



UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

**ORGANIZATIONAL READINESS FOR THE IMPLEMENTATION OF A THREE-
MONTH SHORT-COURSE TB PREVENTIVE THERAPY REGIMEN (3HP) IN
FOUR HEALTH CARE FACILITIES IN ZIMBABWE IN 2020**

DOROTHY TANAKA CHISARE

(Student Number: 854835)

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SUPERVISORS:

PROFESSOR CHARLES CHASELA

PROFESSOR RUTENDO B.L. ZINYAMA-GUTSIRE

13 APRIL 2021

DECLARATION

I, Dorothy Tanaka Chisare declare that this Thesis/Dissertation/Research Report is my own, unaided work. It is being submitted for the Degree of MSc Epidemiology (Implementation Science) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.



April 13th, 2021

DEDICATION

I am thankful to God almighty who always guides and blesses me through each step of my life.

I dedicate this thesis to my parents, Mr and Mrs Chisare who continue to support me throughout my studies and stand to motivate me in all my endeavours. You provided consistent words of encouragement and without your sacrifices, this academic accomplishment would have remained a dream. I also dedicate this thesis to my younger brother Keith who graduated this year. Thank you for your love, support and encouragement.

PRESENTATIONS FROM THIS STUDY

Chisare D, Zinyama – Gutsire R and Chasela C. *Organizational Readiness For The Implementation Of A Three-Month Short-Course TB Preventive Therapy Regimen (3HP) in Four Health Facilities in Zimbabwe in 2020*. Oral Presentation at the Public Health Association of South Africa (PHASA) Conference 2021, 15 -17 February, 2021, Pretoria, South Africa.

ABSTRACT

Background: Tuberculosis preventive therapy (TPT) for latent TB infection has had limited success in Zimbabwe. The country plans to roll-out the three-month short-course TPT regimen (3HP) to address the implementation lag and poor uptake of the 6-9-month regimens. The study measured the level of organizational readiness while identifying barriers and facilitators to implement 3HP in four health facilities in Zimbabwe.

Methods : The study used a convergent, parallel mixed-methods approach to collect data from four primary health clinics in Bulawayo and Harare Metropolitan provinces, Zimbabwe. Twenty healthcare providers completed a self-administered questionnaire; nine of whom further took part in semi-structured key-informant interviews in addition to five TB program managers from the Ministry of Health and implementing partners. Median scores with interquartile ranges were calculated to determine levels of organizational readiness. Qualitative data on barriers and facilitators were transcribed and analyzed using a framework approach.

Results : The overall readiness to implement 3HP across the four facilities was positive with a median score of 3.8(IQR 3.3 – 4.1). The findings, however, presented varied facility scores ($p=0.039$). One facility did not meet the readiness threshold of 3.3 at 3.2(IQR 2.7 – 3.3) because of low contextual 2.5(IQR 2.0 -3.3), task demands 2.6(IQR 2.3 – 2.9), and resource availability 2.1(IQR 1.5 – 2.5) scores. Key organizational readiness facilitators included healthcare provider and management buy-in; community willingness to generate demand for 3HP; strong collective capability through task-shifting, alignment with existing primary healthcare programs, perceived benefits, and need for 3HP. Barriers were negative past TPT experiences, suboptimal programmatic monitoring, inconsistent health provider remuneration, inadequate staffing, added workload, and an erratic supply chain across facilities. The organizational communication gap prompts the slow program implementation culture.

Conclusions : Despite the overall moderate organizational readiness level, the varied scores between facilities suggest distinct underlying organizational conditions for readiness to implement 3HP. A one-size-fits-all implementation strategy will not work; therefore, facilities with less readiness to implement may require more flexibility to reach the intended program merits. Proactive improvements to further improve 3HP implementation strategy are needed.

Keywords: Organizational readiness, TB preventive therapy, TPT, 3HP , Zimbabwe

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LIST OF ABBREVIATIONS

3HP – Three-month short-course TB Preventive Therapy Regimen

CFIR - Consolidated framework for implementation research

CMV – Common Method Variance

GeneXpert MTB/RIF – GeneXpert Mycobacterium tuberculosis (MTB) / Rifapentine (RIF)

HIV – Human Immunodeficiency Virus

HREC – Human Research Ethics Committee

IMPAACT4TB - Increasing Market and Public Health outcomes through scaling up
Affordable Access models of short Course preventive Therapy for TB

INH - Isoniazid

IPT – Isoniazid Preventive Therapy

KII – Key Informant Interview

LTBI – Latent Tuberculosis Infection

MoHCC – Ministry of Health and Child Care

MRCZ – Medical Research Council of Zimbabwe

NGO – Non-governmental Organization

TB – NSP - Tuberculosis national TB strategic plan

OI/ART – Opportunistic Infections / Antiretroviral Therapy

ORIC – Organizational Readiness for Implementing Change

PEPFAR - US Presidents Emergency program for AIDS Relief

PLHIV – People living with HIV/AIDS

TB – Tuberculosis

TB/HIV or HIV/TB – Co-infection with HIV and TB

TPT – TB Preventive Therapy

WHO – World Health Organization

DEFINITION OF TERMS

Terminology	Meaning
Readiness	A two-dimensional construct reflecting the organizational members' shared resolve to implement a change (change commitment) and shared belief in their collective capability to do so (change efficacy).
Change Commitment	Organizational members' shared resolve to pursue courses of action (willingness and motivation) that will lead to successful change implementation
Change Efficacy	Organizational members' shared belief in their co-joint capabilities to organize and execute the courses of action required to implement change successfully
Change Valence	The extent to which a staff member in an organization believes that a change effort will result in benefits to the organization. This construct determines if organizational members collectively value the change enough to commit to its implementation.
Contextual Factors	Circumstances that form the setting for organizational readiness. These specifically include the culture of an organization, policies and procedures in place, past experiences of introduction of interventions and the structure within the structure.
Task Demands	The collective knowledge, effort and time of staff required to conduct change or implement an intervention within the organization.
Resource Availability	The material, financial and human resources required to reach organizational readiness to implement a program within an organization.

CHAPTER 1

1.0 INTRODUCTION

This chapter covers the background and puts the study into context. The problem statement, study justification, literature review and organizational readiness conceptual framework is presented. The research question, aims, objectives and an overview of the research report is given.

1.1 BACKGROUND

Despite significant increased access to treatment, tuberculosis (TB) accounted for 10 million active cases and 1.3 million deaths in 2018 globally (1). The re-occurrence of the growing burden of active TB disease is driven by latent tuberculosis infection (LTBI) , particularly in developing countries (2). Persons with LTBI harbour *Mycobacterium tuberculosis* bacilli but are not infectious and cannot spread TB to others, however, once infected, individuals are at the highest risk of developing active TB (2). One-third of the global population are carriers of LTBI which is an estimated 2.3 billion possible new TB cases (2). The WHO Africa, Western Pacific and South-East Asia regions have the highest prevalence of LTBI and account for 80% of the cases (2). Zimbabwe fosters a high LTBI rate of 210 per 100 000 population and is one of 12 countries that contribute to 50% of the global TB burden (3, 4). With 14% of the population living with HIV, more individuals are at the risk of LTBI wherein progression to active TB is high (3 , 5).

As per WHO, a crucial strategy to prevent and eliminate active TB cases has been the treatment of LTBI through provision of TB preventive therapy (TPT), specifically daily self-administered isoniazid preventive therapy (IPT) (2). Provision of IPT is marred with challenges including constrained effectiveness due to toxicity, low completion rates, suboptimal coverage ranging from 2.4% to 73% , TB provider knowledge gaps, conflicting views on the importance of treatment , as well as the uncertainty about the duration of treatment, i.e. whether it should be administered for six months, nine months, 36 months or a lifetime (2, 3). Shorter, safe regimens are crucial for increasing treatment completion rates and curbing the spread of active TB disease (2 ,4). These regimens include 3HR; a daily three-month (90 doses) TPT and 3HP; a weekly three-month (12 doses) TPT of combined rifapentine and isoniazid. The proposed three-month therapy to replace the standard IPT is 3HP as 3HR is offered in a few countries, only limited to children and adolescents aged less than 15 years and still administered over a long duration (2). Additionally, randomized control trials demonstrated that participants taking

3HP had a threefold likelihood of treatment completion and improved outcomes compared to participants taking 6-9 month IPT (4). The WHO therefore released the 2019 updated guidelines for the treatment of LTBI recommending the use of 3HP for people living with HIV (PLHIV) and contacts of TB cases of any age in place of the standardized daily self-administered IPT (1).

In alignment with the updated WHO guidelines, National HIV/AIDS and TB Control Program under the Ministry of Health and Child Care (MoHCC) of Zimbabwe and partner non-governmental organizations (NGO) set the Tuberculosis national TB strategic plan of 2017-2020 (TB-NSP) which included the provision of 3HP in place of the current 6-month TPT at facility level (3). The first phase of the program implementation (quarter one and two of 2020) was earmarked for 20 health facilities across five provinces in Zimbabwe (3). However, the effectiveness and the success of the 3HP program might be a distant reality as there are operational challenges within the National HIV/AIDS and TB Control Program. Performance indicators are not being met including the sub-optimal performance of the current 6-month TPT (3). Challenges include the shortage of skilled health workers, lack of capacity to recruit additional staff, lack of funding and training to support monitoring of TPT implementation exacerbated by stockouts of essential medication as a result of decades of crippling economic challenges (5). Persistent IPT drug stockouts, for instance, resulted in the interruption of TB prevention program (5). As vital as the change from standard IPT to treatment by 3HP is, the aforementioned challenges could limit the successful implementation of the program.

Organizational readiness (OR) is vital and a necessary precursor to ensure successful implementation of the 3HP program in Zimbabwe. OR is defined as an implementation strategy to indicate the extent to which an organisation is psychologically and behaviourally prepared to implement a new program (6). For example, an organization has to be willing and capable to implement a program for an effective outcome (6). Therefore, determining OR is key to identify bottlenecks as perceived by the organization's staff that could impede efforts to scale-up and to develop recommendations for better implementation.

1.2 PROBLEM STATEMENT

Given that evidence has shown 3HP to be three times more effective than the standard 6-month TPT in countries such as Canada, the National HIV/AIDS and TB Control Program in Zimbabwe will be implementing the regimen at facility level (3,4). However, there is a dearth

in literature on the readiness to implement the regimen change in the low-income, high TB burden setting which faces existent operational challenges including the sub-optimal performance of the current TPT regimen. Such a gap in knowledge and attempts to speed up the adaption of the program while overlooking crucial organizational readiness factors such as the collective willingness and capability of staff to perform the work at different levels of the program will result in a non-optimal response to the growing TB incidence in the country. Additionally, studies have indicated that about 50% of programs fail due to poor organisational readiness which needs to be assessed prior to program implementation (7). The proven, cost-effective GeneXpert test to improve TB screening for example, was characterised by low utilisation rates varying from 50.4% to 63.5% in Zimbabwe due to poor readiness levels to implement the program (5). Similarly, piloting 3HP in facilities in Zimbabwe without assessing OR, its barriers and facilitators as perceived by staff collectively could present challenges and failure to realize the real impact of 3HP. Therefore, organizational readiness is an essential strategy and precursor of successful program implementation to optimize 3HP program performance indicators, inform Zimbabwe national TB prevention guidelines before scale-up, and to develop recommendations for better implementation.

1.3 JUSTIFICATION

The outcomes of this study will indicate the readiness to implement 3HP within the selected facilities in Harare and Bulawayo Metropolitan provinces and identify possible influencing factors in those contexts. By using this method, the quantitative measurement will be strengthened by the lived qualitative experiences useful to the National HIV/AIDS and TB Control Program to address issues that might otherwise escalate into obstacles that could impede successful program implementation in the facilities (6). This is critical because 3HP is a key TB prevention strategy to offset prior suboptimal IPT implementation efforts which were to meet the control program's core objective to treat the reservoir of LTBI and in turn reduce the growing pool of active TB cases in the country (3). The study will also contribute towards the theoretical knowledge of implementation readiness and also expand on the lack of consensus on the measurement of readiness (6). Hopefully, the study will demonstrate the importance of considering readiness at early stages of program implementation as it serves a proximal indicator to successful, quality implementation outcomes without undesired consequences. This will encourage monitoring and evaluation of the program at scale-up as well as tightening of potential loopholes in the implementation. Additionally, lessons learnt from the study can be adapted to facilities in the other provinces and later national level to give

a more generalizable picture of 3HP implementation. Studies assess readiness on a multilevel aspect of organizations (6) however the focus of this study will be based on an intra- level (i.e. facility level) aspect of the Zimbabwe National HIV/AIDS and TB Control Program as an organization. This is simply due to the proposed implementation of the 3HP program taking place at facility level.

1.4 LITERATURE REVIEW

1.4.1 LTBI Burden in Zimbabwe, Current Progress and Challenges

The progression from LTBI to active TB disease continues to add to the existing number of TB patients yearly in Zimbabwe (3). Similarly, several studies suggest that the primary driving force behind the TB burden may be reactivation of LTBI exacerbated by comorbid conditions such as diabetes, malnutrition and HIV which increase the risk conversion of active disease (2, 3). A systematic review of 11 low-income countries revealed that 24.4% to 69.2% of children under 15 years of age who were exposed to TB within their households developed LTBI (2) .

While Zimbabwe has made progress in lowering HIV and TB rates, 56.3% of the PLHIV and 27.5% of children under five years who were household contacts of TB patients were put on TB preventive treatment (TPT) in 2018 (3). Factors contributing to low initiation of TPT include lack of demand for TPT, negative TB health worker attitudes towards the program, lack of trained healthcare workers and a weak health care system capacity to support the sustainability of preventive programs (8,9,10). Given that the updated TPT services are yet to be implemented within the country, operational recommendations arising from the current TPT program should be taken into consideration, especially highlighting barriers faced through qualitative experiences among service providers and implementers.

1.4.2 The Transition from Current TPT to 3HP

Globally, countries have had access to daily isoniazid (INH) monotherapy as TPT for six months and a few also have access to daily 3HR, including Zimbabwe (2). Replacing the standard regimen with shorter, user-friendly regimens, such as the weekly 3HP, will make it easier for the health care system to administer the regimen and make the treatment more tolerable based on the reduced pill burden, lessened adverse effects therefore less workload for facility staff (8). The 2018 PEPFAR report highlighted mistrust among some of the health workers over the 6-month regimen in Zimbabwe which they intend to address by introducing

3HP (11). Moreover, 3HP has been indicated to be cost-effective as the safe generic product is procured at a negotiated drug price among strategic partnerships between NGOs and state ministries of health(12). In the first year of introduction , the cost of 3HP per patient decreased from US\$ 72 to US\$ 46, a 40% reduction globally (12). Due to 3HP being readily available at lowered costs, this has in turn resulted in higher treatment completion rates compared to the previous standard LTBI treatment among patients. For instance, there was a 63% treatment completion rate for patients on 3HP as compared to 58% for those on IPT (12). Similarly those on 3HP presented a 71% decreased risk of reactivation as compared to those on IPT in a Ugandan HIV clinic (2). Although previous studies highlighted that 3HP had more positive outcomes than IPT, a study in Bangladesh conversely reported that 5% of LTBI cases discontinued 3HP due to adverse effects such as skin rashes and peripheral neuropathy (2). Nonetheless, 3HP was associated with 40 – 50% less LTBI cases in Taiwan and favourable among health service providers due to its administration over a shorter time period resulting in treatment adherence and highly desirable treatment completion (2).

As of 2020 , Zimbabwe updated its national guidelines from the standard LTBI treatment to 3HP (3). However, there was a possibility of a delay in the intended roll-out of the intervention due to factors not limited to non-standard pricing of the 3HP regimen, production capacity, interruptions in the medical supply-chain system and untrained organizational personnel (2).

1.4.3 Organizational Readiness for Successful Implementation

In implementation science, readiness is an implementation strategy that addresses barriers to the introduction of new programmes by providing tools that promote the adoption and offer potential solutions to improve implementation efforts (6). OR of health facilities refers to the extent to which the organisation is both willing and able to implement innovation and is a necessary precursor to its successful implementation (7). The concept is multifaceted requiring assessment across a range of elements which are both functional and external to the organization as well as considering perceptions of the members within an organization (13). Weiner ⁶ argues that for an organization to implement the necessary change to elicit anticipated program benefits, organizational readiness has to be high (6). When OR is high, staff are more likely to initiate change, exert more considerable effort, exhibit greater persistence, and display more cooperative behaviour, resulting in effective implementation of the proposed change (6,13). Conversely, when OR is low, staff would be less likely to view the change as desirable, and resist planning for, and participating in the process (6,13).

Despite the assessment of OR in various settings such as workplaces, welfare institutions, schools and health facilities, there is a paucity of evidence to support the idea of readiness specific to TB interventions. Given the TB crisis and a demonstrated myriad of TB program operational challenges in Zimbabwe, it is important to provide perceptions of the organizational staff that would indicate potential areas of need and barriers to effective implementation.

1.4.4 Components of Organizational Readiness

Weiner's theory of organizational readiness for change will guide this research. The drivers of readiness, according to Weiner, include change commitment, change efficacy, change valence, contextual factors, task demands and resource availability.

1.4.4.1 Change Commitment

Change commitment is the willingness or interest by an organization's staff members to engage in the implementation of an intervention (6). Literature highlights that implementation of innovation has a high likelihood of success when an organization secures its members' buy-in' and they become motivated to implement change (14). For example, practitioners in a couple-based HIV prevention program reported a high level of motivation and enthusiasm which increased the level of readiness significantly and continuation of the program from 12 to 18 months (7). Similarly, another study indicated 69 % of nurses had an interest and motivation to implement a self-management phone intervention to improve hypertension in facilities which led to a successful implementation and ultimately program outcome such as the decrease in deaths (14). Gomillion and George (15) argued that while the motivation of staff is vital, it was not sufficient alone to elicit organizational readiness to implement an electronic health record systems innovation in their study. They further highlighted that change commitment was reliant on the change efficacy of staff and possibly other factors including satisfactory work conditions, consistent remuneration or rewards (15). For example ,in the South African and Kenyan context , low motivation among service providers was attributable to efficacy challenges including heavy workload and lack of confidence to administer treatment resulting in the suboptimal coverage of IPT ranging from 39%, and 33-40% respectively (16). Currently, the level of change commitment towards the 3HP program is unknown.

1.4.4.2 Change Efficacy

Change efficacy is the second crucial facet that directly affects readiness and compliments change commitment (6). It refers to the shared belief in the capability to implement an

innovation (6). Takarinda (5) posits that subsequent to the introduction of the GeneXpert program in Zimbabwe, TB case detection deteriorated as service providers reported a lack of capability to change from easier current standard practices and in turn resulted in a significantly reduced willingness for the new program. Takarinda's study (5) highlights the function of both change commitment and efficacy on OR as similarly done so by Weiner (6) who states that OR is more likely to be highest when members not only feel confident that they can implement the new program, but also want to do so. However, there is little substantiating literature to justify the importance of the co-existing constructs for positive readiness outcomes in programs (5,6). Comprehensive research is required to indicate the importance of change efficacy amongst health workers when initiating program change while change commitment is present or vice versa. Moreover, it is important to take into account the differentiated role requirements within programs when assessing efficacy and the impact on readiness as well as to recognize that self-reported collective capabilities can be overestimated or underestimated which call for vibrant, accurate information based on those who have direct experience in the organizations than those who have erroneous information (13).

