophylaxis.

Table 7 : IPT awareness and knowledge level of New Africa House New Start Centre clinic FSWs

Variable (N=296)	Category	IPT Exposure Yes Frequency (%)	IPT Exposure No Frequency (%)
TB screening	No	60(33.7)	69(58.5)
	Yes	118(66.3)	49(41.5)
Tested for TB &results	No	120(67.4)	97(82.2)
	yes negative	51(28.7)	20(17.0)
	yes positive	5(2.8)	1(0.9)
	yes, don't remember the results	2(1.1)	0(0.0)
Heard about IPT	No	3(1.7)	52(44.1)
	Yes	174(97.8)	64(54.2)
	don't remember/don't know	1(0.6)	2(1.7)
IPT Information source	Not applicable	3(1.7)	53(44.9)
	Clinician/clinic /hospital staff	166(93.3)	48(46.7)
	Friends/relatives/social media	4(2.3)	14(11.9)
	media e.g tv, radio	1(0.6)	1(0.9)
	clinician& fiends/relatives	2(1.1)	1(0.9)
	clinician & media	1(0.6)	1(0.9)
	clinician & social media	1(0.6)	0(0.0)
Definition of IPT	don't know/don't remember/missing	97(54.5)	99(83.9)
	Good	81(45.5)	19(16.1)
Information known about IPT Duration	don't know/don't remember/incorrect/missing	33(18.5)	90(76.3)
	Correct	145(81.5)	28(23.7)

4.2.3 Enabling and constraining factors associated with IPT uptake among FSWs at New Africa House NSC clinic.

These factors include the FSWs ART status, Clinical and Health service delivery. As displayed in table 8 below, most respondents, 65 (36.5%) IPT exposed and 44 (37.3%) non-IPT exposed were tested for HIV in 2017 with 163 (91.6%) IPT exposed and 93 (78.8%) non-IPT exposed on WHO stage 1 respectively. Majority of the respondents, 168 (94.4%) IPT exposed and 101 (85.6%) non-IPT exposed were at least 24 weeks on ART. Of these, 137 (77.0%) IPT exposed and 75 (63.6%) non-IPT exposed have a latest non detectable viral load result.

Table 8 : ART Status stratified by IPT uptake

Variable (N=296)	Category	IPT Exposure Yes Frequency (%)	IPT Exposure No Frequency (%)
Date of HIV Diagnosis	2017	65(36.5)	44(37.3)
	2018	47(26.4)	16(13.6)
	2019	33(18.5)	21(17.8)
	2020	28(15.7)	30(25.4)
	2021	5(2.8)	7(5.9)
WHO stage	stage 1	163(91.6)	93(78.8)
	stage 2	11(6.2)	18(15.3)
	stage 3	1(0.6)	3(2.5)
	stage 4	3(1.7)	4(3.4)
# Of weeks on ART	<24	10(5.6)	17(14.4)
	at least 24 weeks	168(94.4)	101(85.6)
Latest Viral Load	non detectable	137(77.0)	75(63.6)
*** Non detectable <1000**	Detectable	2(1.1)	7(5.9)
Detectable >1000	results not yet received/not done	2(1.1)	3(2.5)
	Don't know/ don't remember/missing	25(14.0)	14(11.9)
	Not applicable/not yet due	12(6.7)	19(16.1)

The table 9 shows that 176 (98.9%) IPT exposed and 38 (32.2%) non-IPT exposed were offered IPT prophylaxis by the clinician whilst 78 (66.1%) non-IPT exposed were not offered. Of those offered the IPT prophylaxis and taken it up, 110 (61.8%) had completed the 6-month course, 21 (11.8%) were on 4 to 6 months and 47 (26.4%) on 1 to 3 months. A total of 16 (9.0%) of the 178 exposed to IPT had developed IPT side effects.

The health service delivery was rated good/excellent by 133 (74.7%) IPT exposed and 86 (72.9%) non-IPT exposed while 49 (27.5%) IPT exposed and 49 (41.5%) non-IPT exposed didn't want to express or commented poor on the clinician behaviour and 99 (55.6%) IPT exposed and 61 (51.7%) non IPT exposed rated good clinician behaviour.

Time spent at the clinic was rated <30 minutes, 30 minutes to 1 hour and >1 hour by 77 (43.3%), 79 (44.4%) and 22 (12.4%) respectively by those whom exposed to IPT. A total of 46 (39.0%), 53 (44.9%) and 19 (16.1%) participants rated time spent at the clinic as <30 minutes, 30 minutes to 1 hour and >1 hour respectively.

Table 9 : Clinical and Health service delivery stratified by IPT uptake

Variable (N=296)	Category	IPT Exposure Yes Frequency (%)	IPT Exposure No Frequency (%)
Offered IPT	No	1(0.6)	78(66.1)
	Yes	176(98.9)	38(32.2)
	don't remember	1(0.6)	2(1.7)
	Not applicable	0(0.0)	118(100.0)
IPT Duration	1 to 3 months	47(26.4)	0(0.0)
	4 to 5 months	21(11.8)	0(0.0)
	6 months	110(61.8)	0(0.0)
IPT side effects	None	160(89.9)	1(0.9)
	Yes	16(9.0)	117(99.2)
	not applicable	2(1.1)	0(0.0)
Clinic health service delivery rating	don't know/poor	2(1.1)	2(1.7)
	Average	43(24.2)	30(25.4)
	good/excellent	133(74.7)	86(72.3)
Clinician behavior	don't know/poor/missing	49(27.50	49(41.5)
	Average	30(16.9)	8(6.8)
	good/excellent	99(55.6)	61(51.7)
Time spent at the clinic	<30	77(43.3)	46(39.0)
	30 to 1 hr.	79(44.4)	53(44.9)
	>1hr	22(12.4)	19(16.1)

The study participants' reasons for taking IPT or declining IPT were summarized in four different categories. The table 10 represents the reasons why the 178 respondents had taken up the IPT prophylaxis. The main motivator was IPT prophylaxis ability to prevent TB disease infection among people living with HIV as it records 97 (54.5%) respondents explaining how motivated they were.

Table 10 : IPT uptake motivators

IPT uptake motivators N= 178	**Frequency (%)**
1. HIV risk, thus living with HIV & Prevention better than cure	39(21.9)
2. IPT prophylaxis ability to reduce TB disease by 60%	97(54.5)
3. Vulnerability since working as a full-time sex worker and meeting a lot of people	16(9.0)
4. IPT medicines imposed on clients with instructions of how to take them only, thus without much IPT information	26(14.6)

IPT = Isoniazid Preventive therapy

The reasons which were cited as main demotivates of IPT among this study respondents were tabulated in table 11. The main reason was absence of enough information, awareness and knowledge about the IPT prophylaxis. This contributed 76 (64.4%) of the non IPT uptake among the female sex workers participates in this study. Most of the respondents who had cited fear of side effects and pill burden had also acknowledged the risk of TB disease development among people living with HIV.

Table 11 : IPT uptake demotivates

IPT uptake motivators N= 118	**Frequency (%)**
1. Fear IPT side effects	22(18.6)
2. Pill burden	16(13.6)
3. Absence of information, awareness & knowledge and not offered	76(64.4)
4. Adherence issues and side effects experiences within the first 2 months	4(3.4)

IPT = Isoniazid preventive therapy

4.2.3.1 Key informants interview responses

Table 12 below shows the key informants' interviews responses summary. Table 13 shows the key informants questionnaire guide responses.

