Strategies for optimisation of the quality of tuberculosis care services in public health centres of Addis Ababa, Ethiopia

by

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DEDICATION

This thesis is dedicated to the memory of my father Hassen Yesuf without whose endless love and encouragement I would never have been able to continue my path to education and reach this stage. However, he is not here to provide me the empowerment and support, which I have always felt with his presence that used to encourage me to achieve my goals in life.

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DECLARATION

I declare that STRATEGIES FOR OPTIMISATION OF THE QUALITY OF TUBERCULOSIS CARE SERVICES IN PUBLIC HEALTH CENTRES OF ADDIS ABABA, ETHIOPIA, is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

29 January 2022

ABAS HASSEN YESUF **Date**

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STRATEGIES FOR OPTIMISATION OF THE QUALITY OF TUBERCULOSIS CARE SERVICES IN PUBLIC HEALTH CENTRES OF ADDIS ABABA, ETHIOPIA

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ABSTRACT

Optimising the use of existing tools and improving the quality of care, which has been a missing ingredient in TB care services, could prevent half of all TB deaths (Pai & Temesgen 2019:12-13). The purpose of this study was to develop strategies for the optimisation of the quality of TB care services.

A convergent parallel mixed-methods design based on pragmatism paradigm was employed. The research was done in two phases. The first phase of the study included quantitative and qualitative parts that described and explored the quality of TB care services from the perspectives of TB patients and healthcare providers respectively. The findings were used as evidence in the development of strategies. Sampling design was applied and aligned with the methods used within the mixed-methods design.

Quantitative data were collected from 441 TB patients using a questionnaire. This represented a 97% response rate. Descriptive and logistic regression analysis were done using Epi Info and SPSS software. Qualitative data were obtained through in-depth interviews with 10 healthcare providers using an interview guide. Data were transcribed and thematic analysis was employed using Atlas ti software in the second part of phase one.

The quantitative and qualitative findings were integrated and used as the basis for the development of strategies. Six major thematic areas were identified. It was possible to align the six thematic areas with the Donabedian model. Strategies, actions relevant to

the strategies and rationale of the strategies were proposed under each identified theme. The interim strategies were validated by a purposively selected 13-member panel of experts in two rounds of Delphi technique and finally 11 strategies were approved.

The study identified the need to provide integrated, comprehensive, competent, and patient-centred quality TB prevention, diagnostic and treatment services in the health centres.

KEY CONCEPTS: TB patients, healthcare professionals, TB care services, quality, optimisation, strategy, improvement, competence, communication and satisfaction

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LIST OF ABBREVIATION AND ACRONYMS

AACAHB	Addis Ababa City Administration Health Bureau
AfDB	African Development Bank
AIDS	Acquired Immune Deficiency Virus
AOR	Adjusted odd ratio
AR	Anti-retroviral therapy
AU	African Union
BSC	Bachelor of Science
CDC	Centers for Disease Control and Prevention
CI	Confidence interval
COR	Crude odd ratios
CPD	Continuous professional development
CPT	Cotrimoxazole preventive therapy
CSA	Central Statistics Agency
CxR	Chest X-ray
DOTS	Directly observed treatment short-course
DR-TB	Drug-resistant tuberculosis
EMOH	Ethiopia Ministry of Health
EPTB	Extra-pulmonary tuberculosis
GBD	Global burden of disease
HBC	High burden countries
HC	Health centre
HCW	Healthcare workers

HEWs	Health extension workers
HIV	Human immunodeficiency virus
IIP	In-depth interview participant
IMCI	Integrated management of childhood illnesses
INH	Isoniazide
IPD	Inpatient department
IPT	Ionized preventive therapy
IRBs	Institutional review boards
LMICs	Low- and middle-income countries
LTFU	Lost to follow-up
MBA	Master of Business Administration
MDG	Millennium Development Goal
MDR-TB	Multi-drug resistance tuberculosis
MPH	Master of Public Health
MSC	Master of Science
MTB	Mycobacterium tuberculosis
NTCP	National tuberculosis control programme
NTP	National tuberculosis programme
OPD	Outpatient department
PHD	Doctor of philosophy
PLWHA	People living with HIV and AIDS
PPE	Personal protective equipment
PTB	Pulmonary tuberculosis

QI	Quality improvement
Quote	Quality of care as seen through the eyes of the patient
RECs	Research Ethics Committees
RH	Refampicin in combination with Isoniazid
RHBs	Regional Health Bureaus
RR	Refampicin resistant
RR-TB	Rifampicin-resistant tuberculosis
SARA	Service availability and readiness assessment
SC	Sub-city
SD	Standard deviation
SDG	Sustainable Development Goal
SOPs	Standard operating procedures
SPSS	Statistical Package for the Social Sciences
TB	Tuberculosis
TB-IPC	Tuberculosis infection prevention and control
TBL	Tuberculosis and leprosy
TBL-NSP	Tuberculosis and Leprosy National Strategic Plan
TFC	Treatment Follow-up Centres
TICs	Treatment Initiating Centres
TPT	Tuberculosis preventive therapy
TRAC	Tuberculosis Research and Advisory Committee
TSR	Treatment success rate
TTS	Tuberculosis treatment supporter

UHC	Universal health coverage
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNISA	University of South Africa
USA	United States of America
WHA	World Health Assembly
WHO	World Health Organization
XDR-TB	Extensively drug-resistant tuberculosis

CHAPTER 1

ORIENTATION OF THE STUDY

1.1. INTRODUCTION

The fact that poor quality of tuberculosis (TB) care causes half of all avertable TB-related deaths in low- and middle-income countries (LMICs) highlights the importance of optimising quality of care in TB care services to end TB (Pai & Temesgen 2019:12-13).

This chapter outlines the background to the research problem, theoretical grounding of the study, purpose and objectives of the study, research method and design, ethical considerations, significance, scope, and limitations of the study.