1.4.4.3 Contextual Factors

Situational or broader, contextual factors affect the confidence and commitment of organizational members to implement an intervention (6). The more support staff receive from their management and governing bodies, as well as being included in decision-making processes regarding the innovation, the higher the likelihood of success of that particular intervention (13). Nonetheless, organizational policies and procedures could negatively or positively affect staff members value of the program and their willingness to engage in the program activities (15). Staff members offering TB services in an Ethiopian study noted that bad decision-making and a lack of regular supportive supervision in facilities affected their motivation which in turn affected readiness as well as program performance (17). Moreover, studies by Ochurub (18) and Degeling (19) similarly argue that exercising good management practices at health facilities and providing regular refresher training to health workers will improve low levels of readiness to implement services. Overall, it is imperative to explore if contextual factors could vary from one facility to another as they can amplify or dampen OR.

1.4.4.4 Change Valence

Change valence refers to the extent that staff within organizations value change proposed (6). Specifically, the value of a program is more likely to be perceived highly because it can solve

a major existing problem (perceived fit) and offer a benefit to the organization (perceived advantage), as well as its staff or patients because it is consistent with the organization's missions, goals and values of improving patient care (18). For example, an OR assessment in an obesity program demonstrated positive results due to the majority of personnel that identified relative advantages such as cost-effectiveness linked to the innovation for their clients and facilities (20). Similarly, the readiness to rollout the HTN-IMPROVE program within clinics was increased due to the shared and valued mission of the clinics to centralize the importance of improving patient BP control (14). The perceived value of programs can however, become contingent upon other factors such as commitment which can strengthen or weaken readiness outcomes. For example, the lack of commitment to program outcomes due to staff shortages and workload in HIV/TB clinics in Zimbabwe reduced the change valence of the program (5). Qualitative evidence amongst TB service providers could strengthen the need to assess the perceived value of programs among implementers for increased program success.

1.4.4.5 Task Demands

The collective knowledge, effort and time of staff required to conduct change or implement an intervention within the organization are known as task demands (6). Integration of new programs with components of existing programs allow possible reduction of time allocation therefore less efforts required (6,7). Keshni (13) highlighted that the health intervention needed to be nested within the existing workflows and systems to mitigate increased workload among the staff. Similarly, before introducing the healthier families program, staff members at sites requested integration of programs to meet their concerns regarding the increased time required to commit to completing the new 12-week program, as opposed to the shorter, usual time allocation of five weeks (20). It is crucial to determine whether task demands have a bearing on staff willingness, program value and confidence in conducting change efforts.

1.4.4.6 Resource Availability

Resources include a supply of money, material and staff that an organization requires to function effectively (6). A lack of resources could negatively affect readiness to implement programs. Reports from Ethiopia, Ghana, Mozambique, South Africa, Nigeria, Tanzania, Nepal and Mongolia highlighted barriers to TB program implementation in health facilities attributable to inadequate resources including a lack of staff and inconsistent supplies within health facilities (2). Although resources are crucial, there remains an inconsistency in the literature on the extent to which resources mostly affect readiness. For example, a study on OR

to implement TB programs in Australia highlights that resources will not necessarily be adequate without the concurrent introduction of better systems in place for change in programs, active engagement and willingness to push through change (19). Moreover, PEPFAR reported that the poor performance of IPT in Zimbabwe resulted from available funds being allocated in already dysfunctional IPT programmes (11). It is crucial to qualitatively enquire from facilities, the possible alternatives to reach desired implementation success in the event that resources are scarce within facilities.

1.4.5 Conceptualization of Organizational Readiness

In this study, elements in Weiner's (6) model attempts to understand the collective efforts or behaviour of members in an organization which lead to organizational readiness. In the model, contextual factors, task demands, resource availability, and change valence are mediating elements of organizational readiness as a measure (6). Change efficacy and change commitment are direct elements affecting organizational readiness(6). Weiner (6) highlights the importance of the interrelatedness of these factors that may affect readiness to implement a new program. For example, when members are committed, they have the capability to implement the program. Change efficacy is based on three enabling factors, including task demands, resource availability and contextual factors of the organization (6).**(Figure 1)**

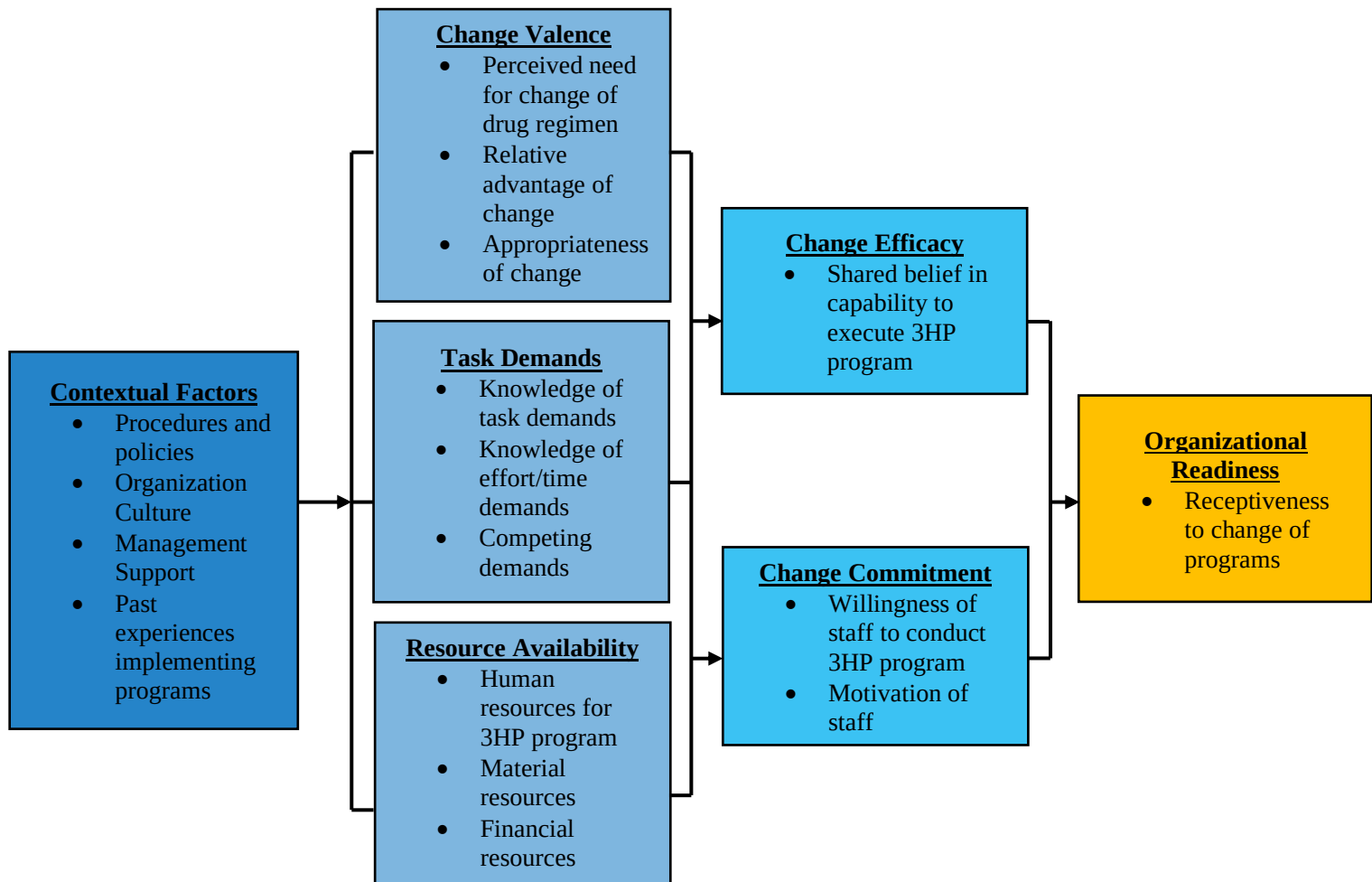


Fig 1.0 Weiner's Model for Organizational Readiness

1.5 RESEARCH QUESTION

What is the level of organizational readiness, perceived barriers, and facilitators for implementation of a three-month short-course TB preventive therapy regimen (3HP) in four health facilities in Zimbabwe?

1.6 STUDY AIMS AND OBJECTIVES

1.6.1 Study Aim

The study aimed to determine the level of organizational readiness, perceived barriers and facilitators for implementation of a three-month short-course TB preventive therapy regimen (3HP) in four health facilities in Zimbabwe.

1.6.2 Research Objectives

1. To describe the characteristics of the facilities and staff preparing to implement a three-month short-course TB preventive therapy regimen in four health facilities in Zimbabwe.
2. To measure the level of organizational readiness to implement a three-month short-course TB preventive therapy regimen in four health facilities in Zimbabwe.
3. To determine perceived facilitators and barriers of organizational readiness to implement a three-month short-course TB preventive therapy regimen in four health facilities in Zimbabwe.

1.7 ORGANIZATIONAL READINESS FOR 3HP IMPLEMENTATION STUDY SCHEMA

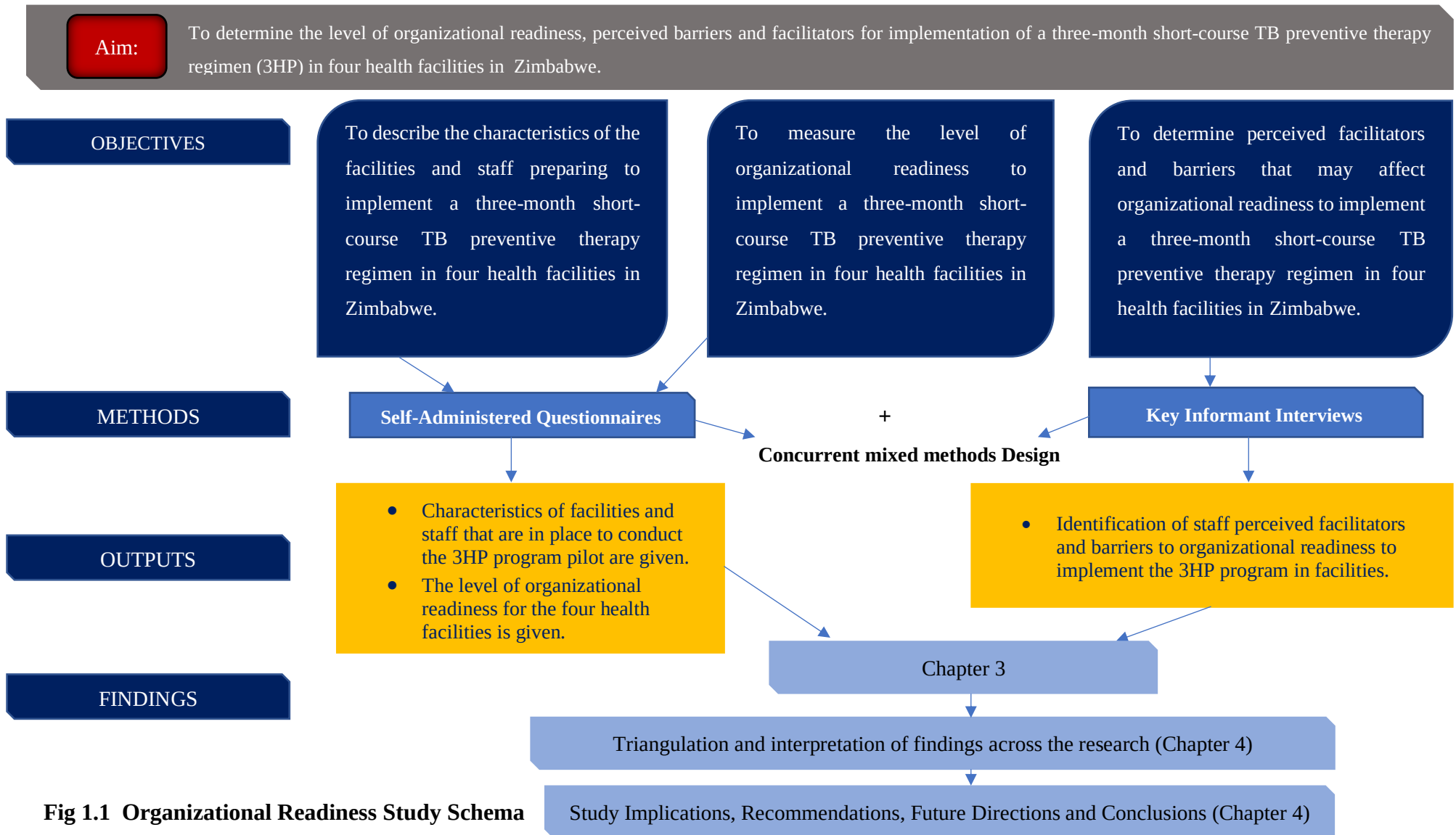


Fig 1.1 Organizational Readiness Study Schema

CHAPTER 2

2.0 METHODOLOGY

This chapter describes the study design, setting and target population; sampling, data collection, data management and statistical analysis.

2.1 STUDY DESIGN

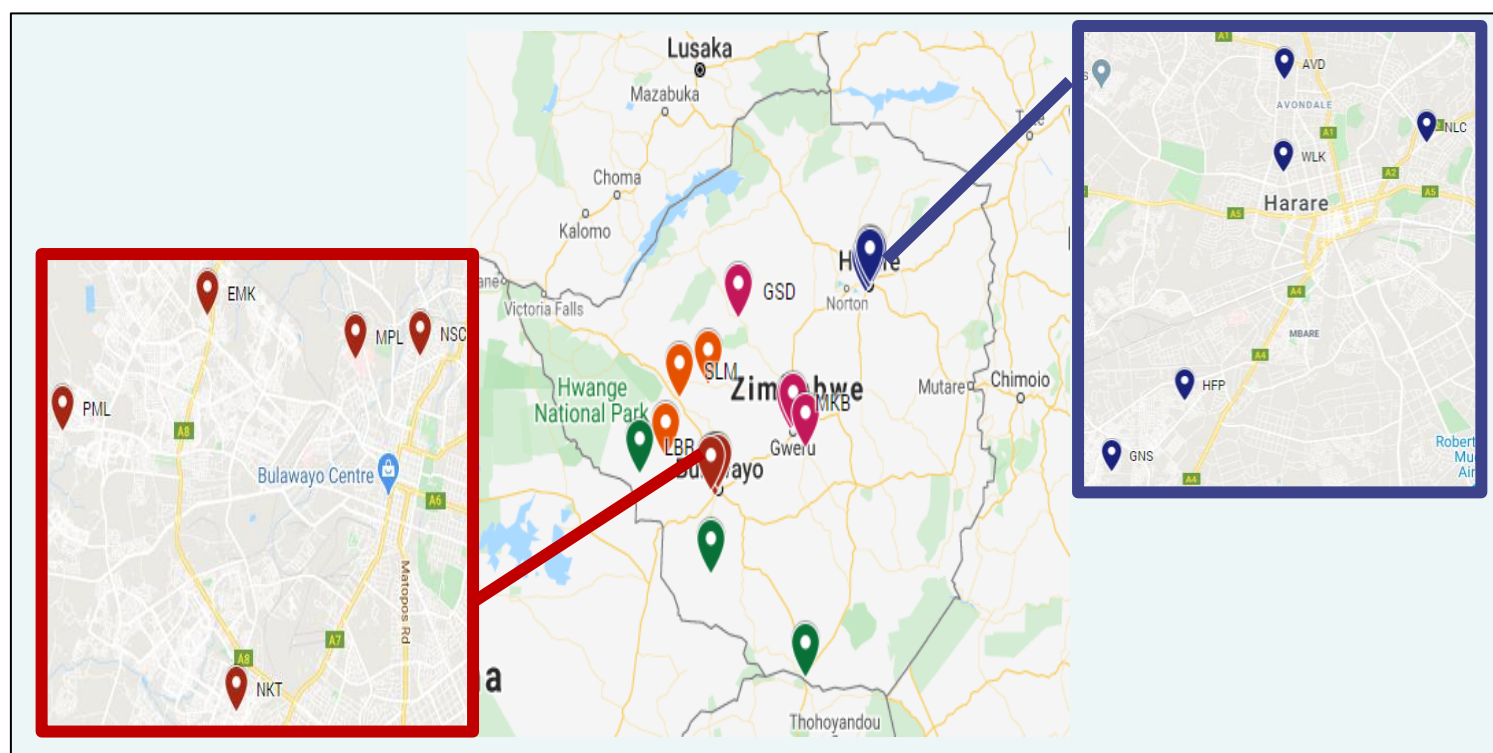
The study used a convergent parallel mixed-methods design. Quantitative and qualitative data were collected in the same phase of the research process to measure organizational readiness and to explore barriers and facilitators that may affect readiness to implement 3HP respectively. The elements were analyzed independently, and the findings were triangulated and interpreted together. The purpose of this approach was to illustrate quantitative results with qualitative findings, synthesize complementary results to develop a more complete, in-depth understanding of readiness, and to compare multiple levels within a system (21).

2.2 STUDY SETTING

The National HIV/AIDS and TB Control Program in collaboration with the IMPAACT4TB program aim to pilot 3HP in twenty public health facilities across five provinces in Zimbabwe. In this study, data was collected from four health facilities across Harare and Bulawayo Metropolitan provinces. The facilities in Harare Metropolitan included Highfields Polyclinic and Glen Norah Satellite Clinic, while in Bulawayo Metropolitan, the facilities included were Pumula and Northern Suburbs Clinics. The four facilities were purposively selected based on physical location, similar facility sizes with respect to high out-patient volumes and same access to technical support. Additionally, Harare and Bulawayo Metropolitan were the only provinces that had infectious disease hospitals which decentralized TB prevention programs to 90% of their clinics and hence it was expected that relatively higher out-patient volumes would access the 3HP intervention here (22) (**figure 2**).

The facilities in both provinces are located in poor, densely populated urban suburbs. For example, 80% of the population in Bulawayo province reside in high residential areas feeding into the strained Pumula clinic with an attending population of 20 912 and Northern Suburbs clinics with a population 27 651. Similarly, both Highfields and Glen Norah clinics are in the overcrowded South Western district of Harare province, the busiest area attending to a population of 83 351. Specifically, Highfields attends to a population of 29 939 and has a slightly higher flow of patients compared to Glen Norah which attends to 10 235 people(22).

Each of the four included primary health care level facilities have a nurse in-charge otherwise reversibly known as the facility manager, a minimum of three clinical TB nurses and a primary care practitioner that works with patients in the OI/ART department where they implement TB preventive services (3).The selected facilities operate from 7.30am to 4pm within weekdays. On average, the facilities have an daily out-patient department attendance of 199.