Table 12 : Key informants interview responses

Codes	Description	IPT uptake status
Stock status/ Supplies	Absence adequate stocks of pyridoxine for management of side effects Eerratic availability of IPT drugs and pyridoxine e.g., we had run out of the pyridoxine (iron supplements) tablets, and we were not able to give clients for the numbness side effects.	Low IPT initiation
Data management	Availability of data capturing tools in soft copy as well Ability of data capturing tools to link between clinicians and pharmacy	Under reporting/ over-reporting of IPT uptake status
Information dissemination	IPT awareness to the public Uptake of IPT is very good with no major side effects experienced by the clients	Low IPT uptake if there are low information dissemination strategies
Provision of staff continuing education	The site should provide more workshops on current research that are being done	Increased IPT uptake
Patient factors	Pill burden on clients is high Some clients reluctant to take IPT drug fearing the pill burden Some clients have discontinued without informing / notifying the health service providers when they experience side effects like neuropathy.	Low IPT uptake

IPT = Isoniazid Preventive Therapy

Table 13 : Key informants interview guide responses

Questions	N= 9 Yes Frequency (%)	N= 9 No Frequency (%)	Comments
1. Did you receive any training in the provision of IPT?	7(77.8)	2(22.2)	
2. Do you know the IPT uptake status at your site?	5(55.6)	3(44.4)	1 SRH clinician commented that she was not sure of the status since she doesn't do it regularly
3. Is systematic screening for IPT eligibility is difficult to implement?	0(0.0)	8(88.9)	1 Pharmacist technician not sure as they don't do it but think that it's easy
4. Is current screening of TB enough to rule out TB	9(100.0)	0(0.0)	
5. Is counseling of patients about IPT difficult and or time consuming?	0(0.0)	8(88.9)	Pharmacist commented that not much counseling is done at the pharmacy when clients are collecting their medicines, those with issues will be referred to the clinician
6. Is documentation of IPT activities difficult and or time consuming?	1(11.1)	8(88.9)	
7. Do you have experience in prescribing IPT?	8(88.9)	1(11.1)	
8. Is IPT part of your clinic routine practice?	9(100.0)	0(0.0)	
9. Are the IPT standard operating procedures (SOP`s) or guidelines available at your clinic?	5(55.6)	2(44.4)	1 ART clinician and 1 Pharmacy technician concurred that they haven`t seen the SOP`s or guidelines at the site but they were told what to do in regards with IPT in a meeting and had never been issued with the copies of the SOP and guidelines
10. Have you ever experienced any IPT drug shortages, stock outs in the last 2 years?	2(22.2)	7(77.8)	ART clinician commented that they had experienced medicines/drug stock shortages in 2020 for about 2 months and the Pharmacist also commented that they had experience out of stock of IPT drugs as well as experiencing a low stock frequency during the past year, 2020.

4.2.4 Association between different socio-demographic characteristics, factors associated and IPT uptake.

A univariate logistic regression was done and table 14 shows the results obtained. Thirteen variable factors had a statistically significant association with uptake of IPT and these includes; marital status [OR = 0.3928 95% CI 0.9897-1.0677 *p* 0.01], level of education [OR = 0.6673 95% CI 0.02016-0.7653 *p* 0.0473], employment status [OR = 1.2539 95% CI 1.0082-1.5595 *p* 0.04], WHO stage [OR = 0.5688 95% CI 0.3665-0.8826 *p* 0.01], latest viral load result [OR = 0.8410 95% CI 0.7196-0.9827 *p* 0.03], TB screened [OR = 2.7689 95% CI 1.7129-4.4759 *p* 0.00], tested for MTB [OR = 2.1164 95% CI 1.2722-3.5208 *p* 0.00], heard about IPT [OR = 25.3066 95% CI 9.7009-66.017 *p* 0.00], IPT information source [OR = 2.3024 95% CI 1.4482-3.6607 *p* 0.00], definition of IPT [OR = 4.3510 95% CI 2.4539-7.7146 *p* 0.00], information known about IPT course duration [OR = 14.1218 95% CI 8.0012-24.9244 *p* 0.00], offered IPT [OR = 104.0407 95% CI 31.292-345.9174 *p* 0.00] and IPT side effects [OR = 0.0033 95% CI 0.0006-0.0195 *p* 0.00].

All the factors that had a statistically significant association with uptake of IPT prophylaxis were controlled for confounding and the table 15 below shows the adjusted odds ratio and the p values at 95% CI.

In the multivariate analysis table 15, only 2 of the 13 variable factors associated with IPT uptake were statistically significant, thus latest viral load result [aOR = 0.1025 95% CI 0.0018-0.8915 *p* 0.04] and IPT side effects [aOR = 0.0002 95% CI 0.0000-0.0322 *p* 0.00] respectively. Only IPT side effects [aOR = 0.0015 95% CI *p* 0.00] on further multivariate analysis had a statistically significant association with uptake of IPT.

Table 14 : Univariate analysis

Variable	Odds Ratio	95%	C.I.	Coefficient	S. E.	Z-Statistic	*P-Value*
Age	1.028	0.9897	1.0677	0.0276	0.0193	1.4264	*0.15*
***Marital status (Yes/No)**	0.3928	0.2016	0.7653	-0.9344	0.3403	-2.7461	*0.01*
***Level of education**	0.6673	0.4475	0.9953	-0.4044	0.2039	-1.9832	*0.04*
Residence	1.1712	0.9218	1.488	0.158	0.1222	1.2935	*1.00*
***Employment status**	1.2539	1.0082	1.5595	0.2263	0.1113	2.0334	*0.04*
Use of substance	1.1143	0.8626	1.4395	0.1083	0.1306	0.8287	*0.41*
Date of HIV diagnosis	0.843	0.7008	1.014	-0.1708	0.0942	-1.8121	*0.07*
***WHO stage**	0.5688	0.3665	0.8826	-0.5642	0.2242	-2.517	*0.01*
***Latest Viral Load**	0.841	0.7196	0.9827	-0.1732	0.0795	-2.1789	*0.03*
***Screened for TB (Yes/No)**	2.7689	1.7129	4.4759	1.0184	0.245	4.1564	*0.00*
***Tested for TB (Yes/No)**	2.1164	1.2722	3.5208	0.7497	0.2597	2.8871	*0.00*
***Heard about IPT (Yes/No)**	25.3066	9.7009	66.017	3.2311	0.4892	6.6046	*0.00*
***IPT information source**	2.3024	1.4482	3.6607	0.834	0.2366	3.5252	*0.00*
***Definition of IPT (Yes/No)**	4.351	2.4539	7.7146	1.4704	0.2922	5.032	*0.00*
***IPT duration info. known**	14.1218	8.0012	24.9244	2.6477	0.2899	9.1343	*0.00*
***Offered IPT (Yes/No)**	104.0407	31.292	345.9174	4.6448	0.613	7.5774	*0.00*
***IPT side effects (Yes/No)**	0.0033	0.0006	0.0195	-5.7077	0.9023	-6.326	*0.00*
Clinic health service delivery rating	1.1126	0.6838	1.8102	0.1067	0.2483	0.4296	*0.67*
Clinician behavior	1.2407	0.9611	1.6016	0.2157	0.1303	1.6555	*0.10*
Time spent waiting to be served	0.8457	0.6042	1.1838	-0.1675	0.1716	-0.9764	*0.33*

Note: All variables marked with an * are statistically significant

IPT = Isoniazid Preventive Therapy

Table 15a: Multivariate analysis

Variable	Adjusted Odds Ratio	95%	C.I.	Coefficient	S. E.	Z-Statistic	*P-Value*
Marital status (Yes/No)	0.4659	0.0031	69.545	-0.7637	2.554	-0.299	*0.76*
Level of education	3.0307	0.2685	34.2047	1.1088	1.2365	0.8967	*0.37*
Employment status	3.8301	0.7136	20.5579	1.3429	0.8573	1.5664	*0.11*
WHO stage	0.115	0.0026	5.1454	-2.1627	1.9392	-1.1153	*0.26*
***Latest Viral Load**	0.1025	0.0118	0.8915	-2.2778	1.1036	-2.064	*0.04*
Screened for TB (Yes/No)	0.0241	0.0003	1.8234	-3.7268	2.208	-1.6879	*0.09*
Tested for TB (Yes/No)	10.5252	0.0633	1749.4622	2.3538	2.6089	0.9022	*0.37*
Heard about IPT (Yes/No)	24.1921	0.0036	164265.9021	3.186	4.5017	0.7077	*0.48*
IPT Information Source	0.8067	0.0068	96.336	-0.2148	2.4402	-0.088	*0.93*
Definition of IPT (Yes/No)	0.2954	0.021	4.1556	-1.2194	1.3489	-0.904	*0.36*
IPT duration info. known	9.4328	0.2002	444.5089	2.2442	1.9657	1.1417	*0.25*
Offered IPT	15.1663	0.008	28851.7979	2.7191	3.8525	0.7058	*0.48*
***IPT side effects**	0.0002	0	0.0322	-8.6419	2.6563	-3.2534	*0.00*
CONSTANT	*	*	*	8.6888	7.3182	1.1873	*0.24*

