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Healthcare workers' perspectives on barriers to and facilitators of the implementation of national tuberculosis programme guidelines for management of pre-treatment loss to follow-up in Ekurhuleni district, South Africa

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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

SCHOOL OF PUBLIC HEALTH

HEALTHCARE WORKERS' PERSPECTIVES ON BARRIERS TO AND FACILITATORS OF THE IMPLEMENTATION OF NATIONAL TUBERCULOSIS PROGRAMME GUIDELINES FOR MANAGEMENT OF PRE-TREATMENT LOSS TO FOLLOW-UP IN EKURHULENI DISTRICT, SOUTH AFRICA

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A research report submitted to the Faculty of Health Sciences in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE IN EPIDEMIOLOGY IN THE FIELD OF IMPLEMENTATION SCIENCE

Supervisor: Professor Latifat Ibisomi

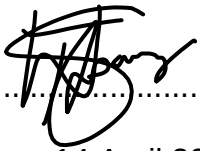
Co-Supervisor: Dr Oludoyinmola Ojifinni

APRIL 2021

Declaration

I, Tasanya Nomaliso Chinsamy declare that this research report is my own, unaided work. It is being submitted in partial fulfilment of the requirements for the Degree of Master of Science in Epidemiology in the Field of Implementation Science at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this, or any other, University.

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Candidate's signature: 

Date: .....14 April 2021.....

For God
who is.

For Siga & Kanaka and Joe & Miriam
who lived hard but beautiful lives
to give my parents everything they could.

For Joy
who gave up many of her own dreams
to help me work towards my own.

For Brian
who fought for freedom
and taught me to love justice, diversity and service to all humanity.

For Alex
who taught me that I am an African
and that the spirit of Ubuntu lives within me.

Abstract

Introduction: Tuberculosis (TB) control in South Africa is sub-optimal despite the comprehensive National TB Programme. One factor contributing to poor control is the pool of pre-treatment lost to follow up (LTFU) patients. While a plan for managing these LTFU patients is laid out in the Tracing and Retention in Care Standard Operating Procedure (TRIC SOP), pre-treatment LTFU rates remain high. This study aimed to explore healthcare workers' perspectives on barriers to and facilitators of the implementation of this guideline in clinics in the Ekurhuleni District. Furthermore, the differences and similarities between under-performing and well-performing clinics were explored.

Methods: A qualitative study was conducted at three study sites. One was well-performing and two were under-performing clinics with regard to pre-treatment LTFU in Ekurhuleni District. The Consolidated Framework for Implementation Research (CFIR) was used to guide data collection and analysis. In-depth interviews were conducted. Fourteen healthcare workers involved in implementation of the TRIC SOP were interviewed. After transcription and de-identification of data, coding was done using MAXQDA software. Both inductive and deductive coding were used, and framework analysis was conducted. The themes were grouped according to the CFIR domains.

Results: The healthcare workers experienced barriers relating to the guideline itself, poor accessibility of the facilities, patient-related socio-economic challenges, safety issues as well as internal facility-related factors. In the domain of Intervention characteristics (aspects of the intervention itself that could affect its implementation), the guidelines were viewed as not being comprehensive enough. In the Outer setting (social, economic, political and physical environment in which the clinics function), poor clinic accessibility, poor patient socio-economic circumstances, stigma and lack of safety were barriers . In the Inner setting (characteristics of the clinics implementing the interventions) barriers included staff constraints and lack of transport, while use of electronic registers and devices were facilitators in this domain. Under the domain of Individuals involved (characteristics of people involved in implementation of the intervention), lack of adequate training and a lack of

acknowledgement of healthcare workers' efforts were barriers to healthcare workers being able to implement the interventions effectively. Under the domain of Implementation process (the steps of planning, engaging with relevant stakeholders, executing the interventions, reflection and evaluation), a barrier that emerged was the lack of involvement of facility-level healthcare workers in guideline development and implementation planning.

The facilitating factors experienced by the healthcare workers included Outer Setting factors such as support from partner organisations and the HIV, AIDS, STI and TB (HAST) Team and Inner Setting factors such as the use of electronic data systems and use of electronic devices by community health workers.

Common barriers experienced across the facilities were challenges caused by patient socio-economic circumstances, stigma and the resulting negative attitude to healthcare workers, as well as safety concerns. Both well-performing and under-performing clinics had challenges with lack of transport, staff and training. Common facilitators across all the clinics were external support from partner organisations and the HAST team, understanding patients' counselling needs and the use of electronic data systems. The differences that emerged were that the well-performing clinic was more easily accessible and had additional resources including generators and electronic devices such as smartphones for use by community health workers.

Conclusion: The healthcare workers perceptions of the barriers faced in returning LTFU patients to care included barriers such as patient-related and socio-economic factors which may be beyond the immediate control of the healthcare system. However, some areas of improvement that *are* within the control of the facilities implementing the TRIC SOP were identified. The study has also suggested facilitators that can be maximized upon to reduce pre-treatment LTFU.

Keywords: Tuberculosis, lost to follow-up, initial lost to follow-up, pre-treatment lost to follow-up, barriers, facilitators, implementation

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Abbreviations

CFIR	Consolidated Framework for Implementation Research
CHW	Community Health Worker
HAST team	HIV AIDS STI TB team
ETR	Electronic TB Register
HCW	Healthcare Worker
HIV	Human Immunodeficiency Virus
ILTFU	Initial lost to follow-up
LTFU	Lost to Follow-up
MDG	Millennium Development Goals
NICD	National Institute for Communicable Disease
NSP	National Strategic Plan
NTP	National Tuberculosis Programme
PHC	Primary Health Care
RCT	Randomized Controlled Trial
TB	Tuberculosis
TRIC SOP	Tracing and Retention in Care Standard Operating Procedure
UN	United Nations
SANTP	South African National Tuberculosis Programme
SDG	Sustainable Development Goals
WBOT	Ward-Based Outreach Team
WBOT TL	Ward-Based Outreach Team, team leader
WHO	World Health Organization

Definition of terms

Community Health Worker: For the purposes of this study, community health workers were defined as members of the ward-based outreach team and any other tracers working at the clinic.

HIV , AIDS, STI and TB (HAST) team: A group of healthcare workers who formed an advisory support team for clinics in each district in the areas of HIV, AIDS STI and TB management. HAST teams were led by district HAST managers. In Ekurhuleni the TB programme and the HIV/STI programme had separate managers.

Healthcare Worker: For the purposes of the study, healthcare workers were defined as anyone involved in the implementation of the TRIC SOP for TB patients at the relevant clinics or at the district level.

TB Pre-treatment Lost-To-Follow-Up Patients: Patients who were found to be sputum-positive for TB but did not start TB treatment.

Tier.net: A three-tiered monitoring system for both HIV and TB care. Initially implemented as an electronic HIV register, Tier.net has a TB module that allows for integrated HIV/TB monitoring. Health facilities can implement the system at the tier that is appropriate for their current resource availability, infrastructure and patient load. The first tier comprises of paper-based registers. The second tier comprises of an offline integrated TB and HIV monitoring software. The third tier is an online electronic medical record system. Most primary health care clinics use either tier one or tier two.

Tuberculosis: An infection caused by the organism *Mycobacterium tuberculosis*.

Ward-based Outreach Teams: Teams that consisted of five community health workers and a team leader, usually a clinic nurse. Each team covered a specific catchment area.

Chapter One: Introduction

This chapter presents the global and South African context of Tuberculosis, the problem statement and justification for this study. The aims and objectives of the study are outlined, and the relevant literature is reviewed.

1.1 Background

1.1.1 Global and South African Tuberculosis Problem

With an estimated 10 million new Tuberculosis (TB) infections globally and 1.5 million TB-associated deaths, TB was identified as one of the 10 leading causes of death worldwide in the 2019 WHO Global TB report (1). Eight countries accounted for more than two-thirds of the global TB burden and South Africa carried 3% of this global burden (1). In South Africa, TB has recurrently been the leading cause of death for the past decade with a mortality rate of 110 /100,000 in 2019 (1–3). The WHO estimated the incidence rate of TB in South Africa to be 520/100,000. This incidence rate is more than double the WHO African Region TB incidence rate of 231/ 100,000 and higher than many other high-burden countries where TB incidence ranges from 100-400/ 100,000 (1,4).

With an estimated 76% treatment coverage rate[1] and 65% low coverage of TB prophylaxis for newly diagnosed HIV positive people, the issues with TB control in South Africa are partially explained (1). The low treatment coverage indicates that high numbers of people remain infectious, while the low prophylaxis coverage suggests that there are many people who are highly susceptible and unprotected.(5) The high incidence rates, poor treatment coverage rates and poor prophylaxis rates suggest that TB control is still sub-optimal in South Africa despite its comprehensive National TB Programme (NTP) (5,6).

[1]The treatment coverage rate estimated by WHO was calculated as the number of people notified and treated divided by the country's estimated incidence and includes both adults and children. Note that treatment initiation rates found in provincial and district level data that are used in this report were presented separately for adults and children. The adult treatment initiation rates were calculated using the number of patients >5 initiated on treatment divided by the number of patients >5 who tested positive for MTB on GeneXpert. Therefore these are not the same measure however, both give an indication of the TB picture at different levels.

This plan is outlined in the National Strategic Plan (NSP) for South Africa for 2017-2022, the National TB Guidelines and the associated standard operating procedures (SOPs) (6–8). The NSP lays out the country's goals for managing the TB epidemic. The first four goals relate to prevention, reducing morbidity and mortality through treatment and adherence support, reaching vulnerable populations and addressing the social and structural drivers of the epidemics (6). The National TB guidelines include detailed guidance on all aspects of TB management from initial screening, investigation and contact management to treatment completion, monitoring and evaluation (7). The SOPs relevant for TB pre-treatment LTFU are detailed in the 'Adherence Guidelines for HIV, TB and STIs' which present a package of interventions to aid linkage to and retention in care (8).

In these guidelines there is a specific plan to address management of LTFU patients that is laid out in the Tracing and Retention in Care Standard Operating Procedure (TRIC SOP) put into effect in October 2015 (8). The SOP covers patients in the pre-treatment phase as well as those who have already been initiated on treatment who have been lost to care. It details interventions to assist in returning these patients to care. The interventions include phone calls, text messages and home tracing, which are interventions that have been proven to be effective in managing LTFU patients in South Africa and other high burden countries such as India and China (9–14). However, five years after intensifying LTFU management with targeted interventions, many districts still have high pre-treatment LTFU rates (5,15).

1.1.2 The worsening of the pre-treatment lost to follow-up problem in South Africa

Prior to adopting the United Nations Sustainable Development Goals (UN SDGs), South Africa aimed to achieve the Millennium Development Goals (MDGs) by 2015. However, in trying to achieve the 85% treatment success rate, the NTP focused largely on the Directly Observed Treatment Short-course (DOTS) strategy aimed at patients who were already initiated on treatment (16). Therefore less attention and resources were channelled towards patients in the pre-treatment phase and many

became lost to care even before initiating treatment (17). These patients are referred to as “pre-treatment lost to follow-up” (pre-treatment LTFU) or “initial lost to follow-up” (ILTFU). By 2015, the MDG targets were not reached and the TB incidence rates remained high (16). A contributing factor to poor TB control was the unintentionally neglected issue of pre-treatment LTFU patients (16–18). This has since become a growing problem and these untreated, infectious patients represent an important part of the TB chain of transmission upon their return to their communities (17).

In 2015, the WHO member states, including South Africa, adopted the Sustainable Development Goals (SDGs). Target 3 under SDG 3 is to end the TB epidemic by 2030. (1). However, according to Naidoo *et al*, the rate of decline of TB incidence is not enough to meet these targets (17). If the problem of pre-treatment LTFU is not addressed, TB transmission will not be effectively interrupted, TB incidence will not decrease at a sufficient rate and the goal of ending the South African TB epidemic will not be achieved. The problem of pre-treatment LTFU and the implementation of interventions to combat this are the focus of this research report.

1.2 Problem Statement

The danger of pre-treatment LTFU is twofold. Firstly, at an individual level, untreated TB can lead to severe morbidity and even death. Secondly, at a community level this group of patients contributes to the preventable spread of TB and therefore to poor TB control on a larger scale.

The 2017/18, national statistics for South Africa showed a 91% treatment initiation rate for TB i.e. a pre-treatment LTFU rate of 9% (15). The treatment initiation rate improved to 97.8% in 2018/19 with a pre-treatment LTFU rate of 2.2%. South Africa has nine provinces and the treatment initiation rates ranged from 77.1% to 106.6% across these provinces (5). Five out of the nine provinces in the country reported treatment initiation rates of over 100%(5). This could be due to data errors or due to including patients who were diagnosed clinically and not on sputum.(5) This may have falsely increased the national average to 97.8%. Therefore, there could be an over-estimation of treatment initiation in sputum positive people and an under-

estimation of the pre-treatment LTFU rates. Within each province, many districts were far below the national target of 100% for treatment initiation with the poorest performing district at 54% i.e. a 46% pre-treatment LTFU rate (5). Therefore, although the overall national statistics show an improvement in TB treatment initiation rates, pre-treatment LTFU is still a problem in South Africa. For instance, a study by Naidoo et al in 2017 investigating the TB care cascade in South Africa estimated pre-treatment LTFU to be as high as 12% (17) while another study of five different provinces estimated it to be higher at 25% (19). Therefore although South Africa is five years into implementing a plan with proven interventions targeted at decreasing pre-treatment LTFU, the pre-treatment LTFU is still a problem that contributes to poor TB control.

Addressing pre-treatment LTFU in South Africa is not only relevant for South Africa itself but also has importance for its neighbouring countries. Gauteng Province, the site of study, is an important area in which to achieve TB control. It is one of the economic hubs of the country and the continent. This densely populated province is a gateway for travel within South Africa as well as to and from surrounding countries (20,21). It is therefore a hotspot for the perpetuation of the spread of TB. Failure to control TB in this province may contribute to continued spread not only within Gauteng but beyond the province and beyond the borders of the country.

Within Gauteng, the district of Ekurhuleni has a low ranking (47th/52 in 2017/18 and 43rd/52 in 2018/19) among all the districts in South Africa for managing pre-treatment LTFU (5,15). In 2017/18[2] it was the second poorest performing district in Gauteng with a treatment initiation rate of 73.4%. The poorest performing district was the West Rand. However Ekurhuleni District has a larger total population, is more densely populated, has higher levels of migration into the district and has greater economic activity than the West Rand District (22,23). Therefore, Ekurhuleni District emerged as an important area in which to address the problem of TB pre-treatment

[2] At the time of conceptualization of the study in 2019 the most relevant data was 2017/18 data in which Ekurhuleni was the poorest performing of the populous districts. The 2018/19 data, released in 2020, showed improvement and Ekurhuleni was the third worst performing district in Gauteng above the City of Johannesburg and Tshwane.

LTFU as it is one of the poor performing districts and is in Gauteng Province which, as discussed, is a vital area within which to achieve TB control

1.3 Aim and Objectives

Aim: To explore the perceptions of healthcare workers on the barriers to and facilitators of implementation of the National TB Programme guidelines for management of pre-treatment lost to follow-up patients in Ekurhuleni District, South Africa.

The main research question for the study is: What are the perceptions of healthcare workers on the barriers to and facilitators of implementation of the National TB Programme guidelines for management of pre-treatment lost to follow-up patients in Ekurhuleni District, South Africa?

Objective 1: To explore the perceptions of healthcare workers on the barriers to the implementation of the National TB Programme guidelines for management of pre-treatment lost to follow-up patients in Ekurhuleni District, South Africa.

Objective 2: To explore the perceptions of healthcare workers on the facilitators of the implementation of the National TB Programme guidelines for management of pre-treatment lost to follow-up patients in Ekurhuleni District, South Africa.

Objective 3: To explore the similarities and differences in the facilitators and barriers found between two clinics with a high pre-treatment lost to follow-up rate and one clinic with a low pre-treatment lost to follow-up rate in Ekurhuleni District, South Africa.

1.4 Justification

When a set of proven interventions does not achieve the desired results, this suggests that either the implementation of the interventions or the context within which they are being implemented are not optimal (24). Investigation is needed into

the reasons why these proven interventions are failing and in cases where they have been successful, insight into what has worked well in implementation is useful.

Further, existing studies on the problem of pre-treatment LTFU have largely focused on the patient perspective and their reasons for “defaulting” or becoming LTFU (25–30). There is a lack of knowledge and qualitative research from a provider perspective in South Africa. If South Africa is to find solutions to high pre-treatment LTFU rates and new aspects of the problem to target, further exploration from the *implementation* and *healthcare provider* perspective is needed.

This study allowed for an exploration of similarities and differences between under-performing facilities (a high pre-treatment LTFU rate) and well-performing facilities (a low pre-treatment LTFU rate). The study explored whether there were similar barriers and similar challenges faced by high and low performing facilities. It also explored whether there were differences in the barriers and facilitators experienced by the healthcare workers. The information gathered from the study suggests areas that require improvement as well as facilitators that can be maximized upon. This study therefore makes a practical contribution by adding to the existing literature on where the greatest challenges, knowledge-to-practice gaps and facilitators in the implementation process lie.

1.5 Literature Review

TB, an infection caused by the organism *Mycobacterium tuberculosis,* is difficult to control as transmission occurs via the inhalation of airborne droplet nuclei containing TB bacilli (31). TB has become one of the greatest burdens of disease in low- and middle-income countries due to factors such as overcrowding, malnutrition and poverty, which are associated with a higher risk of developing active TB (25). In South Africa this is worsened by the convergent HIV epidemic (32,33). Under the current NTP, TB control is suboptimal (15,26). This is due to factors such as inadequate screening, missed or incorrect diagnoses, poor treatment adherence, inadequate TB contact management and inadequate TB prevention strategies (17,26,34). As discussed, one of the factors contributing to this poor control is the

pool of pre-treatment LTFU patients. These untreated patients remain infectious and therefore contribute to the sustained spread of TB (35). A South African modelling study suggested that improving and upscaling implementation of interventions aimed at reducing pre-treatment LTFU was one of the most effective methods to improve TB control (36).

1.5.1 Current South African Guidelines

In South Africa, TB investigation and treatment is provided at all primary health care (PHC) facilities in the public sector. When a patient needs investigation for TB, a sputum sample is collected and the patient is logged in the sputum register. They are asked to return in 2-3 days for their results and clinic staff phone patients when their results are ready. Upon returning, sputum-positive patients are initiated on TB treatment and continue care with the TB team (7). The sputum-positive patients that are lost to care during the time between sputum collection and treatment initiation are considered pre-treatment LTFU patients.

There are processes in place in the NTP for managing pre-treatment LTFU patients so that they can be re-integrated into care. The guideline that addresses this is the Standard Operating Procedure for Tracing and Retention in Care (TRIC SOP) that was put into effect in October 2015[3] (8). The components of the intervention are summarized in Appendix B: "*Summary of Procedures Outlined in the SOP for Tracing and Retention in Care (TRIC)*" which was derived from the South African National Department of Health TRIC SOP (8).

The procedures outlined in the SOP include: identifying LTFU patients, drawing up 'defaulter lists', tracing patients telephonically (by phone call or text message) or physically through home visits and, finally, linking them back to care to initiate treatment (8). These interventions have been proven to work in a South African setting as well as in other high-burden settings. A randomized controlled trial (RCT) investigating the use of text message interventions in Cape Town clinics found text message reminders to be an effective way to decrease pre-treatment LTFU (11).