Facility	Abbreviation	Province	Colour
Northern Suburbs Clinic	NSC	Bulawayo	Red
Pumula Clinic	PML	Bulawayo	
Glen Norah Satellite Clinic	GNS	Harare	Blue
Highfields Polyclinic	HFP	Harare	

Figure 2.0 Study facilities selected in Harare and Bulawayo provinces

2.3 TARGET POPULATION

The target population for this study were facility level staff (health facility managers or more commonly referred to as charge nurses , TB nurses and primary care practitioners) that had worked on the frontline and will directly implement the 3HP program. In addition, key informants such as a subset of the health facility staff (Charge nurses, TB nurses and primary care practitioners) as well as non-frontline personnel within the implementation support

structure of the facilities (National level TB program managers inclusive of TB supply chain manager, the respective provincial-level TB coordinators from the National HIV/AIDS and TB Control Programs; and TB program managers from implementing and funding partners).

2.4 SAMPLING APPROACH

The study purposively selected 15 KII participants involved in the program that will implement 3HP in facilities. Based on Hesse-Biber (21), a minimum of 12 to 15 KII participants are deemed a sufficient sample required to reach data saturation which is dependent on the range of responses and heterogeneity of the target population. \$. As per Weiner's theory on organizational model guiding the study, readiness is measured at the supra-level and not at individual level (6). Therefore, the study aggregated individual level data to represent shared perceptions within facilities.

2.4.1 Inclusion Criteria

The following criteria were employed to select participants:

Inclusion criteria:

- Facility level staff (Charge nurses, TB nurses and primary care practitioners) that had worked more than 6 months in preventive TB care in the implementing facilities.
- Implementation support structure staff (National level TB program managers inclusive of TB supply chain manager, provincial-level TB coordinators, partner TB program managers) that had worked for more than 6 months within National HIV/AIDS and TB Control Program.

Exclusion criteria:

- Facility level staff that worked on other programmes and not involved in preventive TB services in the implementing facilities.
- Implementation support structure staff that worked on other programmes and not involved in the 3HP program.

2.5 DATA COLLECTION

The quantitative and qualitative data collection occurred simultaneously in time among various target groups. Data collection commenced in February and ended in March 2020.

2.5.1 Instrument for Quantitative Data

An organizational readiness questionnaire was distributed to measure the level of organizational readiness within the facilities. Respondents included the facility level staff (Charge nurses, TB nurses and primary care practitioners) at the implementing health facilities. The questionnaire used 5 point-Likert scale responses that comprised of eight sections (Appendix V). Section A consisted of demographic characteristics. Section B-E supported an ordinal level of measurement. Section H was the additional comments section consisting of open-ended questions. With regards to section B-E, the Likert technique consisted of a series of statements to which one responded using a scale of possible answers ; 5-Strongly agree, 4-Agree, 3- Neutral, 2-Disagree and 1- Strongly Disagree.

Table 1.0 5-point Likert scale in the questionnaire

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

The questionnaire also included open-ended questions about perceived limitations and recommendations (e.g. “What do you think will be critical to the success of the program? Please elaborate”). Given that literature states that there is no standardized organizational readiness questionnaire, the structured questionnaire was developed from the constructs of the Weiner Organizational readiness model (6).

The instrument was subjected to an internal consistency test to reinforce the reliability of the survey instrument. In this study, the Cronbach alpha was measured to derive the internal consistency (reliability) of the subscales and the composite scale. Additionally, the Cronbach alpha was measured to mitigate the common method variance (CMV) wherein biases in the way subjects self-report to questionnaires are prone to lead to inflated false internal consistency within the measurement tool (21). Biases through self-reported data include participants providing consistent answers to all survey questions (21). The overall Cronbach alpha of the readiness scale adopted was 0.92, a score above the threshold of 0.70. While resource availability had a low reliability score of 0.50, change commitment, efficacy, valence, task demands and contextual factors to implement 3HP in the facilities all had reliability scores of 0.76, 0.84 ,0.93 ,0.73 and 0.82 respectively (**Table 2**).

The hard-copy self-administered questionnaires were given in person to the participants by the PI and the data collector. This approach allowed for a maximized response rate given that staff

did not have access to electronic devices with internet access to complete the questionnaires. Thereafter, an online platform, REDcap survey, was used by both the PI and the data collector to capture data from hard-copies into a computer for data management analysis.

A pilot was not conducted due to time restrictions. Specifically, there were delays in acquiring letters of permission from the respective Health Service Departments in both provinces. Instead, a pre-test of both the qualitative and quantitative study tools was conducted by the PI in one province, namely Bulawayo Metropolitan before the main study to validate the tools to ensure that they prompted and elicited the information they were intended to. On pre-testing the instruments, there was the need to modify the wording in the instruments for the participants' improved understanding. The data from the pre-test was channelled to the main study data due to the scope and quality of data collected during the pre-test (23).

2.5.2 Instrument for Qualitative Data

The key-informant interviews used open-ended semi-structured interview guides (Appendix VI) to obtain relevant data that captured objective 3 of this study. The use of semi-structured interview guides was to clarify vague statements, allow the exploration of evolving themes and to yield a deeply experiential account of the state of facility readiness to implement 3HP in Bulawayo and Harare. The guide was adapted for the various key-informants to optimize the quality of data regarding the barriers and facilitators for implementation readiness. The interview was conducted by the PI in three of the main local languages namely English, Shona and Ndebele. Before conducting each interview, information sessions were held by the PI individually with the participants to inform them about the intervention, the aim, objectives and importance of the study. Written consent for audio recording of interviews and willingness to participate in the study was obtained from each participant (Appendix IV).

The interview guide had 9 main questions under different groups and touched on organizational readiness literature and the constructs of the Weiner model; the change commitment; change efficacy; change valence; task demands, contextual factors and the resource availability that could hinder or facilitate the readiness to implement the change of regimens within the facilities. This triangulation approach of two or more perspectives and sources of data on the theme of readiness in the development of the interview guide raised validity of the study. Demographic information such as gender, province, job position (program area), years of service and level of organization were also collected for each respondent. Data were collected

as audio recordings and field notes in a diary by the investigator to ensure richness in the qualitative findings reported, interpreted and discussed. The notes consisted of descriptive information including date, time, contexts, actions, participant behaviours, and reflective information such as the PI's thoughts, ideas, questions, and concerns during or after interviews. In addition, the field notes ensured transferability as they allowed the participants' contexts to be related to their experiences and behaviour in the findings, providing more meaning to the reader. Audio recordings were obtained to allow the investigator enough time to listen and transcribe interviewees' responses accurately. Two to three interviews were conducted per day lasting approximately 20-30 minutes with typed transcripts averaging 8 to 10 pages.

The interview guides had been pre-tested with participants from the first facility to ensure it elicited the information it was intended to and all necessary modifications were made to the guide by the PI. Fourteen (14/15) key informants participated in the interviews. One program manager was not readily available at facility 4 to participate in the interviews. The interviews were conducted privately by the PI at the participants' workplaces over a period of 5 days in Bulawayo and another 5 days in Harare. Subsequent to the first interview, the PI transcribed the interview and the following interviews were transcribed in real time. To ensure trustworthiness, member checking was done wherein findings were sent back to the participants for comment and/or correction. Additionally, the qualitative research steps transparently described from the development of the interview guide to the reporting of the findings enabled an audit trail raising the dependability and confirmability of the study results. The data collection tools are in Appendix V and VI.

2.2 DATA MANAGEMENT

2.2.5 Quantitative data

Data from the paper-based questionnaires were captured electronically into REDCap software to enable an audit trail for verification of data quality. The data was exported from REDCap to STATA 16 and cleaned by the use of descriptive commands to check for errors, duplicates and missing values in the data. Data from questionnaires with partial responses were included.

2.2.6 Qualitative data

Audio recorded interviews were transcribed verbatim. Data from the interviews were translated from Shona and Ndebele into English as necessary by the PI. The PI examined the transcripts to ensure comparable formatting until satisfied that there were no inconsistencies on the

transcripts. Reading and rereading of the transcripts was done thoroughly while simultaneously listening back to the audio-recorded interviews to check for errors and for familiarization of the data set to ensure accuracy and completeness for analysis (21). Each transcript was supplemented with notes made during and immediately after the interview, for example noting views given after the recorder was switched off. All the transcript data was combined with responses to the open-ended organizational readiness questionnaires that were imported into Microsoft excel for analysis in MAXQDA software. The PI developed a codebook in the software and regularly met virtually with the supervising researcher to review coded texts, discuss emerging themes and resolve disagreements by negotiating a consensus. Any further disagreements that could not be resolved were addressed by consulting an arbitrator, namely an experienced qualitative researcher. The last line of options was to report the disagreements in the study however none were reported.

2.3 DATA ANALYSIS

2.3.5 Quantitative analysis

Descriptive statistical analysis was performed and frequencies and percentages for categorical data and means (standard deviation) or medians (interquartile range) for numerical data. Responses from the organizational readiness questionnaire were presented descriptively using median scores due to non-normally distributed sub-scales, based on the Shapiro-Wilk test. Subscale median scores > 3.3 indicated areas of strength which translate to the idea of “readiness” in that the respondents generally agree that the facility has the attribute in a given subscale. Conversely, scores < 3.3 show areas of weakness and need attention prior to change efforts. The Kruskal-Wallis rank test was used to test differences within and between the facilities. The significance level was set at $p\text{-value} < 0.05$. In the event that the $p\text{-value}$ was less than or equal to the significance level, the null hypothesis was rejected and a conclusion made that not all the facility median scores were the same.

2.3.6 Qualitative analysis

Using the framework method, the study took a combined approach to analysis, enabling themes to be developed both inductively from the participant opinions, experiences and deductively from existing literature and Weiner’s model on Organizational readiness. The text in the transcripts was examined closely, line by line. Interesting segments of text were underlined and the left hand margin was used to make note of recurring themes from each passage of the transcripts. The right hand margin was used to record detailed notes, and ideas, for example

questions to consider as analysis proceeded. As the study was interested in the content, only long pauses, interruptions and non-verbal communication (laughter) were noted in the text. The recurring themes were collated into groups of similar themes and organized into the conceptual framework. The draft framework was applied back to the transcripts of raw data to explore the fit and to code the themes. The iterative process of refining and applying the draft framework occurred until there was no new codes generated which constituted the final framework. There was much similarity between the draft framework and the final framework. After data was coded according to the final framework, data was manually summarized into a matrix through the charting process using Microsoft excel. During this process, data was abstracted from transcripts for each participant and theme, summarized using verbatim words and inserted into the corresponding cells in the matrix (appendix XII). The final phase of the analysis was to synthesize the data. To ensure reliability and consistency of the analysis, two qualitative researchers duplicated the process and substantial agreement of results was observed among the duplications. Characteristics of KII participants including gender, duration in current position, program area and level of organization were retrieved and presented.

2.4 ETHICAL CONSIDERATIONS

Ethical approval to conduct the study was granted by University of Witwatersrand Human Research Ethics Committee Medical (HREC) in Johannesburg, South Africa (ethics clearance number M1911126; appendix VII) and the Medical Research Council Zimbabwe in Harare, Zimbabwe (ethics clearance number B/1845 ; appendix VIII). Additional approval to access facilities in Bulawayo was obtained from the Bulawayo Health Services Department under the Bulawayo City Council (appendix XI) and in Harare from the Harare Health Services Department under the Harare City Council (appendix X). Similarly, approval to access the National HIV/AIDS and TB Control Program personnel was obtained from the Ministry of Health and Child Care, Zimbabwe (appendix IX). All individual study participants were made aware that participation in the study was voluntary. In this study, confidentiality and privacy of the participants was ensured, by collecting data in the surveys without identifiers or linkages to participants (e.g. ID numbers or names) and allocating key informant interviewees pseudonyms. The collected data was stored on a password protected device within an encrypted vault only accessible to the primary investigator and hard copied data was scanned for electronic storage which was also password protected.

CHAPTER 3

3 RESULTS

This chapter presents the findings of the study. The section details the descriptive analysis, level of organizational readiness and perceived barriers and facilitators of the implementing facilities.

3.1 Descriptive Analysis

3.1.1 Selection of Facilities and Study Participants

Nineteen out of twenty participants from the four facilities completed the ORIC survey yielding a 95% survey response rate. No participants were excluded as they had all worked in TB programs for more than 6 months. One participant was not available to complete the survey. Fourteen of the fifteen key informant interviews elicited a 93% response rate. One participant, a TB program manager was non-responsive therefore not available for interviewing. The study's overall response rate was 94%. **(Figure 3)**.

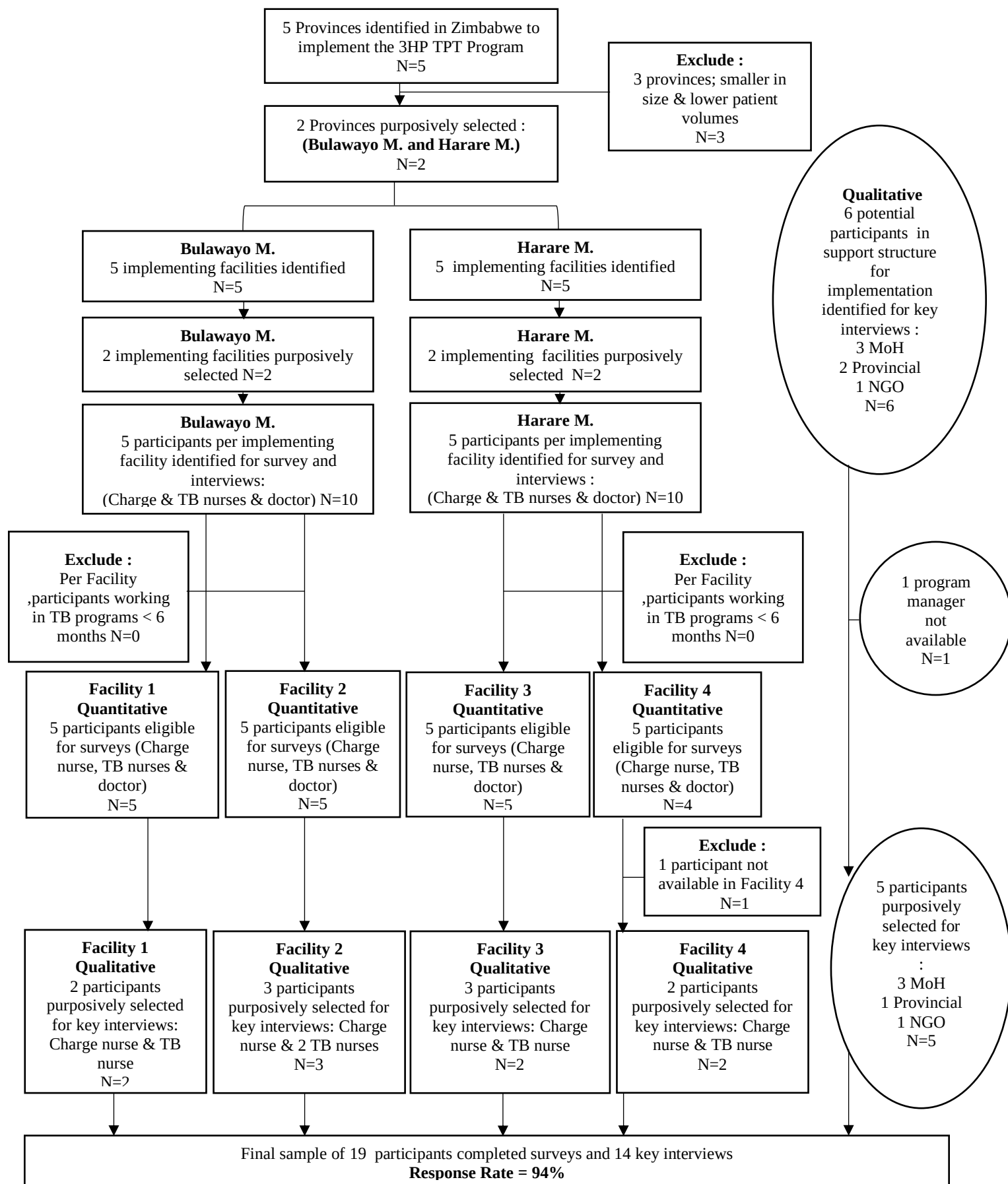


Figure 3. Flowchart showing selection of study facilities and participants

3.1.2 Demographic Characteristics of Survey Participants

The survey participants (Table 1) included nurses (73.7%, n=14), charge nurses (15.8%, n=3) and primary care practitioners (10.5%, n=2). There were more females (84.2%, n=16) as compared to the males (15.8%, n=3). Majority of facility 1 respondents were aged above 50 years (80.0%, n=4), while majority of the respondents in facility 3 were aged between 40 – 50 years (60.0%, n=3) and similarly in facility 4, most of the respondents were aged between 40 – 50 years (50.0%, n=2). There were no participants (0%, n=0) who had provided TB services for 6 – 11 months however most had provided TB services for more than 2 years (79%, n= 15) with 100% of the facility 3 respondents having provided more than 2 years of TB service. Between the two provinces, Bulawayo Metropolitan had slightly more respondents in the facilities (52.6%, n=10) compared to Harare Metropolitan (47.4%, n= 7) (**Table 1**).

Table 1. Demographic Characteristics of Survey Participants in the Implementing Health Facilities.

Characteristics		Total N(%)	Facility 1 n (%)	Facility 2 n (%)	Facility 3 n (%)	Facility 4 n (%)
Sex	Female	16(84.2)	4(80.0)	5(100.0)	5(100.0)	2(50.0)
	Male	3(15.8)	1(20.0)	0(0.0)	0(0.0)	2(50.0)
Age Group	18 - 29	2(10.5)	0(0.0)	0(0.0)	1(20.0)	1(25.0)
	30 – 39	2(10.5)	1(20.0)	1(20.0)	0(0.0)	0(0.0)
	40 – 50	7(36.8)	0(0.0)	2(40.0)	3(60.0)	2(50.0)
	Above 50	8(42.1)	4(80.0)	2(40.0)	1(20.0)	1(25.0)
Role In Facility	Charge nurse (Facility manager)	3(15.8)	1(20.0)	1(20.0)	1(20.0)	0(0.0)
	TB Nurse	14(73.7)	4(80.0)	4(80.0)	4(80.0)	2(50.0)
	Primary care practitioner	2(10.5)	0(0.0)	0(0.0)	0(0.0)	2(50.0)
Years Of Providing TB Services	6 – 11 months	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	1 year to 2 years	3(15.8)	1(20.0)	1(20.0)	0(0.0)	1(25.0)
	More than 2 years	15(79.0)	3(60.0)	4(80.0)	5(100.0)	3(75.0)
Province	Harare Metropolitan	7(47.4)	0(0.0)	0(0.0)	5(100.0)	4(100.0)
	Bulawayo Metropolitan	10(52.6)	5(100.0)	5(100.0)	0(0.0)	0(0.0)

3.2 Level of Organizational Readiness in the Four Facilities

The overall OR median score across the four facilities was 3.8 (IQR 3.3 – 4.1) above 3.3, the chosen cut-off point for acceptable level of readiness (Table 2).