Ensuring high-quality TB care services is vital for excellent treatment outcomes. The aim of TB care services is to cure the patient, prevent relapse and acquired drug resistance, and prevent late complications and death (Ethiopia Ministry of Health (EMOH) 2017a:31). High-quality healthcare is an essential constituent to achieving the Sustainable Development Goal (SDG) number three, namely to ensure healthy lives and to promote the wellbeing of all people at all ages (Akachi & Kruk 2017:2-3).

TB causes illness in millions of people each year and, in 2015, it was one of the top ten causes of death worldwide, ranking above human immunodeficiency virus/acquired immune deficiency virus (HIV/AIDS) as one of the leading causes of death from an infectious disease. This is despite the fact that with timely diagnosis and correct treatment, most people who develop TB can be cured (World Health Organization (WHO) 2016:5). TB is one of the top ten causes of death globally (WHO 2019a:1).

In Ethiopia, “health centres (HCs) are the first or primary level of the healthcare system that provide promotive, preventive, curative and rehabilitation outpatient care. A centre has ten beds for emergency and delivery services” (Ethiopian Standards Agency (ESA) 2012:3).

According to the National TB programme strategic plan, HCs provide health education and BCG vaccination, identification and investigation of presumptive TB cases, provision of microscopy services for sputum and skin smear examination and short course chemotherapy. They are also used as treatment follow-up centres (TFC) for receiving drug-resistant TB (DR-TB) patients from DR-TB treatment-initiating centres (TICs) and preparing a patient status report for the TIC (EMOH 2017b:10). This study aims to describe and explore the quality of TB care services provided in public HCs in Addis

Ababa and to propose strategies to optimise the quality of TB care services.

1.2. BACKGROUND TO THE RESEARCH PROBLEM

The background acts as a scene-setter, framing the importance of a study. It explains the common areas that give rise to the problem (Thomas 2017:1-5).

1.2.1. Global and national TB incidence and prevalence

TB has existed for millennia and remains a major global health problem (WHO 2016:5). Globally, more than a million deaths occur due to TB each year even though it is a preventable and treatable disease. In 2016, there were 9.02 million cases of TB among HIV-negative individuals and the death rate was 1.21 million among HIV-negative individuals. There were1.4 million incident cases and 0.24 million TB deaths among HIV-positive individuals globally (Global Burden of Disease (GBD) TB Collaborators 2018:1239).

TB treatment prevented an estimated 49 million deaths globally in the period 2000-2015. However, there is still diagnostic and treatment disparity. In 2015, 6.1 million new cases of TB were reported to the national authorities and WHO. There was a gap of 4.3 million cases worldwide between the incident and notified cases in countries like India, Indonesia and Nigeria. India, China, Russia, Indonesia and Nigeria are the five counties that are responsible for 60% of the gaps between the incident and notified cases (WHO 2016:1-2).

When there is TB treatment resistance against at least two TB medications (Isoniazid and Rifampicin), it is called multi-drug resistance tuberculosis (MDR-TB), which is responsible for 5% of new cases of TB globally (GBD TB Collaborators 2018:1239).

The MDR-TB treatment success rate (TSR) was 52% globally in 2013. Among the notified TB patients, 55% had a documented test result for HIV whereas the test result was not documented for the remaining TB patients globally. Seventy-eight percent of the HIV-positive TB patients on anti-retroviral therapy (ART) had access to TB prevention and treatment, while 910 000 TB patients living with HIV were also started on TB treatment in 2015. In addition, 87 000 (7%) of those who were eligible were children under the age of five who were also started on TB treatment (WHO 2016:1-2).

According to a WHO global TB report, in 2015, there were around 10.4 million new TB cases globally, of which 5.9 million (56%) were men, 3.5 million (34%) were women and 1.0 million (10%) were children. Of all new TB cases, 1.2 million (11%) were patients

living with HIV. India, Indonesia, China, Nigeria, Pakistan and South Africa accounted for 60% of the new cases (WHO 2016:1-15).

Globally, the incidence of TB declined at a rate of 1.5% between 2014 and 2015, whereas to achieve the End-TB Strategy of 2020, the annual decline rate needed to accelerate at the rate of 4-5%. During that period, there were 480 000 new cases of MDR-TB and an extra 100 000 patients with Rifampicin-resistant TB (RR-TB) that were newly eligible for MDR-TB treatment. India, China and the Russian Federation accounted for 45% of the 580 000 combined resistant cases. In 2015, there were 1.4 million TB deaths and further 0.4 million deaths recorded among HIV patients resulting from TB. TB remained among the top ten causes of death globally in 2015, although the number of TB cases decreased by 22% between 2000 and 2015 (WHO 2016:1-28).

In Africa, TB prevalence per 100 000 population reduced only in 11% of the countries from 1990 to 2011. In that time, countries that reported a reduced TB prevalence rate of more than 50% were: Botswana (52%), the Central African Republic (50%), Egypt (65%), Eritrea (68%), Ghana (68%), Guinea (52%), Madagascar (53%), Malawi (54%), Niger (79%), Rwanda (65%) and Uganda (59%). These countries also reported reduced TB incidence rates over the same period. However, nine African countries reported higher TB incidence rates by reporting a doubling of their rates between 1990 and 2011. Cameroon, Eswatini Gabon, Lesotho, Kenya, the Republic of the Congo, Sierra Leone, South Africa, and Zimbabwe are the nine countries where TB incidence rates doubled (United Nations Economic Commission for Africa (Uneca), African Union (AU), African Development Bank (AfDB) & United Nations Development Programme (UNDP) 2015:71-74).

A national TB prevalence survey done in Kenya shows that the prevalence of all forms of TB and for all ages was 426 (347-504) per 100 000 of the population and the TB incidence rate of 348 (213-516) per 100 000 of the population in 2016 compared to a WHO estimation of 233 per 100 000 population in 2015. Generally, around 169 000 (103 000-250 000) people had TB in 2016 (Kenya Ministry of Health 2016:11).