[3] In March 2020, this SOP was revised and split into two SOPs – the "SOP for Tracing and Recall" and the "SOP for Re-engagement in Care." The interventions used are the same as those outlined in the TRIC SOP.

This was in keeping with evidence from a Cochrane review which found that text message and phone call reminders improved clinic attendance (14). Operational research done in India found the use of phone calls as well as home visits to be effective in decreasing pre-treatment LTFU (13). Similarly, a South African study comparing facilities that had tracer teams to those that did not, found that those using tracing interventions such as phone calls and home visits had significantly lower LTFU rates and better TB treatment outcomes (12). However despite implementing interventions such as text message reminders, phone calls and home tracing, which have been proven to work (9–12), there are *still* high rates of pre-treatment LTFU in TB positive patients (12,37).

Factors affecting the implementation of these interventions include patient-related factors, provider-related factors as well as health system and process-related factors.

1.5.2 Patient factors affecting pre-treatment LTFU

The patient-related factors affecting TB LTFU that were most commonly found in the existing literature included stigma, poor socio-economic circumstances, and poor access to care.

Stigma associated with TB

The issue of TB-associated stigma is not limited to South Africa and has long been recognized as a barrier to effective TB treatment and control in many countries around the world (13,38–44). Stigma creates challenges for HCW in TB care. For example, many patients give incorrect details or do not like phone calls or home tracing by community health workers (CHWs). This has been a commonly experienced phenomenon in TB and HIV programmes around the world (45–47). Therefore, stigma creates a significant barrier to interventions that aim to return TB patients to care.

A South African study exploring TB programme managers and ward-based outreach team (WBOT) members perspectives on pre-treatment LTFU found that one of the main reasons that patients did not take treatment was TB-associated stigma(48).

This was found to be an important factor by multiple other South African studies (28,29,49,50). In the South African context, this is worsened by the concept of "double stigma" - the association of TB with HIV. Many people assume that if someone has TB then they also have HIV. Patients therefore try to avoid any association with TB for fear of being indirectly associated with HIV as well (29,51,52). This creates an implementation challenge as patients do not respond favourably to some of the initial interventions such as tracing and therefore the next steps of the intervention such as referral and linkage to care cannot be implemented properly (53,54).

In a literature review of 30 studies on TB stigma, the main themes that emerged were that TB patients felt shame, isolation and fear (54). TB has been seen as "dirty" and associated with poor hygiene and with poverty. Therefore, patients do not want others to know that they are on TB treatment and they avoid being seen with healthcare workers (HCW) or attending the clinic (54). Contrary to this, other studies found that stigma was either not a major deterrent to taking TB treatment, not as great a factor in TB as it is in HIV or that its effect on treatment delays is inconsistent (28,55,56). However, in general most of the literature concurred that TB-related stigma was a barrier in providing TB care.

Socio-economic factors and poor access to care

South African studies investigating the issue of pre-treatment LTFU from a patient perspective have cited socio-economic factors such as poverty, lack of transport, inability to miss work days and poor access to care as factors that worsen this problem and create barriers for people to start treatment (28,37,49,55). Foster *et al* found that even though TB care is free in South Africa, accessing this care comes at a high cost to patients. These were both direct costs (e.g. traveling to the clinic, money for food while there) and indirect costs (income loss from not attending work due to clinic visits) (27). Furthermore, they found that most of these costs were experienced in the pre-treatment phase, which supports the idea that poor socio-economic status is a barrier to returning patients to care for treatment initiation. In contrast to this, Padayatchi *et al* found that South African patients *were* accessing care, but the system was not equipped to manage them appropriately (57). This was

supported by Naidoo *et al* who found that only 5% of patients were lost due to poor access to care. Up to 12% still did not initiate treatment even after accessing care which suggested that difficulty accessing care is not the only problem (17).

1.5.3 Provider factors affecting pre-treatment LTFU

Some of the recurring provider-related factors found in existing research include safety concerns (lack of protection in dangerous neighbourhoods and risk of contracting TB), staff challenges (lack of training, staff shortages), provider characteristics (attitude to patients, HCW motivation) and resources challenges (lack of transport and lack of space) (19,37,58).

Safety concerns

Safety concerns are related to both personal safety while working in the communities as well as protection from contracting TB. There were minimal studies that examined this problem from an implementation perspective. A study on TB tracer teams and an implementation study assessing barriers faced in the general SANTP highlighted that CHWs worked in dangerous areas and were at risk of contracting TB due to a shortage of masks and inadequate space in clinics (37,59). Lack of space made infection control difficult (60). This was a safety risk for both patients and staff. In terms of physical safety at work, a study involving more than 400 CHWs in Gauteng found that almost 65% did not feel safe walking within the areas in which they worked (61). Similar findings around lack of personal safety were reported by multiple other South African studies on WBOTs (37,62–65).

Training and Staff Challenges

PHC facility nurses noted lack of training and inadequate staff as barriers to implementing the SANTP (49). Programme managers who gave their views on pre-treatment LTFU reported that there were not enough TB-trained staff in the facilities and the remaining staff members did not want to work in the TB room. This study also reported that both WBOT and TB managers needed additional training (48). A South African study by Assegaai and Schneider found that although there is an initial basic training for CHWs, there is no formal training thereafter once they start work in

the communities (66). In a study on South African tracer teams, Bristow *et al* found that there was a need to provide ongoing training for TB practitioners and tracers in order to achieve successful implementation of this part of the NTP (37).

On the other hand, adequate training was found to be a facilitating factor for HCWs involved in implementation of the NTP (59,67). It equipped the HCWs to better understand the interventions they were implementing and enabled them to be more effective in meeting the needs of their patients (61). It ensured that they could provide relevant information and counselling to patients (68). Therefore, good training is a facilitator of implementation of the NTP guidelines just as a lack of training was noted to be a barrier.

Poor provider-patient relationships

After studying a large South African hospital and its down-referral PHC facilities, Loveday *et al* showed that poor provider-patient relationships may have contributed to increased LTFU in TB care as patients are reluctant to return after having a bad experience with the clinic staff (58). Patients reported that nurses were disrespectful, had no time for patients, were uncaring and were insensitive.(58) These findings were supported by multiple other studies which found that poor provider attitudes can affect patients' adherence and health-seeking behaviours (50,69,70).

An important part of the provider-patient relationship is the provision of effective counselling with regards to TB testing, diagnosis and treatment. In a systematic review and meta-analysis of 22 RCTs on adherence interventions, 13 trials investigated the effects of good counselling on reducing LTFU rates. The findings were that good counselling was a facilitator in reducing LTFU (71). Understanding a patient's needs and tailoring counselling according to these needs can change patients' perceptions of their illness and lead to better adherence (72). Another systematic review by Munro *et al* supported the idea that increasing counselling and TB-related information will facilitate better outcomes when implementing interventions to return patients to care (73). Although most of the studies focussed on patients who had already started treatment, these are the same misconceptions

about TB and the stigma surrounding it that need to be corrected for pre-treatment LTFU patients.

Healthcare Worker (HCW) Motivation and Self-Efficacy

HCWs felt motivated when they had a good job satisfaction as well as when they received acknowledgement from their managers (59). This in turn was a facilitating factor in HCWs carrying out their roles effectively. This is supported by studies which show that a lack of acknowledgement from seniors led to poor motivation and negatively affected performance of nurses and CHWs (74,75).

Another factor that motivated HCW to perform well was the financial incentives and salaries they received (65). However, in contrast to this, another study found that some HCWs, primarily the CHWs who received only a stipend, felt that the financial compensation was inadequate and this was a demotivating factor for them (76).

HCW Self-efficacy and confidence were important facilitators found to improve implementation of the community interventions. HCW's perceptions of self-efficacy were influenced by the training they had received (76). This is in keeping with the studies discussed previously, which found training to be a facilitating factor in implementing the NTP interventions.

1.5.4 Health System and Implementation Process Factors

Resource Challenges

Resource challenges are a well-documented barrier to the implementation of the NTP. These resource challenges include lack of space, transport, and protective gear (59,61,62,77). Lack of space was identified as a barrier as WBOTS did not have office space or space for meetings and training (62,64). Other HCW did not have a place to see patients and this compromised their privacy, thereby making patients less likely to attend clinic appointments (59). As discussed, lack of space was a barrier contributing to the risk of contracting TB.

Lack of clinic transport was found to be a barrier to effective tracing as CHWs had to walk long distances to find patients (61). Sometimes even when CHWs managed to successfully trace a patient, the patient still did not return to care as the CHWs did not have transport to take the patient back to the clinic and patients were not willing to walk back with them (64,77). Therefore, the final steps in linkage to care still relied on the patient finding their own means of returning to the clinic, which was difficult due to the socio-economic barriers they faced.

Use of electronic monitoring systems and electronic devices

The move away from solely paper-based registers towards the use of the electronic registers and monitoring systems such as Tier.Net, as well as the use of electronic devices for tracing and recording data have been found to be helpful for both clinic-based and community-based staff (64,67,78). Community staff reported that using electronic devices helped to keep them linked to the clinic-based team and made for easier collection of patient information when in the community (67). In a South African study published in 2020 on PHC facility transition into use of an electronic TB register, clinic staff reported that using an electronic system was faster, decreased their workload and made it easier to access and report patient data (78). A South African study on tracing HIV patients who had missed clinic appointments, found that some of the challenges with the transition to electronic systems included existing fears around using a new system as well as the discrepancies between clinic notes and the data captured electronically (79). The data on the electronic system was less reliable as there was missing information compared to the paper-based sources. Another criticism of this electronic system has been that the electronic data systems and TB registers of different clinics are not linked and therefore are only useful if a patient remains in one clinic (79).

Inclusion of communities and grass-roots level HCW in implementation processes

A systematic review on sustainability of health interventions in sub-Saharan Africa found community engagement and buy-in to be essential for effective health intervention implementation. It was found that inclusion of all stakeholders early on in

the planning process was an important factor (80). Including grassroots level HCW at the early stages of planning leads to a better sense of ownership and allows them to adapt the intervention to the context of their facilities and communities (81,82).

This review of the literature shows that there is a greater body of research on barriers than on facilitators of implementation of interventions targeting LTFU. There have been multiple studies investigating the barriers faced in initiating TB LTFU patients on treatment, however, most of these studies present the barriers from a *patient* perspective and not an implementation perspective. Some of the barriers identified were poverty, stigma, poor knowledge of TB, poor access to care, and health service issues like provider attitudes and long waiting times (28,29,49). Other health system barriers identified included lack of resources, poor infection control, inadequate training, poor understanding of patient needs and poor implementation of the NTP (57). However, of note is that these were general barriers faced in the South African National TB Programme (SANTP) and not specific to the problem of managing pre-treatment LTFU patients. There is a lack of literature on pre-treatment LTFU from the perspective of the implementers to investigate why implementing a set of *proven* interventions is still resulting in sub-optimal progress

Most factors identified in the literature as facilitators of implementing the interventions in the NTP were provider and health system factors. These included use of electronic record systems, good training, good counselling of patients, good job satisfaction and acknowledgement from managers. Of note is that many studies explored the NTP as a whole and not just guidelines associated with LTFU patient management. There was less available information on facilitators than there was on barriers to implementing interventions in management of LTFU patients. Furthermore there were fewer studies exploring the problem from the perspective of the implementers.

1.6 The Consolidated Framework for Implementation Research (CFIR)

The Consolidated Framework for Implementation Research (CFIR) was chosen as the framework around which to organize the study and operationalize some of the

elements found from the literature review. It organizes the factors that can affect implementation of the National TB Programme Guidelines to address pre-treatment LTFU. It was used to guide data collection to assess barriers to and facilitators of implementing the TRIC SOP for management of pre-treatment LTFU patients. The CFIR, designed by Damschroder *et al*, was chosen for use in this study as it is a comprehensive framework created from an analysis of 19 different implementation theories (83,84). It was created to include all the domains used across these theories while avoiding duplication of concepts in the final framework. The result was the comprehensive yet concise CFIR consisting of five domains covering 39 constructs. The domains of the CFIR covered all aspects of the implementation setting, intervention, stakeholders and processes involved (83). It was easily adaptable, and the constructs could be altered to fit the study context without changing the core domains of the framework Therefore, due to its comprehensiveness and adaptability the CFIR was chosen as the framework for use in this study. The CFIR was suitable for use in data collection as well as in analysis and therefore allowed for continuity between these processes.

The ‘Intervention characteristics’ domain refers to aspects of the intervention itself that could affect its implementation, including the complexity of the intervention, adaptability, relative advantage and strength of evidence for the intervention (83).

The ‘Outer setting’ domain refers to the social, economic, political and physical environment in which the clinics function when implementing the intervention. This domain also includes the patients’ needs and resources, external policies and incentives and cosmopolitanism or networking between organisations (83).

The ‘Inner setting’ domain refers to the characteristics of the clinics implementing the interventions. This includes factors such as organisational culture, physical and team structural aspects, communication and implementation climate of the organisation that will be carrying out the implementation processes. The inner and outer setting are often not easily separated in reality as different concepts can be considered “inner” or “outer” in different contexts. There is a constant interplay between these two domains (83).

The ‘Individuals involved’ domain refers to characteristics of people involved in implementation of the intervention such as self-efficacy, knowledge and beliefs about the intervention as well as personal attributes. This is affected by factors such as their backgrounds, mindsets, cultural norms, affiliations and work experience. There is a constant interplay between the inner setting or organisation and the individuals involved as the aggregate of individual behaviour affects organisational climate and the organisation can also affect responses or behaviour at an individual level (83).

The ‘Implementation process’ domain refers to the steps of planning, engaging with relevant stakeholders, executing the interventions, reflecting on and evaluating the implementation process. There can be multiple different processes that run sequentially or in parallel that are required for successful implementation of the intervention and this domain incudes all of these processes.(83)

The framework was adapted according to what was found to be relevant to the study context. Figure 1 shows the adapted CFIR framework. Please see Table 1 in Appendix C for the original CFIR framework and additional information on the CFIR domains in relation to this study.

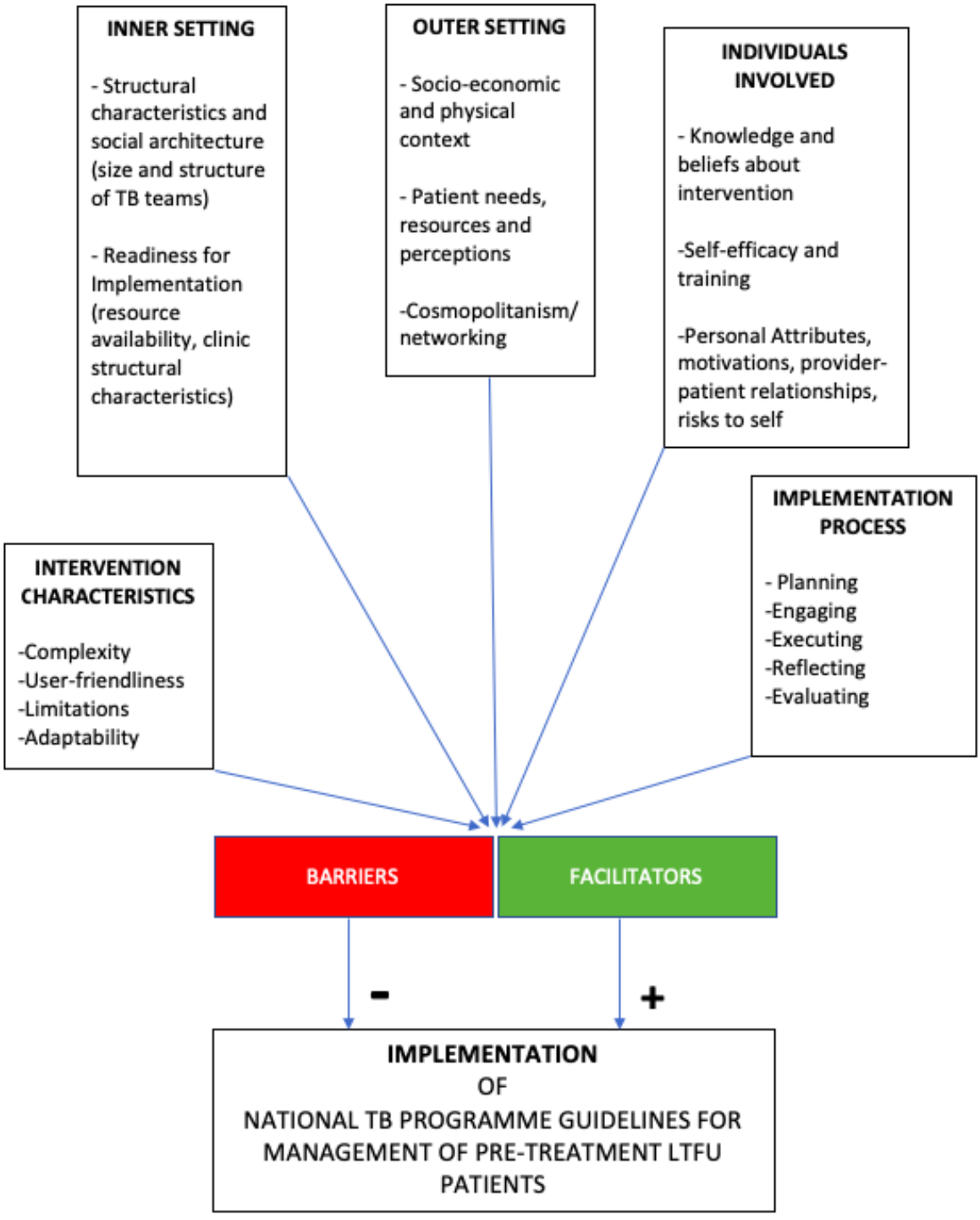


Figure 1 Adapted CFIR Framework

Chapter Two: Materials and methods

This chapter presents the study design, study site, the study population and the selection of participants. It also describes the process of data collection, data management and data analysis in the study. At the end of the chapter the ethical considerations for this study are discussed.

2.1 Study design

The study used an exploratory qualitative approach to explore healthcare workers' perceptions of the barriers and facilitators faced in implementing the guidelines to manage pre-treatment loss to follow-up.

2.2 Study site

2.2.1 Ekurhuleni District

This study was conducted within the Ekurhuleni District of Gauteng Province in South Africa. At the time of site selection Ekurhuleni District had one of the lowest TB treatment initiation rates among all the Gauteng districts. It was second to the West Rand District, however, as discussed, the West Rand is not as densely populated (211 persons per km^2 as opposed to 1803 persons per km^2), has a smaller total population and has less economic activity and migration than Ekurhuleni. It therefore has a lower risk of rapid TB transmission within its population compared to Ekurhuleni District, which was chosen for the study. Based on the 2017/18 data, the treatment initiation rate for Ekurhuleni District was 73.4% but this improved to 91% in 2018/19 (5,15). This is still sub-optimal as the national target is to achieve 100% TB treatment initiation in patients sputum positive patients (5).

Ekurhuleni District has a population of 3 561 977 people with a population density of 1803.5 persons per km^2 the second highest in the province (second to City Of Johannesburg, which was not selected as the study site as it showed a better performance in TB treatment initiation at the time of study site selection) (5,15). There are around 90 primary health facilities serving the district. These facilities are the primary point of care for TB screening, diagnosis and treatment. TB treatment is not routinely provided at secondary, tertiary or quaternary institutions. Although TB may be diagnoses and treatment may be started at higher levels of care, the patients

are down-referred to primary health facilities for continued TB care. The estimated medical scheme coverage is 23.8% therefore most patients' first point of care for TB diagnosis and treatment is the public sector (5). The high population density and poor treatment initiation rates in Ekurhuleni contribute to the potential for rapid TB transmission and poor TB control.