At individual facility level, three of the four facilities had median scores above the readiness cut-off point. Facility 4 within Harare Metropolitan province had an OR median score of 3.2 (IQR 2.7 – 3.3), below the cut-off. Low median scores were presented in the facility's contextual factors 2.5(IQR 2.0 – 3.3), task demands 2.6(IQR 2.3 – 2.9) and resource availability 2.1(IQR 1.5 – 2.5). The change commitment 3.7(IQR 3.1 – 4.2), change efficacy 3.3(IQR 2.8 – 3.6) and change valence scores 4.2(IQR 3.3 – 4.8) of facility 4 were above the cut-off. Alternatively, Facility 3 within Harare province had the highest OR median score of 4.0 (IQR 3.8 – 4.2) although it presented a low resource availability median score of 3.0 (IQR 2.8-3.3). Consequently, Bulawayo Metropolitan's facility 1 had a high level of readiness with an OR median score of 3.9(IQR 3.9 – 4.0). The facility presented high median scores in the change commitment, efficacy, valence, contextual factors, task demands. Nevertheless, facility 1 presented a low median score of 2.8(IQR 2.5 – 3.3) in the resource availability. Facility 2 in Bulawayo Metropolitan province had an acceptable OR median score of 3.6(IQR 3.4 – 4.1) however a low resource availability median score of 2.8(IQR 2.5 – 3.3).

Significant differences were noted in the overall OR scores between the four facilities ($p=0.039$) (Table 2). Within Harare province, significant differences were identified between facility 3 and 4 ($p=0.016$) wherein facility 3 readiness score was the highest compared to facility 4 which presented the lowest score below the threshold. Although there were no statistically significant differences in the change commitment, change efficacy, valence and task demands scores within provinces and between the four facilities across the provinces; significant differences were identified in the contextual factors between facility 3 and facility 4 within the Harare province ($p= 0.016$) and in the contextual factors between all of the four facilities ($p=0.011$). Marginal significant differences were found in the resource availability scores between the two Harare facilities ($p = 0.048$) (**Table 2**).

Table 2. Organizational Readiness Scale and Subscale Scores.

		Bulawayo M.			Harare M.			Total OR	
		Facility 1	Facility 2	P-value	Facility 3	Facility 4	P-value	Median (IQR)	P-value
	Cronbach's alpha	Median (IQR)	Median (IQR)		Median (IQR)	Median (IQR)		Median (IQR)	P-value
Overall Organizational Readiness Scale Per Facility	0.92	3.9(3.9-4.0)	3.6(3.4-4.1)	0.691	4.0(3.8-4.2)	3.2(2.7-3.3)	0.016*	3.8(3.3-4.1)	0.039*
1.Change Commitment	0.76	4.0(4.0-4.2)	4.0(3.8-4.6)	1.000	4.0(4.0-4.6)	3.7(3.1-4.2)	0.095	4.0(3.8-4.6)	0.364
B1.Committed		4.0(4.0-4.0)	5.0(5.0-5.0)		5.0(4.0-5.0)	4.0(3.5-4.5)		4.0(4.0-5.0)	
B2.Want to		4.0(4.0-4.0)	5.0(5.0-5.0)		5.0(4.0-5.0)	4.0(3.5-4.5)		4.0(4.0-5.0)	
B3. Motivated		3.0(3.0-4.0)	4.0(3.0-4.0)		4.0(4.0-5.0)	3.0(2.5-4.0)		4.0(3.0-4.0)	
B4. Whatever it takes		4.0(4.0-4.0)	4.0(3.0-4.0)		4.0(4.0-4.0)	3.5(3.0-4.5)		4.0(3.0-4.0)	
B5. Determined		5.0(4.0-5.0)	4.0(4.0-5.0)		4.0(4.0-4.0)	3.5(2.5-4.0)		4.0(4.0-5.0)	
2.Change Efficacy	0.84	4.0(3.8-4.2)	4.0(2.8-4.2)	0.333	4.0(4.0-4.3)	3.3(2.8-3.6)	0.095	4.0(3.5-4.2)	0.086
C1. Keep momentum going.		4.0(4.0-5.0)	4.0(3.0-5.0)		4.0(4.0-4.0)	3.0(2.5-4.0)		4.0(3.0-5.0)	
C2.Support staff as they adjust		4.0(4.0-4.0)	4.0(3.0-5.0)		4.0(4.0-4.0)	3.5(2.5-4.0)		4.0(3.0-4.0)	
C3.Get the staff invested		3.0(2.0-4.0)	3.0(2.0-3.0)		4.0(4.0-4.0)	2.5(2.0-3.0)		3.0(2.0-4.0)	
C4. Coordinate tasks for smooth implementation.		4.0(4.0-4.0)	4.0(2.0-4.0)		4.0(4.0-5.0)	3.5(3.0-4.0)		4.0(4.0-4.0)	
C5. Handle challenges that arise		5.0(4.0-5.0)	4.0(3.0-4.0)		4.0(4.0-4.0)	3.5(2.5-4.0)		4.0(3.0-4.0)	
C6. Keep track of progress during implementation.		5.0(4.0-5.0)	4.0(3.0-4.0)		4.0(4.0-4.0)	3.5(3.0-4.0)		4.0(3.0-5.0)	

3.Change Valence		0.93	4.2(3.8-5.0)	4.8(4.7-5.0)	0.381	4.3(4.0-4.8)	4.2(3.3-4.8)	0.603	4.7(4.0-5.0)	0.530
	D1.3HP regimen better than standard regimen to meet needs of patients		5.0(3.0-5.0)	5.0(5.0-5.0)		4.0(4.0-5.0)	4.5(3.5-5.0)		5.0(4.0-5.0)	
	D2. Need to implement		4.0(4.0-5.0)	5.0(5.0-5.0)		4.0(4.0-5.0)	4.5(3.5-5.0)		5.0(4.0-5.0)	
	D3.Change will benefit facility and patients		4.0(4.0-5.0)	5.0(4.0-5.0)		4.0(4.0-4.0)	4.5(3.5-5.0)		4.0(4.0-5.0)	
	D4. 3HP is cost-effective		5.0(4.0-5.0)	5.0(4.0-5.0)		4.0(4.0-5.0)	3.5(3.0-4.5)		4.0(4.0-5.0)	
	D5. Value this change		4.0(4.0-5.0)	5.0(4.0-5.0)		5.0(4.0-5.0)	4.0(3.5-4.5)		4.0(4.0-5.0)	
4.Task Demands	D6. Implementing change is a good idea.	0.73	5.0(4.0-5.0)	5.0(5.0-5.0)		5.0(4.0-5.0)	4.0(3.0-5.0)		5.0(4.0-5.0)	
			3.8(3.8-4.0)	3.8(3.3-3.8)	0.746	4.0(3.8-4.0)	2.6(2.3-2.9)	0.079	3.8(3.0-4.0)	0.057
	E1.Coordinating change not a burden		4.0(3.0-4.0)	3.0(3.0-4.0)		4.0(4.0-4.0)	3.0(2.5-3.5)		4.0(3.0-4.0)	
	E2. Implementing change not a strain to workload		2.0(2.0-3.0)	3.0(2.0-4.0)		4.0(3.0-4.0)	2.0(1.5-2.5)		3.0(2.0-4.0)	
	E3.Integration with existing workflow not a challenge		4.0(4.0-5.0)	4.0(3.0-4.0)		4.0(4.0-4.0)	3.0(2.0-3.0)		4.0(3.0-4.0)	
	E4. Coordinating change within patient treatment schedule not challenging		4.0(4.0-4.0)	4.0(4.0-5.0)		4.0(4.0-4.0)	2.5(2.0-3.5)		4.0(4.0-4.0)	
5.Contextual Factors		0.82	4.3(4.0-4.3)	3.5(3.3-3.8)	0.056	3.8(3.8-4.3)	2.5(2.0-3.3)	0.016*	3.8(3.3-4.3)	0.011*
	F1.Other programs within facility will support change.		4.0(4.0-5.0)	4.0(4.0-5.0)		4.0(4.0-5.0)	3.0(2.0-4.0)		4.0(4.0-5.0)	

6.Resource Availability	F2.The facility has good past experience of implementing programs	0.50	5.0(4.0-5.0)	3.0(3.0-4.0)	0.238	4.0(4.0-4.0)	2.5(2.0-3.5)	0.048*	4.0(3.0-4.0)	0.093
	F3.Senior leaders are supportive		4.0(3.0-4.0)	3.0(2.0-3.0)		3.0(3.0-4.0)	2.0(2.0-2.5)		3.0(2.0-4.0)	
	F4. A system is in place to monitor how well change is implemented		4.0(4.0-4.0)	4.0(4.0-4.0)		4.0(4.0-4.0)	2.5(2.0-3.0)		4.0(3.0-4.0)	
	G1. Staffing allocated are sufficient		2.8(2.5-3.3)	2.3(2.3-2.5)		3.0(2.8-3.3)	2.1(1.5-2.5)		2.5(2.3-3.3)	
	G2. Receive enough resources in the facility for sustainable change		2.0(2.0-2.0)	1.0(1.0-2.0)		2.0(2.0-4.0)	1.5(1.0-2.0)		2.0(1.0-2.0)	
	G3.Receive adequate training		2.0(2.0-4.0)	2.0(1.0-3.0)		2.0(2.0-3.0)	1.5(1.0-2.0)		2.0(1.0-3.0)	
	G4.System in place to ensure continuous drug supply.		4.0(4.0-5.0)	3.0(3.0-3.0)		4.0(3.0-4.0)	4.0(3.0-4.0)		4.0(3.0-4.0)	
			3.0(2.0-3.0)	3.0(3.0-4.0)		3.0(3.0-4.0)	1.5(1.0-2.0)		3.0(2.0-4.0)	

***Significant at 0.05**

3.3 Perceived Barriers and Facilitators

Six (n=6) TB nurses and three (n=3) charge nurses were among those interviewed at facility level. Additionally, five (n=5) program managers from the implementation support structure of the facilities (National , provincial and NGO levels) were interviewed. Four participants were male while ten were female. Work experience ranged from 1 to 17 years (**Table 3**).

Table 3 Characteristics of IDI Participants

Participant	Gender	Duration in current position (years)	Program area	Level of Organization
IDI 1	Male	4	MoHCC program manager (National TB program)	National (central)
IDI 2	Female	3	MoHCC program manager (National HIV/TB program)	National (central)
IDI 3	Male	5	TB medicines supply manager MoHCC	National (central)
IDI 4	Female	6	TB program manager	Provincial (subnational)
IDI 5	Female	2	TB program manager	Non-governmental organization
IDI 6	Female	17	Charge nurse	Facility 1
IDI 7	Female	10	TB nurse	Facility 1
IDI 8	Female	7	Charge nurse	Facility 2
IDI 9	Female	10	TB nurse	Facility 2
IDI 10	Female	3	TB nurse	Facility 2
IDI 11	Female	8	Charge nurse	Facility 3
IDI 12	Male	2	TB nurse and focal person	Facility 3
IDI 13	Female	1	TB nurse	Facility 4
IDI 14	Male	7	TB nurse	Facility 4

Emerging perceived barriers and facilitators are presented per construct. The key findings are further presented in summary (**Figure 4**).

Change Commitment

Facilitators

The managers in the TB program believed that there was an overall stakeholder buy-in and willingness to commit to the program change. A MoHCC program manager under the national HIV/TB program (IDI 2) believed that “*it is worthwhile to change to the 3HP.*” It was further reported that a range of directorial stakeholders within the health system across all provinces had pledged their commitment to program implementation. A MoHCC TB program manager (IDI 1) working on the TPT portfolio with 4 years’ experience had the following to say:

“We also have this commitment and acceptance from the various medical provincial directorates. They are also aware of the prevention program and they welcome it”

Moreover, managers believed that the cascade of health workers at the different levels of the health system were equally motivated by the scope of the intervention which reduced facility visits among patients. *“The staff is motivated right from the national level down to the sub national level...I think the nature of the intervention itself is motivating. The fact that the 3 months regimen is not taken daily but once a week ; that on its own is motivating to the health provider and the client receiving the regimen,”* explained a MoHCC manager of the National TB program (IDI 1). Similarly, most facility staff were optimistic and they expressed willingness for implementation. A facility 1 TB nurse (IDI 7) reported that

“We are positive, and we are willing to adapt to the program and implement it.”

Managers also generally reported that through awareness and demand generation for 3HP created by organizations and civil societies, there was excitement amongst patients within communities who have started requesting for the regimen change. *“We have been working with a lot of community support organizations and civil societies. They have also been generating demand in communities and so yah I can definitely say there is a lot of excitement... So, this is not just health care workers pushing it to patients but actually patients coming in to ask to receive this therapy in place to the current one they are on, ”* explained a TB program manager from a partnering NGO with 2 years’ experience.

Barriers

Commitment was indicated to be temporary and contingent on staff remuneration, workload and a constant supply chain management in the facilities. For example, facility 3 reported that *“if they get what to use, they are willing to work , ”* as stated by the charge nurse (IDI 11). Similarly, the MoHCC program manager (IDI 1) stated that

“The shortage of medicines can draw back the motivation of health care workers.”

Meanwhile facility 2 staff reported that the possibility of demotivation was driven by their unsatisfactory remuneration conditions however they were willing to work for their patients. A TB nurse and focal person (IDI 12) echoed this and reported that

"...when working with the patients now it is very difficult to ignore them because they are not the ones who are supposed to pay me. But eish it is very difficult."

Facility 1 staff reported that their already strained workload caused burnouts therefore rewards were necessary to motivate them. A charge nurse (IDI 11) reported that

"When it comes to burnouts, [pause] they will be complaining that they are tired and they will not be motivated...The incentives motivate them."

Although most of the facilities indicated conditional commitment, facility 4 respondents were not willing to implement the program due to their perceived on-going facility issues. *"Considering we have our own challenges already yeah I don't think people will quickly embrace it,"* explained a TB nurse (IDI 14) with 7 years' experience within the facility. The staff further suggested the need for adequate human resources as well as a guarantee from management for the uninterrupted supply of the needed drugs to ensure continuity of the program which they were currently struggling with.

Change Efficacy

Facilitators

The management level believed that similar to the HIV program, the nurses could easily lead implementation and oversee the program change in the facilities. A MoHCC program manager under the national HIV/TB program (IDI 2) explained that:

"...our HIV program is nurse led, happening at the lowest level of facilities, so they are very well capable to implement this program."

Management believed that the change was going to be a *"clear process"* (IDI 1) while the facility staff particularly facility 2, stated that the program was going to be straightforward given that they were going to be trained and given guidelines. A TB nurse (IDI 10) described that *"where there are guidelines, its easy...the person should have time to read over and understand what they mean. As soon as they grasp them, they are easy to follow. The guidelines actually help and are easy to understand."*

In a bid to increase acceptance and accountability of the program among staff, management reported that they aimed to sensitize and train "90 to 100%" of the staff in facilities.

Barriers

Facility 1 and 3 staff self-reported negative attitudes towards TB programs and patients which management acknowledged. Both levels of participants explained that the staff attitudes emanated from the increased adverse events among initiated IPT patients which reduced staff confidence to implement TPT and resulted in negative attitudes from their patients. Both perspectives are described as follows

"We have been suffering from poor uptake of the TPT program by several facilities - that is the IPT program... we had negative attitudes from the service providers and then the patients themselves... knowing the possibilities of the adverse events." (IDI 1).

"The problem is that most of the nurses have attitude towards those patients. I am sorry to say (uhm) but that is very natural. Attitude towards those TB patients with the fear that they will catch TB in the process of nursing them..." (IDI 12).

The staff also reported a lack of confidence in the momentum to consistently implement 3HP in facilities as there are frequent issues such as the shortage of drugs. A TB nurse (14) described that *"...the kickstart will be okay but on the way you find some problems cropping up...like there can be no medicines for some time."* Additionally, staff confidence was reportedly affected by a lack of continuous training after initial implementation of programs to accommodate new recruits that constitute *"70% of the facilities"*. Nonetheless, there remains a challenge of misinterpretation of the Ministry guidelines due to different perspectives among trained staff therefore program implementation does not normally go as planned. The TB medicines supply chain manager at central level (IDI 3) explained that *"...we realized that the staff were initiating people on the current regimen yet they were not eligible...so the staff had everything and the eligibility criteria but their interpretation of that eligibility criteria was different and so those are some of the things that we need to put into consideration."* Suggestions given by staff was the need for adequate training dedicated to the program change and to simplify tools used within the facilities especially registry.

Both the management and facility level staff further reported that communication is often lost along the chain of command within the program which slows down implementation within the facilities. The staff stated that the informal nature of the communication

caused the communication gap hindering them from attending beneficial training. In the event that they do go for the training despite improper communication, the training does not go well. A TB nurse (IDI 12) from facility 3 had this to say

"The challenge that I have noticed is that of communication. We are told to attend a workshop very late. We need time to prepare and that is point number 1...we also want our bosses to be notified in writing, proper communication [pause], proper documentation which supports that. For example, we once attended a workshop hosted by an NGO in collaboration with the Ministry of Health... things did not go well because we did not have a document which showed what we were supposed to be doing there or what we intended to do. They did not know what we had even come for there[Laughing]...communication is very essential."

A MoHCC manager (IDI 2) acknowledged that there are challenges with communication however facilities do not play their part in rectifying the system's shortcoming.

"We write memos from national to province, province to district, district to facility. If there is break in the communication channel, it is possible to get to a facility and they tell you that they have not received that communication, so they are not doing anything about it."

There was also a perceived need to improve coordination in the program's implementation at both management and staff level. A MoHCC manager reported that a lot of stakeholders in the program work in silos to have their own vested interests catered for instead of collective interests as an organization.

"We have a lot of stakeholders and sometimes it is not everyone who plays nice. Everyone wants to make sure that their own interests are attended to you know."
(IDI 12)

Within the facilities, coordination of program activities is affected by the flexi-hour system where nurses rotate and only work two days a week. The challenge is that the nurses are transferred for the next rotation immediately after familiarizing themselves with the day-to-day management of the program, and the next person replacing has to familiarize with that work station again. This is said to affect coordination of effective, consistent program implementation. A TB nurse (IDI 7) explained that

"Now the rotations that are there, the TB nurses or the OI nurses that are there are so used to the routine. Everything is smooth sailing and then you have to be

changed... I'm said to go to maternity then somebody new has to come here to OI and start adapting to this whole thing. For a while that would be a challenge."

Lastly, systematic challenges including a poor monitoring and evaluation system was reported by all the respondents wherein low reporting of cases initiated on treatment occurred. At the MoHCC, a TB medicines supply chain manager (IDI 3) additionally reported that the low incidence of reporting was also due to "... varied issues from lack of knowledge, capacity issues among facilities, even them being overwhelmed , too much work to do, duty issues..." The partnering NGO also suggested that '*there is great need for management to work with facilities on the ground*' at the early stages of implementation through supervisory visits and refresher trainings to enable strengthened data management and reporting.