The high prevalence of HIV significantly contributes to the high burden in the incidence of TB in different countries on the African continent. Among 8.8 million people who were infected with TB in 2012 globally, 1.1 million were HIV positive and 75% of these cases were in Africa. Between 1990 and 2011, Africa's death rate due to TB reduced by 23% (Uneca, AU, AfDB & UNDP 2015:71-72).

The major determinants of the risk of TB transmission are the prevalence of TB in the community, effectiveness of the measures used to control TB and the settings of service delivery. In public health facilities, to reduce poor medical practices and MDR-TB ensuring the delivery of quality TB care is the backbone of the services provided to the clients (Gebrekidan, Tesfaye, Hambisa & Deyessa 2014:1).

The National Service Availability and Readiness Assessment (Sara) report states that Ethiopia reduced the prevalence of TB through the implementation of DOTS in all public health facilities and achieved six targets of the Millennium Development Goal (MDGs). The TB incident rate fell to 224 per 100 000 of the population in 2013 from 369 per 100 000 of the population in 1990. The TB prevalence rate fell by 50.5% (211 per 100 000 of the population) based on the target of reducing the TB prevalence rate by half by 2015. Reduction of TB mortality by 50% as of 2013 baseline was achieved through decreasing the national TB mortality rate by 64%. The recent national TB drug resistance surveillance findings indicate that 2.3% of new TB cases and 17.8% of previously treated TB cases have MDR-TB (Ethiopian Public Health Institute 2016:78).

According to the national TB, DR-TB and Leprosy Guidelines, the national annual TB incidence rate remained at 177 per 100 000 of the population in 2016 despite marked improvements and a 42% decline in the national annual TB incidence rate that was 369 casesper 100 000 of the population in 1990. TB-related mortality is among the top ten causes of death, with a death rate of 26/100 000 population annually from the hospital admissions in 2015in Ethiopia. Due to this, Ethiopia remained among the 30 highest TB, TB/HIV and DR-TB-burdened countries between 2015 and 2020 (EMOH 2017a:8).

1.2.2. Global and national TB prevention, care and control programmes

The findings of an Ethiopian service availability and readiness assessment summary report done on 547 facilities nationally in 2016 shows that 63% of health facilities provide TB services and 54% of the health facilities provide management and treatment follow-up for TB patients. It also found that 16% of the health facilities diagnose TB using X-ray and only 6% of the facilities provide MDR-TB rapid tests (GeneXpert MTB/RIF). Most rural health facilities (74%) provide TB services while only 56% of the urban health facilities provide TB services. The findings from the 91 health facilities involved in the service availability assessment show that 57% of the health facilities offer TB services, TB diagnosis (57%), TB diagnostic testing (53%), clinical diagnosis (56%), smear microscopy (53%), diagnosis by culture (9%), rapid test (GeneXpert MTB/RIF) (14%) and 43% of the facilities provide chest X-ray (CxR). The percentage of facilities that prescribe

and provide TB drugs to TB patients is 33% and 30% respectively, while the percentage of facilities that provide management and treatment follow-up for TB patients is 30% (Ethiopian Public Health Institute 2016:81-91).

A notable reduction in TB death rates in countries that are making efforts to reduce TB prevalenceand incidence has been recorded. However, HIV co-infection, lack of access to and quality of TB care remain the major challenges in the reduction of MDR-TB and hinder efforts by developing countries, especially in Africa, to achieve TB eradication targets (Uneca, AU, AfDB & UNDP 2015:74).

A 2018 Lancet Global Health Commission publication on quality of health systems shows that uptake of new TB diagnostic tests has been slow, and many countries continue to rely on inaccurate smear microscopy reference. In high burden countries (HBCs), nine sputum smears are done for every gold standard test (Xpert MTB/RIF) used. Making timely diagnosis is crucial to interrupting transmission and optimising treatment outcomes when dealing with infectious diseases. An average of 28.4 days passed between the first contact of patients with the health system and date of TB diagnosis, ranging from two days in China to 87 days in Pakistan (Kruk, Gage, Arsenault, Jordan, Leslie, Dewan et al 2018:1206).

A systematic review estimated patient losses to the system between diagnosis and treatment for TB to be as high as 18% in Africa and 13% in Asia. Of the two million deaths from TB and other conditions that are amenable to healthcare, 56% occurred in people who used the health system but did not receive good quality care. Therefore, improving access to high quality of care can avert eight million deaths globally (Kruk et al 2018:204-1235).

TB TSRs are also reflective of the quality of TB care services and eight of the 30 HBC have achieved a 90% first line TSR. TSR ranges from 50% to 85% in countries witha high burden of MDR-TB. It is the indication for better follow up, treatment and counselling of patients with manageable conditions in LMICs. MDR-TB arises from low economic gradient sub-groups, communities and countries that get poor quality of TB care. Community-based TB services are cost-effective with evidence for the benefits of shifting quality focused care services to primary healthcare levels (Kruk et al 2018:204-1235).

Ethiopia’s national public health facilities capacity assessment to deliver TB diagnosis and treatment service, as of May 2017, shows that there are 156 public hospitals and 3 335 public HCs providing TB diagnosis and treatment service nationally. Most of them (2 891) provide acid-fast bacilli microscopy, and 144 sites have a GeneXpert machine

that can provide an Xpert test. Five regional reference laboratories, four referral university hospitals and a National Reference Laboratory do TB cultures. There are 155 Laboratory External Quality Assurance centres, and 48 hospitals working as RR/MDR-TB TICs and 658 RR/MDR-TB TFCs (EMOH 2017b:12-13).