Table 15b :Multivariate analysis

Variable	Adjusted Odds Ratio	95%	C.I.	Coefficient	S. E.	Z-Statistic	*P-Value*
Latest Viral Load	0.3706	0.1268	1.0832	-0.9928	0.5473	-1.814	*0.07*
***IPT side effects**	0.0015	0.0001	0.0207	-6.4876	1.3325	-4.8689	*0.00*
CONSTANT	*	*	*	9.6876	2.5296	3.8297	*0.00*

Note: All variables marked with an * are statistically significant

IPT = Isoniazid Preventive Therapy

4.3 Discussion and Interpretation of Results

Among the 296 study participants, majority were aged from 30-39 and were not married. Several female sex workers were also unemployed with quite a number being full time sex workers, thus working at least 5 days in the sex work basing in bars, hotels, or home as their area of work. Most of the respondents had at least 2 meals per day hence a notably significant nutrition. Majority of the study participants had no history of substance abuse and the substances which were investigated were alcohol, tobacco smoking and any other illegal drug like marijuana, *mutoriro* and glue.

Awareness and knowledge of IPT was critical in the determination of IPT uptake status as most respondents had either accept or deny the IPT prophylaxis basing on the information they know and received from the clinicians at the clinic. Majority of all those who had been offered IPT, accepted the prophylaxis and successfully completed the course had been given comprehensive IPT information.

Most of the respondents were tested in 2017 and had started ART and initial WHO stage was stage 1 for the majority. All those eligible for viral load testing, thus at least 24 weeks on ART were virologically suppressed and this promoted IPT uptake level. The clinic service delivery also plays a significant role in the clinic IPT uptake status as most study participants who had accepted IPT have had an opportunity to know more information about IPT drug and had made an informed decision whether to accept or deny the IPT service. IPT prophylaxis has notably been imposed on a few individuals. They commented that they were not aware of the IPT as they had been just given the IPT without enough information received as it was packed as part of the ART regimen. Majority of the respondents were satisfied with the health clinic service delivery with comments like good and excellent work for both the service received

and clinician behaviour. Quite a number of predictors had a statistically significant association with IPT uptake, and these factors includes marital status, level of education, employment status, WHO stage, latest viral load result, TB screened, tested for MTB, heard about IPT, IPT information source, definition of IPT, information known about IPT course duration, offered IPT and IPT side effects.

4.4 Chapter Summary

This chapter presented the study results in line with the study objectives. The results were analysed using descriptive statistics and proportions showing the IPT uptake status in different dimensions inclusive of the female sex workers socio-demographic characteristics. Inferential statistics were used in the determination of the association between variables and uptake of IPT prophylaxis to determine predictors of IPT uptake. Results were also discussed in general.

CHAPTER 5 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the study results are discussed considering what other studies had obtained or reported looking at the similarities and differences and the possible way forward. In addition, the chapter highlights the summary of the whole study, conclusion considering the findings and the recommendations.

5.2 Discussion

The study sample size was 296 and all the respondents interviewed were eligible for IPT. WHO consolidated guidelines on tuberculosis module 1 is prevention, thus Tuberculosis preventive treatment and states that IPT is the recommendation for TB preventive therapy since globally, it is estimated that about a quarter of the world`s population is infected with TB (WHO, 2020). People living with HIV are one of the target population groups meant for IPT TB preventive therapy as it is one of the key interventions to achieve the End TB Strategy targets recommended by WHO.

Of the 296 participants, only 178 had accepted thus 60% IPT acceptance. The IPT coverage at the NAH clinic was IPT 37% (305/825) in 2017, 22% (112/498) in 2018; 26% (178/684) in 2019 and 29% (153/524) in 2020 (PSI-Zimbabwe, 2020). This shows a generally low IPT implementation at the clinic and this concurs with studies by Briggs et al. (2015) and LaCourse (2017) as they revealed that the WHO had reported a significantly low IPT implementation across Sub Saharan countries despite the presence of IPT policies. In addition, the UN High level meeting on TB in September 2018 also noted the low IPT implementation even in the priority target groups (WHO, 2020).

According to Birungi et al. (2018), despite the diversity in methodology designs used in some countries, the IPT uptake established in this study (60%) was found to be higher than 6%, 18.7%, 26.8%, 33% and 64.3% reported in Malawi, Timor-Leste, South Africa, South India, and Ethiopia respectively.

This is contrary to the study results shown in the IPT uptake assessment in other countries where the uptake was 89%, 89% and 99% in Rwanda, Gambia and Benin respectively (Birungi , Graham, Uwimana, & Wyk, 2018). The integration of IPT into the programmatic delivery of healthcare might explain the high uptake reported in these studies.

The study revealed that low IPT implementation was due to drug stock shortages at some point since its introduction in 2017. The site had gone for 6 months (from July 2019 to February 2020) without any IPT drugs. In addition, the site experienced 2 months that is March 2021 to April 2021 with inadequate IPT drugs for newly HIV diagnosed /infected clients. The drug shortages lead to non IPT initiation which then resulted in low IPT clients taking/being given the prophylaxis.

The drug shortages experienced at the site is like a study in India which showed that only 40% of the ART cohort was initiated on IPT with main reason of non-initiation as drug stock outs. Another study in Ethiopia, Tigray region revealed the same concerns of drug shortages as the major contributor to the low IPT implementation (Teklay et al., 2016).

New Africa House New Start Centre IPT stock out dates were as follows:

i. January 2021 (21/01/2021) to April 2021 (30/4/2021). Therefore, there were no new clients initiated from March 2021 to May 2021 and this had resulted in IPT information not being disseminated to newly identified HIV positive FSWs hence opportunity missed and failure in delivering the new HIV management guidelines.

ii. Mid July 2019 (17/7/2019) to Mid-February 2020 (16/2/2020), thus more than 6 months stock out.

In addition, the pharmacy stock cards records were with mixed dates, some dates not completed and new stock cards used when the one in use is misplaced hence too many stock cards in use with haphazard information.

The study participants ages followed a normal distribution curve with the FSWs main age category of 30-34 [80 (27.0%)] and 35-39 [81 (27.4%)] respectively. IPT exposed FSWs were 178 with minimum age of 18, median 34, maximum 54 and mode 36. Non IPT exposed FSWs were 118 with minimum age of 20, median 32, maximum 46 and mode 29. This is similar to studies done in Northwest Nigeria of factors associated with IPT implementation among people living with HIV (Adepoju et al., 2020).

Majority of the FSWs, 254 (54.8%) were either single/never been married, separated or cohabitant. This concurs with a study done by LaCourse (2017), as it will be very difficult to married whilst pursing sex work. Despite society expectations and religious context that married women are not expected to be associated with extra-marital affairs, the study reveals that 42 (14.2%) were married FSWs.

Most of the FSWs, 191 (64.5%) had attained secondary level of education and 45 (15.2%) had gone as far as tertiary level. Of the 191, a total of 111 (62.4%) and 24 (13.5%) of the 45 had opted for IPT whilst 80 (67.8%) and 21 (71.8%) had opted out respectively. This concurs with LaCourse (2017) in an evaluation study of IPT care cascade among female sex workers in Mombasa Kenya.

A high rate of unemployment, 127 (42.9%) was noted among the study participants with 69 (38.8%) exposed to IPT and 58 (49.2%) none exposed to IPT. A considerable

number of the respondents, 41 (13.9%) were full time sex workers, thus they work at least 5 days a week in different locations including bars, hotels and their residential places. A total of 48 (16.2%) were formally employed with jobs ranging from marketing, sales, bar tenders and office assistants/secretaries. Despite being employed, the formally employed respondents explained that the economy situation in Zimbabwe is the main reason for them to be female sex workers as they try to make ends meet.