2.2.2 Selection of Primary Health Care Clinics

The study was conducted at three PHC clinics in Ekurhuleni District. One well-performing clinic (low pre-treatment LTFU rate) and two under-performing clinics (high pre-treatment LTFU rates) were chosen. Ekurhuleni District provided the data on treatment initiation rates for all facilities in the district for the period of January to December 2019. The facilities that met the criteria of low (less than 10%) or high (greater than 50%) pre-treatment LTFU rates with adequate TB patient numbers were chosen. Clinics with lower numbers of patients were not chosen as they may have very small TB teams and therefore may not have had enough staff to interview.

The clinics with the lowest LTFU rates (less than 10%) were ranked according to the number of new TB patients that the clinic had recorded. Of these, the clinic that had the greatest number of TB patients was chosen as the well-performing clinic. The clinics with the highest pre-treatment LTFU rates (greater than 50%) were ranked according to the number of new TB patients they had recorded. Of these, the clinics with the two greatest number of new TB patients were chosen as the under-performing clinics.

2.2.3 Selected Primary Health Care Clinics

In order to maintain anonymity of staff, clinics names are not shared in this report as some clinics in the district had small TB teams and therefore participants could be identified if the clinic name is shared. The clinics are referred to as "Clinic A" (under-performing), "Clinic B" (well-performing) and "Clinic C" (under-performing).

Clinic A (under-performing) serves a catchment population of around 25 000 people and has an average monthly patient count of 4000 people. Over the period of

January 2019 – December 2019, Clinic A had 51 people over the age of five who tested positive for TB and of these patients, 18 were started on treatment. There was a treatment initiation rate of 35% and therefore a pre-treatment LTFU rate of 65%, which made this clinic one of the under-performing clinics in the district regarding pre-treatment LTFU.

Clinic B (well-performing) serves a catchment population of around 67 000 people and currently has an average monthly patient turnover of 10 403 people. Over the period of January 2019 – December 2019, Clinic B had 140 people over the age of five who tested positive for TB and of these people, all were started on treatment[4] which made Clinic B a well-performing clinic.

Clinic C (under-performing) serves a catchment population of around 57 000 people and currently has an average monthly patient turnover of close to 6500 people. Over the period of January 2019 – December 2019 Clinic C had 113 people over the age of five who tested positive for TB and of these people, 48 were started on treatment. There was a treatment initiation rate of 42% and therefore a pre-treatment LTFU rate of 58% which made this clinic one of the under-performing clinics in the district regarding pre-treatment LTFU.

Table 1: Patient Statistics for Selected Primary Health Care Clinics

Clinic	Catchment	Average Monthly Patient Turnover	>5 Tested Positive for TB (Jan-Dec 2019)	>5 Started on treatment	LTFU Rate
A	25 000	4 000	51	18	65 %
B	67 000	10 403	140	140	0 %
C	57 000	6 500	113	48	58%

[4] There were other clinics in the district with equally high treatment initiation rates however, this clinic was chosen as it is one of the well-performing clinics in the district with a higher number of TB patients.

2.3 Study population

The study participants included all HCWs involved in implementing the SOP for managing pre-treatment LTFU patients at the three chosen clinics and at the district during the interview period (February to June 2020). For the purpose of the study, a HCW was anyone involved in the implementation of the TRIC SOP at the relevant clinics or at the district level. This included TB nurses, data team members, CHWs (WBOT members and tracers), clinic managers and district-level HCWs involved in the TB programme.

The TB nurses were responsible for the initial visit with a patient who was symptomatic for TB and the patient was counselled, sputum samples were taken to test for TB and a follow-up date was given to the patient to come back for the results. Nurses also called patients when results were ready. Data team members were responsible for flagging patients who did not come back to collect their results and start treatment. They drew up defaulter lists of these patients for the CHWs to contact. CHWs included members of the WBOT as well as tracers. They traced patients telephonically and if this was unsuccessful, physical tracing and home visits were performed. Clinic managers were involved in ensuring that there were adequate staff and resources. They were also responsible for ensuring training of the staff by sending selected staff to formal training and arranging for this information to be shared with the rest of the team. District HCWs were involved in communicating important information to clinics as well as assisting with challenges such as resource and logistical challenges. The district had regular meetings with the HIV, AIDS, STI and TB (HAST) teams as well as the clinic managers to discuss difficulties and progress of the TB programmes.

Inclusion criteria: 1) At least 18 years old 2) Involved in implementing the SOP for management of TB pre-treatment LTFU patients at the relevant site and 3) longer than six months working in their current role in the TB programme.

2.4 Participant Selection

Purposive sampling was used for selecting the study participants as it allowed for selection of people who have specific experience and knowledge of different roles relevant to the implementation of the guidelines (85). The total planned number of participants was 16 (five from each clinic and one district level HCW involved in the TB programme). At each clinic, an initial meeting with the clinic managers enabled the identification of staff members that were involved in the TB team and they were approached to participate in the study. The clinic managers were not informed which staff members participated and a study number was allocated to each participant. There were 14 participants in total - six participants from Clinic A, five from Clinic B, two from Clinic C and one participant from the district. Initially six people had agreed to participate in the study in Clinic C. However, due to the coronavirus pandemic, the clinic staff were under increased pressure and HCW who had initially agreed to participate declined due to lack of time.

2.5 Data collection

Semi-structured interviews were conducted using an interview guide. Face-to-face interviews were conducted at the Primary Health Care facilities between February and March 2020 and one telephonic interview was conducted in June 2020. The interviews were conducted in English. The interview guide was designed by the investigator based on the CFIR constructs relevant to the study. There was one interview guide for HCW in the TB Team and a separate guide for management level participants ie. clinic managers and district level participants. The interview guides are attached in Appendix D. The themes explored included how the clinics manage pre-treatment LTFU and the participant's role in this. There were also enquiries related to each domain of the CFIR – intervention characteristics (complexity, necessity of steps, user-friendliness), outer setting (understanding patients' needs and resources, patients' views on tracing interventions, socio-economic factors), inner setting (resources, structural characteristics of clinic staff, communication, staff characteristics), individuals involved (confidence, training, personal characteristics) and processes involved (participants views on how well the implementation process was conducted).

Initially the interviews were to be conducted face-to-face at each of the clinics however, once the national lockdown began, interviews had to be conducted telephonically. In total, 13 face-to-face interviews (at the health facilities) and one telephonic interview were done. The interviews were between 35 and 80 minutes in duration and were audio recorded. Field notes and memos were recorded throughout the study.

2.6 Quality Assurance

Quality was assured by first pre-testing the interview guide with two people who were at a different clinic in the district. The feedback received from the pre-test was that the questions were easily understandable and the pre-test participants felt comfortable answering all the questions. After this pre-test, minor adjustments were made such as adding extra prompts in the interview guide where necessary.

For dependability, two coders coded four of the transcripts and an intercoder agreement was done using MaxQDA. The differences in coding were discussed and resolved and the codebook was edited based on the changes agreed upon.

2.7 Data management

The audio files on the recording devices were transferred to an access-controlled folder on a laptop. Participant details were kept in a separate password-protected folder. Interviews were transcribed verbatim. Transcripts were reviewed and edited to remove all identifying information. Transcripts were checked again by comparing the transcribed interviews to the audio file to ensure accuracy of transcription. The final transcripts were imported into MaxQDA for coding.

2.8 Data Analysis

The Framework Method of analysis was used. This is made up of five steps and allows the researcher to analyse the data in a structured and methodical way (86). During this process the data was reviewed, coded and analysed as per the well described processes involved in qualitative data analysis (86–88). The same framework that was used to direct the interviews in the data collection stage (CFIR)

was used in data analysis to ensure continuity between the data collected and the categories for analysis (88).

The analysis process was made up of five steps (86):

1) Familiarization with the data
2) Identifying a framework for analysis
3) Indexing or coding
4) Charting the data in a matrix
5) Mapping and interpretation of data

The first step was familiarization with the data by reading through the transcripts multiple times to get an overview of the data and to start to note common major ideas and recurrent themes (87). Even before formal data analysis, transcription allowed initial familiarization with the data. After transcription, the transcripts were rechecked against the audio which allowed another review of the data both by reading and by hearing it. After the transcripts were checked they were read again, and notes were made for each transcript on the main ideas for each of the areas discussed in the interview. This allowed for a general overview of each participant's experiences.

Step two is usually identifying the framework (87), however in this case, CFIR had already been selected. The framework was used as a guide to build an initial coding system based on the constructs of CFIR in order to begin step three.

The third step was coding which involved both deductive coding as well as inductive coding. Because an existing framework (CFIR) was used, there were pre-existing concepts or "a priori" themes that allowed for deductive coding under each of the CFIR domains. This coding system was then expanded as inductive coding was used to create the sub-codes as they emerged from the data. As discussed, the codebook was refined after the process of the intercoder agreement was completed. The final codebook is attached in Appendix E.

After coding all the transcripts, some of the smaller subcodes were merged to form broader codes. The main codes of the CFIR domains remained unchanged. The final

coding system was made up of 6 main categories (the CFIR Domains and an additional “general” category) with 29 codes and 37 subcodes.

Step four was to chart the data, which was done by creating a matrix with the codes in rows and each participant in a separate column (87). Therefore, each cell in the matrix represented the view of a specific participant on a certain topic. Once this matrix was done, summaries were written for each code for each participant. This matrix allowed for analysis of different codes *within* a single participant as well as for analysis of a specific code *across* different participants. By reviewing each results table on its own *and* in context with all the other tables, the main themes became clearer. This was compared to the earlier summaries that were done on the initial review of each transcript to ensure no major themes had been missed.

The final step was mapping and interpretation of the data where different concepts, patterns and associations were identified (87). The barriers and facilitators were expanded upon and the results were written up. As part of objective three, the similarities and difference between the well-performing clinic and the under-performing clinics were explored.

2.9 Ethical Considerations

Ethics approval was received from the WITS Human Research Ethics Committee on 23 January 2020 (M191037). Final permission from the Ekurhuleni District Research Committee was received on 19 February 2020. In April 2020 permission was granted by WITS HREC to conduct the research via telephonic interactions. These permissions can be found in Appendix F.

Informed consent was obtained from each participant. Prospective participants were first approached to meet for a one-on-one information session. At the session, the study information document was shared with the participant and discussed paragraph by paragraph. They were contacted a few days later to confirm whether they would like to participate or not. A consent and interview time was set up with those who decided to continue. Two consent forms were signed – one for participation in the study and one for audio recording. For one participant the

consent process was done telephonically and was audio-recorded. The consent forms and information sheets are attached in Appendix G.

Anonymity was ensured by de-identifying all data and using study numbers for participants during interviews instead of their names and clinics. For the report write-up participants were grouped according to their roles and given a number. Their study number, role and clinic were never reported together. This helped to protect the identity of the district level participant as they were the only participant not associated with any clinic. Confidentiality was ensured as far as possible by holding the interviews in a private room and at a time of day that was most comfortable for the participant.

Chapter Three: Results

In this chapter, the findings of the study are presented for each objective – barriers, facilitators and lastly, similarities and differences found between the well-performing and under-performing clinics. Barriers and facilitators that are common to both well-performing and under-performing clinics are discussed under objectives one and two and are not discussed in detail under objective three. Only the barriers and facilitators that showed differences between the clinics are discussed in detail under objective three. The participants have been grouped and given a number according to their role (e.g. TB Nurse 1, TB Nurse 2 etc). In the first two objectives, the participant number and role is used. In the last objective, only the clinic type (well-performing or under-performing) and participant role is used. This is to protect the identity of the participants as some of the clinics had very small TB teams and if participant number, role and clinic are all used together it may compromise the preservation of participant anonymity.

3.1 Demographics of Participants

All the HCWs who agreed to participate were female. There was only one prospective male participant, a WBOT team leader, but he was unable to participate due to time constraints. The participants comprised of one clinic manager, one participant from the district, three nurses, two WBOT team leaders, two CHWs and five data team members. The ages of the participants ranged from 23-62 years old and the median age was 46 years old. The number of years spent in the TB role ranged from 7 months to 16 years and the median number of years spent in a participant's TB role was 4 years.

Table 2 Demographic Characteristics of Participants

Variable	Value	Frequency
Age	<30	5
	30-50	5
	>50	4
Role	Management Level HCW (District HCW and Clinic Head)	2
	TB Nurse	3
	WBOT TL	2
	CHW/Tracer	2
	Data Team Members	5
Years of Experience in role	<5	7
	5-10	4
	11-15	2
	16-20	1

3.2 Themes

Table 3 Themes found under Objective 1: Barriers

CFIR Domain	Barriers
Intervention Characteristics (Aspects of the intervention that could affect its implementation such as how complex it is or how user-friendly it is)	Lack of comprehensiveness of TRIC SOP
Outer Setting (Social, economic and political environment in which the clinics function. Includes the patients' needs and resources, external policies and incentives and networking between organisations)	Poor clinic accessibility and patient socio-economic challenges Challenges due to TB-related stigma Safety concerns
Inner Setting (Characteristics of the clinic such as available resources, communication, physical and team structural aspects, and implementation climate.)	Staff constraints Lack of transport for community health workers
Individuals Involved (Characteristics of people involved in implementation of the intervention. Includes self-efficacy, motivations, knowledge and beliefs about the intervention, personal attributes.)	Lack of acknowledgement of HCWs' effort Lack of training
Implementation Process (The steps of planning, engaging, executing and reflecting that occur during implementation)	Lack of involvement of facility-level HCW in guideline development

Table 4 Themes found under Objective 2: Facilitators

CFIR Domain	Facilitators
Outer Setting	External support Understanding patients' counselling needs Patient compliance
Inner Setting	Use of electronic data systems and electronic devices
Individuals Involved	Passion for working in healthcare

Table 5 Themes found under Objective 3: Similarities between under-performing and well-performing clinics

CFIR Domain	Common Barriers	Common Facilitators
Outer Setting	Patient socio-economic factors: challenges with transport, money and food Challenges due to TB-related stigma Safety concerns	External support Understanding patients' counselling needs
Inner Setting	Resource challenges: • Staff constraints • Lack of transport for community health workers	Use of electronic data systems
Individuals Involved	Lack of training Lack of acknowledgement of HCWs' effort	No common facilitators found

Table 6 Themes found under Objective 3: Differences between under-performing and well-performing clinics

CFIR Domain	Under-performing	Well-performing
Outer setting	Poor accessibility of clinic for patients	Good accessibility of clinic for patients
Inner Setting	Load shedding and generator not functional	Load shedding but functional generator available
	Limited access to electronic devices for CHWs	Routine use of electronic devices by CHWs

3.3 Perceived barriers to the implementation of the South African National TB Programme Guidelines for management of pre-treatment lost to follow-up patients in Ekurhuleni District, South Africa.

3.3.1 Intervention Characteristics

This domain refers to aspects of the intervention (such as complexity, adaptability and user-friendliness) that affect its implementation. In this domain only one theme emerged, which was the lack of comprehensiveness of the TRIC SOP.

3.3.1.1 Lack of comprehensiveness of the TRIC SOP

Although HCWs reported the guidelines to be generally user-friendly and the intervention to be simple, some reported that it was not comprehensive. It did not cover certain scenarios that HCWs found themselves in. The main difficulty that arose was how to trace patients when the assumptions made in the guidelines were not met on the ground. For example, some of the assumptions were that the patient provided correct contact details, that the clinic had a working phone or that the clinic had transport to reach patients who lived in inaccessible places. There were no contingency plans in the guideline for what to do in cases where these assumptions were not met.

"They are user-friendly, but I think somewhere there's information that is missing. It's not fully informative because some of the problems that we [are] faced with are not in the guideline. You have to use your own common sense… because the guideline doesn't say anything about that problem." **- TB Nurse 1**

"There's one [part of the guideline] that says give three phone calls and then trace the patient within seven days. Now the challenge is you ***do*** *have a contact number but [it's the] wrong contact number. What do you do because you can't call? If you call three times, all the times you're calling, [you get to] voicemail."* **- TB Nurse 2**

"it focuses on when the patient is traceable, [but] how do we trace the untraceable? Because those are the most dangerous patients." **- Management Level HCW 1**

3.3.2 Outer Setting

The outer setting refers to the social, economic, and political external environment in which an intervention is implemented. This domain includes factors that are outside of the clinic itself and includes the patient-related aspects that affect implementation (83). The barriers found in this domain were poor clinic accessibility, poor patient socio-economic circumstances, stigma and the resulting negative attitudes towards HCWs, and lastly, HCW safety risks.

3.3.2.1 Poor clinic accessibility and patient socio-economic challenges

Accessibility of the clinic was found to be an important factor in a patient's ability to return to care. Accessibility is discussed under objective 3 as it was a difference found between under- and well-performing clinics. Patient's socio-economic circumstances also affected their ability to return to care to start treatment. HCWs reported that patients did not come back for treatment initiation as they did not have any means of transport and were often unable to walk to the clinic as they were too

ill. Patients have reported to HCWs that even if they could attend clinic visits, they didn't have enough food to take with the medication and were therefore reluctant to take treatment. Multiple HCW felt that if government could give porridge and supplements consistently to people it would encourage them to start treatment.

> *"The problem is that we are dealing with sick patients who are poor. The distance from their homes to the facility [is far]… they walk from the informal settlement to here because they cannot even afford [the] transport fare."* **– Management Level HCW 1**

> *"Some will tell you that 'I didn't come maybe on this day because I didn't have money for transport. I was hungry… I was tired. There's no food' "* **– TB Nurse1**

> *"Some of them complain to us that 'sister I do understand that I must drink these tablets, but I don't have food.' So, if the government can give them food parcels, especially the TB patients… Because… these tablets make them hungry".* **– WBOT TL 1**

3.3.2.2 Challenges due to TB-related stigma

The challenges resulting from TB-associated stigma were that patients had a poor response to HCW and to tracing interventions, they deliberately gave incorrect details to make themselves difficult to trace and they were dishonest or hostile towards HCWs when they were successfully traced.

TB and HIV stigma and poor attitude to HCW

Although the participants were not patients themselves, they understood that patients fear the stigma around TB. HCW reported that patients would feel embarrassed if people in their community found out they had TB. Furthermore, people associated TB with HIV and this increased the stigma felt by TB patients. People who are HIV negative didn't want to take TB treatment as they were afraid that others would assume they were HIV positive. Those that were HIV positive were

worried about “exposing” their status. This stigma affected their attitude towards the HCWs, and patients did not want to be traced or seen with them for fear of any association with TB and, by extension, HIV. In addition, HCW reported that patients had a poor attitude towards them because patients felt that tracing was an invasion of their privacy and ‘exposed’ their illness to their families and community.