Nationally, 403 health facilitates were involved in a study that focused on the readiness of health facilities to provide TB services (Ethiopian Public Health Institute 2016:78-84). Among health facilities assessed for having 12 tracer items for TB services, only 8% had all the tracer items. The readiness score of the health facilities was 56% in general. Of the 403 health facilities involved in service readiness assessment nationally, 64 are health facilities providing TB services in Addis Ababa. The mean availability of tracer items was 48%, while 5% of the facilities have all tracer items. Among the 64 facilities in Addis Ababa, 54% have all first-line TB medicine.

Service standardisation and quality of service assessed by staff capacity among the 64 assessed facilities shows that 44% of them have at least one trained staff member on TB infection prevention and control (TB-IPC). Of these assessed centres, 53% have at least one trained staff member on diagnosis and management of TB and 41% have at least one trained staff member on MDR-TB diagnosis and management (Ethiopian Public Health Institute 2016:78-84).

Of the health facilities involved in the study, 42% have diagnosis and treatment guidelines, 46% have TB/HIV co-infection management guidelines, 33% have MDR-TB management guidelines and 47% have infection control guidelines. The findings on the diagnostic service domain show that from the 64 facilities in Addis Ababa, 47% provide TB microscopy, 21% provide HIV diagnostic services and 60% have systems for diagnosing HIV among TB clients. These findings show that there is a big gap in readiness of the health facilities to provide quality TB care services (Ethiopian Public Health Institute 2016:78-84).

1.2.3. TB programme policies and supportive systems

During the 1990s, global and national TB control programmes (NTCP) prioritised the essential TB control interventions to maximise their impact with limited resources. Implementing DOTS programmes also became very important. The diagnosis and treatment of chronic TB patients affected by MDR-TB was only implemented in a few TB programmes in HBCs (World Health Assembly 2009:1-5).

The 62nd World Health Assembly (WHA) endorsed a series of actions to combat MDR-

TB and extensively drug resistant TB (XDR-TB) through a resolution in 2009. Member states also agreed on the strengthening of universal access to MDR and XDR-TB diagnosis and quality treatment. The resolution brought major improvements in the operationalisation of the global TB control and care under the Stop TB Strategy. Political commitment of governments on national and global financial support and resource mobilisation also relatively improved (Onozaki & Raviglione 2010:32-43).

In 2016, US$6.6 billion was granted for TB prevention and care in LMICs, 84% of which was generated from local domestic sources. In low-income countries, 90% of national TB programmes (NTPs) depended on global donors for financing. In LMICs, investments dropped by US$2 billion, resulting in a shortage on the US$8.3 billion required in 2016. This yearly gap was envisaged to widen to US$6 billion by 2020, unless funding improved. Globally, WHO expected an improvement in healthcare financing overall (WHO 2016:108).

The WHO End-TB Strategy approved by WHA in 2014 calls for a 90% reduction in TB deaths and 80% reduction in TB incidence rate by the end of 2030. The global improvement and achievement of the End-TB Strategy targets depend on major advancements in the TB prevention and care services in the world's HBCs (WHO 2016:1-15). A few countries are likely to meet SDG 2030 targets to end TB, if the current TB incidence trend continues. Improving the qualityof and access to TB diagnosis and care can accelerate progress through the scaling up of TB risk factor prevention interventions and TB and HIV control programme integration (GBD TB Collaborators 2018:1239).

In the past five decades, TB was identified and has remained the major public health problem for Ethiopia and three TB centres and sanatoria were established in the urban areas of the country in the early 1960s to mitigate the challenge. NTCP, which was founded in 1976, initiated and piloted DOTS in selected health facilities of Ethiopia since 1992, as cited in the National Strategic Plan for TB and Leprosy (TBL) Control (EMOH 2017b:9). Ethiopia is still among the top 30 countries having a high burden of TB, MDR-TB and TB/HIV worldwide (WHO 2019a:23).The country has implemented national TB prevention and control strategies, which are aligned with the national health sector development and transformation plan in an effort to reduce the burden.

1.3. **STATEMENT OF THE RESEARCH PROBLEM**

The two continents with the highest TB incidence and TB/HIV prevalence are Africa and Asia (Zenebe, Adem, Mekonnen, Derbie, Bereded, Bantie, Tulu, Hailu & Biadglegne 2016:2). The high burden of HIV/AIDS and lack of appropriate, accessible, and quality

care are among the main challenges to ending TB in these continents. As a result of these challenges, the targets for TB care services have not been met (Uneca, AU, AfDB & UNDP 2015:71-72). To improve the case notification rate and treatment outcomes, Ethiopia implemented the DOTS accelerated decentralisation programme in 1992, as a pilot. Study has found early case detection using active case finding useful in areas where there is a shortage of resources (Dangisso, Datiko & Lindtjørnl 2014:2).

Ethiopia is one of the countries with the highest TB burden. In 2014, WHO estimated that Ethiopia had 200 000 new TB cases, ranking the country tenth among the world's 22 HBC for TB and the fourth HBC in sub-Saharan African countries. In Ethiopia, an estimated 32 000 people die of TB every year and more than 80 people die per day. Study indicates that TB has a long-term corrosive impact on the health of the Ethiopian population (Reves, Angelo & Nieburg 2016:34).

Most TB cases occur among young adults and children, resulting in high costs and impeding the country's drive towards becoming a middle-income country. The economic consequences of TB include the loss of income and productivity during diagnosis and treatment. There are also immeasurable consequences due to permanent lung damage in up to 50% of survivors (Reves et al 2016:34).

Besides being an HBC, Ethiopia is also among countries mostly affected by high treatment failure and continued transmission due to delayed diagnosis and treatment. Treatment non-adherence is another major challenge. Research findings show that the TSR is 83% and case detection rate is 62%. The DOTS programme covers 100% geographically and 95% of the health facilities provide the service but the outcomes of the treatment are not satisfactory (Zenebe et al 2016:2).

TB affects different sectors of the community and research shows that TB case notification is higher in males than in females and the case fatality rate is lower in males. Low socio-economic status, poor access to health services, treatment and use and delay in seeking care play a major role in low case notification. Poor knowledge about TB is also a problem as well as gender (Dangisso et al 2014:2).