Majority of the FSWs, 177 (59.8%) resides in the high-density suburbs whilst 59 (19.9%), 27 (9.1%), 27 (9.1%) and 6 (2.0%) residing in medium density, low density, CBD (Avenues) and rural areas respectively. This is in line with the study of factors associated with IPT uptake among Human Immune-deficiency Virus infected clients in Zimbabwe (Khabo, 2017).

Most of the respondents, 291 (98.3%) have at least 2 meals per day and this shows a better nutrition and better health of the FSWs. Of the 291, 176 (98.9%) had opted for IPT. A majority, 166 (56.1%) of the study participants did not have a history of substance use whilst 101 (34.1%), 11 (3.7%), 8 (2.7%) and 10 (3.4%) take alcohol only, tobacco only, other drugs such as marijuana, *mutoriro* & glue, and at least a combination of alcohol, tobacco or other illegal drugs respectively.

The relative risk of under nutrition, alcohol abuse and cigarette smoking among the female sex work in this study was low considering the TB determinants relative risk stated in the literature review of 3.1-3.3; 1.9-4.6 and 1.6-2.5 respectively (Glaziou, 2013).

Other reasons for low IPT uptake cited in this study were fear of IPT side effects in addition to the fear of pill burden. Side effects of IPT noted in this study includes

nausea & vomiting, jaundice, convulsions, dark urine, right upper quadrant abdominal pain, severe rash, psychosis and peripheral neuropathy. According to WHO TB preventive therapy guidelines, for mild peripheral neuropathy, vitamin B6 dose must be increased from 25mg to 100mg per day till symptoms disappear but at NAH NSC clinic this was not feasible as they had consistently low stocks of the pyridoxine as commented by one of the clinicians.

Moreover, the lack of adequate commitment by service providers also plays a critical role in the low IPT implementation. This was revealed by some of the respondents who had refused to take IPT and who had cited that they had never heard of IPT and didn't know anything about it despite it despite being on ART for several years (at least 96). This shows that the clinician would have not talk about IPT during the clients visits and this concurs with a study in Kenya where IPT implementation and uptake barrier was inadequate commitment and support from program managers and clinicians respectively (Wambiya et al., 2018).

Ngugi (2020) study of IPT uptake in Kenya for children living with HIV was 68% and this is close enough to what this study had also revealed, thus 60% IPT uptake. Other IPT uptake prohibitions noted in the study by Ngugi (2020) were fear of drug adverse reactions; pill burden and lack of integrated monitoring and evaluation system were the noted barriers of IPT uptake. This is like this study finding where fear of side effects, pill burden, and lack of information dissemination was some of the barriers of IPT uptake at NAH NSC clinic.

The highest study participates reason of IPT opting in was the ability of the IPT in TB disease prevention. Most of the female sex workers were aware of the 60% TB disease risk reduction provided by the IPT prophylaxis hence they were greatly motivated to

take it up. Several studies had concurred that IPT use will definitely prevent the TB disease risk by 60% (Ayele, Mourik, & Bonten, 2015), (Grant, Charalambous, & Fielding, 2005) & (LaCourse et al., 2017).

A total of 76 (64.4%) the respondents who opted out commented that they didn't know about it or there was no adequate information, awareness and knowledge of IPT prophylaxis. For those who cited reason for opting out as fear of side effects or pill burden had acknowledged the presence of TB risk among people living with HIV, but they are still not willing to take the IPT prophylaxis.

From the study participates and key informants guide interviews, supply chain factors were the biggest hinder of IPT implementation hence uptake low as they had experienced a longer drug shortage of 6 months and 2 months respectively. This is similar to Zambia experience that had resulted in limited demand creation activities for IPT scale up where only 18% of the eligible people living with HIV were enrolled on IPT in 2017 (Kagujje et al., 2019).

Semu et al., 2017 study shows that gender, residence area, employment status, WHO baseline stage and CD4 count were noted as the risk factors of TB incidence and determines IPT uptake. This is like this study as employment status and WHO stage among other factors were statistically significantly associated with IPT uptake. From the key informant guide interviews, absence of guidelines at the site revealed the poor health care workers fidelity to the IPT program guidelines. This concurs with a study in South Africa which had concluded that poor health personnel fidelity to the IPT guidelines had resulted in low IPT uptake despite the use of behavioural framework including training and participatory IPT development strategy (Ginderdeuren et al., 2019).

5.3 Conclusion

Isoniazid Preventive Therapy, the TB preventive therapy is an intervention that should be part of the care for PLHIV. New Africa House New Start Centre fulfil the prerequisite for IPT implementation and started rolling out IPT in 2017. This study had revealed the clinic shortcoming in implementing the TB preventive therapy and areas of improvement needed were noted.

Factors associated with IPT uptake were demographic characteristics that is marital status, level of education and employment status, IPT awareness and knowledge that`s heard about IPT, IPT information source, definition of IPT and information known about IPT course duration, health service delivery that is TB screening & MTB testing and clinician offering IPT and patient factors including WHO stage, latest viral load result, client willingness to take IPT drug, fear of IPT side effects and pill burden.

5.4 Implications

Tuberculosis preventive treatment is one of the key interventions recommended by WHO to achieve the End TB Strategy targets. Zimbabwean government, the MOHCC had adopted the guidelines to minimize the risk of TB disease among the people living with HIV. For the provision of a comprehensive care to HIV/AIDS patients, the Ministry of Health and Child Care in Zimbabwe had rolled out TB preventive therapy to all public health services. IPT program had started in 2017 at New Africa House New Start Centre. Therefore, IPT uptake status at any health clinic providing ART services should be known.

New Africa House New Start Centre clinic is one of the health institutions in Zimbabwe providing HIV/AIDS treatment and care services in conjunction with TB

program. The clinic`s IPT uptake status from this study is low and this means that the aim of the MOHCC and End TB Strategy will not be reached by 2030 resulting in a failure to achieve as desired.

The clinic provides high quality HIV testing services and every client/patient is automatically screened for active TB as the TB screening tool had been incorporated into the electronic data information management tool being used at the clinic. Clients with suspected active TB disease are referred for further investigation accordingly.

The clinic provides the TB investigations services at the site, and this is a plus for the clinic as referrals are done under one roof hence all suspected clients/patients are served within expected turnaround time, thus real time TB diagnostic. The site laboratory provides the MTB GeneXpert testing for all clients referred for TB diagnosis as well as smear microscopy for follow up clients on TB treatment.

New Africa House New Start Centre clinic fall short of providing follow up services and monitoring of clients on IPT as well as providing follow up adherence counselling and continual addressing of IPT side effects and active TB disease exclusion. This had been revealed by this study as several female sex workers study respondents had pointed out that they were just stopping IPT on their own when they start experiencing side effects without discussion with the clinicians. Furthermore, poor IPT documentation and tracking system in the patients` eMR and IPT registers contributes to low IPT initiation & follow up reporting hence incorrect picture of the clinics implementation uptake and coverage.

In addition, the clinicians were providing 6-month course at one go not on monthly basis. This evidence supports the absence of continuous monitoring of clients on IPT

and follow up addressing of side effects and active TB disease exclusion. Despite the clinic HIV/AIDS programme taking responsibility for implementing TB preventive therapy, there is absence of strong collaboration between HIV/AIDS and TB programs at NAH NSC clinic as evidenced by the low IPT uptake over the years from 2017.

Moreover, there was insufficient data collected regarding IPT implementation, the clinic is fidelity only on recording the total number of people started on IPT and forget to update the total number of people who successfully completed IPT as well as the number of people who develop active TB or any serious side effects when taking IPT. This is evidenced by the incomplete clients' electronic medical records in the Bahmni NAH NSC clinic eMR system and the pharmacy IPT database.

Exclusion of TB include screening of active TB signs and symptoms including cough, fever, loss of weight and drenching night sweats considering the notable TB prevalence in Zimbabwe, all HIV infected people with no signs and symptoms of suggestive of active TB are eligible for IPT. Female sex workers are one of the vulnerable groups that are particular risk of developing TB disease as HIV on its own is a TB determinant with 20-30 times relative risk.

This increases the chances of a HIV infected person to suffer from TB disease hence IPT will provide the necessary protective effect and they would benefit from it. Risk of developing TB is highest in the first 6 months after initiating ART and often occurs in the setting of immune reconstitution inflammatory syndrome (IRIS). Retrospective cohort studies indicate additional benefits of IPT to patients during ART.