Change Valence ***Facilitators***

A positive factor was the perceived program appropriateness which was the relevance and compatibility of the 3HP innovation to address problems within the existent program. A TB program manager (IDI 5) stated that "*we do believe a lot of issues from the previous regimen , IPT will be addressed...*" A TB nurse with 10 years' experience (IDI 9) implementing TPT further explained that

"At least I would be giving them for 3 months, it's just a short duration, we will be done. The 6 months was a bit hectic and sometimes we would even forget...for the first time I think the three months will be manageable as compared to the 6 months treatment."

Similarly, the change effort was perceived as a need and was described to be timely as to alleviate medicine stockouts that facilities were experiencing. "*The timing is right...we are running short of the current IPT medicines,*" explained a TB nurse from facility 2. Additionally, all facility staff expressed that the program would be regarded as a priority as TB care was one of two core programs within the facilities. A charge nurse (IDI 8) echoed this as follows,

"TB is one of the priorities in any council clinic so I believe if 3HP is a prevention strategy as part of TB programs, it would be a priority here."

Similarly, another charge nurse (IDI 11) expressed that "*there is a need for such programs, we need to prevent latent TB. Prevention programs for TB must come first."*

The staff further discussed the relative advantages the program may offer such as lower risk of mortality for their clients whom they develop a bond with. A TB nurse working in her position for 3 years had the following to say:

"In the OI department, we get so attached to our patients. If one of our patients die because of TB, we feel pain because we will be attached to them. So I am happy with 3HP. It will reduce mortality rate. It is an advantage for our patients."

A TB nurse and focal person (IDI 12) believed that the change effort would be cost-effective for patients stating that *"...it actually brings with it a lot of relief, to the community in the sense that it provides low cost strategy in the long run. Patients are not required to continue coming to the clinic because treatment duration will be cut down which reduces the frequency of visits so it is less transport cost for them. Now they complain that it costs them to keep coming to the clinic for the 6-month treatment."*

Facility staff also believed that the program would be of beneficial value to them and their health indirectly as they feel the treatment may reduce the risk of TB transmission within their workspace.

Barriers

The recurring perception was that if patients were not interested nor valued the regimen, the program implementation would be negatively affected regardless of high valence among facility staff. This was a focal point for seven of the fourteen participants, and examples of their responses included:

"Yes, we are saying 3HP will produce good results but the challenge comes on clients...telling clients to come every week for resupplies it can be a challenge...clients are already complaining of taking a lot of pills" (IDI 14).

"The challenge with preventive therapy, patients do not really feel the disease so, they don't really see the reason for taking it. We have to anticipate that." (IDI 5).

"The 3HP pill burden is huge...So for us we might be happy that it is a short regimen but the burden then comes to the patient or the recipient of care. They are the ones who are going to decide whether they are willing to take 10, 13 tablets once a week at once or they want to take 1 or 2 tablets every day for 6 months." (IDI 2).

The trade-off between a higher pill burden over a shorter period of time versus lower pill burden over a long period of time and attitude toward preventive therapy were factors that could affect the patient value of the program change.

Task Demands

Facilitators

Managers believed that the change requires basic effort which was positive. A MoHCC program manager (IDI 1) reported that staff in the facilities will be provided with the materials and tools necessary to guide them with little effort required. The manager explained that

"A lot of printed flow charts will be stuck on the walls of the facilities...even without opening the book but by just looking on the wall, they can see any SOP and they will be easily guided."

A provincial manager of 4 years (IDI 4) anticipated smooth integration of programs as rendered previously and stated that *"we have implemented programs in the past very well...the IPT was already integrated so we would think we will have no problems integrating this TPT into the program."* Overall, management expressed positive insights in contrast to facility.

Barriers

Regardless of the perceived basic effort reported by the managers, there was an anticipated challenge of increased workload with the introduction of the 3HP program amongst the staff in all of the facilities. *"It is still difficult on their workload," explained a TB nurse in facility 4. "Programs just come and get piled on the same person, today is TB then tomorrow is HIV then tomorrow it's this...it is a lot of work,"* a TB nurse in facility 1 reported. A charge nurse (IDI 6) explained that "complex registers" strained their workload and reported that

"Each program comes with new registers... we have so many registers besides our work to enter...we have to fill this register, now I go to the EPI program there are registers, you go to the OI program - a heap of them and now the TPT [laughter].That's the only challenge we can really have with the work load..."

Although some facilities reported that the increased workload was due to facility staff shortages, a MoHCC program manager (IDI 1) stated that the workload should not be a challenge as staff were expected to *"synchronize their activities, to harmonize their service provisions and provide services under a one stop shop approach"*

The second barrier included time constraints within the staff schedules due to increased patient to staff ratios. As a result, a charge nurse (IDI 6) reported that there was an inability to complete

all their tasks and stated that they “...cannot help all of the patients in a day, the ratio of all patients to health personnel is hectic.” The time constraint was also explained to be due to the flexi-hour working system. A manager at central level (IDI 1) explained that

"The flexi hours, you would find that those that have been trained will be with the patients for lesser hours which is a challenge."

However, a nurse (IDI 10) reported that *"there is nothing we can do about the time, but we have to just fit it in given that we understand that it is really important."*

Contextual Factors

Facilitators

Management reported that there is “political commitment” and support in the form of continuous on-site trainings and mentorship for the facilities within the National HIV/TB program. Managers further stressed that the importance of the initial implementation phase was for management to show support to their facilities which in turn will allow for staff to follow suit and support their TPT patients. A MoHCC program manager echoed and explained this

"We have buy-in from both the sub-national and national implementers as well as civil society on the country's implementing mechanism...they have always appraised these new developments and have always approved them. So, we have a backing on all such... we will continue to visit facilities and make sure that whenever they come across patients, they will support them the same as we get support. That is the importance of this initial phase."

Moreover, management and staff both also believed that facilities are accustomed to research and innovation which will facilitate change implementation. A charge nurse (IDI 11) explained that

"People are not resistant to change. There are a lot of programs that are coming, and they are dynamic and there is need to move we cannot stay in one place."

Overall, staff believe programs need to evolve and are welcoming to constant change in their work environments.

Barriers

Support and managerial oversight is inconsistent in facilities affecting facility staff. A TB nurse and focal person (IDI 12) described their experience.

"Visit us periodically. Not just introducing a program and go [laughing]...In the [name of organization] program it is also a TB program, we only did a workshop last year. They are not following up on us. They gave us tablets (uhm) and the data is actually a problem. They are not doing what we expected from them...When you launch a program you are supposed to follow your aim to be successful but if you do not follow, you will not reach your aim...and we here in the clinic will be like those people who will not be coming."

Support of staff in terms of their wellbeing was no longer made available as in the past which exposes them to infectious TB patients. They explain that they are “*exposed waiting to get sick.*” Facilities also state that they have experienced negative encounters with patients in the past such as adverse events while implementing TPT programs which the managers reported that they are aware these can impact staff confidence. A TB nurse recounts her experience (IDI 9)

"What happened here at the clinic...there are these bad side effect that happened to our patients eeheh [shakes head] ...one of my colleagues, we were together in the room when a patient developed [pause], it was like a syndrome or something like that. The patient is in a wheelchair till today, whenever they come to clinic, we feel bad. What if it happens to me that I am the one with two or more that are put in wheelchairs?"

The managers believed that the whole organization “*...has not been performing well in the last few years*” regarding TPT and the culture of slow program implementation in the facilities could affect this program change. A nurse in facility 2 (IDI 10) gave an example;

"At times they take long because of the availability of the drug for example introducing [name]. It was introduced in 2015, we only started giving it last year [laughs] as in 2019.Four years later."

Resource Availability **Facilitators**

Managers at national level reported that efforts were made for the program’s smooth logistic flow in facilities. A program manager (IDI 1) explains

"We did the forecasting and quantification of the TB medicines in general. We also did the quantification for the TPT because we had already taken into account the WHO system from 2018 so within our procurement system we are also including that procurement of TPT medicines"

Moreover, the consistent supply of drugs is ensured through supply and program matching at central level alternatively, in the event that drug supply within the province is interrupted, emergency stocks are ordered at the central level with a turnaround time of two weeks. A manager working in TB medicines supply for 5 years (IDI 3) echoed this description.

"We look at our plan holistically and based on what we can get , we start off by initiating 10% of our clients and monitor the progress. That is how we see that our supply and programming match. This reduces ruptures within the supply in our programs...there is also a mechanism in place where facilities can place emergency orders from the central stores and depending on the province they are in, there is a turnaround time of about two weeks"

The program manager from the partnering NGO (IDI 5) explained the importance of partnerships between organizations and the Ministry for the program's funding.

"We also made sure to choose sites supported by PEPFAR to ensure sustainability of this work. One; because these are supported in terms of staffing, and two; TPT scale up is a priority with PEPFAR"

Partnerships were deemed as a major necessity to maintain resource capacity.

Barriers

Management acknowledged a recurring human resources shortage challenge at the facility level however staff reported that management does not address their concerns. A TB nurse in facility 4 (IDI 14) reported that

"There is no support in terms of staff... the bosses don't take it seriously [pause]...the cry of staff has been there since the year 19 - I don't know...So to them I think it's now just a parotic sound [laughs]...on the ground it's a real problem but we are made to live with it so I don't know whether anyone is going to hear us because they will be just saying live with it."

Notwithstanding, a MoHCC program manager (IDI 1) explained that *"There is high turnover of the staff, especially those who would have been trained about the program. They leave the facilities after being trained. "* Moreover, staff reported that there was a lack of incentives and irregular remuneration within the implementing facilities due to management at central level not being favourable of the concept . As explained by a charge nurse (IDI 6),

"...sometimes with the city council, the NGOs might bring incentives for the nurses but our bosses I don't know if they become jealous of the incentives, they can sometimes turn down those incentives and say no there is no need, council is

paying them... that time we have got a back log of being paid. We have not been paid from February [whispering] but we are working, we struggle. "

Despite the reported program and supply matching at national level, a provincial manager (IDI 4) suggested that *"the most important thing is to sort out the logistics before it all starts, not in bits and pieces...there were erratic supplies of late...the logistic flow was not good. You find that drugs are plenty in one province and in another there is nothing."* Staff in facility 4 stressed that the 6-month IPT program had irregular supplies and faced isoniazid shortages although at initial implementation they were informed that stocks would be distributed adequately. This affected their perception of the change effort supply as asked by a TB nurse (IDI 14);

"Is it going to be continuous supply of the drug or there will be hick ups just like the previous 6 months' program? ...The program was said to be implemented to everyone but 2 months down the line there was shortage of INH."

The TB program manager from the partnering NGO (IDI 5) reported that production capacity and 3HP pricing were external barriers to the supply chain beyond control.

" The supplier's capacity did not turn out to be what they had initially committed [pause] so they could not commit to the volumes that our country needed... another thing was that the drug price that we had agreed on for the national scale up and sustainability had not been reached yet so all these are things that delayed rollout at country level."

It was further stated by the manager that *"...we anticipate further delays now with the COVID-19 pandemic."* Nevertheless, provision for sustainable funding after the initial implementation phase remains unclear as the program heavily relies on partnering and actively present NGOs within the facilities. An application for funding towards the scale-up of the program was still in the development stages as explained by a MoHCC program manager (IDI 1),

"CHAI will assist us in this initial stage and maybe going forwards PEPFAR funding will then come in. Then the Global Fund GF application will then take care of the same...we are in the current phase of developing that."

The partnering NGO committed to the first 4 years of the program reported that a function of the 3HP program was to address funding commitment and sustainability issues from past TB programs. It was recommended that *"clear commitment for funding would enable the program to include all eligible patients without adjustment of the guidelines..."* (IDI 5)

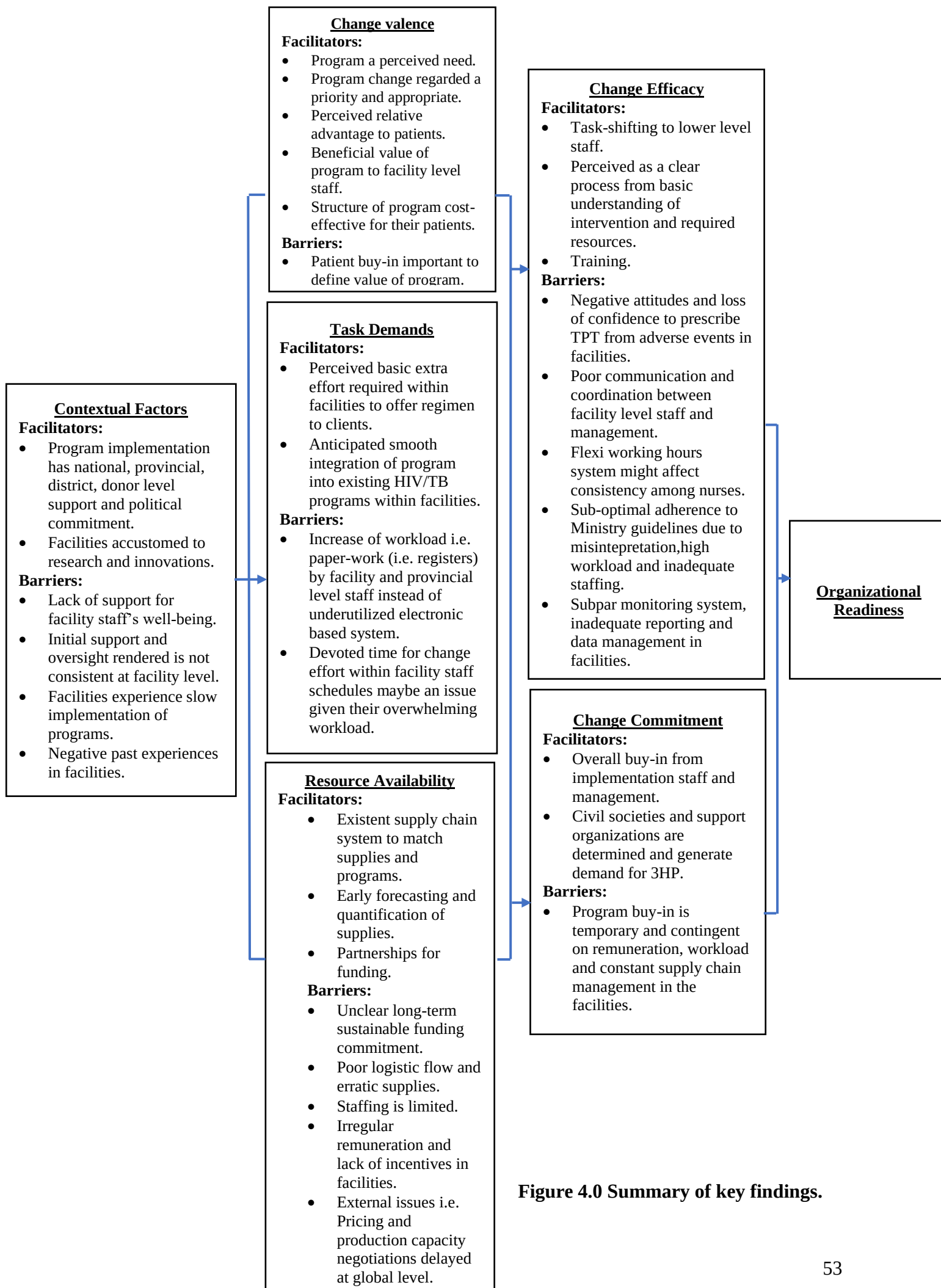


Figure 4.0 Summary of key findings.

CHAPTER 4

4.0 DISCUSSION

In this study we investigated whether four facilities in Harare and Bulawayo, Zimbabwe were ready to implement 3HP. This chapter discusses our findings in relation to existing literature and limitations of the study. We conclude our findings, suggest recommendations and future work.

4.1 Level of Organizational Readiness to Implement

Three of the four facilities (facility 1, 2 and 3) welcomed and saw a need to implement the intervention. Our findings are supported by the measurements of readiness scores per facility which were above the threshold. We believe the high scores demonstrated that staff in the three facilities were most likely to collectively commit and demonstrate a more consistent, high quality use of the intervention (6). The results led to a similar conclusion in Shaw et al's study where high readiness scores reflected the degree of commitment and efficacy among facilities towards implementing a telemedicine behavioural program (15). This is consistent with a South African study that used readiness scores to indicate that four of five schools collectively valued a combined HIV and nutrition intervention highly enough to commit to its implementation. Similar to our study, the two mixed methods studies used adapted context specific tools to measure readiness (6, 14). Although this is widely accepted, an apparent limitation is that the tools were adapted from contexts outside of the clinical or health fields due to limited healthcare readiness studies (24). It is worthy to further note that literature indicated a paucity of studies assessing the level of readiness to implement 3HP in the Zimbabwean context and the few studies on 3HP implementation were based in high income countries such as Canada.

Our results also demonstrated that facility 4 of Harare Metropolitan province was not ready to implement 3HP compared to the other 3 facilities. Additionally, staff in the facility qualitatively indicated that, “... *we have our own challenges already...I don't think people will quickly embrace it.*” At this stage of understanding, Weiner's theory suggests that low readiness reflects the need for additional support before implementation to curb the facility potentially resisting change, putting less effort, persevering less in the face of challenges, and exhibiting compliant intervention utilisation (6). Our finding also showed that the low readiness in facility 4 was due to low contextual factors, task demands and resource availability. The result of our study is then compared to Shaw et al's study which found non-readiness in facilities due to a lack of commitment (14) and due to contextual factors including leadership, fidelity, costs and partnerships in another review (32). The difference in the studies

is attributed to the main limitation of the inconsistency of constructs measured which may impact readiness to implement. For example, our study did not account for leadership whereas Rubenstein et al's study (25) used the CFIR framework which found the construct to be key in the non-readiness of facilities. However, a review suggested that there is no gold standard in readiness studies as existing issues were tailored to specific studies, interventions and settings (24). From this standpoint, we believe our study is the first to contribute important findings specific to the 3HP intervention and possibly other TB program readiness studies.

Our findings on the difference in facility scores at least hinted that each facility had specific underlying conditions for readiness to implement 3HP. For example, one Harare Metropolitan province facility had the highest readiness score while the other was not ready and had the lowest score among all of the facilities. The difference between the two facilities was due to varying contextual factors and the availability of resources which was supported by the qualitative findings as well. This is consistent with two previous studies whereby intervention sites differed in readiness due to varying resource availability and reported contextual conditions such as past experiences in implementing programs per the specific setting (25). It is worth discussing that our study's approach of including facility staff plus supplemental qualitative accounts from different levels of management provided more detail on the varying conditions that lead to readiness as compared to Rubenstein et al's study²⁵ that indicated a limitation of only including reflections from facility leaders as a representation of the facilities (25).

4.2 Perceived Barriers and Facilitators of Organizational Readiness

The findings demonstrated that change commitment, efficacy and valence were key facilitators of readiness to implement 3HP. The key barriers emanating were task demands, contextual factors and resource availability.