Poor or inappropriate medical practices for TB diagnosis and treatment contribute to the unnecessary suffering of patients and diagnostic delays lead to the continued spread of TB and high healthcare costs for patients and society, and the development of MDR-TB. Although case detection rate through the engagement of private health facilities has increased and TB care provision is encouraging, the emergence of MDR-TB has become a major public health problem in Ethiopia and an obstacle to global TB control efforts

(Gebrekidan et al 2014:2).

TB screening and case detection at outpatient departments and other service outlets (providers) are below the estimation that 10% of the outpatients could be TB presumptive. WHO recommends GeneXpert testing for all presumptive TB and drug sensitivity tests but these have not been fully implemented in presumptive case detection. This late diagnosis and treatment of presumptive TB has contributed to high MDR-TB prevalence in previously TB treated patients, according to the Addis Ababa City Administration Health Bureau (AACAHB) TB programme annual performance report (AACAHB 2017).

It is presumed that 20-30% of TB cases are extra-pulmonary tuberculosis (EPTB) (EMOH 2017a:24). However, 38% of the TB patients are diagnosed with EPTB in fact. The MDR-TB case detection rate is 65%, which is below the expected rate of 85%. Only 5% of eligible people living with HIV and AIDS (PLWHA) are using ionised preventive therapy (IPT) (AACAHB 2017).This is below the national target for the use of IPT of 80% (EMOH 2017a :22)**.**

In Addis Ababa, there is a co-infection rate of 25%, which is higher than the global figure of 8%. The re-treatment rate is 10%, which is higher than the standard rate of 5%. Similarly, the cure rate for diagnosed pulmonary smear-positive TB patients of 84% is not satisfactory – it is lower than the above 85% target and there is a high death rate (10%). The MDR-TB TSR is 66% and the death rate is 14% when it should be less than 5%. In addition, MDR-TB patients lost to follow-up (LTFU) rate is 10% and the rate of not evaluated is 9%, when it should be less than 5% for both (AACAHB 2017).

In short, TB programmes and public HCs are focused on measuring coverage and access to TB diagnosis and treatment services and overestimating TB treatment performance in this regard. Measuring the quality of TB care services and user experience are woefully underappreciated (Arsenault, Kruk & Roder-DeWan 2019:4; Ikeda, Basenero, Murungu, Jasmin, Inimah & Agins 2019:2; Naidoo, Gengiah, Singh, Stillo & Padayatchi 2019:4; Pai & Temesgen 2019:12). This led the researcher, who has been working on public health and leading health service quality improvement at different levels of the health sector in the country with global experiences for more than ten years, to study the topic.

This observation was supported by findings of other researchers that only less than half of the presumptive (suspected) TB cases are managed correctly in LMICs. The main contributor to mortality is the poor quality of care rather than poor access to care. Poor quality care contributes 60% of deaths, while poor utilisation of the health system resulted in the remaining 40% of deaths from disease and health conditions that need healthcare

services (Kruk et al 2018:e1196-1252).

The above problems and gaps drive the research to address the following questions:

- What is the level of quality of TB care service according to the perspectives of patients?
- What are the experiences of healthcare professionals in providing TB care?
- What strategies are needed to optimise the quality of TB care services?

1.4. AIM OF THE RESEARCH

1.4.1. Research purpose

The research purpose statement sets the objective, intent and central idea for the study (Creswell & Creswell 2018:117). The purpose of this study is to develop strategies for optimisation of the quality of TB care services in public health facilities of Addis Ababa, Ethiopia.

1.4.2. Research objectives

The objectives of this research are to:

- Describe the quality of TB care services according to the perspective of TB patients.
- Explore the experiences of healthcare professionals in TB care service delivery.
- Develop strategies to optimise the quality of TB care services.

1.4.3. Research questions

The research questions in this study are:

- What is the level of the quality TB care services, according to the perspectives of TB patients?
- What are the experiences of healthcare professionals in providing TB care?
- What strategies are needed to optimise the quality of TB care services?

1.5. SIGNIFICANCE OF THE STUDY

The significance of the study points to the importance of the research for different audiences that may benefit from reading and using the findings of the study (Creswell & Creswell 2018:250). There is limited research on the quality of TB care in public health

facilities of Addis Ababa. This study will provide the health facility leaders with information to help them make evidence-based decisions about quality optimisation of TB care in public HCs. The study will also provide TB programme managers, through the strategies, with informationon how to implement appropriate quality optimisation interventions and programmes taking available resources into account.

Strategies of this kind do not currently exist and there is a need for them, as was clear from the background to the study. The comprehensive mixed-methods research study will not only result in the generation of the strategies but will also give insight into patients' evaluation of the quality of TB care in the research context as well as the healthcare professionals' experiences of working in this context.

It is hoped that the strategies will help to also optimise the culture of TB healthcare professionals striving towards the best possible care. The findings could also give health policy makers and managers useful insights in designing strategies on the standardisation of TB care nationally. The study will generate and add knowledge regarding quality of TB care. It is hoped that the methodology will guide or form the basis for further studies.

1.6. DEFINITIONS OF TERMS

1.6.1. Definitions of key concepts

Concepts are mental images or perceptions whose understanding varies from person to person and need shared understanding (Kumar 2014:81). A conceptual definition is the theoretical or abstract meaning of the concept under study (Polit & Beck 2010:549).

Tuberculosis (TB) is a disease caused by an organism called *Mycobacterium tuberculosis*, a rod-shaped bacillus (EMOH 2017a:1).

Presumptive TB refers to a patient who presents with symptoms or signs suggestive of TB (previously known as a TB suspect).

Multidrug-resistant TB (MDR-TB): This type of TB is caused by *Mycobacterium tuberculosis* resistant in vitro to the effects of the two known anti-TB drugs, that is, Isoniazid (INH) and Rifampicin, with or without resistance to any other anti-TB drugs.