> *“They [patients] don't want to be seen with the health workers at their house because [people will think of] of other diseases... [Like] HIV… People will think I'm HIV positive... So, they don't want to be seen with the health workers outside the health facility.”* **– TB Nurse 1**

> *“They complain that we’re invading their privacy. No one likes anyone to come to your door…. And we are exposing them. There’s no confidentiality when you come to their doors.”* **– Management Level HCW 1**

Difficulties in contacting patients due to incorrect information or patient dishonesty

Patients were so afraid of associating themselves with TB that they provided incorrect telephone numbers and addresses so that they could not be traced by HCWs. They attended clinics that were far outside their area to avoid seeing people that they knew. This made it difficult for HCW from the clinic to trace them. Tracing would lead to the incorrect household or HCW found that the patient lived far outside the catchment area of the WBOT covering the clinic and the team could not trace them.

> *“Some patients, don’t provide their real contact details which makes it very difficult for tracing… I think it’s stigma related. ‘People will find out that I’m TB positive and then they won’t welcome me freely… so I don’t want anybody to know’ ”* **– Data Team Member 5**

> *“They [patients] can come [from] far because they don’t want to go to their nearest clinics… Because they don’t want to see people that they know… When that patient comes to the clinic and [becomes] our lost to follow [up] we*

won't be able to go and trace because [the] WBOT team trace according to their demarcations." **– Data Team Member 4**

Even when HCW managed to call the correct number or find the correct address, some patients did not open the door, pretended not to be home or pretended to be someone else. Therefore, even when tracing interventions were successfully implemented, patients did not respond well to these interventions and this presented another barrier to returning them to care.

"Sometimes they don't even open. They just peep by the window and then see that there are health workers and then they don't open. [It's] so challenging." ***-TB*** **Nurse 1**

"They [patients] can't even tolerate it [tracing interventions]... Sometimes they [HCW] will ask for a patient and the patient says 'no, she just left' and you're actually speaking to the patient that will pretend to be someone else… even on the phone it's the same thing. 'Can I speak to whoever?' And it's like 'no, she just went out', and I can tell that's her but what can I do?" **–CHW/Tracer1**

3.3.2.3 Safety concerns

There were four recurrent safety concerns that emerged as barriers to HCWs' ability to perform their roles. These were aggressive behaviour from patients, fear of working in high-crime areas, fear of gender-based violence and the fear of contracting TB.

Aggressive Behaviour Towards HCWs

Some patients were hostile towards HCWs due to the stigma they felt by being associated with HCW who provide TB care. This hostile behaviour from patients toward HCWs contributed to HCWs' concerns about their safety. Some patients became so angry about HCWs being seen at their homes that they became aggressive towards HCWs or set their dogs loose to chase them away. The HCWs were forced to run away, for their own safety, without having a chance to contact the

patient. This meant that they were unable to successfully implement tracing interventions to link these patients back to care. This is linked to the theme of stigma and the resulting poor attitude to HCW and tracing interventions.

> *"You go to a person trying to trace and then they tell you 'should you ever come back here… now you want the community to see that I'm taking treatment?... I don't want to see you here anymore'. Then some promise to kill them… promise to beat [assault] them"* **– TB Nurse 2**

> *"They [CHWs] are not safe also because… some people, they just open their gates and then open for the dogs… You have to run for your life. Sometimes people don't want you to come near their houses so it's not very safe".*-**Data Team member 1**

Fear of working in high-risk areas

HCWs felt unsafe in the areas they worked in and voiced concerns about being attacked or robbed as these were areas with high crime rates. Multiple HCWs reported that if there were more male CHWs, they would feel safer while tracing in the communities. Sometimes if they felt unsafe, they did not continue tracing and left the area without contacting the patient. This lack of security in high risk areas prevented them from implementing the tracing interventions effectively.

> *"The [lack of] safety is a risk because they can mug you outside, especially those who are walking… they can be mugged, they can be injured. There are so many things that can happen to them because it's women. There's no men amongst those people who are tracing, it's only women."* **– TB Nurse 1**

> *"There's a high crime rate, there's no tarred road, there's gravel roads… and you find there's only females. Two females doing the tracing… going house to house. So, that's the problem…. it's not safe or they feel they are not protected and then they turn back without the patient."* **– TB Nurse 2**

Fear of gender-based violence

The desire for more male CHWs stemmed from female CHWs' fears of gender-based violence, which they have known to occur in the areas in which they work. Many of the participants reported that they are afraid of being raped – a very specific fear, but one that emerged strongly and recurrently within the theme of safety. HCW did not feel safe walking to and from the areas in which they worked and did not feel safe going into patients' homes once they were already *within* the area.

> *"You see it on TV, gender-based violence, but it's happening down here, where a man will intimidate you physically and they know that this is a female dominated profession. It's scary… they only see it when somebody has been killed but our community, they are very, very aggressive. They take out their anger on us".* **– Management Level HCW 1**

> *"We don't go in those household[s] where you see that this house is full of men. We don't go in because we are afraid of them…We hear that it happened in [Area A6], they raped a community health worker. We are not safe… On the way to the catchment area, even in the households we are not safe because we are only women. They can rape us!"* **– WBOT TL 1**

For some, this fear was so great that they even carried condoms in their pockets, which tells of how real this daily fear was for them. Due to this fear, the CHWs went to each household in pairs (and therefore covered fewer households at a time) or as suggested previously, at times they altogether avoided households where there are only male patients. This has negative consequences for the tracing process as CHWs are not able to cover the optimal number of patients or homes in the time they have available.

> *"There was a time where we used to carry condoms in our pockets because we thought 'if I enter somewhere they might attack us, they might rape us…' that's the reason why we go into pairs… we don't just go inside. [We] stand at the door, ask for someone then step out so that we can watch…. if we find people who are smoking dagga in there, maybe it's four guys or six of them,*

they are busy smoking then we enter and close the door. What do we expect?" **– CHW/Tracer 2**

"It's difficult because -- if we go alone, we have a risk of being raped…We go in pairs." **– Management Level HCW 1**

Fear of contracting TB

Another personal risk to HCW was that of contracting TB and this made them reluctant to work in TB care. This theme is part of both the outer and the inner setting as this risk affects HCW in the community setting as well as within the clinic. This fear of contracting TB contributed to the shortages of staff available and willing to work in TB. While the participants did not report a lack of protective gear such as masks, some did point out the limited space in the clinic as a factor that could contribute to the risk of contracting TB. Mostly participants reported that staff were not willing to work in TB because they saw other colleagues in the clinic contract TB and become ill. TB has reduced the quality of life for some HCW and they still suffered the long term residual effects of it. This resulted in some of the other HCW in the clinic becoming afraid of working in the TB team.

"Our clinic is very small. Even you can see the, the room that I'm working in is very small for TB because we need [better] ventilation. So, the layout of our clinic is not good. Even the waiting area- the TB patients, when they wait, they are mixing with the other acute and chronic conditions patients." **– TB Nurse1**

"People are not willing to [work in TB], especially after we've had three nurses and myself with TB, they just say 'no… It's a lot'. Ill health also does affect [us], I'm not 100% [well]. I'm 50% because of the TB. It has reduced my quality of life". **-Management Level HCW 1**

"Sometimes I feel like they are just not interested. They don't want to do TB because of the fear of contracting TB. I think because now there's two cases of the staff members who got TB in the past year. Now everyone is like 'I'm not going to [TB room]. I'm scared.' " **- TB Nurse 2**

Therefore, there was a shortage of staff members who were *willing* to work in TB care but in some clinics there was also a shortage of staff members who were *able* to safely take on this role. This was a challenge in clinics where the only available staff members were high risk, for example HCW who were immunocompromised or have previously had TB and had residual lung damage. The clinics sometimes had as little as one TB nurse and some clinics did not have a relief nurse to cover if the TB nurse took leave.

> *"You cannot expose that health worker to TB. If she's immunocompromised… she's got cancer, she's on steroids, all those…that is the biggest challenge that we have… because right now I've got only one nurse who's healthy."* **– Management Level HCW 1**

> *"Sometimes, like now, sister [the TB nurse] is going on leave, we don't know who is going to relieve her and how is she going to manage."* ***– WBOT TL1***

The risk of contracting TB is closely linked to the reluctance to work in TB care and therefore to the inner setting theme of lack of TB staff.

3.3.3 Inner Setting

This refers to the characteristics (cultural, structural, resources and implementation climate) of the clinics that were implementing the interventions in the TRIC SOP (83). In this domain the greatest barrier found was a lack of resources, specifically lack of staff and lack of transport.

3.3.3.1 Staff constraints

The staffing difficulties arise from 3 areas – reluctance to work in the TB team (as discussed in the theme of 'fear of contracting TB'), the high turnover of young staff and lastly, the lack of cross-training of HCW on TB care.

High turnover of young, skilled staff

Staff shortages were worsened by the difficulty in retaining staff. Younger staff left after they had been trained and were sometimes not replaced. Therefore, there was a need to train new staff frequently. This was because many of the staff were from the partner organisations and were employed on a contract basis. This means that clinics had to constantly train new people who then left with the skills and knowledge they had gained.

> *"The young ones, they don't stay, they leave… so you train them, they leave... You train them, they leave".* –**Management Level HCW 1**

> *"They must hire them as permanent staff… When the contract ends then I have to train another person… so I used to get different people to train… I think every year…and they [partner organisations] take them if they are good."* **-Data Team Member 1**

> *"We used to have [interns]… now we don't have…. he got another job… they didn't replace him"* **–Data Team Member 5**

Lack of cross-training on TB

Another challenge with staffing was that nurses were not cross-trained in different disciplines and therefore there were only specific nurses who were trained in TB care. If nurses were cross trained, TB testing, management and counselling could all be done in one consultation. In the clinics only the "TB nurse" provided TB care, therefore patients were initially seen by a "non-TB" nurse and then referred to the TB Room to wait in another queue to be seen by the TB nurse. The process of having to wait for a second consultation could have resulted in patients leaving before being linked into the TB care system. This in turn could have contributed to the poor retention of patients and the increased likelihood of pre-treatment LTFU.

> *"The others will say "I'm not TB trained so I don't know TB."… it must not be something that is designated for only one person…I think that's where we lose the patient also. Because now you give them the sputum then you say 'go to*

TB Room'. There's seven people that are before you. You have to wait there. Now you [patient] have antibiotics in your pockets, you are like "No…. I'm leaving!", you see?" **– TB Nurse 2**

3.3.3.2 Lack of transport for community health workers

The implementation of the TRIC SOP for managing pre-treatment LTFU patients requires that CHWs conduct home visits if the patient cannot be reached by telephone (8). However, the SOP does not stipulate any information relating to transport of HCW. All the clinics in the study had CHWs but there was no designated transport for them. CHWs had to walk long distances sometimes in poor weather or high temperatures to get to the communities where the LTFU patients lived. The lack of transport meant extra time was spent walking to and from the clinic and less time was available within the community to trace patients. Some neighbourhoods were far away and, as discussed, it could be unsafe to walk within and around them. Participants reported that some CHWs had even resigned as they could not manage the work conditions. Once again, this contributed to the shortage of HCW who were willing to work in TB. There was therefore a relationship between the themes of lack of transport, lack of safety and lack of staff.

*"Physically it's draining. I mean, when it's hot. Temperatures are what now? Extreme… So, every morning they have to walk. They were five when they started, five or six. Three resigned. They could not take it***." -TB Nurse 1**

"She's [WBOT member] complaining that 'it's far, my feet are painful, the sun is hot. Why don't they give us transport to go there? They can drop us. Maybe they can come later and fetch us'... The only thing that we are crying about is the transport". **– WBOT TL 1**

Some of the areas CHWs walked to were more than an hour away on foot. The process was that once they found a patient, CHWs would give the patient a referral letter and encourage them to go back to the clinic. If the patient agreed to return, the CHWs sometimes took the patient back to the clinic with them on the same day to

make sure the patients were linked back into care. The lack of transport made it difficult to get patients back to the clinic as patients were less likely to return if they had to walk a far distance to the clinic and then walk back home again. They were more likely to return to the clinic with the CHW if there was transport to the clinic available. This affected the ability of the CHWs to link patients to care.

> *"It's very difficult… it's easier for those who have transport because they can easily get the patients … If they [patients] see a car they'll come because they know that [they are] going to get a lift to the clinic and back. So, if I'm walking and they have to walk back with me, unfortunately, they're going to say 'no, I'm going to come tomorrow' and tomorrow they won't come because it's very far."* - **CHW / Tracer 1**

3.3.4 Individuals Involved

This domain refers to the characteristics of the people that were implementing the intervention and how these characteristics affected their ability to carry out their required roles (83). In this domain, the barriers that emerged were a) lack of recognition and b) lack of training.

3.3.4.1 Lack of acknowledgement of HCWs' effort

Some HCW saw a lack of recognition or acknowledgement as a demotivating factor and a barrier to carrying out their roles optimally. Some felt that the district criticized the clinics for not meeting targets but did not understand or acknowledge how hard the HCW worked. HCW reported that they often used their own money, airtime, and cars to implement some of the interventions and felt that they should have received some form of acknowledgement for the extra effort they put into their jobs.

> *"From the district they say, "this clinic is not doing well". They don't know how much we work, how dedicated [we are], how much we use our phones, how much are we [are] driving our cars to get people. They underestimate what we do. They are considering targets, you see? And yet we are doing extras."* **– WBOT TL 2**

When asked what they would like from district or from government the healthcare workers responded that they would like acknowledgement and gratitude for their hard work.

> *"I think the staff needs appraisal… to be acknowledged that you did well…. I think if you did well, they should just tell you that you did well… that's what everybody needs… just by saying 'thank you' is enough."* **– Data Team Member 5**

> *"Just acknowledgement… Not money but acknowledging that 'guys, you are working.' "* **– WBOT TL 2**

3.3.4.2 Lack of Training

HCWs felt that although training added to their confidence, further training was still needed, particularly formal primary training for the TB teams. For the purposes of this study, primary training was defined as formal training by the district or an external programme. Secondary training refers to informal training from a colleague who had attended the primary training. In the primary health setting a cascaded training approach or a 'train the trainer' approach was used. One or two staff members (usually TB nurses) would attend the formal primary training and the trained staff would then go back to the clinic and provide secondary training to those who did not attend. Some HCW who had received primary training suggested that there was a difference in confidence between those who had formal primary training and those who had only received secondary training from a colleague. They associated their training with the confidence in performing their roles.

> *"I can say I am [confident] because we do go for in-service training, they train us, then [we] go back and train our community health workers."* **– WBOT TL 1**

> *"I attend trainings. I've got enough information; I have guidelines to guide me…. I don't think they [colleagues] are confident enough because they*

would say "I'm not TB trained" so they don't even attempt to attend [to] the TB patients. I think they feel they are not trained yet so they don't feel confident enough." **-TB Nurse 2**

Most participants had never received formal primary training themselves and were trained by a colleague who had attended the formal training. Even those who *had* attended formal training reported that there was still a need for refresher trainings. In one clinic, the only TB nurse covering the clinic had never received formal training but rather received secondary training from a colleague who had left the role. In general, the HCWs preferred to receive primary training themselves instead of being taught by a colleague.

"I'm not yet trained on it but there's somebody who went for training and then she train[ed] me on site." **– TB Nurse 1**

"We don't usually get trainings. No…if something new comes up I would like to be trained because most of the time they take our sisters [nurses] to go to trainings and then deliver the messages to us." **– CHW/Tracer 2**

"I think they must do refresher course[s] every year or after six months" **-Data Team Member 4**

3.3.5 Implementation Process

This domain covers the steps of planning, engaging, executing and reflecting that occur during implementation. Ideally the people implementing the intervention on the ground should be involved or consulted at all stages of the process (83). In the study, the theme that emerged in this domain was the lack of engagement with the facility-level HCW during the planning phases of implementation of the guidelines.

3.3.5.1 Lack of involvement of facility-level HCW in guideline development

One participant felt that HCW who work in the clinic daily should have been included in the implementation process. She expressed that those who had designed the

guidelines did not understand the challenges faced at facility level but still expected the facility to implement the guidelines effectively. The suggestion made to address this was that when government provides guidelines for implementation, they should ask HCW across the different clinics for their input on areas that need to be changed or improved upon.

> *"Because [they] are on top that's why [they] don't understand what is happening in the facility. If you work in the facility then you'll understand… Don't say 'implement things' and then give it to your lower level person to do it because it will be frustrating because they don't know what we face every day… They must take someone from here in the facility and ask questions and change things, not just give us something that's already written in black and white… They must ask* ***us*** *who are working in the facility, not those who are in the offices."* ***- Data Team Member 1***

3.4 Perceived facilitators of the implementation of the South African National TB Programme Guidelines for management of pre-treatment lost to follow-up patients in Ekurhuleni District, South Africa.

3.4.1 Outer Setting

In this domain there were two themes that emerged as facilitators of implementation of the guidelines. The first is external support from partner organisations and the HAST team and the second is the HCWs' understanding of the patients' needs during the period when the pre-treatment LTFU occurs.

3.4.1.1 External Support

All the clinics received support from partner organisations (for example NGOs and church-based organisations) and the HAST teams. Participants viewed the partner organisations as an important part of the team and felt that the clinic staff would not be able to implement the guidelines effectively without their help. Partner

organisations assisted with additional human resources (such as data capturers, administration clerks, tracers, nurses, and queue marshals) as well as material resources (such as stationery, transport and electronic devices or smartphones).

> *"They are very important. Without them I don't think we would have been where we are…. without the partners we can't [manage]… They also provide the administration clerks, the nurses… the queue marshals and they still give us resources."* **- Data Team Member 5**

> *"They help us with the clinic capturing… if they were not there, we were going to be struggling really, really, really!"* **- Data Team Member 4**

In one clinic an NGO provided smart phones to the outreach team which made the CHWs' work much easier and more efficient. In another clinic a church-based organisation (CBO) used their private car to help with transport for WBOTs and patients. These were both resources that improved the ability of staff to implement the tracing interventions. However, they were not readily available in the clinics without the contribution of partner organisations.

> *"The phones were bought by [NGO/Partner1] for the outreach team... but it's only for the outreach team"* **-TB Nurse 3**

> *"The church-based organisations are very helpful. They are very helpful with regards to the car because they fetch the patients and then they take them [to the clinic]"* **- TB Nurse 2**

Another source of help that HCW often turned to was the HAST team. This team provided advice to clinics on the management of current and prospective TB patients and assisted with challenges that arose in the TB programme. They helped clinics with difficult clinical cases, kept clinics updated with the latest guidelines as well as assisted with implementation problems such as material resource shortages and staff shortages. Some coordinators even assisted by working in the clinic when the clinic was short-staffed.

"The HAST team is super. The coordinators…. Honestly, I don't know how I've made it day-by-day up to this. I've got those seniors that I talk to a lot when we meet in workshops." ***– Management Level HCW 1***

"We get support because we even have a WhatsApp group with the coordinator's TB team… It's for advice…[or] if we need something, [for example] 'I'm running short of stationery can you please organise?'…so we are doing well." **- WBOT TL 2**

"With TB … they're supporting the clinics; they are making sure they have the guidelines… supporting the clinician… They're updated with everything that is currently happening in terms of TB and HIV." **-Management Level HCW 2**

3.4.1.2 Understanding patients' counselling needs

HCWs had a good understanding of their patients' needs during the period when LTFU occurs. The greatest need identified was the need for good counselling and health education. They viewed this as a facilitating factor in returning patients to care. Patients needed easily understandable but detailed explanations of their illness, treatment, adherence, and the consequences of not taking treatment. HCWs felt that that part of this TB counselling should be done at the initial visit when sputum is collected even before patients have been confirmed to have TB so that they understand the importance of returning to take treatment.