Change Commitment

Change commitment was high among all the facilities and the finding was qualitatively supported by the perception that there was overall buy-in from stakeholders for the implementation while determination from the community as well as various organizations to generate demand for 3HP. This result ties well with previous studies that indicated that shared interest and commitment between managers and staff were found to be important precursors for a successful intervention (18, 25,6). Although staff in the study indicated that they were

motivated, there was the possibility of temporary buy-in dependent on issues such as inconsistent staff remuneration, increased work load and an inconsistent supply chain in facilities. This is challenging and has led to frequent strikes in Zimbabwe among frustrated health care workers disrupting implementation of programs (26). A similar pattern of findings were obtained in Zhang et al's study (27) suggesting that discrepancies between the current and desired conditions within an organization overshadowed the high change commitment for programs. Notwithstanding, our study had limited time and resources therefore was conducted at one-point in time as compared to the aforementioned previous study that measured readiness at the pre-adoption, pre-implementation and post-implementation stages of the program (27).

Change Efficacy

There was high collective capability (efficacy) scores which paralleled positive qualitative findings such as the availability of refresher trainings, task-shifting of services, the anticipated basic and clear process of the implementation in facilities. However when comparing our results to those of older studies, it was indicated that efficacy may potentially be affected by varying factors. Firstly, although staff may report high efficacy to perform tasks, it is possible that they may not be able to create meaningful change due to the inability to mobilize resources in an efficacious manner for the desired implementation effort (6). Secondly, confidence to collectively perform tasks can be affected by commitment and vice versa. For instance, Keshni¹³ stated that readiness is likely to be high when members not only feel confident to perform tasks but also want to do so (13). Similarly, we demonstrated that the lack of confidence to implement previous TPT was attributed to by negative staff attitudes. Therefore our findings contribute to the idea that efficacy is interrelated to commitment. Lastly, apparent systematic challenges such as task co-ordination and flexi-working hour system in the facilities may affect efficacy. In this case, our finding lends support to earlier studies which popularly explain that discrepancies in efficacy are due to the differentiated roles in facilities (i.e. nurses, charge nurses, administrators and medical directors) (20, 28). Therefore for future work, it is worthy to note that some questions in readiness tools may have more of a clinical meaning for participants, for example in our study that were majorly nurses as compared to other studies that had mostly leaders who may have more of an administrative meaning (28) .

Change Valence

Measured scores were supported by recurring textual findings that indicated that staff collectively valued the program highly. Staff felt that the previous suboptimal TPT

implementation would be alleviated by the benefits of 3HP implementation, considered it a core priority within all facilities and comprehended it enough to commit to its implementation. This speculation is warranted by staff acknowledging that they were willing (commitment) to implement the program because change in programs was urgently needed for the well-being of their patients. Our findings therefore indicate the link between change valence and commitment to positively influence readiness to implement. Our study is in line with Weiner's theory (6) and Keshni et al's study (13) whereby change commitment was proposed as a major function of change valence, that is, if organizational members value the change then they will want to implement the change. However, the main limitation is that individual perceptions are given in each study instead of collective staff perceptions of the program value which may implicate consistent, cross-situational relationship between change valence and organizational readiness. Future studies need to indicate if change valence resulting from different individual reasons might be as potent in readiness outcomes as change valence resulting from commonly shared reasons. Additionally, although the study reported high valence, facilities stated the challenge of an oversight of patient input on the value of the 3HP program. In line with our findings, a study posited that patients are often omitted from the implementation planning phase yet their value of the intervention holds a considerable amount of weight with regards to the implementation outcomes and program performance (14). The patients' perceptions would reflect if change valence truly influences readiness to implement despite the acceptable overall change valence score.

Task Demands

Our findings showed recurring challenges mostly in facility 4 despite staff having anticipated little effort to offer the new regimen and a smooth integration of program activities within existing HIV/TB programs. Barriers as described by the staff included increased workload in the form of paper-work instead of availing the underutilized electronic system. The increased workload was mostly attributed to a lack of human resources in the facility as staff recommended that increased human resources could offset the strained workload. Shea et al's study (29) findings were consistent with our findings and similarly recommended for the recruitment of more staff plus provision of additional support to improve readiness levels. Another identified challenge was that staff may not have devoted time for the program within their overwhelmed schedule which might impede implementation. Keshni et al's study (13) explains that if the facility is not inclusive of implementation efforts in the staff schedule's, slow implementation will occur. Our study recommends that facilities should develop and

implement work transition plans to develop continuity plans which would mitigate both barriers presented with regards to task demands.

Contextual Factors

Our study quantitatively confirmed that the facilities had distinct, acceptable contextual conditions however the qualitative findings detailed a myriad of challenges particularly in facility 4. For instance, support in facilities was rendered by key stakeholders however it was inconsistent and a further lack of support for the staff's wellbeing was reported which both led to their negative attitudes. Izudi (28) revealed that TB staff commonly present negative attitudes due to fear of contraction of TB from their patients affecting their performance to carry out tasks. The provision of routine testing for staff implementing the TB program in facilities was recommended by staff in our study. Another challenge was the slow implementation of programs, for example facilities reported 4 year delays after trainings to implement programs. Additionally, our results suggest that the high number of adverse events associated with TPT contributed to the negative past experiences in facilities. We believe these combined could result in staff not embracing the innovation and therefore could impede readiness just as Amatayakul (30) concluded that negative experiences could deter facilities from reaching organizational readiness. The difference in studies however, is that our findings go beyond to show that negative past experiences negatively affect the staff's value of the program and their capability to implement it. Therefore, our findings contribute further to readiness evidence in demonstrating that contextual factors affect valence and efficacy which are proximal factors for readiness. Nevertheless, our study was guided by Weiner's framework as compared to Amatayakul's study which is guided by the Consolidated Framework for Implementation Research (CFIR) with different constructs (30). Although facilities faced multiple contextual barriers, the staff indicated that they are accustomed to research and its rapidly changing nature which may contribute towards acceptance of implementation efforts.

Resource Availability

Resource availability was not at a sufficient level for the implementation effort to occur effectively which was supported by identified qualitative barriers. Recurring challenges were the shortage and the inequitable distribution of staff as observed between facility 3 and 4. The finding may be warranted by the smaller number of staff that were available in facility 4 as compared to the other facilities in the study. It was recommended that facilities should allocate personnel to serve as implementation champions to facilitate the process as Ochurub, Bussin

and Goosen (18) similarly suggested. We further demonstrated the lack of staff incentives that negatively impacted willingness. It is generally accepted that incentives and rewards increase job satisfaction, teamwork as well as help staff feel equipped to undertake a new initiative (13). Alternatively, Scaccia et al's findings (31) argue that staff may be motivated enough to work with whatever resources are available. The difference in study contexts may have led to the difference in conclusions therefore we believe that contextual conditions may play a key role in facilitating implementation despite resource inadequacy. However, given poor contextual conditions in Zimbabwe's health system (26), our study argues for more planning and the actual provision of resources to enhance facilities' chances of readiness to implement.

Managers explained that unforeseen , external issues occur such as 3HP pricing and production capacity delays exacerbated by the onset of the COVID-19 pandemic which cannot be resolved at country level. This is broadly in line with a study that highlighted the unexpected disruption in the implementation of HIV programs in Sub-Saharan African countries due to priority shifts at the start of the pandemic (32). It is worthwhile to note there were positive aspects identified by managers which may overcome unforeseen consequences such as the early forecasting and quantification of supplies; and fostered partnerships for funding for the first phase of implementation.

4.3 Study Implications

The study has many implications for policy makers, 3HP program managers and healthcare providers in the facilities. The current study highlights the need for more research given the limited literature on the readiness to implement TB preventive interventions particularly in LMIC settings where the greater burden lies. Assessing organizational readiness prior to implementing the newer TPT identifies barriers and facilitators that are key to address the research-to-practice gap that already exists in the program in Zimbabwe. Program managers and healthcare providers should collaborate with researchers to further identify more bottlenecks before implementation through operational research. The findings will prevent undesired consequences as strategies will be informed and adapted prior to implementation from detailed recommendations from the staff who will do the work in the facilities.

The study also highlights the issue of centralizing on program development and design while neglecting the delivery approaches (33). For example, the findings indicated that after development and implementation of MoHCC TPT guidelines, staff often misinterpret them and

offer the treatment to those not eligible. Therefore, it is hoped that policy makers and program managers will be more involved every step of the way including following through on the delivery of implementation guidelines, their development and revision. This will improve the extent to which TPT interventions are delivered to also ensure longer-term sustainability.

4.4 Strengths and Limitations

The main limitation of the proposed study rests primarily on the sample size particularly the survey sample which may not be statistically representative however the aim was firstly to analyse at the facility, not the individual level and to strengthen understanding of the social processes involved in implementation therefore sample size is of less concern. Although the sample size was large enough to measure OR in the study, it restricted further additional statistical analysis. Notwithstanding, Weiner (6), suggests that OR measures should be descriptive and not evaluative. Moreover, the generalizability of the results may be limited to the four facilities that were operated by the same entities however as in implementation science, the key is to draw on lessons learned to inform policy and implementation approaches in similar contexts (6).

Although the ORIC tool was adapted to suit the study context and design, the resource availability subscale was slightly below the threshold Cronbach alpha level. However due to the shown acceptable overall Cronbach alpha scale indicating the tool's high reliability in consistency, the subscale was retained. Another limitation is construct bias wherein the selected Weiner OR conceptual model to guide the study may have omitted other constructs that affect readiness including implementation climate (13). Additionally, constructs within the conceptual model overlap and are not always discrete. Future studies are required to improve OR models and their constructs. Nevertheless, the current study provides insight into readiness factors that relate to the implementation of a TB preventive therapy which has received little attention thus far.

The study employed mixed methods which provided several merits. The combination and triangulation of the quantitative and qualitative analysis methods facilitated understanding the complexity of organizational readiness to implement 3HP. The quantitative helped measure the level of readiness and its factors as a useful benchmark of the sites. The qualitative offered insight into the challenges and influences of readiness. The interviews were held until

saturation was achieved which is important in exhaustively underscoring the reasons for the measured scores in facilities.

4.5 Conclusion and Recommendations

In conclusion, three of the four facilities were ready to implement 3HP in Harare and Bulawayo Metropolitan province. Facility four of Harare Metropolitan province was not ready to implement due to low task demands, contextual and resource availability factors. Each facility had differing strengths and weaknesses to be deemed ready to implement the intervention, but these would likely not be revealed without triangulation of OR scores and interview data. Potential factors that could either facilitate or hinder effective implementation were identified to allow enhancements to be made to the intervention implementation strategy. Facilitators identified were change commitment, efficacy and valence which should be considered in developing the steps towards meeting acceptable readiness levels to implement 3HP in facilities. The barriers included were task demands, contextual factors and resource availability.

The study findings demonstrate the necessity for further research to assess OR prior to 3HP TPT implementation in health facilities. Considering the limitation to generalize our findings, the study should be scaled up in other high TB settings in Zimbabwe as well as the other high TB burden countries yet to implement 3HP. Although implementation of the TPT program change will be staggered into phases, our study assessed readiness at one point in time as opposed to continued assessment. We recommend for the periodic evaluation of readiness within health facilities for optimal delivery of the program to ensure successful implementation. It is worthwhile to note that conditions for readiness per facility can differ therefore OR is critical for efforts to carefully attune implementation according to the strengths and barriers present at each facility. Moreover, policy makers need to take into account that facilities with less readiness to implement may require more flexibility to reach the intended the program merits.

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APPENDICES

Appendix I: Plagiarism Declaration



PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I Dorothy Tanaka Chisare (Student number: 854835) am a student registered for the degree of MSc Epidemiology (Implementation Science) in the academic year 2021.

I hereby declare the following:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.
- I have included as an appendix a report from "Turnitin" (or other approved plagiarism detection) software indicating the level of plagiarism in my research document.

Signature: Dorothy Tanaka Chisare Date: 23 March 2021

Appendix II: Signed Turnitin Score Page

854835:MSc_full_report_Dorothy_Chisare.docx				
ORIGINALITY REPORT				
7 %	7 %	4 %	%	
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS	
PRIMARY SOURCES				
1	hdl.handle.net Internet Source		2 %	
2	journals.plos.org Internet Source		1 %	
3	wiredspace.wits.ac.za Internet Source		1 %	
4	apps.who.int Internet Source		1 %	
5	www.ncbi.nlm.nih.gov Internet Source		<1 %	
6	Alison B. Hamilton, Amy N. Cohen, Alexander S. Young. "Organizational Readiness in Specialty Mental Health Care", Journal of General Internal Medicine, 2010 Publication		<1 %	
7	www.implementationscience.com Internet Source		<1 %	
8	www.hrpub.org Internet Source		<1 %	

Appendix III: Information Sheet

INTRODUCTORY LETTER



UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

Dear Respondent,

I am a post-graduate student studying towards my MSc in Epidemiology in the field of implementation Science at the University of the Witwatersrand, Johannesburg South Africa. The aim of my study is to assess Organizational Readiness For The Implementation Of A Three-Month Short-Course TB Preventive Therapy Regimen (3HP) In Zimbabwe. I believe that my study would make a contribution to improving the preparedness and readiness for managing innovations that will help prevent the spread and increase of active TB.

As one of the selected respondents, your views are invaluable to the success of this study. Your responses to the questions on the questionnaire (10-15 minutes' worth of your time) or/and interview (20-30 minutes long) are highly appreciated. I want to thank you in advance for your co-operation. I guarantee that all information will be handled with the utmost CONFIDENTIALITY. Thank you very much.

Dorothy Chisare

+27 623171084 / +263 788847194

dorothyct9@gmail.com

Appendix IV: Participant Informed Consent Form

Page 1 [of 6]

MRCZ No. B/1845

INFORMED CONSENT FORM



UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

ORGANIZATIONAL READINESS FOR THE IMPLEMENTATION OF A THREE-MONTH SHORT-COURSE TB PREVENTIVE THERAPY REGIMEN (3HP) IN ZIMBABWE

Principal Investigator: **Dorothy Tanaka Chisare**, [BPH (Hons), MSc]

Phone number(s) **+27 623171084 / +263 788479194**

Study Sites : **Bulawayo and Harare Metropolitan Provinces**

What you should know about this research study:

- We give you this consent so that you may read about the purpose, risks, and benefits of this research study.
- Routine care is based upon the best known treatment and is provided with the main goal of helping the individual patient. The main goal of research studies is to gain knowledge that may help future patients.
- We cannot promise that this research will benefit you. Just like regular care, this research can have side effects that can be serious or minor.
- You have the right to refuse to take part, or agree to take part now and change your mind later.
- Whatever you decide, it will not affect your regular care.
- Please review this consent form carefully. Ask any questions before you make a decision.
- Your participation is voluntary.

[BLANK]

PURPOSE

You are being asked to participate in a research study to assess readiness in health facilities to implement the three-month short-course TB preventive therapy regimen in Harare and Bulawayo Metropolitan. The study seeks to understand the level of readiness to implement 3HP, a 3-month short-course TB preventive therapy regimen in health facilities in Zimbabwe. The study also seeks to understand the facilitators and challenges that might affect readiness to implement the 3HP regimen in the facilities. 3HP is a TB preventive therapy regimen that combines two TB drugs weekly for 3 months by directly observed therapy (DOT) for the treatment of latent TB infection among people living with HIV and contacts of TB cases of any age. Shorter, safe regimens such as the 3HP are important for increasing treatment completion as they are easier to administer, they reduce drug resistant TB and the spread of active, infectious TB disease. Studies show that participants taking the 3HP regimen have 3 times the improved outcomes than those on the long standard isoniazid treatment which is taken daily over a range of 6 – 36 months. There are limited studies to show the readiness to implement 3HP in health institutions in Zimbabwe. You were selected as a possible participant in this study because of your potential involvement in the 3HP program either as personnel directly implementing the change within the facilities or in the planning and initial implementation of the program. We are expecting to include 35 participants in total in the study from both Bulawayo and Harare.

PROCEDURES AND DURATION

If you decide to participate, you will be among those that will be involved in either filling in the questionnaire or participating in an interview or being involved in both dependent on your role within the 3HP program. Specifically, staff in facilities will be involved in the questionnaire filling. A subset of these clinic staff will be interviewed as well as TB staff in supporting NGOs and other relevant National TB Program personnel involved in the 3HP project. Additionally, the expected duration of the research participant's participation will be six months in which the principal investigator will be in contact with participants for the questionnaire distribution as well as collection and 20 – 30 minutes for the interview. A single visit per participant at the relevant study site will occur over the study period with a possibility for a follow-up with the permission of the participant. During the interview, we will ask you some questions about activities of the organization such as trainings, stakeholder engagement which will help improve readiness for change in your organization. If it is not a good day for us to talk with you, we will arrange for a date that you are free to talk to us.

AUDIO – TAPING OF INTERVIEW

If you agree to take part in the study, you will be among those that will either fill in the questionnaire and/or participate in the interview. Sufficient opportunity will be provided to ask questions and (of your own free will) will thereby declare yourself prepared to be audio-taped. Interviews per participant will occur for 20 – 30 minutes. The recording will be transcribed and any information that could identify yourself (the participant) will be removed. The recordings will be erased after 6 years whether the findings of this research are published or not. Parts of the discussion to be quoted without any information that could identify me, may be cited in the research report or other write-ups of research. Quotes from the interview may be used in the study given your consent. If you are selected and agree to participate in the interview, please read section and complete the section titled “AUTHORIZATION FOR THE AUDIO-TAPING OF INTERVIEW.” If you are selected and consent to take part in filling the survey questionnaire only, please skip the section.

RISKS AND DISCOMFORTS

The study involves asking questions regarding your life and experiences. Talking about these may make you feel uncomfortable. To mitigate this, if you feel uncomfortable answering a question then you can refuse to answer the question. The risk is minimal and the likelihood of encountering it varies per participant.

[RISKS TO PREGNANT WOMEN]

This research does not represent a significant risk to unborn children or pregnant women because it involves health professionals within the national health system and not patients.

BENEFITS AND/OR COMPENSATION

The research does not offer direct benefits to participants however by participating, you will be helping us strengthen our understanding of what readiness is and how ready we are as a country to embrace change to prevent development and spread of active TB disease. You will be also helping in finding ways to build and improve readiness in healthy organizations and among workers. This allows for increased program implementation which yields optimum results as intended. We cannot and do not guarantee or promise that you will receive any benefits from this study.

We will provide light refreshment for your convenience if you wish during our contact time with you. There is no cost to you for participating in the study and you will NOT be paid to participate in the study.

CONFIDENTIALITY

If you indicate your willingness to participate in this study by signing this document, we plan to disclose to the participants, Ministry of Health and Child Care of Zimbabwe, Supervisors, Wits University through a final report to be submitted for the partial fulfilment of the degree of MSc in Epidemiology at the University of Witwatersrand. Thereafter presentations will be made at relevant conferences and publication of the findings in an academic journal. The purpose to disclose to participants as well as the others mentioned above is to allow for transparency from the research team as well as show results of the study in terms of readiness to implement a new TB preventative regimen which could potentially increase effectiveness of the scaled up 3HP program. All data in the surveys will be collected without identifiers or linkages to participants or key informants (e.g. no ID numbers or names). Miss Dorothy Chisare is responsible for this. All collected data will be stored on a password protected device only accessible to the principal investigator (Miss Dorothy Chisare) and hard copied data will be scanned for electronic storage which will also be password protected.