Extensive drug resistance TB: Resistance to any Fluoroquinolone and to at least one of three second-line injectable drugs (Capreomycin, Kanamycin and Amikacin), in addition to multi-drug resistance.

TB Treatment: The action taken to get rid of TB using a combination of anti-TB drugs that can kill or prevent the replication of *Mycobacterium tuberculosis* in the patient's body.

Intensive (initial) phase: It is the TB treatment (chemotherapy) phase aimed at reducing the load of the bacilli in the sputum and improving the clinical condition of the patient under treatment rapidly and making the patient non-infectious with effective treatment (bactericidal, sterilising and drug-resistance prevention ability).

Continuation phase: It is the second phase of TB treatment planned and given for four months to sterilise the remaining semi-dormant bacilli and ensures treatment completion and cure to prevent relapse of the disease after completion of treatment.

Patient pathway: "refers to the steps TB patients take from the initial point of care-seeking to the point of achieving a successful treatment outcome" (Mulder, Fiekert, Heus, Kamp, Brunetti, Meis & Andrii 2018:7).

Epi Info™ 7 is a series of tools designed to enable epidemiologists and other public health and medical professionals to create a questionnaire, customise the data entry process, and enter and analyse data (Centers for Disease Control and Prevention (CDC) 2016:2).

1.6.2. Operational definitions

TB patient is an individual diagnosed with active pulmonary or EPTB disease.

Healthcare professional is a healthcare worker, such as a doctor, health officer, nurse, midwife and laboratory professional.

TB focal person is a healthcare professional in-charge of TB care services in a public HC (Izudi, Tamwesigire & Bajunirwe 2020:150).

Public HCs: are government owned primary leve HCs in the healthcare system providing delivery and emergency services with ten beds, pharmacy, laboratory and outpatient promotive, preventive, curative and rehabilitation services (ESA 2012:3).

TB clinic is a department in the public HCs dedicated for providing TB care services regularly.

Strategy: is a "plan of actions designed to achieve a goal or ambitions" (City Health Care Partnership 2018:18).

Interventions are a set of activities aimed at optimising the quality of TB care services and achieving expected outcomes in the TB programme.

Optimisation: is a “deliberate, iterative and data-driven process to improve a health intervention and/or its implementation to meet stakeholder-defined public health impacts within resource constraints” (Wolfenden, Bolsewicz, Grady, McCrabb, Kingsland, Wiggers, Bauman, Wyse, Nathan, Sutherland, Hodder, Fernandez, Lewis, Taylor, McKay, Grimshaw, Hall, Moullin, Albers, Batchelor, Attia, Milat, Bailey, Rissel, Reeves, Sims-Gould, Mildon, Doran & Yoong 2019:1).

Quality of healthcare refers to the extent to which healthcare services provided to the individual and patient populations improve desired health outcomes, as stated by the United States of America’s Institute of Medicine (2001:5-6).

Quality improvement “refers to an approach aimed at systematically improving the quality of care by addressing gaps between current practices and desired standards, through management decisions, team-based problem solving, process improvement, and quality redesign” (Mulder et al 2018:7) .

Cascade of care: is “a model for evaluating patient retention across sequential stages of care required to achieve a successful treatment outcome” (Subbaraman, Nathavitharana, Mayer, Satyanarayana, Chadha, Arinaminpathy & Pai 2019:1).

Competent TB care services is providing TB care services in accordance with the most recent evidence and technologies for all TB patients with recent TB care guidances (Arsenault et al 2019:3).

Healthcare professional’s competence is the ability of healthcare providers to provide TB care services that yield desired patient outcomes with the current TB care guidance (Kak, Burkhalter & Cooper 2001:3).

Contact investigation: refers to the systematic evaluation of individuals who have been in close contact with potentially infectious TB cases within three months of the commencement of TB treatment (EMOH 2016a:21).

Positive patient experience refers to respect and patient-centredness in providing TB care services with a caring and compassionate approach, dignity, confidentiality, maintaining privacy and honouring values of TB patients (Arsenault et al 2019:3).

Concepts interchangeably used:

Healthcare professionals, healthcare providers, TB care providers.

Optimisation of care, improvement of care.

1.7. FOUNDATION OF THE STUDY

Selecting a research topic, paradigms (worldview), philosophical assumptions and metatheories and theoretical frameworks (model) is the key task of a researcher in designing research studies to understand a phenomenon under study and guide the study (Chilisa & Kawulich 2012:1). The paradigms, philosophical assumptions and metatheories and theoretical frameworks (model) used to study the quality of TB care service in public HCs of Addis Ababa are presented next and discussed in detail.

1.7.1. Paradigms of the study

“Paradigm is a model or framework for observation and understanding, which shapes both what we see and how we understand it” (Babbie 2017:31-33). “Paradigm is a worldview of the underlying theories and methodology of a scientific subject or the real world. It is also a way of looking at natural phenomena that encompasses a set of philosophical assumptions and that guides one's approach to inquiry” (Polit & Beck 2012:736).

The commonly used research paradigms in health studies are qualitative research paradigm (interpretivist and constructivist research paradigm), quantitative research paradigm (positivist and post-positivist research paradigm) and mixed-methods research paradigm (multiple paradigms approach and pragmatism research paradigm). Each of the paradigms was discussed in the context of the study in the following sections. The common assumptions of the research paradigms are: epistemology, ontology, methodology, and axiology (Kivunja & Kuyini 2017:254-265). The qualitative, quantitative, and mixed-methods paradigms and their assumptions in the study are discussed below:

1.7.1.1. Qualitative research paradigm

Qualitative research also known as the interpretivist paradigm can be constructivist in nature. Qualitative research involves the assessment of study participants' attitudes, opinions, behaviours, and perceptions of their interactions with the world around them. The paradigm's fundamental belief is that the reality of the situation being studied is explored, constructed, and meaning is generated or reconstructed. The interpretivist

paradigm assumes that social reality exists as individual experiences, the presence of multiple realities, and the social construction of realities, as well as their understanding in relation to the contexts and subjective experiences of the research participants (Kivunja & Kuyini 2017:26).