Patients on d4T ART regimen and INH may be at risk of peripheral neuropathy and those on NVP regimen and INH may be at increased risk for hepatotoxicity. Therefore,

clients/patients on IPT and on ART should be continually clinically monitored and IPT should be immediately stopped if there is evidence of severe peripheral neuropathy or hepatotoxicity.

The clinic clinicians were found to be falling short of this requirement in this study and hence they missed the opportunity to provide continual counselling, adherence encouragement, addressing side effects and active TB exclusion as well as recording of any clients developing active TB whilst on IPT.

In conclusion, all eligible clients/patients should be thoroughly counselled for them to be ready to take up the TB preventive therapy. There is a greater probability of LTBI progression to active TB disease in specific risk groups such as the people living with HIV and topping it all being a female sex worker already with their own challenges are at increased TB risk than other populations. Therefore, introduction of IPT and 100% uptake status improves the likelihood of a broad public health impact.

Tuberculosis preventive therapy, IPT provides benefit to people living with HIV and patients who successfully complete TB treatment. IPT can be started after successful completion of TB treatment or at any time after a previous episode of TB provided that active TB disease is excluded. TB preventive therapy should be given once only, and its protective effect is expected to last for 18 months.

Recommendations are primarily meant for ministries of health and policy makers working on TB, HIV, infectious diseases and maternal health and childcare to implement IPT with fidelity. IPT is a very effective intervention for preventing morbidity and mortality attributed to TB among the HIV infected individuals.

5.5 Recommendations

i. Information about TB including IPT should be easily available to all people living with HIV/AIDS. Information made available should include experiences and operational research results as well as IPT side effects issues. Clinicians should be able to discuss and ensure full clients understanding and demystify IPT prophylaxis facts. Strong advocacy and dissemination of evidence-based information regarding benefits of IPT are urgently required from the international to national and local level.

ii. During the post-test HIV testing counselling, the client should be informed about the IPT and its benefit such that they will be able to make an informed decision on whether to take up the IPT or not. This increases the chances of all HIV positive clients to take up the IPT, hence provision of a comprehensive HIV/AIDS and TB care packages achieved at the same time. In case the clients are not ready for IPT package now, they should be invited/ encouraged to return to the clinic for the IPT service later for the service.

iii. Follow up visits should be done without excuses. These include weight recording, active TB symptoms sharing and discussions, adherence issues addressed and side effects of isoniazid assessment. Clinicians should take note of emphasizing to the clients the importance of immediately stopping IPT when side effects persist and seeking health care attention. Clients should be screened for TB at every clinic follow up visit.

iv. Clients on IPT and on ART should be continually monitored hence suggestion of giving the clients drugs on monthly basis as the visits will provide the opportunity for on-going counselling, side effects identification, enhanced adherence counselling provision and early active TB disease detection.

v. Adherence should be continually monitored. Continual emphasis on the importance of adherence is encouraged and the health worker should enquire about reasons for treatment interruptions and address the issues accordingly. Drug resistance surveys to be done annually for monitoring INH resistance. IPT monitoring indicators to be developed and incorporated into routine reporting system at all HIV/TB health care centres.

vi. Collaborative actions at multiple levels for successful implementation. The leadership should provide an unequivocal support in provision of interrupted services by making sure of the availability of supplies as well as the human resources to meet the demand and strengthen the HIV/TB program activities. The management should support the quality improvement projects implemented by the health care providers' e.g., clinicians to improve health care service delivery.

5.6 Suggestions for Further Studies

Feasibility of interventions like IPT considering our local circumstances- In view of the challenges in supply chain management revealed in this study, the feasibility of IPT implementation at health institutions and national supply chain management should be analysed.

IPT adherence and completion- For a successful of the IPT TB key intervention among the people living with HIV, adherence and completion status should be evaluated. Survival analysis of IPT among the key populations on ART at NAH NSC clinic should be analysed. The expected protective effect of TB preventive therapy is approximately 18 months, and this can be shown by doing a survival analysis study of the clinic cohort considering IPT adherence and completion factors.

Health workers perception of IPT implementation, guidelines analysis and suggestions reviews. For effective and efficient implementation of programs, health workers perceptions, policy guidelines feasibility and areas of improvements should be considered and prioritised and not imposed.

REFERENCES

Adepoju, A. V., Ogbudebe, C. L., Adejumo, O. A., Okolie, J., & Inegbeboh, J. O. (2020). Implementation of Isoniazid Preventive Therapy among people living with HIV in North Western Nigeria: Completion rate and predictive factors. *Journal of Global Infectious Disease, 12*(2), 105-111.

Assebe, L. F., Reda, H. L., Wubeneh, A. D., Lerebo, W. T., & Lambert, S. M. (2015). The effect of isoniazid preventive therapy on incidence of tuberculosis among HIV infected clients under pre-ART care,Jimma,Ethiopia:a retrospective cohort study. *BioMed Central Public Health, 15*(346), 1-9.

Ayele, H. T., Mourik, M. S., & Bonten, M. J. (2015). Effect of Isoniazid preventive therapy on tuberculosis or death in persons with HIV:a retrospective cohort study. *BioMed Central Infectious Diseases, 15*(334), 1-8.

Birungi , F. M., Graham, S., Uwimana, J., & Wyk, B. (2018). Assessment of the Isoniazid Preventive Therapy Uptake and Associated Characteristics: A Cross-Sectional Study. *Hindawi Journal, 2018*, 1-9.

Briggs, M. A., Courtney, E., & Surbhi, M. (2015). Use of Isoniazid Preventive Therapy for Tuberculosis Prophylaxis Among People Living With HIV/AIDS: A Review of the Literature. *Journal of Acquired Immune Deficiency Syndrome, 68*, 297-304.

Chaudoir, S. R., Dugan, A. G., & Barr, C. H. (2013). Measuring factors affecting implementation of health innovations: a systematic review of structural, organizational, provider, patient, and innovation level measures. *Implementation Science, 8*(22), 1-20.

Chirenda , J., Gwitira, I., Warren, R. N., Sampson, S. L., Murwira, A., Masimirembwa, C., . . . Streicher, E. M. (2019). Spatial distribution of Mycobacterium Tuberculosis in metropolitan Harare,Zimbabwe. *PLoS ONE, 15*(4), e0231637.

Frigati, L. J., Kranzer, K., Cotton, M. F., Schaaf, H. S., Lombard, C. J., & Zar, H. Z. (2011, April 2). *The impact of isoniazid preventive therapy and antiretroviral therapy on tuberculosis in childreninfected with HIV in a high tuberculosisincidence setting.* Retrieved from Thorax: http://thorax.bmj.com

Getahun, H. (2008). *Global Implementationof TB screening and isoniazid preventive therapy among people living with HIV.* Geneva: The Stop TB Department WHO.

Ginderdeuren, E. V., Bassett, J., Hanrahan, C., Matunga, L., & Van Rie, A. (2019). Health system barriers to implementation of TB preventive strategies in South African primary care facilities. *PLoS ONE, 14*(2), 1-12.

Glaziou, P. (2013). *Estimating TB burden.* Accra: World Health Organisation. Retrieved from https/accra2013_3_estimating_tb_burden_glaziou.pdf

Grant, A. D., Charalambous, S., & Fielding, K. L. (2005). Effect of routine isoniazid preventive therapy on tuberculosis incidence among HIV-infected men in South Africa: a novel randomized incremental recruitment study. *Journal of the American Medical Association, 293*(22), 2719– 2725.

Hermans, S. M., Grant, A. D., Chihota, V., Lewis, J. J., Vynnycky, E., Churchyard, G. J., & Fielding, C. L. (2016). The timing of tuberculosis after isoniazid preventive therapy among gold miners in South Africa:a prospective cohort study. *BioMed Central Medicine, 14*(45), 1-6.

Kagujje, M., Mubiana, M. L., Mwamba, E., & Muyoyeta, M. (2019). Implementation of isoniazid preventive therapy in people living with HIV in Zambia: challenges and lessons. *BioMed Central Public Health, 19*(1329), 1-4.