ADDITIONAL COSTS

There will be no additional costs borne by the study for the participants as the study sites will be at the participants' places of work.

IN THE EVENT OF INJURY

In the event of injury resulting from your participation in this study, treatment shall be offered by the study. In the event of injury, contact **Miss Dorothy Chisare +263 788479194 (ZIM) / +27 623171084 (SA)**.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you decide not to participate in this study, your decision will not affect your future relations with the Ministry of Health and Child Care, its personnel, and associated facilities. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without penalty.

ADDITIONAL ELEMENTS**What happens if you refuse to take part in the study?**

Your participation in this study is voluntary. Before agreeing to participate, it is important that you read and understand the following explanation of the project procedures, benefits, risks, discomforts and precautions, as well as your right to withdraw from the study at any time. You need to understand what is involved before you agree to take part in the study. If you have any questions do not hesitate to ask the principal investigator. You should not agree to take part unless you are satisfied with all the procedures involved. If you decide to take part in this study, you will be asked to sign this document to confirm that you understand the study. You will be given a copy to keep.

You may withdraw/ stop taking part from the study at any given time. If you withdraw, we will not collect any further information from you for the research purposes. We will only use the information we collected up to your point of withdrawal, only if you agree to this.

SIGNATURE PAGE

**ORGANIZATIONAL READINESS FOR THE IMPLEMENTATION OF A THREE-MONTH
SHORT-COURSE TB PREVENTIVE THERAPY REGIMEN (3HP) IN ZIMBABWE
Protocol Version Number 1 / 04/12/19**

OFFER TO ANSWER QUESTIONS

Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

AUTHORIZATION

You are making a decision whether or not to participate in this study. Your signature indicates that you have read and understood the information provided above, have had all your questions answered, and have decided to participate.

Name of Research Participant (please print)

Date

Time

Name of Staff Obtaining Consent

Signature

Date

Name of Witness (*if required*)

Signature

Date

YOU WILL BE OFFERED A COPY OF THIS CONSENT FORM TO KEEP.

If you have any questions concerning this study or consent form beyond those answered by the investigator, including questions about the research, your rights as a research participant or research-related injuries; or if you feel that you have been treated unfairly and would like to talk to someone other than a member of the research team, please feel free to contact the Medical Research Council of Zimbabwe (MRCZ) on telephone (04)791792 or (04) 791193 and cell phone lines 0784 956 128. The MRCZ Offices are located at the National Institute of Health Research premises at Corner Josiah Tongogara and Mazowe Avenue in Harare.

AUTHORIZATION FOR THE AUDIO-TAPING OF INTERVIEW

You are making a decision whether or not to allow for the audio-taping of the interview in this study. Your signature indicates that you have read and understood the information provided above, have had all your questions answered, and have decided to allow recording to proceed.

Statement of Consent to be audiotaped.

I understand that audio recordings will be taken during the study. (*For the statement below , please choose YES or NO by inserting your initials in the relevant box*)

- I agree to **being audio recorded**

Yes

☐

No

☐

Name of Participant (please print)

Signature

Date

Appendix V: Data collection tool - Facility Level Staff Organizational Readiness Questionnaire

FACILITY LEVEL STAFF QUESTIONNAIRE SECTION A

DEMOGRAPHIC DATA

Instruction: Please help us by answering the following questions. Please tick the box that best answers information about yourself. Do not give your name. Results will be grouped, and all individual comments will be kept anonymous.

DATE OF VISIT

d	d	m	m	y	y	y	y
---	---	---	---	---	---	---	---

INTERVIEWER

F	i	r	s	t	n	a	m	e								
S	u	r	n	a	m	e										

1. Gender	☐ Female ☐ Male
2. Age group	☐ (18– 24) ☐ (25 – 29) ☐ (30 – 34) ☐ (35 – 39) ☐ (40-50) ☐ (Above 50)
3. Province	☐ Harare Metropolitan ☐ Bulawayo Metropolitan
4. Job / Role of Facility	☐ Facility manager ☐ Nurse ☐ Primary care practitioner ☐ Non-physician provider
5. Years of providing TB services	☐ Less than 6 months ☐ 6-11 months ☐ 1 Year to 2 Years ☐ More than 2 Years

SECTION B
CHANGE COMMITMENT

Instruction: The following items relate to your **CURRENT** perceptions of your organisation. That is, the extent that you perceive your organization at this point in time. Your participation is totally voluntary and the information you provide will be kept confidential. You will not be required to give information about yourself.

This section is for you to identify characteristics of the facility that motivates or encourages you to accept the innovation and be prepared to apply it to your patients.

Please circle the number to indicate whether you disagree or agree with each statement :

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. We will be committed to implementing this change	1	2	3	4	5
2. We want to implement this change	1	2	3	4	5
3. We are motivated to implement this change in this facility	1	2	3	4	5
4. We will do whatever it takes to implement this program	1	2	3	4	5
5. We are determined to implement this change	1	2	3	4	5

SECTION C

CHANGE EFFICACY

Instruction: This section is for you to give your expert opinion that relates to your capability to conduct the program tasks required. We want to understand if the program necessary to improve your skills or if it will strain your work load.

Please remember to think of your organization and not about yourself as an individual only. The information will aid in better strategies and support for the facility to address TB.

For all of the items below , please circle the number to indicate whether you disagree or agree with each statement :

Organizational Readiness - Change Efficacy					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I feel confident that we can keep the momentum going in implementing this program in this facility	1	2	3	4	5
2. I feel confident that this organization can support staff as they adjust to this change	1	2	3	4	5
3. I feel confident that the organization can get staff invested in implementing this program	1	2	3	4	5
4. I feel confident that the facility can coordinate tasks so that implementation goes smoothly	1	2	3	4	5
5. I feel confident that the facility can handle the challenges that might arise in implementing this change	1	2	3	4	5
6. I feel confident that the organization can keep track of progress in implementing this change	1	2	3	4	5

SECTION D

CHANGE VALENCE

Instruction: This section is for you to identify the value or importance the program has to you and the organization.

Please remember to think of your organization and not about yourself as an individual only. The information will aid in better strategies and support for the facility to address TB.

For all of the items below , please circle the number to indicate whether you disagree or agree with each statement :

Organizational Readiness - Change Valence					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The regimen is better than the standard treatment we are currently using in our practice to meet needs of our patients	1	2	3	4	5
2. We need to implement this regimen	1	2	3	4	5
3. We believe this change will benefit our facility and its patient's right now	1	2	3	4	5
4. We believe 3HP is cost-effective	1	2	3	4	5
5. We value this change	1	2	3	4	5
6. We feel implementing this change is a good idea	1	2	3	4	5

SECTION E

TASK DEMANDS

Instruction: The following section is for you to give your opinion on the Knowledge and effort required in facilities to conduct a 3HP project.

Please remember to think of your organization and not about yourself as an individual only. The information will aid in better strategies and support for the facility to address TB.

For all of the items below , please circle the number to indicate whether you disagree or agree with each statement

Organizational Readiness - Task Demands

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Coordinating change with patients that seek treatment from facility would not be a burden	1	2	3	4	5
2. Implementing this change would not strain to my work	1	2	3	4	5
3. Integration with existing work flow would not be a challenge	1	2	3	4	5
4. Coordinating change within patients' treatment schedule would not be challenging	1	2	3	4	5

SECTION F

CONTEXTUAL FACTORS

Instruction: The following section is for you to give your opinion on competing programs in the facility and how they relate to this program being introduced as well as past experiences on introduction of programs in your facility.

Please remember to think of your organization and not about yourself as an individual only. The information will aid in better strategies and support for the facility to address TB.

For all of the items below , please circle the number to indicate whether you disagree or agree with each statement :

Organizational Readiness - Contextual Factors
--

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Other programs within the facility will support this change	1	2	3	4	5
2. The facility has a good past experience with implementing new programs	1	2	3	4	5
3. I am supported by the most senior leaders in doing my work	1	2	3	4	5
4. We have a system in place to monitor how well change is implemented	1	2	3	4	5

SECTION G

RESOURCE AVAILABILITY

Instruction: The following section is for you to give your opinion on fiscal, technical and human resources required to apply the program successfully in the facility.

For all of the items below , please circle the number to indicate whether you disagree or agree with each statement :

Organizational Readiness - Resource Availability					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Staffing allocated for this program are sufficient	1	2	3	4	5
2. We receive enough resources in the facility to make this change sustainable (i.e. staff, space to consult patients)	1	2	3	4	5
3. We receive adequate training when implementing new programs	1	2	3	4	5
4. We have a system in place to ensure there is a continuous supply of drugs	1	2	3	4	5

SECTION H

ADDITIONAL INFORMATION

How would you recommend that the organization get the staff involved and motivated to successfully carry out the implementation? Please elaborate.

What do you think will be critical to the success of the program? Please elaborate

What do you think could limit the success of the program? Please elaborate.

Do you have any other comments, questions or concerns?

THANK YOU

Appendix VI: Data Collection Tool – Interview Guides

KEY INFORMANT INTERVIEW GUIDE

(30 minutes total)

DATE OF VISIT

d	d	m	m	y	y	y	y

INTERVIEWER

F	i	r	s	t	n	a	m	e								
S	u	r	n	a	m	e										

NAME OF PROVINCE

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ROLE/POSITION

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Introduction

(start at _____ end at _____)

Introduction —Explain purpose of the interview

- Thank you for agreeing to do this interview. My name is Dorothy and I'll be talking with you today.
- As you know, this project is a part of my MSc Epidemiology degree requirement and is
- The purpose of this interview today is to learn more about your experiences with and recommendations related to the organizational readiness for implementation of 3HP, a 3 month short-course TB preventive therapy regimen in health facilities in Zimbabwe.
- The interview will last about 30 minutes maximum.
- A consent form was sent to you prior this interview. Did you read the consent form that was sent to you? Do you have any questions?

Ground rules

- Everything you tell us will be confidential. To protect your privacy, we won't connect your name with anything that you say.
- At any time during our conversation, please feel free to let me know if you have any questions or if you would rather not answer any specific question. You can also stop the interview at any time for any reason.
- Please remember that we want to know what you think and feel and that there are no right or wrong answers.
- Is it OK if I audiotape this interview today?

[Turn on recording equipment.]

Background

I'd like to begin by asking you some questions about your current job. **[All]**

- What is your position at [organization]? What are your major responsibilities in your current position?
- How long have you been with [organization]?
- Can you tell me a bit about your work and experience as it relates to the TB program (Probe particularly for aspects of current job that relate to 3HP program, for example your experience with the current TB preventive treatment- IPT)

CHANGE COMMITMENT (Willingness/motivation)

A key aspect of readiness is willingness or motivation of staff to conduct the program. I would like to get your opinion on the concept of “Change commitment” which is about the willingness of staff to do this project.

1. **How do you recognize the need for change of the TB short-course preventive therapy regimen? Does the change have meaning to you and the TB program? **[All]****
 - Would you say the change is worthwhile your time compared to other programs you are/have been involved in?
 - Would you say you are willing to engage in the change and the effort it may require?
 - Do you think the change has many components that may potentially reduce motivation of the staff?
 - Does the program change excite or challenge you and your workflow? Could you tell me more

CHANGE EFFICACY

Now let's talk about staff capabilities for implementation

2. **Do you feel staff will anticipate any challenges when implementing the new TPT? **[All]****
 - From your experience, would you say staff performed successfully from past experiences after implementing programs? And how would you describe the successes or challenges?
 - When you implement this program, do you think some tasks will increase or decrease staff confidence?
 - Do you feel staff normally follow guidelines comprehensively for making change within their facilities? Could you tell me more?

CHANGE VALENCE (Perceived value)

3. **In your opinion, are there any relative advantages to you and the facilities of implementing the 3 month short-course TPT regimen? **[All]****
 - Is the shorter regimen better than the standard available IPT in facilities to meet needs of patients?
 - Would the shorter regimen require more skill from TB providers in the facilities?
 - What is the feedback from TB providers on the standard regimen - IPT? , In your opinion, will the providers be eager to engage in change from IPT?
4. **Does the change align with other TB programs being implemented? **[All]****
 - Do you perceive the change as being timely given current needs of patients within the facilities as well as current staffing needs?
5. **Do you think the change would be received as a priority by TB program staff? Why? **[All]****

- Do the staff perceive the change as important for the facilities right now?
- Could there be other priorities as seen by staff at facilities? Explain?

TASK DEMANDS

6. **What do you see as necessary to implement a successful program within the clinics?**
 - Would you say more training?
 - Time allocation to program within schedule of TB program personnel
 - Integration of program into existing workflow? Could there be challenges or minimal steps are required?

CONTEXTUAL FACTORS

7. **Do you feel that your National HIV/AIDS and TB program will provide sufficient support to facilities? [All]**
 - Could you describe your past experiences of working with the facilities to conduct change?
 - If so, were the staff driven to make change? Explain?
 - How do you feel about the support you have been provided with in the past? **[Facilities & supply chain]**
 - Do you ensure extra effort to lead program success?
 - Do you see a clear process in conducting program in the facilities?

RESOURCE AVAILABILITY

8. **Would you say the facilities' have relevant infrastructure and equipment for adequate, appropriate provision of new TPT services? [All]**
 - Are there enough nurses providing OI nurses in clinics providing TPT? To what extent?
 - Do the facility TB service providers demonstrate competency to conduct change? Explain.
9. **How does the TB program ensure continuous access and availability of drug? [Supply chain]**
 - Can you describe if there are systems in place to ensure adequate supply of drugs?
 - Have there ever been shortages in facilities , what caused them and how did they deal with them?
 - What do you feel are the main hindrances to adequate and continuous supply of drugs?
 - What measures can be used to ensure continuous supply of the new regimen
10. **Can you describe any kind of external support you provide to these facilities? [NGOS & MoHCC]**
 - Does this form of support offer program sustainability for facilities ?

CLOSING [All]

What is the most important message that you want us to take away from this interview?

Is there anything else that you would like to add about any of the topics that we've discussed or other areas that we didn't discuss but you think are important?

Thank you for your time and participation in this interview. The information that you provided to us will be very helpful in this project.

[Stop recording]

Appendix VII: Wits HREC Approval



R14/49 Miss Dorothy Chisare

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M1911126

NAME: Miss Dorothy Chisare
(Principal Investigator)
DEPARTMENT: Epidemiology and Biostatistics
Harare and Bulawayo Metropolitan
Zimbabwe

PROJECT TITLE: Organizational Readiness for the Implementation of a
Three-Month Short-Course TB Preventive Therapy Regimen
(3HP) in Four Health Facilities in Zimbabwe in 2020

DATE CONSIDERED: 29/11/2019

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Prof Charles Chasela

APPROVED BY: 
Dr. CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 21/02/2020

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the Third Floor, Faculty of Health Sciences, Philip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized

to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. I agree to submit a yearly progress report. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in November and will therefore be due in the month of November each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).


Principal Investigator Signature

25/02/2020
Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix VIII: Medical Research Council Zimbabwe Approval

Telephone: 791792/791193
Telefax: (263) - 4 - 790715
E-mail: mrcz@mrcz.org.zw
Website: <http://www.mrcz.org.zw>



Medical Research Council of Zimbabwe
Josiah Tongogara / Mazoe Street
P. O. Box CY 573
Causeway
Harare

APPROVAL

MRCZ/B/1845

18 December, 2019

Dorothy Tanaka Chisare
6 Kean Street
Triangle

RE: - Organizational Readiness for the Implementation of a Three-Month Short-Course TB Preventive Therapy Regimen (3HP) in Four Health Facilities in Zimbabwe in 2020

Thank you for the application for review of Research Activity that you submitted to the Medical Research Council of Zimbabwe (MRCZ). Please be advised that the Medical Research Council of Zimbabwe has reviewed and approved your application to conduct the above titled study.

This approval is based on the review and approval of the following documents that were submitted to MRCZ for review:-

- Study Proposal
- English Informed Consent Form
- Data Collection Tools

APPROVAL NUMBER : MRCZ/B/1845

This number should be used on all correspondence, consent forms and documents as appropriate.

- TYPE OF MEETING** : Expedited
- APPROVAL DATE** : 18 December, 2019
- EXPIRATION DATE** : 17 December, 2020

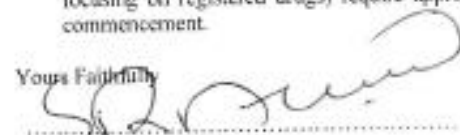
After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the MRCZ Offices should be submitted three months before the expiration date for continuing review.

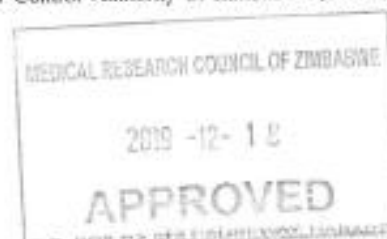
- SERIOUS ADVERSE EVENT REPORTING:** All serious problems having to do with subject safety must be reported to the Institutional Ethical Review Committee (IERC) as well as the MRCZ within 3 working days using standard forms obtainable from the MRCZ Offices or website.
- MODIFICATIONS:** Prior MRCZ and IERC approval using standard forms obtainable from the MRCZ Offices is required before implementing any changes in the Protocol (including changes in the consent documents).
- TERMINATION OF STUDY:** On termination of a study, a report has to be submitted to the MRCZ using standard forms obtainable from the MRCZ Offices or website.
- QUESTIONS:** Please contact the MRCZ on Telephone No. (04) 791 792, 791 193 or by e-mail on mrcz@mrcz.org.zw

Other

- Please be reminded to send in copies of your research results for our records as well as for Health Research Database.
- You're also encouraged to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study.
- In addition to this approval, all clinical trials involving drugs, devices and biologics (including other studies focusing on registered drugs) require approval of Medicines Control Authority of Zimbabwe (MCAZ) before commencement.

Yours Faithfully


MRCZ SECRETARIAT
FOR CHAIRPERSON
MEDICAL RESEARCH COUNCIL OF ZIMBABWE



PROMOTING THE ETHICAL CONDUCT OF HEALTH RESEARCH

Appendix IX: MoHCC Approval

Telephone 730011

Telegraphic Address
"MEDICUS", Harare
Fax: 729154/793634 (702293 FHP)
Telex: MEDICUS 22211ZW



Reference:
MINISTRY OF HEALTH
AND CHILD WELFARE
P.O. Box CY1122
Causeway
Zimbabwe

15th of October 2019

University Of The Witwatersrand
Faculty Of Health Sciences
School Of Public Health

RE: Organizational Readiness for the Implementation of a Three-Month Short-Course TB Preventive Therapy Regimen (3HP) in Four Health Facilities in Zimbabwe in 2020: Commitment to support Dorothy Tanaka Chisare, Student Number: 854835 to access facilities for data collection

Reference is made to the above subject matter. The Ministry of Health and Child Care will be happy to provide access to your student to collect data from our facilities in fulfilment of her research objectives for the above study. The access will however require that she first furnishes the Ministry with copies of ethical approval for the proposed study from the relevant bodies.