To achieve the research goal, the interpretivist paradigm, within a constructivist nature, is used to study, understand, and reconstruct various realities that people have within their social world in their natural settings. The study in such conditions is the function of researchers' insights and impressions with the interaction of the research participants and the subject or situation under study. The generated result of the study can be in non-quantitative form or not subjected to quantitative analysis (Salkind 2010; UKEssays 2018).

The interpretivist/constructivist paradigm assumes elements of subjectivist epistemological, relativist ontological, naturalists methodological and balanced axiological assumptions (Kivunja & Kuyini 2017:26-34).

Focus group discussions, interviews, in-depth interviews and projective techniques can be used to gather data (Creswell 2014:33). Interpretivist paradigm means that reality can be translated in many ways. The aim of the research guides how reality can be constructed within the context of the qualitative study (Polit & Beck 2012:12). In this study, it is aimed at understanding the experiences of healthcare providers in TB care service delivery.

1.7.1.2. Quantitative research paradigm

"***Positivist paradigm*** is defined as a worldview to research, which is grounded in what is known in research methods as the scientific method of investigation" (Kivunja & Kuyini 2017:30). Positivist paradigm is a means of testing objective theories by examining the relationships among variables (Creswell 2014:32). However, many aspects of the positivist paradigm cannot be applied in the world in which humans are involved.

Post-positivist paradigm (also known as logical empiricism) is a less strict form of the positivist paradigm that provides for social and behavioural studies involving human beings. Post-positivist paradigm accepts that the human social world is not value free and cannot be studied in the same way as the natural world. Post-positivist paradigm assumes that it is problematic to explain the causal nature in the social world unlike the natural world. Reality could not be understood fully. Post-positivist paradigm supports that reality is also not perfect and truth is not absolute but probable (Kivunja & Kuyini 2017:31-32).

The post-positivist researchers believe that “no matter how faithfully the scientist adheres to the scientific methods of research, research outcomes are neither totally objective, nor unquestionably certain” (Chilisa & Kawulich 2012:7-8).

Objectivity, standardisation, deductive reasoning and control within the research process are considered to be logical steps followed by post-positivist researchers to claim knowledge and to study their view of the world (Kaushik & Walsh 2019:1-2).

In this study, the factors that affect the quality of TB care were examined and the real relationship was analysed. The major inputs and process factors that determine the treatment outcomes were theoretically conceptualised and framed to guide the study design and method.

1.7.1.3. Pragmatism paradigm

Pragmatism is a philosophical paradigm used to understand worldviews and as a guide in constructing knowledge (Maarouf 2019:1-8).

The pragmatism paradigm is also known as the mixed-methods research paradigm or the multiple paradigms approach. This is used as the main paradigm of this study. It is a complementary mixed-methods research approach. It can be used in programmatic or intervention-based research to develop practical solutions. It is underpinned by shared meanings and joint actions. There is an element of connecting with theories prior and post-data collection. The pragmatism paradigm is commonly used in mixed-methods studies. It complements the limitations of quantitative and qualitative research approaches and maintains the contribution of abstract issues (Kothari 1990:13).

Induction, deduction, and abduction are the logic of inquiry used in pragmatism as research paradigm. Abduction is a way of identifying practical solutions to social problems and the findings are context-specific and generalisable to other situations and areas to improve the outcome of the programme or care. It focuses on research questions and balancing subjectivity and objectivity in all stages of the study (Shannon-Baker 2016:322-332). The assumptions of the study, which stemmed from the paradigm of study, are discussed as following sections**.**

1.7.2. Philosophical assumptions of the research

A principle or set of basic beliefs that is accepted as being true without proof based on logic or reason is called an assumption. Philosophical assumptions (foundations) underpin every study based on the paradigm of the research that guides the study (Polit

& Beck 2010:547). The common philosophical assumptions of research that stemmed from the paradigms of the research include the way to identify the reality or how we know what we know (epistemology), the nature of the knowable or existing reality (ontology), the way to go about it (methodology), and the need for research ethics and relationship (axiology) (Kothari 1990:13).

TB programmes and public HCs are mainly focused on coverage and access to TB diagnosis and treatment services and are ignoring the quality of TB care (Arsenault et al 2019:4; Ikeda et al 2019:2; Naidoo et al 2019:4; Pai& Temesgen 2019:12). There are no strategies designed for the optimisation of the quality of TB care in the public HCs of Addis Ababa City Administration. The assumptions of this study are presented in detail next.

1.7.2.1. Epistemological assumptions

Epistemology concerns assumptions about knowledge and how knowledge is gained (Creswell 2014:54). Knowledge is gained through the insights obtained from data generated by the quantitative and qualitative phases of the research (completing questionnaires by respondents who were TB patients and data from in-depth interviews with healthcare workers).

Lancet Global Health Commission (Kruk et al 2018:e1196-1252) reported that only less than half of the presumptive (suspected) TB cases are managed correctly in LMICs. The main contributor to mortality is the poor quality of care rather than poor access to care. Poor quality care contributes to 60% of deaths, while poor utilisation of the health system results in the remaining 40% of deaths from TB. In this study, the quality of TB care services and the factors that determine the quality of TB care were studied to develop the TB care quality optimisation strategy.

1.7.2.2. Ontological assumptions

Ontology is about the nature of the knowable or reality and it is also about the existing reality or phenomenon (Johnson & Christensen 2014:30). Ontology is a traditional branch of philosophy that deals with the nature of reality (Tracy 2013:62). Ontology deals with the real world, the constituent of the reality, what is known about the phenomena. It suggests that reality is subjective and differs from individual to individual (Bradshaw, Atkinson & Doody 2017:2). Ethiopia became one of the highest TB burden countries due to high number of TB-related sickness and deaths.