Khabo, B. B. (2017). *Factors associated with uptake of Isoniazid Preventive Therapy among Human Immunodeficiency Virus-infected clients in Zimbabwe.* Retrieved from Magister Public Health: http://hdl.handle.net/11394/5781

LaCourse, S. M., Deya, R. W., Graham , S. M., Masese, L. M., Jaoko, W., Mandaliya, K. N., . . . McClelland, S. (2017). Evaluation of the Isoniazid Preventive Therapy Care Cascade Among HIV-Positive Female Sex Workers in Mombasa, Kenya. *Journal of Acquired Immune Deficiency Syndrome, 76*(1), 74-81.

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

Makoni, A., Chemhuru, M., Tshimanga, M., Gombe, N. T., Mungati, M., & Bangure, D. (2015). Evaluation of the isoniazid preventive therapy (IPT) program in Shurugwi District,Midlands Province, Zimbabwe, January 2013 to August 2014. *BioMed Central Research Notes, 8*(476), 1-6.

Metcalfe, J. Z., Makumbirofa, S., Makamure, B., Sandy, C., Bara, W., Mungofa, S., . . . Mason, P. (2014). Drug-Resistant Tuberculosis in High-Risk Groups, Zimbabwe. *Emerging Infectious Diseases, 20*(1), 135-137.

Ministry of Health and Child Care [MOH]. (2017, August). *National Tuberculosis Program –Strategic Plan (2017-2020).* Harare, Harare, Zimbabwe: Ministry of Health and Child Care. Retrieved from Zimbabwe TB programmes.

Mosimaneotsile, B., Mathoma, A., Chengeta, B., Nyirenda, S., Agizew, T., Tedla, Z., . . . Samandari, T. (2010). Isoniazid Tuberculosis Preventive Therapy in HIV-Infected Adults Accessing Antiretroviral Therapy: A Botswana Experience 2004-2006. *Journal of Epidemiology and Prevention, 54*(1), 71-77.

Mugisha, B., Bock, N., & Mermin, J. (2006). Tuberculosis case finding and preventive therapy in an HIV voluntary counseling and testing center in Uganda. *International Journal of Tuberculosis and Lung Disease, 10*, 761–767.

Munseri, P. J., Talbot, E. A., Mtei, L., & Reyn, C. F. (2008). Completion of isoniazid preventive therapy among HIV-infected patients in Tanzania. *International Journal of Tuberculosis and Lung Disease, 12*, 1037–1041.

Mwinga A, H. M.-F. (1998). Twice weekly tuberculosis preventive therapy in HIV infection in Zambia. AIDS. 2447–2457.

Ngugi, S. K., Muiruri, P., Odero, T., & Gachuno, O. (2020). Factors affecting uptake and completion of isoniazid preventive therapy among HIV infected hospital, Kenya: a mixed quantitative and qualitative study. *BioMed Central Infectious Diseases, 20*(294), 1-11.

Nyathi, S., Dlodlo, R., Satyanarayana, S., Takarinda, C., Tweya, H., & Hove, S. (2019). Isoniazid Preventive Therapy uptake,incidence of TB and survival among PLWHIV in Bulawayo. *PLoS ONE, 14*(10), e0223076.

Ogunsola, O. O., Ajayi, O., Ojo, O., Adeyeye, O., Akin, Y., Oke, O., . . . Olajide , O. (2019). Improving coverage and completion rate of isoniazid preventive therapy among eligible HIV patients using quality improvement approaches: a case study of State Hospital, Ijebu Ode, Ogun State, Nigeria. *Pan African Medical Journal, 34*(193), 1-9.

Population Service International Zimbabwe [PSI-Zimbabwe]. (2019). *NAH NSC USAID TB Stat Report 2019.* Harare: PSI-Zimbabwe.

Population Service International Zimbabwe. (2020). *NAH NSC USAID Tx-curr 2019.* Harare.

Population Service International Zimbabwe. (2020). *New Africa House New Start Centre Ministry of Health Stats.*

PSI-Zimbabwe. (2020). *USAID Treatment Current (Tx-Curr) 2015-2020.* Harare: Population Service International Zimbabwe.

Rana, M. M., Islam, M. R., & MoinUddin, S. (2019). Knowledge of tuberculosis among female sex workers in Rajshahi city,Bangladesh:a cross sectional study. *BioMed Central Infectious Disease, 19*(837), 1-10.

Reddy, M. M., Thekkur, P., Ramya, N., Kamath, P. B., Shastri, S. G., Kumar, R. B., . . . Kumar , A. M. (2020). To start or to complete?-Challenges in implementing tuberculosis preventive therapy among people living with HIV:a mixed-methods study from Karnataka,India. *Global Health Action, 13*(1), 1-5.

Semu, M., Fenta, T. G., Medhin, G., & Assefa, D. (2017). Effectiveness of isoniazid preventative therapy in reducing incidence of active tuberculosis among people living with HIV/ AIDS in public health facilities of Addis Ababa, Ethiopia: a historical cohort study. *BioMed Central Infectious Diseases, 17*(5), 1-8.

Teklay, G., Teklu, T., Legesse, B., Tedla, K., & Klinkenberg, E. (2016). Barriers in the implementation of isoniazid preventive therapy for people living with HIV in Northern Ethiopia: a mixed quantitative and qualitative study. *BioMed Central Public Health, 16*(840), 1-9.

Tiruneh, G., Getahun, A., & Adeba, E. (2019). Assessing the Impact of Isoniazid Preventive Therapy (IPT) on Tuberculosis Incidence and Predictors of Tuberculosis among Adult Patients Enrolled on ART in Nekemte Town,Western Ethiopia: A Retrospective Cohort Study. *Interdisciplinary Perspectives on Infectious Diseases, 2019*, 1-8.

Tram, K. H., Mwangwa, F., Atukunda, M., Owaraganise, A., Ayieko, J., Plenty, A., . . . Marquez, C. (2017). Isoniazid Preventive Therapy Completion in the Era of Differentiated HIV Care. *Journal of Acquired Immune Deficiency Syndrome, 76*(5), 115-117.

U.S. Centers for Disease Control and Prevention. (1990). *The Use of Preventive Therapy for Tuberculous Infection in the United States Recommendations of the Advisory Committee for Elimination of Tuberculosis.* U.S. CDC. Retrieved from https://www.cdc.gov/mmwr/preview/mmwrhtml/00001643.htm

U.S.Department of Health and Human Services Centres for Disease Control and Prevention [CDC]. (2019). Epidemiology of Tuberculosis. In U. D. Services, *Self-Study Modules On Tuberculosis* (p. 3). Atlanta, Georgia: CDC. Retrieved from https://www.cdc.gov/tb/education/ssmodules/pdfs/module2.pdf

United Nations partnership on HIV/AIDS [UNAIDS]. (2014). *The Gap Report.* Geneva: UNAIDS. Retrieved from https://www.unaids.org/en/resources/documents/2014/20140716_UNAIDS_gap_report

USA Centres for Diseases Control and Prevention [CDC]. (2010). *The Use of Preventive Therapy for Tuberculous Infection in the United States*

Recommendations of the Advisory Committee for Elimination of Tuberculosis.

Uwamahoro, M. C., Mwape, L. M., & Nyirenda, S. (2015). Effectiveness of Isoniazid Preventive Therapy on Incidence of Tuberculosis in Adult People Living with HIV in Selected Districts of Rwanda. *Rwanda Journal Series F*, 97.

Wambiya, E. O., Atela, M., Eberoime, E., & Ibisomi, L. (2018). Factors affecting the acceptability of Isoniazid Preventive Therapy among health care providers in selected HIV clinics in Nairobi County,Kenya:a qualitative study. *British Medical Journal (Open), 8*, 1-8.

Whalen, C. C., Johnson, J. L., & Okwera, A. (1997). A trial of three regimens to prevent tuberculosis in Ugandan adults infected with the human immunodeficiency virus. Uganda-Case Western Reserve University Research Collaboration. *New England Journal of Medicine*, 801–808.