"They need emphasis on education - health education. They need counselling… Emphasis on adherence, compliance, risks, benefits, reasons why they must take the medication, the importance of the medication. And if they don't take the medication what happens. Give them information about contact, the spread, resistance." **-TB Nurse 2**

"I think what they need from us is a health talk… they need to be informed about the importance of taking the treatment. As a healthcare worker I need to explain that it's important that you take treatment so that you don't infect the

other people or the household members…. Especially when the patient is giving us the sputum - I think the health talk must start there." **– TB Nurse 3**

3.4.1.3 Patient compliance

The strongest facilitating factor found in terms of patient characteristic was good compliance. This means that patients either come back for initiation and therefore prevent pre-treatment LTFU altogether or it means that once LTFU have been traced they then adhere to requests to attend clinic visits and start treatment due to good compliance once they have been linked back to care. Patient compliance is an important facilitating factor as the other interventions such as tracing would be rendered useless if patients still do not attend visits even after tracing and linkage back into to care.

"Just compliance… compliance is very important in TB. Taking your medication, not saying that you have taken them and you don't convert.. Honesty… you need to be honest and truthful." **– TB Nurse 1**

"If the patient is, is compliant it's very easy. It makes the job very easy. If you tell them please come back, [and] then they come, it's very easy". **– TB Nurse 2**

3.4.2 Inner Setting

3.4.2.1 Use of electronic data systems and electronic devices

HCWs found the use of the Tier.net electronic data system and the Electronic TB register (ETR) to be more efficient than the use of paper registers and forms. However, some people were uncomfortable with using electronic systems as work was disrupted during periods of load shedding our power outages. The use of electronic systems helped facilities to easily identify and flag their LTFU patients. It was also useful in monitoring of flagged patients, results, and outcomes. The clinics that consistently used the electronic systems functioned more efficiently.

"We capture all these patients on ETR. The ETR will flag for you that you need to trace this patient, so it makes life easy. It's unlike when we were doing it manually with the files. It used to be very difficult… It's just that people

were uncomfortable with the ETR because of load shedding, but it does help when it comes to flagging of patients and the tracing of defaulters " **– Management Level HCW 1**

"[When] you run the facility managers' report, you'll see you [have] patients that have not been started on treatment… Facilities that are using the Tier.net are doing well…. those that are really doing [it] consistently …Those that have not reached a stage to see that this is making their lives easy are running [the lists] just once in a while when they remember but others know that [using the system] makes [their] programmes run well in their facility." **– Management Level HCW 2**

This participant also pointed out that in some facilities the Tier data is not reliable as there were numerous inconsistencies between the clinic paper-based records and the data captured electronically.

"The capturing has not been going well because you see when you run on the Tier you find that the [LTFU] patients are very few, but when you compare with the report that the person can do counting manually, you find that the number is higher than the one that is on Tier. So, I think the capturing has been a challenge." **– Management Level HCW 2**

The second shift away from paper-based systems was the use of smartphones and other electronic devices such as tablets which allowed CHWs to collect data and update information while working in the community. This was then uploaded to the clinic and government database. This resulted in less paperwork, faster data collection, less duplication of work in terms of transferring written records to electronic systems, as well as a lower risk of losing information and patient records. HCW using electronic devices reported that this was helpful for activities such as registering patients and tracing them.

"We used to use papers to write and they get lost. Now [with] the smart phone it's okay… [It] Catches all the information and [at] month-end we sync it straight to the Department of Health." **–WBOT TL 1**

"We have a new system now…Before we were working with paper… now we are doing it on the phone…[It's] very easy now because I don't have to carry a lot of papers. The only paper that I carry [is] a referral letter. If I find someone, I just refer the patient. Unlike before we had to carry a lot of papers." **-TB Nurse 3**

"We are doing it on the phone…. we are capturing everything… Registering our clients, the tracing… everything!" ***–WBOT TL2***

3.4.3 Individuals Involved

3.4.3.1 Passion for working in healthcare

One facilitating factor that was found in the domain of Individuals involved was HCW having a passion for their job. This inspired them to work hard, serve beyond just their expected tasks and persevere despite the difficult challenges faced in the public healthcare system.

"I think it's passion. They love their job. I did not get nurses who, who came here for money or clerks who came here for money-- they love their job. They are very dedicated and under these circumstances that we are working, they are good workers. I think they love health… they are passionate about their job. They go an extra mile" ***– Management Level HCW 1***

3.5 Perceived similarities and differences in the facilitators and barriers found between two clinics with a high pre-treatment LTFU rate and one clinic with a low pre-treatment LTFU rate in Ekurhuleni District, South Africa.

3.5.1 Similarities

3.5.1.1 Common Barriers

The common barriers found across all the clinics included patient-related barriers, resource shortages, and individual factors affecting HCWs' ability to conduct their

roles. These themes have been discussed under objective one and are only summarised briefly in this section.

Outer Setting

In the Outer setting, the patient-related factors such as their socio-economic circumstances were similar between both under-performing and well-performing clinics. As discussed, many patients who accessed these clinics did not have their own transport, money for transport or money for food. This affected their ability to attend clinic visits as well as their desire to initiate treatment. These were common findings across all the clinics. The issues of stigma and patients' poor responses to interventions implemented by HCWs were common to both under-performing and well-performing clinics. CHWs were generally not received well in patients' homes due to their association with HIV and TB. CHWs were also unanimously concerned for their safety and at all three clinics they did not feel protected in the areas where they worked.

Inner Setting

In the Inner setting, staff constraints and lack of transport were common to both under-performing and well-performing facilities. At all the clinics, participants recognized a shortage of HCW willing to work in the TB team. Regarding transport, none of the clinics had dedicated transport for CHWs and some relied on partner organisations while others relied on using staff members' personal vehicles.

Individuals Involved

In the domain of Individuals involved, the common barriers were the lack of primary training and the lack of acknowledgement of HCWs' efforts. Cascaded training negatively affected some HCWs' confidence and the lack of acknowledgement negatively affected their motivation.

3.5.1.2 Common Facilitators

The common facilitators found included help from partner organisations, understanding patients' needs and the use of electronic data systems. These themes

have been discussed under objective two and will not be discussed in detail in this section.

Outer Setting

One of the common facilitators that emerged in the Outer setting from both under-performing and well-performing clinics was the support received from partner organisations. All the clinics acknowledged the role that the partner organisations played in helping them implement the guidelines by providing staff, material resources and training. The second common facilitator was that HCWs had a good understanding of patients' counselling needs during the period in which LTFU occurs. Understanding the kind of health education patients needed allowed HCWs to counsel effectively and they saw this as a facilitator in returning patients to care.

Inner Setting

In the domain of the Inner setting, the use of electronic data systems such as Tier.net as well as the ETR was a common facilitator across the clinics. It allowed clinics to easily identify and track pre-treatment LTFU patients.

3.5.2 Differences

When exploring the differences between the under-performing and well-performing clinics, the themes that emerged were differences in accessibility and differences in certain resource availability. The under-performing clinics had challenges with poor accessibility of the clinic for patients and a lack of important resources. The well-performing clinics were found to be more easily accessible and better resourced. This section will not be divided into "barriers" and "facilitators." The findings will be discussed together to show differences in these factors created barriers at the under-performing clinics and facilitators at the well-performing clinics.

3.5.2.1 Outer Setting

Accessibility

In the under-performing clinic, accessibility of the clinic was reported to be poor while the well-performing clinic was reported to be easily accessible to patients.

The challenge of the clinic being far away and therefore inaccessible for patients was repetitively mentioned as a barrier by participants in one of the under-performing clinics. This is because even if patients were successfully traced, the poor accessibility of the clinic was a barrier in the last step of the process which is referral and linkage back to care. Patients whose clinic was difficult to access were more likely to become LTFU. The poor accessibility of the clinic for patients also meant that the reverse was true – it was difficult for HCW from these clinics to access the communities that were far away. Some HCW even suggested that certain areas required their own clinic because it was too far for patients to travel and for HCW to walk to. This theme is linked to the challenges of patient socio-economic status as well as the theme of safety and transport, as previously discussed. The debilitating effects of these challenges were compounded in the clinic that was less accessible and may have contributed to the higher pre-treatment LTFU rates.

> *"It's very far and that's one thing I've noticed that… one of the reasons why they're defaulting, it's very far because [even] if I walk there, it's too much. So, sometimes I feel like they have to have their own clinic that side."* **– CHW/ Tracer, Under-Performing Clinic**

> *"Where we [have] come from now, it's a long distance… They don't have a clinic; they come here. And along the way they mug them… They take their phones, take their money on the way when they come to the clinic every day."* ***– WBOT TL, Under-Performing Clinic***

In the well performing clinic on the other hand, most participants viewed the clinic as being accessible to the population that they served and felt that their demarcated area was manageable.

> *"It's very close because -- we are working according to the demarcation. so, it's okay."* **– Data Team Member, Well-Performing Clinic**

“It’s very accessible… For all the target communities.” **– TB Nurse, Well-Performing Clinic**

3.5.2.2 Inner Setting

Resources

Electricity shortages and availability of generators

Both well-performing and under-performing clinics experienced load shedding or power outages but the well-performing clinic had a functioning generator.

Participants in the under-performing clinics identified load shedding and lack of a functioning generator as a barrier to carrying out some of the tasks required in the guidelines. In both the under-performing clinics the generators were not working and in one of these clinics it had never worked since it was installed.

“Right now, we don’t have electricity and the generator is not working and we are sitting not working. So, that’s a challenge for us….Since I’ve been in this clinic it’s not work[ing]” **– Data Team Member, Under-Performing Clinic**

"Yes, we usually do [have load-shedding] most of the week…. we just sit because we don’t have [anything] to do. We just maybe file the files and then do other things because the generator is not working. If they can fix the generator, then that will be fine…. Since they put it there it [has] never worked." **– Data Team Member, Under-Performing Clinic**

Load shedding made it difficult to find results if there were no hard copies available. HCWs could not phone to get results as they experienced network problems during periods of load shedding. Delays in receiving results may have contributed to delays in contacting patients to return to the clinic. A lack of electricity also inhibited effective implementation of other guideline activities as it interrupted access to the

ETR and Tier.net, data capturing as well as the generation of defaulter lists for CHWs to know which patients to trace.

> *"It gives us a problem. When we've got load shedding, we can't find the results sometimes. If the hard copy is not here, we can't find the results, we can't phone, the network is not there [not working]."* **– TB Nurse, Under-Performing Clinic**

> *"It [load shedding] happens a lot…. It affects me if I don't have a list because I need a list to trace. So, if the electricity is not there, I don't have a list, so I'm stuck."* **– CHW/Tracer, Under-Performing Clinic**

The well-performing clinic on the other hand had a generator that was working and therefore load shedding did not affect their daily tasks such as capturing data and retrieving defaulter lists.

> *"We do [get load shedding] but since we have the generator everything is smooth."* **– Data Team Member, Well-Performing Clinic**

> *"It doesn't [affect my job] because we have a generator here."* **– TB Nurse, Well-Performing Clinic**

Therefore, load shedding was a barrier to implementing the guidelines in the under-performing clinics and in the well-performing clinic, access to a functional generator during periods of load shedding was a facilitator of implementation to overcome this.

Electronic devices for CHWs

There was a difference between under-performing and well-performing clinics with regard to the use of electronic devices in the community setting (discussed under inner setting facilitators). Although both clinics had used them, they were used routinely in the well-performing clinic while in the under-performing clinic it was only available to the WBOT TL and not to other CHWs.

A CHW in an under-performing clinic reported that although the WBOT TL had a smart phone to use, the other CHWs did not routinely have electronic devices to use whilst in the community. This HCW stated that it would make their work more efficient if they had smart phones so that they could receive lists and record data electronically. This could save time as CHWs could start work in the community and come to the clinic at the end of the day instead of having to first walk to the clinic to get the lists and then walk back to the communities.

> *"It's much easier for example if home tracers had smart phones or tablets. That way we don't necessarily have to come to the clinic because what's killing us is, we have to come to the clinic, receive the list and then go back. So, it's easier if maybe you stay at a particular area then you just receive the list through your phone, and then you just go around and trace. That would be much easier."* **– CHW/Tracer, Under-Performing Clinic**

Chapter Four: Discussion

This study sought to explore healthcare workers' perceptions on the barriers to and facilitators of successful implementation of the current guidelines for managing pre-treatment LTFU patients. This chapter reviews the results in the context of the existing literature, the relevance of the findings as well as the limitations and strengths of the study. Results that were presented under the similarities and differences sections will be included in the relevant 'barriers' or 'facilitators' sections below.

4.1 Perceived Barriers

4.1.1 Intervention Characteristics

One of the challenges faced in implementing the TRIC SOP was that it did not comprehensively cover some of the difficulties encountered by HCWs. It was based on certain assumptions of resource availability that were not always met at the clinics. This is contrary to some South African studies which found that the guidelines were adequate but it was rather the health system capacity and the contextual factors that created this gap and prevented good implementation of TB guidelines (34,89). This is the essentially the same barrier from a different perspective and the solution would require either changing the guideline or improving the contextual factors so that the assumptions in the guidelines are met.

4.1.2 Outer setting

The socio-economic circumstances of patients and poor accessibility of the clinic were found to be barriers to successful linkage back to care. These findings are in keeping with the findings of a study on pre-treatment LTFU across five South African provinces (28) as well as a study on TB treatment default in patients living in informal settlements in South Africa (47). The patients served by our study clinics had a similar socio-economic circumstance to those in the above studies. Our study concurred with these and other South African studies that poor socio-economic circumstances and poor clinic accessibility were inhibiting factors in returning patients to care (55,76,90).

TB related stigma was found to be a common barrier as patients did not return for treatment out of fear of having any association with TB and HIV. South African studies by Kerrigan et al (91) and Naidoo et al (76) reported that TB-related stigma affected a patient's decision to seek care and was associated with negative responses to HCW and tracing interventions. In one study that showed findings *contrary* to ours, participants felt that although TB stigma was present, it was *not* a major problem (28). However much of the literature around TB/HIV stigma and patient behaviour suggested that stigma was a contributing factor to patient behaviour. Consistent with other South African studies, our results showed that patients were often hostile towards CHWs, gave incorrect addresses or did not allow access to their homes. This made it difficult for CHWs to implement interventions such as tracing and counselling (48,62,79).

Lack of HCWs' safety emerged strongly as a barrier to implementing the interventions to manage pre-treatment LTFU patients. HCW felt physically unsafe and at high risk of contracting TB. Jinabhai et al (64), who conducted a rapid appraisal of WBOTs and Ramukumba et al (63), who conducted a study on CHWs' perceptions of their work, both found that HCWs perceived their jobs as high risk. HCWs had concerns about contracting TB and concerns for their physical safety while working in high risk areas. They had to work in pairs for security. Our study mirrors the findings of these and other similar studies done in South African communities (37,65,76,92).

One recurrent safety concern from our study that did not emerge strongly in the initial review of South African literature was gender-based violence and the need for more male CHWs. This lack of male CHWs was evident even among the study participants who were all female. There were very few male members in the TB teams. This supports the participants report that that there is a need to employ more male CHWs. Female CHWs felt that they were safer when there were male CHWs present. There was a paucity of South African evidence for gender-based violence as a barrier to implementing health programmes. However, a study in India found that female CHWs' safety was not ensured and in Papua New Guinea female CHWs were found to resign due to lack of safety (93,94).

4.1.3 Inner Setting

The lack of transport for CHWs was found to be a barrier to implementation of some of the interventions such as home tracing. The results of assessments of the WBOT and HIV/TB programmes as well as a study on contextual factors affecting WBOTs similarly found that a lack of transport was a limiting factor to effective implementation of CHWs' tasks (76,95,96). Although the well-performing clinics in the study were closer to the catchment areas, HCWs still required transport due to the safety issues. This could explain why lack of transport may still have emerged as a common barrier despite the well-performing clinic being perceived as more accessible.

Our study found staffing challenges to be a barrier to effective guideline implementation. These were similar to challenges found in a South African study on pre-treatment LTFU (48). PHC facilities were generally understaffed, staff did not like to work in TB, frequent rotation of staff was a problem and more HCW needed to become familiar with TB protocols instead of relying only on a few TB-trained people (48,59,89). This is related to the theme of training as a vital part of effective implementation as discussed below.

In keeping with other South African studies, our study found the lack of recognition or acknowledgement of HCW was found to be a barrier to HCWs performing their roles optimally (64,66). In some South African studies the issue of financial incentives, together with acknowledgement, emerged strongly as influencing factors of HCW motivation (64,65,96). However our study was not in keeping with this, as financial incentives or the lack thereof were not reported as motivating or demotivating factors. A possible reason for this difference is that some of these studies focussed on CHWs who generally received a small stipend. Our study participants were a mix of HCW including salaried workers who are formally employed by the clinic, such as nurses and clinic managers. This may explain why the issue of financial incentives did not emerge as strongly in our study as it had in other literature.

4.1.4 Individuals Involved

HCW training in South Africa has often been reported as inadequate and our study supported the idea found in other studies that this was a barrier in implementing community interventions (53,64,97). These findings are mirrored in a South African study on pre-treatment LTFU (48) and a South African study by Padayatchi et al. (57) on failure to treat TB patients. A systematic review of implementation of interventions in primary care by Seckler et al (68) found that even in settings where there were adequate resources available, a lack of adequate training was a barrier to implementation of the interventions. This suggests that even if some of the resource challenges found in our study are addressed, implementation will remain sub-optimal if training is not improved.

4.1.5 Implementation Process

The implementation process includes the planning and engagement processes that occur prior to the execution phase. Engaging those who will be implementing the interventions is important for its success (81,83). Lack of involvement of facility-level HCWs in guideline development and implementation planning was identified as a barrier to effective implementation. This is in keeping with the findings of other studies on implementation of South African guidelines or programmes. For example, a similar challenge was faced in the implementation of the WBOT programme. HCWs on the ground were not included in discussions on guideline development, programme decision making or implementation plans (64,98,99). Our study supports these findings.

4.2 Perceived Facilitators

4.2.1 Outer Setting

In our study, assistance from partner organisations such as NGOs and church-based organisations were found to be a facilitator across all the clinics. Many studies have showed the importance of the partnership between government facilities and external supporting organisations. These studies acknowledged the multiple roles partner organisations fulfil as well as the resulting economic relief on the public health facilities (100–103). A 2021 systematic review of 61 studies on public-private

partnerships in primary healthcare found that these partnerships facilitate access to care and recommended that governments consider long term collaborations with private organizations in primary healthcare (103). This finding is supported by an assessment of NGO support in NTPs across different countries (including South Africa) that found that these private-public partnerships improved TB outcomes (104). There was minimal literature specifically on HAST teams. However, one South African study showed that HAST teams can be a positive support for quality improvement activities in primary health clinics (105).

Understanding patients' counselling needs and tailoring the counselling to their needs was found to be a facilitator in this study. Increased understanding can improve patients' responses to other interventions such as tracing and referral back into care as they start to understand the need for these interventions. Lack of knowledge worsens LTFU and improved health education and counselling is necessary to retain patients in care (37,48,91). A systematic review of RCTs examining interventions to improve TB treatment adherence found that counselling was an effective intervention. These RCTs included patients who had already started treatment but the principles of using counselling to increase retention are relevant for our study context (106).