Dr. Charles Sandy
Deputy Director AIDS and TB Unit, National Tuberculosis Program
MINISTRY OF HEALTH AND CHILD CARE

Appendix X: Harare Health Services Department Approval

CITY OF HARARE

All correspondence to be addressed to the
DIRECTOR OF HEALTH SERVICES

DIRECTOR OF HEALTH SERVICES

Rowan Martin Building, Civic Centre,
Pennefather Avenue, Off Rotten Row,
Harare, Zimbabwe.

PO Box 596

Telephone: +263(242)753326

753330/1/2

Fax: +263(242)752093

Director of Health Services

DR PROSPER CHONZI
MBChB, MPH, MBA

Ref:

Your Ref:

12 February 2020

Dorothy Tanaka Chisare
University of the Witwatersrand
Johannesburg
SOUTH AFRICA

Dear Madam

RE: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH

I acknowledge receipt of your letter in connection with the above.

Permission has been granted for you to conduct a study entitled *"Organizational readiness for the implementation of a three-month short course TB preventive therapy regimen (3HP) in four health facilities in Zimbabwe in 2020"* at Glen Norah Satellite Clinic and Highfields Polyclinic.

For further assistance please liaise with the Sister in Charge of respective clinics.

Yours faithfully



DIRECTOR OF HEALTH SERVICES

IM/rm

c.c. Sister in Charge - Glen Norah Satellite Clinic
 Sister in Charge - Highfields Polyclinic

Appendix XI: Bulawayo Health Services Department Approval


CITY OF BULAWAYO

All correspondence to be
Addressed to
Director of Health Services
P.O. Box 1946
BULAWAYO
ZIMBABWE

Health Services Department
Municipal Buildings
1, Takawira & 1, Tongogara
BULAWAYO
Tel: (09) 75011
Fax: (26)-9) 63650
E-mail: zhwalima@citybycc.co.zw

Your Reference:
Our Reference: S23

29 January 2020

Miss Dorothy T. Chisare
27 St Andrews Road
Johannesburg
SOUTH AFRICA

Dear Miss Chisare,

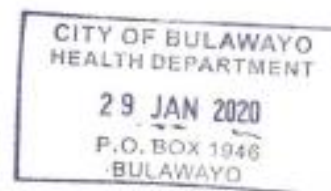
**REQUEST FOR PERMISSION TO CARRY OUT RESEARCH ON COUNCIL
PREMISES ; TO ACCESS HEALTH FACILITIES – ORGANISATIONAL
READINESS FOR THE IMPLEMENTATION OF A 3 MONTH SHORT
COURSE TB PREVENTIVE THERAPY REGIMEN**

I refer to your request dated 24 January 2020 in connection with the above research.

Please be informed that Council acceded to your request to carry out research at Northern Suburbs and Pumula Clinics on condition that you submit a copy of your research findings after completing the research exercise and you indemnify Council against any mishaps which may occur during the conduct of the research.

Yours faithfully,


DIRECTOR OF HEALTH SERVICES
ES/sn



Appendix XII: Framework Method Matrix

	Codes					
	Resources availability	Contextual factors	Task demands	Change valence	Change efficacy	Change commitment
Implementation support structure\TPT manager, HIV Program MOHCC	" Stock ruptures do happen once in a while and that will be because health facilities fail to order on time from national stocks..." "what the national level tries to do is to procure in time but at times there are things that are beyond their control..."	"we have not been doing well in the last few years. That has been due to a variety of factors. "there is support supervision from national and provincial level..." "I think the over sight still needs to continue we cannot say we have done enough with 3HP and now they can run on their own and expect things to be happening."	"The extra effort is now probably to make the conscious effort to offer TPT to their clients." "one reason for low uptake of TPT before was that it was not being offered but now, they have to be conscious to offer TPT to their clients, recipients of care and managing their stocks."	"I think for the better side effects that has been given for the 3HP that will work better." "...because of these challenges it is timely for us to be adopting these new regimens so that the program performs, and it is our ultimate goal." "3HP the pill burden is huge.... are they (patients) willing to take 10, 13 tablets once a week at once or they want to take 1 or 2 tablets every day for 6 months."	"I mean our HIV program is nurse led, happening at the lowest level of facilities and so they are very well capable." "clients were refusing TPT because of said side effects and adverse events and also health workers having lost confidence in prescribing it to their clients." "... they felt that if these meds have this amount of side effects, is it ethically correct for them to prescribe it?"	"I think it is worthwhile to change to the 3HP"
Implementation support structure\TB Medicines Supply Chain Manager, MOHCC	"We come up with implementation plans that are aligned... We take into account training of staff and supply chain issues and so once we have our guideline materials in place we then come up with an implementation plan..." "I do not for see any challenges because we are going to be using the same supply chain that was used in the old regimen."			"From a supply chain perspective, I think that is good that we have reduced dosing frequency of isoniazid." "Our initial regimen, Isoniazid was associated with severe adverse events... If you have one thousand patients and one loses their life, people become skeptical and it brings the conversation to the new regimen."	"...the back bone to this new intervention is capacity building." "We have very low incidence of reporting from health careworkers" ".. they were initiating someone on the regimen that they are not supposed to be on..." "they have always faced some challenges in implementing new things in our health care systems...."	"I think 3HP will be more acceptable because we will be moving from Isoniazid that has come with these negative issues."

Implementation support structure\TPT manager, TB Program MOHCC	“NATPHAM, our local distribution system is working well...” “We also did the quantification for the TPT because we had already taken into account the WHO system from 2018 ...procurement of TPT medicines number is 1” “there is high turnover of the staff, high attrition and the staff...” "we have got commitment from PEPFAR to support scale up, so we also trust that we can have additional funding to continue the intervention..."	"They fear most the occurrence of adverse events..." "The good thing about this is that there is good political commitment and most of these things we have gone with them to our civil society and our parliament..." "we have to ensure that we will have a schedule of following them up regularly through to go and learn any new problems that are emerging..." “the country implementing mechanism they have always appraised these new developments..."	the extra effort is now to explain to the clients how good the new regimen is and how palatable it could be maybe we can say as that is necessary." "There is potential of them complaining that there are too many programs, too much tools, registers and guidelines. ..." "The recommendation that we can put to them is to have a lot of printed flow charts so that they will be stuck on the walls in their consulting rooms..." “We have tried to come up with one register, instead of two and that register still communicates enough information that is required for upload within the electronic data base that we use called the DHIS version 2...We avoid duplications."	"TB prevention is also a pillar in the TB program where we prioritize it and make sure that it works... because for example if we find 1 case early, we prevent further spread." The occurrence of the adverse events is minimal as compared to the benefits associated with that one."	"We have been suffering from poor uptake by several facilities of the TPT program... we had negative attitudes from the service providers and the patients themselves... knowing the possibilities of the adverse events." "With the flexi hours, you would find that those that have been trained will be with the patients for lesser hours." "There is also the issue of new recruitments without training, you can find that at a health facility 70% are new recruits..." “We want to do trainings on the facilities so that we will train 90 to 100% of the staff at the facilities..."	"The nature of the intervention itself is motivating. The fact that the 3 months one is not taken daily but once a week. That on its own is motivating..." "The staff is motivated right from the national level down to the sub national level." "We also have this commitment and acceptance; the various medical provincial directorates are also aware of the prevention program and they welcome it." “The shortage of medicines can draw back the motivation of health care workers..."
Implementation support structure\TB manager, NGO A	"I can compare this transition of moving to the shorter course drug resistant regimens, for that work there wasn't really funding committed. It was not really clear that if we moved the guidelines; say we put all clients on injectable regimens really, where these drugs will be coming from. If there was commitment, I think it was going to be easier to accept that change."	“We have seen at the global level like in terms of manufacturer delays and capacity issues, we anticipate some delays now with the current Covid-19 pandemic... delays are not necessarily due to lack of readiness at the country level." "Whatever the issue is we want to work with these facilities to see how best we can improve performance within the environments that they are working... if	"It is just making the time and effort to complete those registers." “The pill burden is much lower. Patients can get one full course in one visit. So, I think for health care workers it is definitely much less work." "In terms of administration it's the same if not easier than what they have been doing"	"We were really involved with IPT and ah, the feedback that we have been receiving is that ah there are adverse events that ah discourage health care workers from administering the regimen and by patients actually taking it. (uhm)That is one of the big things and the other one is the long duration 6 months." "We do believe a lot of the issues from the previous regimen, IPT	"A TB /HIV meeting, we have 30 to 40 people who will be for Malaria, nutrition and we end up having people close to a hundred. It will end up being difficult to coordinate that. Yes, but we will have focal persons from each department to represent." “What needs to be done is working closely with the facilities identifying the things that they are doing well, include that in the national scale up plan, as	“We have been working with a lot of community support organizations and civil societies. They have also been generating demand in communities and so yah I can definitely say there is a lot of excitement...actually patients come in to ask to receive this therapy." "Site level, as we introduce the kind of work that we are doing, the next question we get

	"we work in a very challenging socio-economic environment..." "we have commitment already from PEPFAR that they are going to scale up. We have also included that on the budget for Global fund for 2021 to 2024 for a lot of TB therapy prevention therapy activities and given the country is focusing on 3HP... the national need will be covered for the next few years." "We are working very close with the ministry to ensure that supply management chain is being strengthened." "... the supplier's capacity turned out not to be what they had initially committed..."	there are ways to address that, to improve that ,we are hoping to find that out through the work." "we feel like we have played our catalytic role we have reduced the price, and generate interest in the country and we have developed all the materials and we are supporting this early scale up at 20 sites"		will be addressed. So, everything from adhering, monitoring and other things." "At the site level it is a new regimen that is expected to be easier on both patient and nurses."	well as identifying challenges and issues that are not working well immediately." "strengthening data management and reporting and make sure the sites are doing it and they are doing it correctly so that we get a clear picture of the situation on the ground. From uptake to positive and negative responses." "... if we see that things are not going according to what the government recommend we do refresher training and sort of do monitor the situation from there... " "we are working closely with the ministry of health to improve better adverse reporting and general pharmacovigilance"	from the nurses is , "So when are we getting this drug?" That is really encouraging for us too." "Ah I think unfortunately, given the environment that we are working in I think motivation is not extremely higher across the country."
Bulawayo M. Province\Sister in charge, Facility 2	"Currently we have never experienced any shortage of dose."	"We are receiving adequate support."		"I would be happy I won't get infection from patients... the chances of transmitting infection, I think they are lessened"		
Bulawayo M. Province\Provincial focal person, Bulawayo Province	"The barrier would be the shortage of the commodity when people want it. That is a big barrier because then people forget to then commence patients on that treatment plan...the most important thing is to sort out the logistics before it all	"we have implemented programs very well, as you know the TB/HIV program started in Bulawayo, we were the first to implement a pilot and it did well, very well and went throughout the country, so we expect any other new program to	"we are for it because it reduces our workload." " They must use the existing tools, yes for documentation because the moment they start introducing new registers people just get angry because they are already overwhelmed to the yeah."	"I think for the benefit of the patients it's a good program"	"Our TB /HIV program is already integrated in this city, even the IPT was already integrated so we would think we will have no problems integrating this TPT into the program , [ahh] no we won't have such problems"	"I think the staff are also as willing to take it up because it's for the good of the patients."

	started not in bits and pieces" "there were erratic supplies, I must say. The logistic flow was not good." "you find that drugs are plenty in one province and in another there is nothing so it's not in our control but it's at NATPHARM level"	pass. Normally our programs do well." "we support our staff." "support from management, the director, all other managers to the staff and the Ministry also would go a long way...support to the people as they start"				
Bulawayo M. Province\Sister in charge, Facility 1	"I was wondering why these programs are not giving incentives to the poor nurses short staffed [now I am gossiping , laughing]... the NGOs might bring incentives just say we are doing this for the nurses but our bosses I don't know they become jealous of the incentives. They can sometimes close those incentives and say no there is no need, council is paying them you know but incentives are good like now, the situation in Zimbabwe, we have got back log in being paid. We have not been paid from February [whispering] but we are working, we struggle."	"We are just exposed waiting to get sick. Once in a time maybe once in a year, a community sister may ask you for investigations and an x-ray but it's all gone now." "support visits are done within [pause] within the clinics...to just supervise the program. Then from there, we get assistance"	"each program comes with new registers, they would be plenty and they would be a heap, right now we have so many registers besides our work to enter... that's the only challenge we can really have with the work load... Because we have to fill this register, now I go to the Epi program there are registers, you go to the OI program - a heap of them and now the TPT [both laugh].. The challenge could be the registers." "Monday to Saturday we are at work, Sunday is our only off day. Monday we are back here, no time to do anything for yourself especially under departmental monthly salary we are getting."	"we have the IPT but still we have got people that are still coming into the program infected with TB. If it is something really that minimizes the infection of TB we would be very much happy to start it."		"we are happy to do the program" "I would be personally excited. Yes, and very much interested in knowing the start of the program"

Bulawayo M. Province\Nurse, Facility 2	"Sometimes we are overwhelmed by patients, we sometimes have something like 75 to 100 and something unlimited, think of it. Somehow, we want to do it but we are limited on resources as well."		"we have so many patients, sometimes we don't even write in the book that we have given but for the first time I think the three months will be manageable."	"it's a priority just like the six months one is a priority as well." "The 6 months was a bit hectic and sometimes we would even forget. I suppose we have so many patients, sometimes we don't even write in the book that we have given but for the first time I think the three months will be manageable."	" even the cleaners need to ukuthi know that there is such a program. They can be... Even be talking about this outside and the areas where they live." "One of my colleagues, we were together in the room when a patient developed [pause] it was like a syndrome or something like that. The patient is on wheelchair till today, whenever they come to Clinic, we feel bad... what if it happens to me that I am the one with two or more put in the wheelchairs but [haaa] if its different from this IPT, that would be better."	"It sounds exciting for the work staff [laughs] and the patients also like because if you look at the six months ahhh it was like a long long time... given there is enough staff, we have to really do everything."
Bulawayo M. Province\Nurse, Facility 1	"you find that at OI I am alone; we have got so many registers to fill. The ratio all of our clients to the health personnel it's hectic."	"with programs that are implemented, we are let down by the implementers and now we don't have enough of the medicines and we would have convinced our clients."	"more work is being added on me when I am already screaming out of the work load that I already have."	"At the clinics, TB and immunization of children are the core of a clinic. TB is usually of priority to us." "we would gladly Implement them because they also benefit us. So, the value is in our health as well." "Considering now that we are running short of that current IPT medicines I think the timing is right hoping they would supply us with adequate medicines for this program."	"now the rotations that are there, the TB nurses or the OI nurses that are there are so used to the routine, everything is smooth sailing and then you have to be changed... I'm said to go to maternity then somebody new has to come here to OI and start adapting to this whole thing. For a while that would be a challenge." "... We are not confident... in our statistics, there is very little documentation pregnant women and children being initiated"	"We are positive and we are willing to adapt to the program and implement it... I hope this thing comes and we start with the program"

Bulawayo M. Province\Nurse 2, Facility 2	"at times they take long because of the availability of the drug for example introducing [name], it was introduced in 2015, we only started giving it last year [laughs] as in 2019."	"I think they have given enough support. They do follow up visits as well. Just to make sure that we are initiating patients in IPT and record keeping, to see how many patients we have initiated, and we just talk of that as well."	"we have to take a longer time with them to convince them to take the drug" "Eeeeeh! [excitement] that will be of great help actually. If it is taken only once a week for 12 weeks?! You have shortened it"	"Ahhhh the 3 month one would be great advantage to us who work here even for the patients. It reduces the number of tablets that they are taking on a daily basis as well"	"At times they take long because of the availability of the drug for example introducing [name], it was introduced in 2015, we only started giving it last year [laughs] as in 2019."	"I hope it won't just end up there, I hope it will be implemented [laugh]."
Harare M. Province\Sister in charge, facility 3	"It would be better if they can add two more staff members to work towards that program. It will be better. So that we will not be burn out." "they normally appreciate more programs that come with incentives...So those ones are well run. I do not want to lie. The incentives motivate them."		"... Implementing will not be a challenge but rather work load. " "the staff are running a lot of programs...We were just twenty, and now that they are to add on another program. It will be too much for us...it is an increased workload. It would be better if to add more staff members towards that program...So that we will not be burnout"		"When any program comes they have to work because by the end of every month statistics will be required. There is no way you can give an excuse that you were not doing that program."	"... people are not resistant to change. There are a lot of programs that are coming, and they are dynamic and there is need to move we cannot stay in one place." "...they appreciate programs that come with incentives...The incentives motivate them."
Harare M. Province\Sister in charge, Facility 4	"Is it going to be continuous supply of the drug or there will be hick ups just like the previous 6 months' programs? The program was said to be implemented to everyone but 2 months down the line there was shortage of INH, and others had started the project."	"...from the past experiences, the kickstart will be okay but on the way you find some problems cropping up. Initially, there can be enough resources but in the long run, there is less, that problem has been there with the last programs"	"We are supposed to give the current medication daily but due to workloads we are now giving them weekly but still it is difficult."	"We are saying it will produce good results (uhm) but the challenge comes on how it is given. (Uhm) like to tell clients to come every week for resupplies it can be a challenge. (Ok) yes it can be a challenge."	"The kickstart will be okay but on the way, you find some problems cropping up"	"Considering we have our own challenges already yeahh I don't think people will quickly embrace it"

Harare M. Province\TB focal person, Facility 3	"The resources are letting us down." "We would also [pause] be grateful to ministry if they would bring in some audiovisuals IEC materials like we have televisions at our sites where you can just record something, and patients see and assimilate while they wait for services."	"Visit us periodically. Not just introducing a program and go [laughing] ... We are not motivated by money only but at times having supervision. Then you check our papers and correct where I am wrong and compliment what I will be doing." "Please tell them to remember us. Even if it is not money but just coming to tell us that we should bear with them and that they have a plan for us which is 'ABC'. Just communication, there is no communication they are just silent..."	"Give us electronic gadgets and few paper-based work,"	"I think it actually brings with it a lot of relief...if you have reduced the period from 6 months to 3 months, it provides low cost strategy in the long run" "Our patients are going to be happy because they are going to cut their treatment time by half (uhm), which is quite a big magnitude"	"Nurses have an attitude towards those patients....the fear that we will catch TB in the process of nursing patients. Some of the nurses have compromised immune due to HIV, be it Diabetes which is more common and stress. Like myself, I am really stressed, [laughing] you can imagine someone coughing in front of you it is disheartening" "... when I am at home or I am on leave, people will then call me...I do not know whether it is the attitude, lack of knowledge or the fear of catching TB. [Laughing]..."	"The motivation is very low but when working with the patients now it is very difficult to ignore them because they are not the ones who are supposed to pay me. But eish it is very difficult."
Harare M. Province\OI nurse, Facility 4			"I am the only OI nurse. Most of the work that is supposed to be done is done by me and so at the end of the day, I can get overwhelmed and not do all that needs to be done."	"The shorter course will be best because most clients are complaining of taking a lot of pills."		