World Health Organisation [WHO]. (2010, October). *A Conceptual Framework for Action on the Social on the Social Determinants of Health.* Retrieved from World Health Organisation: https://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH_eng.pdf

World Health Organisation [WHO]. (2010). *Priority Research Questions for Tuberculosis/Human Immunodeficiency Virus (TB/HIV) in HIV-Prevalent and Resource-Limited Settings. Geneva, Switzerland:*. Geneva: World Health Organisation. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/44431/9789241500302_eng.pdf?sequence=1

World Health Organisation [WHO]. (2011). *Guidelines for Intensified Tuberculosis Case-finding and Isoniazid Preventive Therapy for People Living with HIV in Resource-constrained Settings.* Geneva: World Health Organisation. Retrieved from https://apps.who.int/iris/handle/10665/44472

World Health Organisation [WHO]. (2014). *Intensified TB case finding (ICP) and Isoniazid Preventive Therapy (IPT) Implementation in Zimbabwe. Progress Report for the collaborative TB/HIV activities supported under the WHO/UBRAF Grant. Oct 2012 to June 2014.* Harare: WHO Africa. Retrieved from https://apps.who.int/iris/handle/10665/325127

World Health Organisation [WHO]. (2016, July 1). *Consolidated Guidelines on HIV Prevention, Diagnosis, Treatment and Care for Key Populations.* Retrieved from World Health Organisation: https://www.who.int/publications/i/item/9789241511124

World Health Organisation [WHO]. (2016). *Global TB Report.* Geneva: World Health Organisation. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/250441/9789241565394-eng.pdf?sequence=1

World Health Organisation [WHO]. (2019). *World Tuberculosis Day 2019.* Geneva: WHO. Retrieved from https://www.afro.who.int/media-centre/events/world-tuberculosis-day-2019

World Health Organisation [WHO]. (2020). *Global tuberculosis report.* Geneva: World Health Organisation. Retrieved from https://www.who.int/publications/i/item/9789240013131

APPENDICES

APPENDIX 1: English study questionnaire and participants consent form

Questionnaire

TB preventive therapy (IPT) uptake among female sex workers living with HIV and on antiretroviral (ART) at New Africa House New Start Centre, Harare.

Dear participant, my name is Judith Machakanise, a student at Africa University and working at New Africa House New Start Centre clinic. I am conducting a research study as a requirement of my studies. This study is about determining the factors associated with IPT uptake among female sex workers on antiretroviral treatment at New Africa House New Start Centre. It is for academic purposes. You had been identified as an important person to participate in this study. All information you provide us will remain confidential. Only the study team will have this information and will be treated with confidentiality unless your express permission is obtained. This will not affect services you are receiving. Your name will not appear anywhere in this study. If you have any questions relating to this study, you can use the contact details below. Please be informed that the confidentiality of the information you provide is guaranteed.

Certificate of Consent

I have been invited to participate in a research study titled "**TB preventive therapy (IPT) uptake among female sex workers living with HIV and on ART at New Africa House New Start Centre, Harare."** The forgoing information had been read to me. I have had the opportunity to ask questions about it and any questions I have asked had been answered to my satisfaction. I understand that at any time I may withdraw from the study without giving a reason and this will not affect the care receiving at the clinic.

Signature of participant…….. **Date……**
College of Health, Agriculture and Natural Sciences, Africa University Research Supervisor: Mr T Kadzere Researcher: Judith Machakanise Email: machakanisej@africau.edu Mobile: +263 775 600 349

IDENTIFICATION INFORMATION

Questionnaire number: _____

Interviewer: _____

Date of interview: _____

Section A: IPT awareness, knowledge level and perceptions

1a) Have you ever heard about IPT ①Yes ☐ ⓪No ☐

②Don't remember ☐

b) If yes, what was the source of information (tick all that apply)

①Clinician /Clinic staff ☐ ③Media such as radio,t ☐

②Social media e.g., whatsapp, facebook ☐ ②Family members&/ friends ☐

☐ ④Other, specify _____

c) IPT stands for…….

d) For how long should one take IPT? ① 1 month ☐ ②3 months ☐

③6 months ☐ ④ don't know ☐

2a) Were you offered IPT and provided with information about IPT by the clinician at the clinic? ①Yes ☐ ⓪ No ☐

b) Are you taking or have taken Isoniazid Preventive Therapy (IPT) drugs

①Yes ☐ ⓪ No ☐

b) If yes, for how long have you been taking the drugs? ① 1-3 months ☐

② 4-5 months ☐ ③ 6 months ☐

3 a) Did you experience any IPT drug side effects?

①Yes ☐ ⓪ No ☐ ②Not Applicable ☐

b) If yes, explain……

4. Give reasons for why you are motivated/not motivated to take IPT drugs?

……

……

5. What is your rating of the health service given by the clinic?

⓪Poor ☐ ①Average ☐ ②Very good ☐

6. What do you think about the behavior of the health care workers offering these services? ②Excellent/Good ☐ ①Average ☐

(⓪Poor ☐ ⓪Don't know ☐

7. How much time do you take waiting to be served?

⓪< 30 mins ☐ ①30mins-1 hr ☐ ②>1 hr ☐

Section B: Clinical information

8. Date/Month/Year of HIV diagnosis……

9. Initial WHO stage of HIV/AIDS ① Stage I ☐ ② Stage II ☐

③Stage III ☐ ④ Stage IV ☐

10. a) How long have you been taking ART drugs in weeks……

b) If week 24 and above, latest Viral Load result ……

11. a) Were you ever screened for TB ①Yes ☐ ⓪ No ☐

b) Have you ever been tested for TB? ① Yes ☐ ⓪ No ☐

c) If yes, what were the results and when.....

Section C: Socio – demographic characteristics

12. Age in years…….

13. Marital status ⓪Single ☐ ① Married ☐ ⓪Widowed ☐

⓪ Separated/Divorced ☐ ⓪ Cohabitating ☐

14. Level of education ⓪No formal education ☐ ⓪Primary ☐

① Secondary ☐ ②Tertiary ☐

15. Employment status ⓪Unemployed ☐ ①Informal ☐

②Full time sex work (*at least 5days a week) ③Formally employed ☐

16. Residence place ……..

17. Number of meals per day……

18. Do you use/take any of the following?

⓪None ☐ ①Alcohol ☐ ②Tobacco ☐

③Drugs ☐

The End

Thank you for your participation and time.

APPENDIX 2: Shona study questionnaire and participants consent form

Questionnaire

Mushonga wedziviriro yechirwere cheTB, IPT muvasikana vanotengesa bonde vanorama neutachiona hweHIV uye vachimwa maARV paNew Africa House New Start Centre, Harare.

Ini ndinonzi Judith Machakanise,ndinodzidza kuAfrica University uye ndichishanda pakirinika yeNew Africa House New Start Centre. Ndiri kuita tsvakurudzo yekuda kuziva zvikonzero zvinoita kuti mutore kana kusatora mushonga wekudzivirira chirwere cheRurindi (TB) pakati pevakadzi vane makore gumi nemasere zvichikwidza vanotengesa bonde vachimwa mishonga yavo yeART kuzadzikisa zvinodiwa nekudzidza kwangu. Muri kukumbirwa kupinda mutsvakurudzo iyi. Ruzivo ruri maererano nenhamba yerupawo ndirwo ruchagoveranwa nevamwe vatsvakurudzi, kwete zita renyu Ruzivo rwamuchapa zvichaiswa pamwe chete nenhamba yerupawo yamuchapiwa, kwete zita renyu. Hatisi kuzoshandisa mazita mumaripoti ari maererano netsvakurudzo. Kupinda mutsvakurudzo kuda kwenyu uye munogona kusarudza kubuda mutsvakurudzo chero nguva uye mucharamba muchiwana rubatsiro rwamunoda pakirinika nguva dzose. Kana paine zvamungada kuziva maererano netsvakurudzo ino munokwanisa kufona kumutsvakudzi panhamba dziri pasi.

Gwaro Retenderano

Ini ndakumbirwa uye ndabvuma kupinda mutsvakurudzo ye "**TB preventive therapy (IPT) uptake among female sex workers living with HIV and on ART at New Africa House New Start Centre, Harare."** Ndaziviswa zvinotarisirwa uye ndapiwa mukana wekubvunza mibvunzo ndikapindurwa zvandigutsa. Ndinoziva ndinokwanisa

kubuda mutsvakurudzi iyi nguva yandada ndisingape zvikonzero. Zvisinei nekuti handina kupinda mutsvakurudzo kana kuti ndabuda mutsvakurudzo, ndicharamba ndichiwana rubatsiro rwakafanana nerwandaisiwana kubva kukirinika senguva dzose.