4.2.2 Inner Setting

In our study, the shift from paper-based systems to electronic systems was found to be a facilitator in implementing the LTFU guidelines. South African studies have shown that the use of electronic devices were beneficial as they were less time consuming, decreased the duplication of work and patient records were more easily accessible (64,67,78). However, problems with network connectivity, lack of trust of new technology, the need to train CHWs, and reluctance to implement new changes due to reliability of paper-based methods were some of the challenges that were reported (64,78). Although issues of trust and training did not emerge strongly in or study, other findings, such as the lack of reliability of the electronic data were similar to the findings of the abovementioned studies.

All the clinics in the study experienced power outages. Clinics without generators struggled to implement steps of the guidelines such as drawing up ‘defaulter’ lists, updating data and calling LTFU patients, which all require electricity. A study on the effects of load shedding in South African health facilities showed that it caused disruptions of equipment, network and clinic telephones (107). Another study recommended that primary care facilities should all have emergency funds allocated for a generator as it is vital to daily functioning of the facility (108). The findings of our study are aligned with these findings.

4.3 Relevance of Study Findings

This study highlights areas in implementation research that need greater focus. Much research on TB LTFU has been done from a patient perspective but further research is needed from the perspective of those who are on the ground implementing the interventions. While HCW and the Department of Health cannot change factors such as patients’ socio-economic circumstances, they *can* address health system and programme issues causing sub-optimal intervention implementation.

The study highlights the knowledge-to-practice gaps that exist, and the practical challenges faced. For example, the guidelines assume availability of certain resources in order to implement some of the interventions. There is no alternate guidance for situations when these resources are not available.

The study has drawn attention to factors that are not directly related to the guidelines but are important to address if implementation of the guidelines is to be improved. These are issues such as gender-based violence, lack of safety and the lack of male CHWs. The guidelines do not account for maintaining the safety of HCW or stipulate what the expectations are in situations where their safety is compromised. Therefore, the study has highlighted areas where the guideline may need to be revised to make it more applicable in the context of the limitations experienced on the ground and the perceptions that healthcare workers have of the interventions being implemented.

4.4 Study Limitations

The participants in the study were all female. There was only one male in the TB team in clinic C however he could not participate due to a lack of time once preparations for the Corona Virus pandemic began. Therefore, it is possible that any challenges or facilitators that were experienced more by male HCWs than female HCWs may have been missed.

There were only two management level participants. Therefore, the higher-level facilitators and barriers that may be experienced may not have been fully captured in the study. For example, there was only one finding in the domain of Implementation process. Further factors in this domain may have emerged if more management level HCW participated as they may have had greater insight into the implementation processes.

Due to the first national lockdown in March 2020 in response to the Coronavirus pandemic, visits to Clinic C were cancelled. On the advice of WITS HREC, the research was permitted to continue using telephonic recruitment and interviews. However, these attempts were unsuccessful and only two participants from Clinic C were recruited. This clinic was an under-performing clinic and additional data collected could have given further insight on the challenges faced. Furthermore, the clinic manager in one of the other clinics declined to participate and it would have been helpful to interview the clinic manager in Clinic C.

A feedback session was to be held at each clinic to present the general findings of the study and to get the participants' opinions on whether these are an accurate reflection of their experiences. However, this was not possible due to the national lockdown as well as the HCW's lack of time due to the increased pressure on all the clinics while preparing for the first wave of the Coronavirus pandemic.

4.5 Study Strengths

Despite the abovementioned limitation of being unable to complete interviews at the third clinic, the study included enough participants in similar roles from one well-

performing and one under-performing clinic. The data from each of the clinics was still rich enough to allow for exploration of the differences and similarities between the clinics.

Another strength is that an existing implementation science framework (CFIR) was used in all phases of the study from development to data analysis. The comprehensive CFIR was used to develop the interview guide to ensure that all factors that could affect implementation were covered. The same framework was used in developing the initial outline of the coding system that was used for deductive coding. The framework was also used in analysis and results were reported according to the CFIR domains.

Chapter Five: Conclusions and recommendations

This chapter provides an overview of the findings and suggested recommendations. The main barriers to implementation of the interventions in the TRIC SOP were classified under the five CFIR domains.

5.1 Conclusion

In the outer setting healthcare workers perceived barriers relating to poor socio-economic status of patients, poor clinic accessibility, stigma, and lack of safety in high risk areas. Inner setting barriers experienced by healthcare workers were lack of resources such as transport, electricity, and staff constraints. In the domain of individuals involved, the barriers were lack of recognition and inadequate training. The outer setting facilitators experienced were support from partner organisations and the HAST team and good understanding of patients' needs and tailoring counselling to this. In the inner setting the facilitating factors included resources such as electronic records and devices (as opposed to paper-based) and a generator. In the domain of individuals involved, acknowledgement from seniors was found to be a facilitator. The main differences between the under-performing and well-performing clinics were that the well-performing performing clinic was found to be more accessible and better resourced.

5.2 Recommendations

1. Further research is necessary on a larger scale. More research from an implementation perspective is needed. A larger number of clinics should be included to assess barriers and facilitators that may not have been experienced by the three clinics included in this study. In addition, a limitation in the current study is that all the participants were female and very few were of management level. Therefore, studies involving both male and female HCW as well as more management-level HCW would be insightful.

2. Resource provision:

There is a gap between the expected and actual resource availability that needs to be closed for proper implementation to occur. Either the clinics need to be given additional resources or the guidelines need to be altered to be adaptable to situations where these resources are not available.

a. Some parts of the guideline assume a constant availability of electricity to perform certain steps. Clinics should be provided with a working generator or current generators should be repaired.
b. Effective tracing relies on HCW being able to access the communities easily. Some areas are too far away or too dangerous to walk to. Therefore, the provision of transport is important for the implementation of tracing activities. If it is not feasible to provide each clinic with their own car, there could be a system of providing a car to different clinics on one or two days a week and clinics could schedule all far-out home visits for a particular day when transport will be available for their clinic.
c. Provision of electronic devices to community teams will decrease the amount of paperwork and time taken to collect and report data.

3. Training
    a. Provide more frequent TB training and refresher trainings to staff. If trainings are more frequent, more people will be able to attend the “primary” trainings and not have to rely on being trained by colleagues who attended the training.
    b. Cross-train staff on TB so that there is no separation between “TB-trained” staff and other staff. Therefore, all HCW would be able to manage a potential TB patient which would decrease the load on the “TB team” and allow for any HCW to see patients if the current TB nurse is not available.

4. Safety Concerns and lack of male CHWs
    a. The abovementioned provision of transport will assist with improving safety. Improving safety will improve retention of staff as well as their ability to implement the interventions fully.
    b. Employ more male community health workers. If there are not enough males applying to be CHWs, there may be a need for recruitment

drives or information sessions in the communities to present possible male CHWs with the opportunity to get involved. CHWs pair up due to safety. It may be helpful to have pairs of one male and one female CHW both for improved patient comfort but also to make female CHWs feel safer.

The study has contributed information to the existing pool of knowledge around healthcare worker perceptions of implementing LTFU management guidelines. It has also highlighted areas that can be built upon and investigated further. This study in conjunction with past and future studies can form an evidence base for health departments to find areas for potential improvement in the implementation of interventions to combat TB pre-treatment LTFU.

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Appendices

Appendix A: Plagiarism Declaration

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

FACULTY OF HEALTH SCIENCES

PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I Tasanya Nomaliso Chinsamy (Student number: 0703998N) am a student registered for the degree of 0703998N in the academic year 2019/20.

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:  Date: 23 Oct 2020

1

Appendix B: Summary of Procedures Outlines in Tracing and Retention in Care SOP

Summarized from the South African National department of Health Standard Operating Procedure for Tracing and Retention in Care (TRIC) (Reference number: AGL: TRIC 6) (8)
The full SOP can be found at https://www.nacosa.org.za/wp-content/uploads/2018/05/SOP-Adherence-counselling-A5-booklet-19-03-2017.pdf (page 44)

1. Identification of patients to be traced
    - Review facility register during the week to check which patients missed their appointment
    - If a patient has not returned for 5 or more days after the scheduled appointment date the patient is entered into the facility register as a defaulter for tracing

2. Generating the defaulter list
    - Each day, the files for visits for the following day should be taken out in preparation for the visit.
    - At the end of the day, the files of those who missed their visit should be kept aside and these patients should be added to a list of defaulters that should be finalized at the end of each week
    - The list is given to the facility manager to be signed off

3. Initiating Tracing
    - Once facility manager has signed off the defaulter list this is given to the person in charge of tracing the patients
    - A meeting is held to discuss the list with relevant staff such as data capturers, WBOT team leaders, Home-based care leaders, tracer teams etc.
    - Facility manager or other delegated staff member assigns someone to trace the patients telephonically

4. Tracing by Phone or SMS
    - The assigned staff member will look through the appropriate files or registers to retrieve the patient's contact details (telephone number and address)
    - Information added to the tracing register
    - Assigned staff member makes telephone calls using the facility phone to all patients added to the register for that week and indicates outcome of the tracing attempt
    - If a patient cannot be reached after 3 attempts over 14 days since the scheduled appointment, they are added to a list of patients that require tracing via outreach teams and home visits (if they have consented to this).

5. Tracing via outreach to communities and homes
    - Home visits should be conducted for those who could not be traced with 3 telephonic attempts or those without valid telephone numbers who could not be reached within 2 weeks of their scheduled appointment date.
    - These can be done via WBOTS and CHWs, Homebased care workers, TB tracing teams, tracing of children through schools' health programs
    - Information about the visit (date, time, address, outcome etc.) is recorded in the tracing register

6. Tracing of patients not seen for 90 days and with no status update on treatment register
    - Not applicable in this context as this is for registered treatment patients

7. Re-Integrating Patients into Care
    - If tracing is successful and the patient agrees to continue to attend the clinic they are advised to return to the facility where they will receive counselling as well as additional support with dealing with the challenges of adherence to clinic visits. They will be referred to the appropriate medical health care worker to continue care
8. Relevant district and provincial reports filled

Appendix C: Consolidated Framework for Implementation Research

Original CFIR Framework.

The framework used in the study was adapted from the CFIR framework (83).

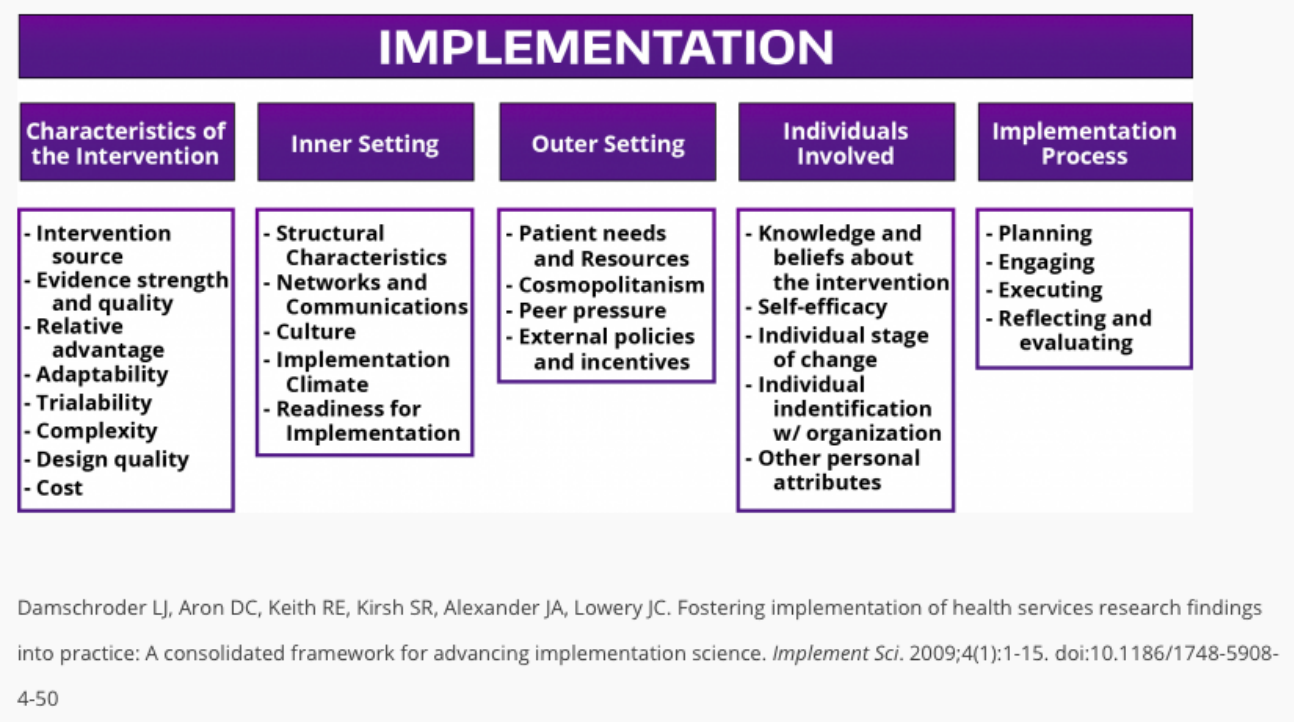


Figure 2 Original CFIR Framework

The five domains of CFIR and their application in this study:

*Please note that the word “defaulter” or “defaulter register” has been used to avoid confusion as this is what is referred to in the SOP issued by National Department of Health. There is currently a shift in language away from the use of accusatory words such as “defaulter” to more patient-friendly language such as “lost to follow-up” however for the purposes of this report when making references to registers or lists etc. the word “defaulter” may be used for congruency with the NDoH SOP (e.g. “defaulter list”).

Table 1: Consolidated Framework for Implementation Research

CFIR Domain	**Definition** (83)	**People/Place/Process this applies to in this protocol**
Intervention Characteristic	Aspects of the intervention that could affect its implementation such as complexity of an intervention, adaptability, strength of evidence for the intervention among others.	Examines the perceived complexity of the processes outlined in the SOP by those implementing it e.g. how difficult or easy do health care workers find it to perform steps such as identifying lost to follow-up patients, calling them, doing home visits etc.
Inner Setting	The characteristics (culture, structural aspects, implementation climate) of the organisation that will be carrying out the implementation processes.	Clinic factors that could affect implementation: Structural characteristics such as staff numbers, structure of teams, teamwork Communication within the clinic such as relationships between staff and managers and support available to healthcare workers when implementing the SOP activities. Available resources including budget, training, space and other required resources e.g. phones to make calls, airtime is cell phones are used, vehicles for home visits, stationery for registers
Outer Setting	The social, economic and political environment in which the intervention is going to be implemented. This domain also includes the patient needs and resources	Patient needs that could affect the implementation of the SOP e.g. if a patient feels like their need for privacy is being infringed upon, they may not want to consent to home visits or phone calls may be at an inconvenient time etc. Patient resources that may affect the ability of the clinic staff to implement the activities outlined in the SOP e.g. patient may not be able to afford a

CFIR Domain	**Definition** (83)	**People/Place/Process this applies to in this protocol**
		cell phone or home phone, patient may live very far away from the clinic in an inaccessible area which could make tracing difficult
Individuals Involved	Characteristics of people involved at all stages of the implementation of the intervention. This is affected by their backgrounds, mindsets, cultural norms, experience, affiliations etc.	Factors related to the healthcare workers perceptions of themselves and their jobs e.g. knowledge and beliefs about the intervention, self-efficacy/ confidence, stress, workload, job satisfaction
Processes	The active processes of planning, engaging, executing and reflecting during implementation. Can be multiple different processes that run sequentially or in parallel that are required for successful implementation of the intervention.	Factors associated with the execution of the steps involved in the TRIC SOP such as adhering to the suggested steps in the SOP.

Appendix D: Interview Guides

Interview Guide for Clinic Healthcare workers

General Data

Study number:

Clinic (circle): A. B. C

General Questions

- How are suspected TB patients managed in this facility?
- Can you tell me what you understand by “pre-treatment loss to follow up” in people diagnosed with TB?
- What is your opinion on this issue with regard to your facility?
    - Probe if they think this is a problem or not
- How is your facility tackling the area of Pre-treatment LTFU TB patient management?
    - Probe if they are aware of the national SOP on how to manage this
    - What process does the clinic follow?
- Can you elaborate on the role you play in this process?
- Why do you think it is difficult to get people back to the clinic to start treatment?

Intervention Characteristics

Complexity

- What is your opinion on the process of managing pre-treatment lost to follow-up patients and the ease/difficulty of this for you?
    - Probe if participant thinks it is a complicated vs simple process, their level of understanding of the process, number of steps required, difficult or easy to carry out

Outer Setting

Patient Needs & Resources

- To what extent do you feel you understand the patients’ needs in TB management from the time of screening until starting treatment?
    - What do patient’s need from healthcare workers during this time? What have patient’s told you they need/ would like from us as HCW?

- What do you think the patients' views are on the procedures carried out according to these guidelines?
    - How do patients feel about the tracing procedures?
    - Probe for any difficulties the implementation of the guideline may cause for the patients?
    - What patient characteristics or behaviours make it difficult to carry out the procedures required to your job?
    - What patient characteristics are helpful to you when carrying out the procedures required to do your job?

Inner Setting

Structural Characteristics

- How does the clinic staff affect the implementation of the intervention?
    - Probe for views on effect of ages of staff, maturity, staff numbers, relationships/ teamwork
- How does the environment of the clinic affect the implementation of the intervention?
    - Probe about physical layout, space, proximity to target community

Resources

- What challenges/difficulties have you had with resources during performing the processes in the guideline?
    - Probe about budget, stationery, transport requirements, trainings, space in the clinic (if not covered above),
- What resources have been helpful in the implementation of the guidelines?

Communication

- How do you feel about communication between people working in the clinic?
    - Probe for: frequency of staff meetings or team meetings, attendance at the meetings, content discussed and helpfulness of this
    - Probe for working relationship with staff (if managing any staff) and their own manager/ seniors?
    - Probe for openness of relationship, approachability, freedom to ask advice/help, adequate support
    - Probe for how new information or feedback is passed along

- Probe if aware of clinic targets with respect to pre-treatment lost to follow-up patients, any motivations to reach these targets, anything that is demotivating
- Probe for who participant asks when they need help/ support

Characteristics of the Individual

- How comfortable do you feel to carry out your role in implementing these guidelines?
  - What gives you that level of confidence (or lack of confidence)?
- How confident do you think your colleagues in the same role feel about this?
  - What gives them that level of confidence (or lack of confidence)?
- What personal characteristics make it difficult to carry out your role?
- What personal characteristics make it easier to carry out your role?
- Do you have any examples of this from you or colleagues? (Please do not mention any names – only what role the colleague was acting in)
- How would you describe your job satisfaction in this role?
  - Probe which parts of this process do you find fulfilling?
  - Probe which parts of this role do you not enjoy?
  - Probe do you think job satisfaction in general affects the way staff in the clinic carry out their roles in managing these LTFU patients?
- For managers: What characteristics of your staff affect the way they carry out their role in implementing the guidelines?
  - Probe for characteristics that improve effectiveness of employees
  - Probe for characteristics that inhibit effectiveness of employees

Processes

- How do you feel about the implementation of this guideline in your clinic compared to what the guideline describes?
  - Probe: is the clinic following the guideline? Is the intervention being implemented as it should be?
  - If yes -what has helped you to achieve this?
  - If no – what has prevented you from achieving this, what would you require in order to achieve this?

Other:

- What do you think works well about the guidelines or their implementation and why?
- What would you *like* to change about the guidelines or way the SOP is being implemented and why?
- Any other difficulties we have not discussed that you have encountered when implementing this intervention?
- Any other factors that make it easier to implement the intervention that we have not discussed?
- Anything else you would like to add?

Interview Guide for District TB HCW and Management Level HCW

General Data

Study number:

General Questions

- Can you tell me what you understand by “pre-treatment loss to follow up” in people diagnosed with TB?
- What is your opinion on this issue with regard to your facility?
    - Probe if they think this is a problem or not
- How is your district tackling the area of Pre-treatment LTFU TB patient management?
    - Probe if they are aware of the national guidelines on how to manage this
    - What process does the clinic follow?
- Can you elaborate on the role you play in this process?
    - Probe for supporting clinic managers and in what ways

Intervention Characteristics

Complexity

- How do you feel about the process of managing pre-treatment lost to follow-up patients?
    - Probe if participant thinks it is a complicated vs simple process, their level of understanding of the process, number of steps required, difficult or easy to carry out

Outer Setting

Patient Needs & Resources

- To what extent do you feel you understand the patients’ needs in TB management from the time of screening until starting treatment?
    - What do patient’s need from healthcare workers during this time? What have patient’s told you they need/ would like from us as HCW?
- What do you think the patients’ views are on the procedures carried out according to these guidelines?
    - How do patients feel about the tracing procedures?
    - Probe for any difficulties the implementation of the guidelines may cause for the patients?

Inner Setting

Resources

- What challenges/difficulties have the clinics in the district had with resources during management of lost to follow-up patients as per the SOP?
    - Probe about budget, stationary, transport requirements, trainings, space in the clinic (if not covered above),
- What resources have been helpful in the implementation of the guidelines?
- How does the district support clinics when they have challenges with resources?
    - Probe for district involvement, turnaround times, success stories/ what has worked in the past

Communication

- How do you feel about communication between the district and primary healthcare level healthcare workers?
    - Probe for: mode of communication, frequency of meetings or communication, who attends
    - Probe for working relationship with clinic managers
    - Probe for openness of relationship, approachability, freedom to ask advice/help, adequate support
    - Probe for how new information or feedback is passed along
    - Probe if clinics are aware of targets with respect to pre-treatment lost to follow-up patients, any motivations to reach these targets, anything that is demotivating

- If a clinic approaches you with a problem with implementing the SOP for managing pre-treatment lost to follow-up TB patients and you need help/ advice/support in assisting the clinics what support structures/ people are available to you?
    - What has your experience of this support been like?
    - How does/has this assist(ed) you to improve the way the PHC facilities manage lost to follow-up TB patients?

Characteristics of the Individual

- What characteristics of the clinic managers and other clinic staff affect the way they carry out their role in implementing the guidelines?
    - Probe for characteristics that improve effectiveness of employees
    - Probe for characteristics that inhibit effectiveness of employees

Processes

- How do you feel about the implementation of this SOP in the clinics in Ekurhuleni District compared to what the SOP describes?
    - Probe: Are clinics following the SOP? Is the intervention being implemented as it should be?
    - If yes -what has helped clinics in the district to achieve this?
    - If no – what has prevented clinics in the district from achieving this, what would you require in order to achieve this?

Other:

- What do you think works well about the guidelines or their implementation and why?
- What would you *like* to change about the SOPs or way the SOP is being implemented and why?
- Any other difficulties we have not discussed that you have encountered when implementing this intervention?
- Any other factors that make it easier to implement the intervention that we have not discussed?

  Anything else you would like to add?

Appendix E: Codebook

BARRIERS TO AND FACILITATORS OF IMPLEMENTATION OF NATIONAL TB PROGRAMME GUIDELINES FOR MANAGEMENT OF PRE-TREATMENT LOST TO FOLLOW-UP TB PATIENTS IN EKURHULENI DISTRICT, SOUTH AFRICA.

Final Codebook

Tasanya Chinsamy

Code System
1 General Info
1.1 Current Clinic Process
1.2 Participant's understanding of Pre-treatment LTFU
1.3 Is this a problem?
1.4 Participant's role
1.4.1 WBOT/ Tracer/CHW
4.4.2 Clinic Head
4.4.3 Data Capturer
4.4.4 Role: TB nurse
2 Intervention Characteristics
2.1 Which Guidelines used
2.2 User-Friendly, Complexity/Necessity of Steps (+)
2.3 Guidelines: Limitations/Negative Perception
2.4 Guidelines: Positive Perceptions
3 Outer Setting
3.1 External Organisations
3.1.1 District/ Provincial government
3.1.2 Partner organisations
3.1.3 HAST/other external support
3.2 Accessibility of clinic for patients
3.3 Safety in Community/At clinic
3.3.1 Gender-based issues
3.3.2 Aggressive Patients
3.3.3 Feeling unsafe/safe in clinic or community
3.3.4 Dogs
3.4 Patient-related factors
3.4.1 Difficulties contacting patient
3.4.1.1 Patient not around (relocate, transfer, death)
3.4.1.2 Phone's not answered
3.4.1.3 Patient provided incorrect details
3.4.2 Stigma and attitude to Home Tracing
3.4.3 Patient Socio-economic factors
3.4.4 Patient's needs
3.4.5 Patient Characteristics

- 3.4.5.1 Good Patient Characteristics
- 3.4.5.2 Difficult Patient Characteristics

4 Inner Setting

- 4.1 Demotivating Factors
- 4.2 Motivating factors
- 4.3 Clinic Targets
- 4.4 Structural Characteristics
  - 4.4.1 Structure of Clinic and Infection Prevention
  - 4.4.2 Team Characteristics
- 4.5 Resources
  - 4.5.1 Human Resources and Workload
  - 4.5.2 Transport/ Distance for home tracing
  - 4.5.3 Medical supplies
  - 4.5.4 Stationery/Equipment/Phone-related (+)
  - 4.5.5 Budget
  - 4.5.6 Load Shedding
- 4.6 Team communication
  - 4.6.1 Teamwork/ Team Relationships
  - 4.6.2 Sharing of Guidelines/new info
  - 4.6.3 Relationship with Juniors
  - 4.6.4 Management/Guidance (+)
  - 4.6.5 Team-specific meetings/ communication (+)
  - 4.6.6 Meetings

5 Individuals Involved

- 5.1 Confidence
- 5.2 Stress Levels
  - 5.2.1 High Stress
  - 5.2.2 Low/Med Stress
- 5.3 Job Satisfaction
  - 5.3.1 Poor Job Satisfaction
  - 5.3.2 Good Job Satisfaction
- 5.4 Employee wellness/ support
- 5.5 Unhelpful Characteristics
- 5.6 Helpful Characteristics
- 5.7 Other Risks to Participant

- 5.8 Training
  - 5.8.1 Primary Training
  - 5.8.2 Additional Training/ Refresher Trainings
  - 5.8.3 Secondary Training
- 6 Processes
  - 6.1 Changes needed/ Areas for Improvement
  - 6.2 What works well?
  - 6.3 Implemented well/not

1 General Info Demographic information, participant's role, understanding of LTFU and whether this is a problem.	1.1 Current Clinic Process Actual processes that the clinic currently follows with regard to handling/managing presumptive TB patients and pre-treatment LTFU patients.	
	1.2 Participant's understanding of Pre-treatment LTFU Participants explanation of what the problem of pre-treatment LTFU is.	
	1.3 Is this a problem? Participant's view on whether this is a problem for their clinic.	
	1.4 Participant's role Participant's job in the TB team	1.4.1 WBOT/ Tracer/CHW
		1.4.2 Clinic Head
		1.4.3 Data Capturer
		1.4.4 Role: TB nurse
2 Intervention Characteristics Aspects of the intervention that could affect its implementation such as complexity, adaptability, relative, advantage and strength of evidence for the intervention	2.1 Which Guidelines used Which guidelines are used to manage the pre-treatment LTFU patients?	
	2.2 User-Friendly, Complexity, Necessity of Steps How user-friendly are the guidelines for the participants? Are the processes/steps in the intervention easy to carry out in a clinic? Are all steps in guidelines necessary?	

	2.3 Guidelines: Limitations/ Negative Perception Any negative experiences or perceptions of the guidelines Limitations of the guidelines including access to the guidelines.	
	2.4 Guidelines: Positive Perceptions Any positive experiences or perceptions of the guidelines.	
3 Outer Setting The social, economic and political external factors that affect implementation of the guidelines. This domain also includes the patients' needs and resources, external policies and incentives and networking between organisations	3.1 External Support Information relating to District/Provincial government, HAST teams, and partner organisations (NPO/NGOs, faith-based organisations)	3.1.1 District/ Provincial government Information about support/lack of support from government or higher level managers.
		3.1.2 Partner organisations Information about assistance/ lack of assistance from NGO/NPO/Faith-based partners that support the clinics.
		3.1.3 HAST/other external support Information about assistance/ lack of assistance from HAST team, external doctors at specialist hospitals or other external support mentioned.
	3.2 Accessibility of clinic for patients HCW opinion on whether their facility is easily accessible/ close enough to the target population.	
		3.3.1 Gender-based issues

	3.3 Safety in Community/At clinic	Risks faced by female healthcare workers such as risk of sexual harassment or assault while at clinic or in the community. Feelings of lack of safety due to being a female in their profession/ role.
		3.3.2 Aggressive Patients HCW experiences of aggressive or hostile behaviour towards them from patients
		3.3.3 Feeling unsafe/safe in clinic or community Risk of crime/working in high risk areas. Risk to CHWs of being robbed, assaulted. Also affects clinic-based staff if area surrounding clinic is high risk.
		3.3.4 Dogs Tracers experiences with being exposed to uncontained dogs in neighbourhood.
	3.4 Patient-related factors Geographic, socio-economic, psychological and behavioural characteristics of a patient that may limit the effectiveness of the interventions in returning them to care.	3.4.1 Difficulties contacting patient 3.4.1.1 Patient not around (relocate, transfer, death) Patient relocating without informing clinic or getting a proper out-referral. Patients attending clinics that are in other catchment areas instead of their own clinic. Patient death and family not informing clinic. 3.4.1.2 Phone's not answered

		Patient's not answering phone calls from clinic. 3.4.1.3 Patient provided incorrect details Problems with tracing due to patient supplying incorrect or incomplete phone/ address details.
		3.4.2 Stigma and attitude to Home Tracing Issues to do with stigma experienced by patients around TB and TB treatment. Patient's attitudes (neg/pos) towards home tracing as experienced by healthcare providers.
		3.4.3 Patient Socio-economic factors Patient's social and financial factors that can affect whether they come back for treatment or not and whether they are traceable or not - includes issues such as transport, work commitments, food security, drug use, unemployment, living in informal settlements without formal address/ road names etc.
		3.4.4 Patient's needs HCW perceptions of what patients need from them during the period of screening, diagnosis etc until they initiate treatment.
		3.4.5 Patient Characteristics 3.4.5.1 Good Patient Characteristics Attitudes, characteristics, behaviours etc of a

		patient that make it easier for the HCW to carry out their role in implementing the intervention. 3.4.5.2 Difficult Patient Characteristics Attitudes, characteristics, behaviours etc of a patient that make it difficult for the HCW to carry out their role in implementing the intervention.
4 Inner Setting The characteristics of the clinics such as organisational culture, physical and team structural aspects, communication, available resources and implementation climate of the organisation that will be carrying out the implementation processes.	4.1 Clinic Targets Issues related to targets the clinic is supposed to achieve – Are staff aware of targets? Are they realistic? Achievable? Too high or too low?	
	4.2 Structural Characteristics	4.2.1 Structure of Clinic and Infection Prevention Participant's views on whether the physical structure of the clinic affects their job or how well they can implement the intervention. This could also relate to ideas around space, infection control and risk to other patients and staff.
		4.2.2 Team Characteristics Characteristics of team members that could negatively/ positively affect how they carry out their jobs e.g. age, maturity
	4.3 Resources	4.3.1 Human Resources and Workload

	HCW's perceptions on issues related to the availability of resources needed to carry out their jobs	Participant's perception of whether there are enough people in the TB team. Perceptions on the workload they are required to carry. Includes issues of shortage of staff, staff turnover, rotation through clinics and departments.
		4.3.2 Transport/ Distance for home tracing Issues related to transport: need for transport or not? Presence or lack of transport and how this affects implementation of interventions such as home tracing.
		4.3.3 Medical supplies Issues around material medical resources used by HCW when implementing the relevant interventions in returning patients to care and initiating them on treatment e.g. gloves, masks, sputum bottles, TB drug
		4.3.4 Stationery/ Equipment/ Phone-related Issues around stationery required to carry out their role - e.g. registers, forms, writing stationery etc Includes computers, landlines, smart phones, airtime, phone codes, furniture and other office equipment Includes lab results and lab forms. Presence of absence of electronic systems for health records or tracking patients/ results etc

		Electronic devices for tracing activities or work in the communities Includes issues with filing/ losing files/ tracking files/ paper-based system benefits and challenges etc
		4.3.5 Budget Adequate/ inadequate budget for TB team activities
		4.3.6 Load Shedding Any issues to do with load shedding, how this affects work and whether clinics have a generator or other alternatives to overcome this.
	4.4 Team communication Participant's opinion on how well the team communicates	4.4.1 Teamwork/ Team Relationships General perceptions of teamwork, team dynamics and communication.
		4.4.2 Sharing of Guidelines/new info Describes how new information or updates to the guidelines are passed on to members in the TB team.
		4.4.3 Relationship with Juniors Perception on relationship with participant is managing and whether they feel they are approachable or helpful as a manager.
		4.4.4 Management/ Guidance Relationship with their manager - perception on whether their

		manager is approachable or helpful Includes who the participant goes to for help when they need advice or guidance in their role.
		4.4.5 Team-specific meetings/ communication Does the team have TB-team meetings/ other team-specific meetings? Ways of communication used between team including scheduled formal meetings, informal meetings, verbal messages in passing, sticky notes etc
		4.4.6 Meetings Information about whether general staff meetings occur at the facilities, how often these take place, the content discussed, whether it is helpful for TB team etc
5 Individuals Involved This domain refers to characteristics of the people that were implementing the intervention and how these	5.1 Confidence How capable/ competent/ confident participant feels in carrying out their tasks and what gives them this confidence/ lack of confidence?	
	5.2 Stress Levels Participant's experience of how stressful their role is	5.2.1 High Stress Participant finds work to be a very stressful aspect of their life/ work contributes greatly to their current stress levels.
		5.2.2 Low/Med Stress

characteristics affect their ability to carry out their required roles. These include confidence and training, stress levels, job satisfaction, helpful or unhelpful staff characteristics and any risks felt by employees.		Participant does not find work to be a very stressful aspect of their life.
	5.3 Job Satisfaction How happy/ satisfied participants are in their current role	5.3.1 Poor Job Satisfaction Participant is not happy to come to work/ do their job. Does not feel their job is rewarding. Does not looks forward to work etc.
		5.3.2 Good Job Satisfaction Participant is happy to come to work/ do their job. Feels their job is rewarding. Looks forward to work etc.
	5.4 Employee wellness/ support Issues to do with support for employees (not technical support related to their jobs but rather psychological/other holistic employee support)	
	5.5 Unhelpful Characteristics Characteristics in a participant or their staff that make it difficult to carry out their role/ makes someone "bad/ poor performing" at their role	
	5.6 Helpful Characteristics Characteristics in a participant or their staff that made it easier to carry out the role/ makes someone "good/ well-performing" at their job/role	

	Also includes information about people going beyond just their expected role to help beyond what is expected of them e.g. helping with other team members' jobs/ tasks in the clinic, using their own cars, airtime, money etc to do their job	
	5.7 Other Risks to Participant Any risks the participant feels they experience due to their role excluding the safety risks included under outer setting.	
	5.8 Training Issues related to training received/ not received.	5.8.1 Primary Training Received a formal training by district/national/NGO and not trained only by a fellow colleague at the clinic.
		5.8.2 Additional Training/ Refresher Trainings Issues to do with inadequate training or need for additional/refresher trainings.
		5.8.3 Secondary Training Refers to being trained by a colleague who attended the official training and came back to train others at the clinic
	5.9 Demotivating Factors Information about what is demotivating for clinics and their employees with regard to reaching their targets or	

	carrying out their roles effectively	
	5.10 Motivating factors Information about what motivates clinics and their employees to reach their targets or carry out their roles effectively	
6 Processes Any issues relating to the steps of planning, engaging, executing and reflecting that occur during implementation of the intervention. Includes changes needed in the intervention, what worked well and what did not work well and whether the participants feel it has been implemented well or not.	6.1 Changes needed/ Areas for Improvement Any changes the participant would like to make to the guidelines or what areas they feel needs to be improved upon.	
	6.2 What works well? Perceptions on which aspects of the guideline were effective to achieve the goal of returning patients to care.	
	6.3 Implemented well/not Participant's view on whether the guidelines were implemented as they should be. What factors helped them to implement it well or what prevented them from implementing it well.	

Appendix F: Approval Documents

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

R14/49 Dr TN Chinsamy

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M191037

NAME: (Principal Investigator)	Dr TN Chinsamy
DEPARTMENT:	School of Public Health Division of Epidemiology and Biostatistics Medical School University
PROJECT TITLE:	Barriers to and facilitators of implementation of national TB programme guidelines for management of pre-treatment lost-to-follow-up TB patients in Ekurhuleni district, South Africa
DATE CONSIDERED:	2019/10/25
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Professor L Ibisomi
APPROVED BY:	Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	2020/01/09

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 3rd Floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

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 submit details to the Committee. I agree to submit a yearly progress report. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in **October** and will therefore reports and re-certification will be due early in the month of **October** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature

23 Jan 2020
Date

PLEASE QUOTE THE CLEARANCE CERTIFICATE NUMBER IN ALL ENQUIRIES

Title: Barriers to and Facilitators of Implementation of National TB Program guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa.

- The EHDRC must be informed in writing before publication or presentation of research findings and a copy of the report/publications/presentation must be submitted to the EHDRC
- The district must be acknowledged in all the reports/publications generated from the research.
- The researcher will be expected to provide the EHDRC with
  - Six monthly progress updates including any adverse events
  - The final study report in electronic format
  - Present the final research findings at the annual Ekurhuleni research conference if possible.

- The EDHRC reserves the right to withdraw the approval, if any of the conditions mentioned above have being breached
- The research committee wishes the researcher(s) the best of success.

DR. J. SOPUYA

DEPUTY CHAIRPERSON: CITY OF EKURHULENI

Dated: 12/12/2019

Dr. R. Kellerman

CHAIRPERSON: GAUTENG DEPARTMENT OF HEALTH (EKURHULENI HEALTH DISTRICT)

Dated: 23/12/2019.

From: **Clement Penny** Clement.Penny@wits.ac.za
Subject: RE: Suspension of Research Activities
Date: 30 March 2020 at 12:24
To: Tasanya Chinsamy tasanyachinsamy@gmail.com

CP

Dear Dr Chinsamy
It will be fine to complete your study via telephonic interview. Can you obtain consent and record it with a witness present with you?
Regards
Clement Penny

From: Tasanya Chinsamy [mailto:tasanyachinsamy@gmail.com]
Sent: 30 March 2020 12:01 PM
To: Clement Penny
Subject: Suspension of Research Activities

Dear Mr Penny

My name is Tasanya Chinsamy. I am a Masters student at WITS conducting a qualitative study among TB teams at clinics in Ekurhuleni. I'd just like some clarity with the guidelines sent out to us by WITS that indicated that studies should be suspended unless they are essential and that we should contact you if further clarity is needed.