Sainecha yemunhu apinda mutsvakurudzo……..

Zuva……

College of Health, Agriculture and Natural Sciences, Africa University

Research Supervisor: Mr T Kadzere

Researcher: Judith Machakanise

Email: machakanisej@africau.edu

Mobile: +263 775 600 349

IDENTIFICATION INFORMATION

Questionnaire number: _____

Mutsvakurudzi: _____

Zuva retsvakurudzo: _____

Chikamu chekutanga:

1 a) Makambonzwa here nezvemushonga wekudzivirira chirwere che TB?

①Hongu ☐ ⓪Kwete ☐ ②Handichaziva ☐

b) Kana mati hongu,makazvinzwa kubva kupi? ①Mbuya murapi/Pakirinika ☐

②Hama neshamwari ☐ ③Panhepfenyuro/tv ☐ ②Whatsapp/facebook ☐

c) IPT zvakamirira kuti chii?.....

d) Munhu anofanira kunwa mushonga uyu kwenguva yakareba sei?

①Zvepasi pemwedzi mitatu ☐ ②mwedzi mitatu ☐

③mwedzi mitanhatu ☐ ④handizivi ☐

2a) Makapiwa here mukana wekuti mutore mishonga uyu matsanangurirwa nezvawo?

①Hongu ☐ ⓪ Kwete ☐

b) Muri kutora kana kuti makambotora mushonga wekudzivirira TB (IPT) here?

①Hongu ☐ ⓪ Kwete ☐

c) Kana mati hongu,mava nenguva yakareba sei kana kuti makatora kwemwedzi mangani? ①Mumwe kusvika pamitatu ☐ ②mina kusvika pamishanu ☐

③mitanhatu ☐ ⓪Not applicable ☐

3. Makamborwara here nekuda kwekunwa mushonga wekudzivirira TB?

① Hongu ☐ ⓪Kwete ☐ ②Not applicable ☐

b) Kana mati hongu, maibatiswa nei?

.....

4. Ipai zvikonzero zvinoita kuti mutore kana kurega kutora mushonga uyu?……

……

5. Semaonere enyu,munobatwa zvakadini pakirinika ino

⓪Zvakaipa ☐ ①Zviri pakati nepakati ☐ ②Zvakanaka ☐

6. Semaonere enyu,munofungei nezvavashandi vepakirinika ino vanokubatsirai nguva dzose

⓪Havagoni kukuzivisai kana kukubatai zvakanaka ☐

①Vari pakati nepakati ☐

②Vane ruzivo uye vanokuzivisai zvirongwa zvamunogutsikana ☐

⓪Handizivi ☐

7.Munowanzotora nguva yakareba sei pakirinika makamirira kubatsirwa?

⓪Pasi pe 30mins ☐ ①30 mins-1hr ☐ ②kudarika 1 hr ☐

Chikamu chechipiri: Mibvunzo maererano neUtano

8. Zuva ramakaongororwa hutachiona hweHIV/AIDS……..

9. HIV/AIDS WHO stage pamakatanga mushonga ①Stage I ☐ ②Stage II ☐

③Stage III ☐ ④ Stage IV ☐

10 a) Mava nenguva yakareba zvakadini muchitora maARV?.....

b) Kana madarika mwedzi mitanhatu, uwandu hweutachiona hwakamira sei (viral load) ……..

11. a) Makambobvunzwa here maringe nezve TB? ① Hongu ☐ ⓪ Kwete ☐

b) Makamboongororwa nezve TB here? ①Hongu ☐ ⓪Kwete ☐

c) Kana mati hongu,zvanga zvakamira sei uye rinhi?.....

Chikamu Chechitatu:

12. Makore ekuberekwa ……..

13. Chimiro pakuroorwa ⓪Handina kubvira ndaroorwa ☐ ①Ndakaroorwa ☐

⓪Takarambana ☐ ⓪Ndakafirwa ☐ ⓪Tinogarisana ☐

☐

14. Danho rekudzidza ⓪Handina kuenda kuchikoro ⓪Primary ☐

①Secondary ☐ ② Tertiary ☐

15. Basa ramunoita …….

16. Munogara kupi?.....

17. Munodya kangani pazuva…….

18.Pane zvinotevera pane chamunonwa kana kushandisa here?

①Doro ☐ ② Fodya ☐ ③ Zvimwe zvinodhaka ☐ ⓪Hapana ☐

Mibvunzo yapera

Tinokutendai chose

APPENDIX 3: Key Informant guide

Interviews of ART clinicians and pharmacy staff will be done using the key informant guide. The question includes the following:

Questions	Yes	No	Comments
1. Did you receive any training in the provision of IPT?			
2. Do you know the IPT uptake status at your site?			
3. Is systematic screening for IPT eligibility is difficult to implement?			
4. Is current screening of TB sufficient to rule out TB			
5. Is counselling of patients about IPT difficult and or time consuming?			
6. Is documentation of IPT activities difficult and or time consuming?			
7. Do you have experience in prescribing IPT?			
8. Is IPT part of your clinic routine practice?			
9. Are the IPT standard operating procedures (SOP`s) or guidelines available at your clinic?			
10. Have you ever experienced any IPT drug shortages, stock outs in the last 2 years?			

Any additional information about IPT uptake

……

……

……

……

APPENDIX 4: PSI-Zimbabwe Approval Letter

BLOCK E, EMERALD OFFICE PARK
30 THE CHASE WEST EMERALD HILL
HARARE ZIMBABWE

Tel 263-4 334631/2 339580/3
Fax 263-4 339632
PSI.ORG

28 February 2021

To whom it may concern

Dear Sir/Madam

Ref: Approval Letter to conduct a study at PSI site (New Africa House) for academic purposes

Dissertation Proposal:
To determine the factors associated with IPT uptake among female sex workers living with HIV and on Antiretroviral therapy (ART) in Harare.

This letter serves to inform you that the undersigned has granted permission to Judith Machakanise to carry out the above-mentioned study at New Africa House for academic purposes only.

The investigator is mandated to observe ethical standards of the highest degree and will be required to seek ethical approval from the local Institutional Review Board (IRB) and to also acknowledge PSI and our major donors in the final project report. Further, the applicant should sign a PSI oath of confidentiality form should the study require that the applicant collects identifiable data. All study costs should be borne by the researcher.

The information gathered in the study should only be used for academic purposes and the applicant will be obliged to share study findings with key program members at PSI, the donors and stakeholders locally and internationally.

Yours faithfully

Noah Taruberekera

(Monitoring Evaluation and Learning Advisor – PSI Zimbabwe)

Appendix 5: AUREC Approval Letter

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

Ref: AU1957/21 15 March, 2021

Judith Machakanise
C/O CHANS
Africa University
Box 1320
Mutare

RE: **Isoniazid Preventive Therapy uptake among the female sex workers on Antiretroviral treatment at New Africa House New Start Centre Clinic in Harare,Zimbabwe, 2020**

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal
b) Data collection instruments
c) Informed consent guide

- **APPROVAL NUMBER** AUREC1957/21
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** March 15, 2021
- **EXPIRATION DATE** March 15, 2022
- **TYPE OF MEETING** Expedited
  After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

APPROVED

Yours Faithfully

MARY CHINZOU – A/AUREC ADMINISTRATORFOR CHAIRPERSON, AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE

Appendix 6: PSI-Zimbabwe document retention SOP

Population Services International Zimbabwe Laboratories	Quality System Procedure	SOP:PSI/Z Lab-P02 Version: 01
	Title: **Document Control SOP**	Copy No:

	Name	Position	Date
Prepared by:	Thomas Ngano	Medical Laboratory Scientist	06/05/2019
Reviewed by:	PSI Medical Laboratory Scientist		21/05/2020
Approved by:	Thomas Ngano	Laboratory Scientist	23/05/2020
Authorized by:	Chiedza Mguni	Laboratory Service Manager	28/05/2020