Does this refer only to clinical studies or even studies that only involve interviews? My study does not involve any other procedures. I still have around 6 interviews to complete. I would like to know if I'm allowed to do these telephonically or if I need to suspend my study as well?

Thank you,
Dr TN Chinsamy

This communication is intended for the addressee only. It is confidential. If you have received this communication in error, please notify us immediately and destroy the original message. You may not copy or disseminate this communication without the permission of the University. Only authorised signatories are competent to enter into agreements on behalf of the University and recipients are thus advised that the content of this message may not be legally binding on the University and may contain the personal views and opinions of the author, which are not necessarily the views and opinions of The University of the Witwatersrand, Johannesburg. All agreements between the University and outsiders are subject to South African Law unless the University agrees in writing to the contrary.

Appendix G: Information Sheet and Consent Forms

STUDY INFORMATION DOCUMENT (FOR FACE TO FACE INTERVIEWS)

Study title: Barriers to and Facilitators of Implementation of National TB Programme guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa.

Dear Prospective Participant

My name is Tasanya Chinsamy. I am currently a Masters student doing research at clinics in Ekurhuleni. Research is a process used in finding new knowledge. Through my research I am trying to find information on how clinics in Ekurhuleni carry out the guidelines to manage patients who are diagnosed with TB but have not yet come back to the clinic to start treatment (pre-treatment lost to follow up patients.).

In this study I want to learn what challenges and enablers clinic staff face when trying to implement the guidelines to manage pre-treatment lost to follow up TB patients. This studying is being done because there are many people who are diagnosed with TB but not started on treatment. This means that they can still spread the TB while they are in their homes and communities and this makes TB difficult to control. This study will help to explore some of the reasons that clinics are finding this difficult as well as some of the factors that help them. We can then use this information to help the clinics to improve their current procedures as well as to contribute to information used for further research.

Invitation to Participate: I would like to invite you to take part in this study which would involve:

1. A study using interviews with healthcare workers involved in managing pre-treatment lost to follow-up patients.
2. Participants would be involved in answering questions during an interview
3. Interviews will take place between January and March 2020
4. With your permission, the interviews will be recorded however any information that could identify you (such as your name) will not be shared or used and will be removed before analysing any result. You will remain anonymous.
5. The interviews will be conducted at the clinic where the participant works and are expected to take up to an hour to complete.
6. The questions that would be asked are around what the participant knows about how their clinic carries out the guidelines discussed above, what their role is, how they feel about the procedures conducted, their view on the clinic

resources and facilities as well as any challenges faced or factors that helped during implementation of the guidelines.

Risks of being involved in the study: There are no risks to you caused by involvement in the study. You are under NO obligation to participate in the study. You are free to decline participation and will not face ANY negative consequences or risks as a result of your decision to participate or not to participate. The researcher does not have any affiliation to or influence on the clinic or clinic managers and your participation or non-participation in the study will have no bearing on your work or professional relationships.

Benefits of being in the study: There is no immediate short-term or direct benefit to you as a potential participant however, the information that you provide could be used to improve health outcomes for future patients as well as to improve the clinic procedure and environment for future healthcare workers. There is no personal incentive to participate. There is NO personal gain (monetary, reputation-wise, favour with manager/colleagues as the researcher has no affiliation to or influence on the clinics or clinic heads.

Sharing of Relevant Information: Participants will be given any relevant or important information on the study while involved in the project and after the results are available. Feedback will also be given to the Ekurhuleni District TB Manager and representatives from the clinics involved.

Participation is voluntary. Refusal to participate will involve **no** penalty or loss of any benefits to which the participant is otherwise entitled. Even after a participant decides to provide consent, they can withdraw this consent at any time if they do not want to continue and the interview will be stopped immediately. Participation will be discontinued without **any** negative consequences, penalty, or loss of any benefits to which the Participant is otherwise entitled. A participant does not have to give a reason for withdrawing from the study. Any information collected will not be used and will be destroyed unless the participant gives consent to use the information.

There is no re-imbursement as no out-of-pocket costs are anticipated for the participant.

Confidentiality: Personal information will be treated in the strictest confidence and will only be available to myself, the research assistant and my Supervisor unless:

- If required by law - Personal information may be disclosed
- the Human Research Ethics Committees of the University may exceptionally require personal data to respond to a formal complaint, or for a compliance audit

All data collected in the course of the study will be securely retained for two (2) years, if a scientific publication arises from the study and six (6) years, if there is no publication. Thereafter it will be destroyed accordingly.

Anonymity: Your name will not be recorded in the interview transcripts and will not be shared with anyone. All information that could identify you will be removed before the data is analysed.

Contact details of researcher/s: email: tasanyachinsamy@gmail.com cell: 079 078 5429

Outputs: The expected output of the study is a Master's thesis that will compile the information received from the different interviews as well as the analysis of all the data collected. I will share these findings with all participants at a group feedback session.

Queries/questions: I will answer any questions you may have about the study or your potential participation. Please feel free to raise any questions with me at any time.

Supervisor contact details:
Prof Latifat Ibisomi, Supervisor on telephone no. 0117172607 or by e-mail at Latifat.Ibisomi@wits.ac.za

Contact details of HREC administrator and chair . Please see the information below to contact the WITS Human Research Ethics Committee if you would like to report any complaints or problems.

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.

Date: October 2019

WITS UNIVERSITY

PARTICIPANT CONSENT SHEET (FOR FACE TO FACE INTERVIEWS)

Project Title: Barriers to and Facilitators of Implementation of National TB Programme guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa.

1. I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;
2. I was given time to read it, or had it read to me, in the language I best understand;
3. I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;
4. I believe I fully understand why the study is being conducted and what the intended outcomes will be;
5. I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time. There is NO personal gain (e.g. monetary, reputation-wise, favour with manager/colleagues) from participating in the study.
6. I understand that I have NO obligation to participate in the study and I am free to decline participation or withdraw at any time and will not face any negative consequences or risks as a result of my decision.
7. I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the study would immediately be destroyed, unless I give consent for it to be retained
8. I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study I am free to speak to any of these contacts.

Contact details:

Dr Tasanya Nomaliso Chinsamy, Principal Investigator, telephone no. 079 078 5429, or by e-mail at tasanyachinsamy@gmail.com

Prof Latifat Ibisomi, Supervisor on telephone no. 0117172607 or by e-mail at Latifat.Ibisomi@wits.ac.za

Professor CB Penny, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by e-mail at Clement.Penny@wits.ac.za.
Ms. Z Ndlovu or Mr Rhulani Mkansi, Committee Secretariat, telephone nos.: 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

Name of Participant: _____
Date: _____
Place: _____
Signature or mark _____

Witnessed by:
Name of Witness: _____
Signature: _____
Date: _____



CONSENT FORM FOR AUDIO RECORDING OF STUDY PARTICIPATION (FOR FACE TO FACE INTERVIEWS)

Project Title: Barriers to and Facilitators of Implementation of National TB Programme guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa.

I hereby consent to audio recording of the interview

.

I understand that:

- The recording will be stored in a secure location (a locked cupboard or password protected computer) with restricted access to the researcher and the research supervisor.
- The recording will be transcribed and any information that could identify me will be removed,
- The recordings will be erased within either (a) two (2) years of the publication of the research findings, or (b) six (6) years, if no publications arise from this research
- Anyone wishing to access this information in the future will first have to obtain the approval of the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg
- Direct quotes from my interview, without any information that could identify me, may be cited in the research report or other write-ups of research.

Name of Participant: _____
Date: _____
Place: _____
Signature or mark _____

Witnessed by:
Name of Witness: _____
Signature: _____
Date:

WITS UNIVERSITY

STUDY INFORMATION DOCUMENT (FOR TELEPHONIC INTERVIEWS)

Study title: Barriers to and Facilitators of Implementation of National TB Programme guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa.

Dear Prospective Participant

My name is Tasanya Chinsamy. I am currently a Masters student doing research at clinics in Ekurhuleni. Research is a process used in finding new knowledge. Through my research I am trying to find information on how clinics in Ekurhuleni carry out the guidelines to manage patients who are diagnosed with TB but have not yet come back to the clinic to start treatment (pre-treatment lost to follow up patients.).

In this study I want to learn what challenges and enablers clinic staff face when trying to implement the guidelines to manage pre-treatment lost to follow up TB patients. This studying is being done because there are many people who are diagnosed with TB but not started on treatment. This means that they can still spread the TB while they are in their homes and communities and this makes TB difficult to control. This study will help to explore some of the reasons that clinics are finding this difficult as well as some of the factors that help them. We can then use this information to help the clinics to improve their current procedures as well as to contribute to information used for further research.

Invitation to Participate: I would like to invite you to take part in this study which would involve:

1. A study using interviews with healthcare workers involved in managing pre-treatment lost to follow-up patients.
2. Participants would be involved in answering questions during an interview
3. Interviews will take place between January and July 2020
4. With your permission, the interviews will be recorded however any information that could identify you (such as your name) will not be shared or used and will be removed before analysing any result. You will remain anonymous.
5. The interviews will be conducted telephonically expected to take up to a maximum of one hour to complete.
6. The questions that would be asked are around what the participant knows about how their clinic carries out the guidelines discussed above, what their role is, how they feel about the procedures conducted, their view on the clinic resources and facilities as well as any challenges faced or factors that helped during implementation of the guidelines.

Risks of being involved in the study: There are no risks to you caused by involvement in the study. You are under NO obligation to participate in the study. You are free to decline participation and will not face ANY negative consequences or risks as a result

of your decision to participate or not to participate. The researcher does not have any affiliation to or influence on the clinic or clinic managers and your participation or non-participation in the study will have no bearing on your work or professional relationships.

Benefits of being in the study: There is no immediate short-term or direct benefit to you as a potential participant however, the information that you provide could be used to improve health outcomes for future patients as well as to improve the clinic procedure and environment for future healthcare workers. There is no personal incentive to participate. There is NO personal gain (monetary, reputation-wise, favour with manager/colleagues as the researcher has no affiliation to or influence on the clinics or clinic heads.

Sharing of Relevant Information: Participants will be given any relevant or important information on the study while involved in the project and after the results are available. Feedback will also be given to the Ekurhuleni District TB Manager and representatives from the clinics involved.

Participation is voluntary. Refusal to participate will involve **no** penalty or loss of any benefits to which the participant is otherwise entitled. Even after a participant decides to provide consent, they can withdraw this consent at any time if they do not want to continue and the interview will be stopped immediately. Participation will be discontinued without **any** negative consequences, penalty, or loss of any benefits to which the Participant is otherwise entitled. A participant does not have to give a reason for withdrawing from the study. Any information collected will not be used and will be destroyed unless the participant gives consent to use the information.

There is no re-imbursement as no out-of-pocket costs are anticipated for the participant.

Confidentiality: Personal information will be treated in the strictest confidence and will only be available to myself, the research assistant and my Supervisor unless:

- If required by law - Personal information may be disclosed
- the Human Research Ethics Committees of the University may exceptionally require personal data to respond to a formal complaint, or for a compliance audit

All data collected in the course of the study will be securely retained for two (2) years, if a scientific publication arises from the study and six (6) years, if there is no publication. Thereafter it will be destroyed accordingly.

Anonymity: Your name will not be recorded in the interview transcripts and will not be shared with anyone. All information that could identify you will be removed before the data is analysed.

Contact details of researcher/s: email: tasanyachinsamy@gmail.com cell: 079 078 5429

Outputs: The expected output of the study is a Master's thesis that will compile the information received from the different interviews as well as the analysis of all the data collected. I will share these findings with all participants at a group feedback session.

Queries/questions: I will answer any questions you may have about the study or your potential participation. Please feel free to raise any questions with me at any time.

Supervisor contact details:
Prof Latifat Ibisomi, Supervisor on telephone no. 0117172607 or by e-mail at Latifat.Ibisomi@wits.ac.za

Contact details of HREC administrator and chair . Please see the information below to contact the WITS Human Research Ethics Committee if you would like to report any complaints or problems.

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.

Date: October 2019

WITS UNIVERSITY

PARTICIPANT CONSENT SHEET 1 (FOR TELEPHONIC INTERVIEWS)

Project Title: Barriers to and Facilitators of Implementation of National TB Programme guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa.

1. I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;
2. I was given time to read it, or had it read to me, in the language I best understand;
3. I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;
4. I believe I fully understand why the study is being conducted and what the intended outcomes will be;
5. I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time. There is NO personal gain (e.g. monetary, reputation-wise, favour with manager/colleagues) from participating in the study.
6. I understand that I have NO obligation to participate in the study and I am free to decline participation or withdraw at any time and will not face any negative consequences or risks as a result of my decision.
7. I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the study would immediately be destroyed, unless I give consent for it to be retained
8. I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study I am free to speak to any of these contacts.

Contact details:

Dr Tasanya Nomaliso Chinsamy, Principal Investigator, telephone no. 079 078 5429, or by e-mail at tasanyachinsamy@gmail.com

Prof Latifat Ibisomi, Supervisor on telephone no. 0117172607 or by e-mail at Latifat.Ibisomi@wits.ac.za

Professor CB Penny, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by e-mail at Clement.Penny@wits.ac.za.
Ms. Z Ndlovu or Mr Rhulani Mkansi, Committee Secretariat, telephone nos.: 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

Wording used for telephonic consent:

Interviewer: We will now record the telephonic consent for the study titled: "Barriers to and Facilitators of Implementation of National TB Programme guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa.":

Participant:
I [your name and surname] have understood this study as explained to me in the information session. I give my consent to take part in this study, today being [date – e.g. 1st of April 2020].

Witness:

I [your name and surname] have witnessed the information and consent process whereby [participants name and surname] has given their consent to participate in the study, today being [date- e.g. 1st April 2020]



CONSENT FORM FOR AUDIO RECORDING OF STUDY PARTICIPATION (FOR TELEPHONIC INTERVIEWS)

Project Title: Barriers to and Facilitators of Implementation of National TB Programme guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa.

I hereby consent to audio recording of the interview

.

I understand that:

- The recording will be stored in a secure location (a locked cupboard or password protected computer) with restricted access to the researcher and the research supervisor.
- The recording will be transcribed and any information that could identify me will be removed,
- The recordings will be erased within either (a) two (2) years of the publication of the research findings, or (b) six (6) years, if no publications arise from this research
- Anyone wishing to access this information in the future will first have to obtain the approval of the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg
- Direct quotes from my interview, without any information that could identify me, may be cited in the research report or other write-ups of research.

Wording used for telephonic consent:

Interviewer:

We will now record the telephonic consent for audio recording for the study titled “Barriers to and Facilitators of Implementation of National TB Programme guidelines for Management of Pre-Treatment Lost-to-Follow-Up TB patients in Ekurhuleni District, South Africa”

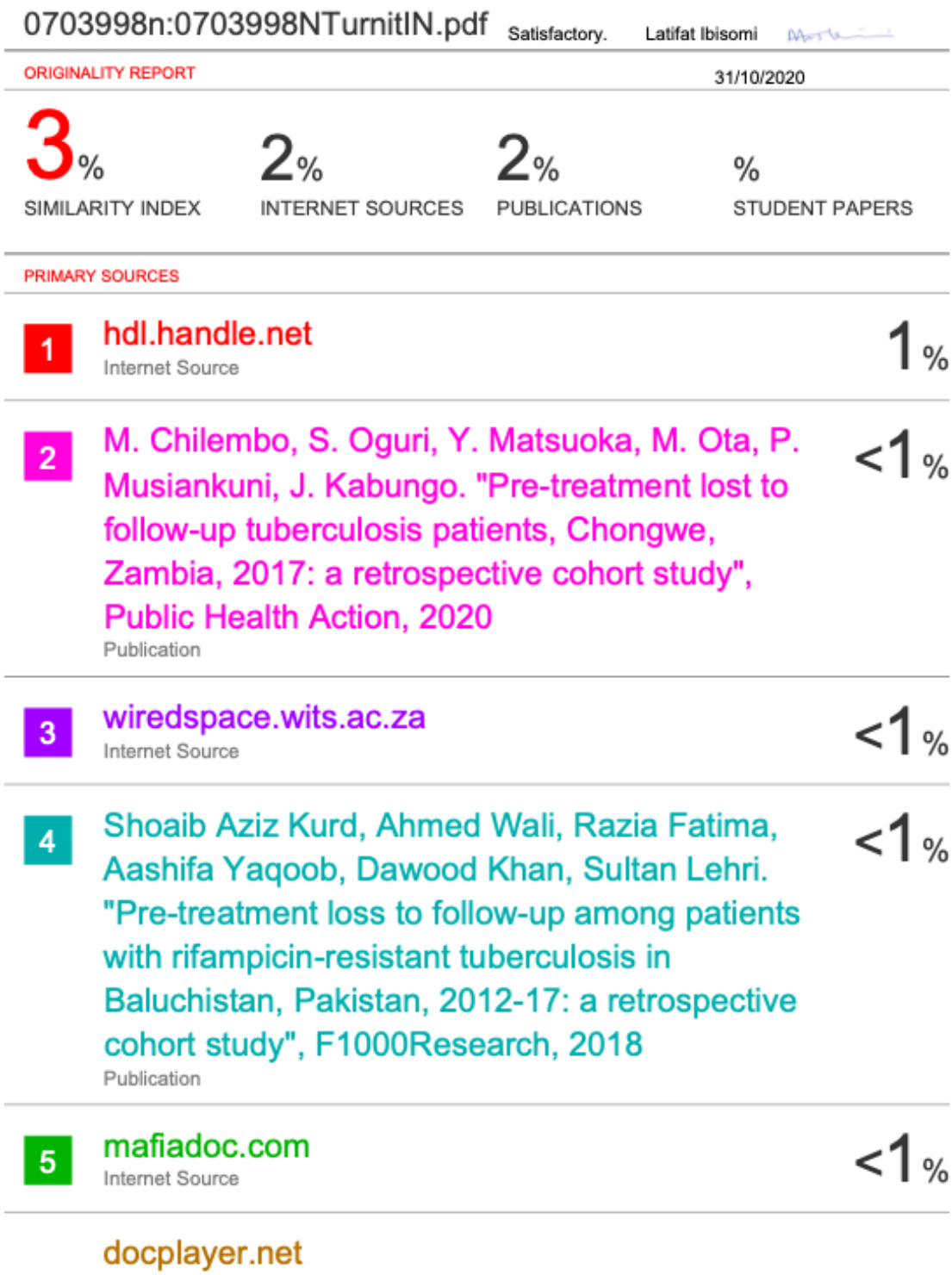
Participant:

I [your name and surname] have understood the terms of the audio-recording of my interview for this study as explained to me. I give my consent for the interview to be recorded, today being [date – e.g. 1st of April 2020].

Witness:

I [your name and surname] have witnessed the information and consent process whereby [participants name and surname] has given their consent for the interview to be recorded, today being [date-e.g. 1st April 2020

Appendix H: Turn-it-In Report



0703998n:0703998NTurnitIN.pdf Satisfactory. Latifat Ibisomi

ORIGINALITY REPORT 31/10/2020

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SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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	Smythers, Freda F. Liu, Richard Leichtweis, A. Paige Peterson, Corey Fagan. "Leveraging Health Information Technology to Meet The Joint Commission's Standard for Measurement-Based Care: A Case Study", The Joint Commission Journal on Quality and Patient Safety, 2020 Publication	
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