1.7.2.3. Methodological assumptions

Methodological assumptions are concerned with the scientific approach for obtaining facts that are thought to be known, as well as how we may know or gain knowledge of the world. The research design is governed by philosophical assumptions generated from the paradigm of the study (Bradshaw et al 2017:3). A research approach includes the plans, procedures, and methodology to investigate a problem. There are three types of research approaches, namely qualitative, quantitative and mixed-methods, based on the mode of inquiry (Kumar 2014:11-14).

In this study, a mixed-methods study was used to obtain data to gain a better understanding of the quality of TB care services and for the development of strategies. The quantitative approach was used to describe the quality of TB care services in the perspectives of TB patients and the qualitative part was used to explore the experience of the healthcare professionals in TB care services (refer to section 3.2).

1.7.2.4. Axiological assumptions

"Axiology refers to the ethical issues that need to be considered when planning ~~a~~ research" (Kivunja & Kuyini 2017:28). It deals with what is meaningful and valuable during research. Axiological assumptions deal with effects of the researchers' experience, values, and perceptions about the research topic (Maarouf 2019:9-10). The researcher addressed issues related to respecting the rights of the research participants through obtaining informed consent from participants in the study. Ensuring scientific integrity of the researchis addressed by obtaining approval to conduct the study from the University of South Africa (Unisa) and the Addis Ababa City Administration Health Bureau. All the consulted literature, individuals, and institutions that contributed to the completion of this study were acknowledged.

1.7.3. Theoretical foundations of the study

The following are the meta-theoretical assumptions and conceptual framework of the research that are tailored to the context of the study for building up the concepts and variables to be studied and used to guide data analysis in the study.

1.7.3.1. Meta-theoretical assumptions of the study

The set of ideas fundamental to understanding, describing, investigating and analysing data in a particular field in the social and natural phenomena is called metatheory (Bates 2005:257).

“Theory is a systematic, abstract explanation of some aspects of reality and explains how phenomena are interrelated. It consists of concepts and sets of propositions that form a logically interrelated system and provide mechanism for logically deducing new statements from the original propositions” (Polit & Beck 2012:744). “Theory is an organised body of concepts and principles intended to explain a particular phenomenon” (Leedy & Ormrod 2015:39).

Meta-theory deals with the analysis of the theoretical foundation on which the studies are grounded and is used to describe the theories and shape the body of inquiry (Polit & Beck 2012:671). In this study, the Donabedian Theoretical Framework of Quality of Care and the Six Dimensions of Quality of Care, as laid out by the Institute of Medicine, were used to ground the investigation, description and analysis of factors affecting the quality of TB care.

1.7.3.1.1. *Donabedian model of quality of care*

According to the Donabedian model, resources (inputs), processes (the way of things are going to be done) and outcomes (the expected results of the activity) are the three interrelated elements of care that determine the quality of care and its outcome (EMOH 2016a:s2). In this study, the Donabedian theoretical model for quality of care was used to determine factors that determine the quality of TB care services and used as the framework of the study to conceptualise the basic concepts to assess and optimise the quality of TB care. Each component of the framework is discussed in the conceptual framework of the study below.

1.7.3.1.2. *Dimensions of quality of care*

According to the Health Sector Transformation in Quality Guideline (EMOH 2016a:s1), the Institute of Medicine states six dimensions or aims of quality of care:

- **Safety of care:** it is about avoiding injuries to patients from the care that is intended to help them and observing patient safety also involves the prevention of errors and adverse effects to patients associated with healthcare.
- **Effectiveness of care:** it concerns avoiding giving the patients services that do not or are not likely to benefit them and delivering services according to the current scientific knowledge to all patients that can benefit from it.
- **Patient-centredness of care**: focuses on ensuring that patient values are guiding all the clinical decisions and the care provided is respectful and responsive to patients’ individual choices, desires and values.

- **Timeliness of care**: this concerns providing timely care and reducing waits and harmful delays to the patient as well as the care providers.
- **Efficiency of care:** It is using all the available resources properly and efficiently by avoiding wastage of equipment, supplies, ideas and energy.
- **Equity of care:** It is giving a service to those who need it fairly, avoiding discriminant provision of care due to personal variation of characteristics like socio-economic status, geographical location, ethnicity and gender.

1.7.3.1.3. *Quality of tuberculosis care according to TB Care II in the perspective of the TB patients, providers and managers*

According to the TB care II Quality Improvement Handbook for TB and MDR-TB programmes, quality of TB care is defined and interpreted differently by TB care providers, TB patients and managers leading public HCs providing TB care services (TB Care II 2013:3). It can be described with different perspectives as follows:

- **Quality of tuberculosis care from the perspective of the patients**

  The key expectations of TB patients from the healthcare providers and HCs are presented as follows:

  - To be treated with dignity and respect by a competent TB care provider
  - To be examined, diagnosed and treated properly with current scientific knowledge
  - To get proper information and counselling services
  - To have short waiting time and proper consultation time
  - To get service without stigmatisation and good treatment outcome after completion of the treatment

- **Quality of tuberculosis care from the perspective of service providers**

  Provider perspectives and expectations on providing quality tuberculosis care services are:

  - Being confident and competent
  - Respectful, timely and informative TB care service provision
  - TB management on the national and international TB guidelines
  - Teamwork and approach
  - Incentives and technical support from higher bodies
  - Proper documentation and data utilisation for decision making
  - Resource availability for TB care services
  - Treatment adherence

- **Quality of tuberculosis care from the perspectives of the health facility managers**

  From the perspectives of the health facility managers, quality of TB care service may mean:

  - Availing TB care service
  - Treating patients and providing appropriate services
  - Monitoring TB care service quality with indicators
  - Improving patient satisfaction and meeting expectations
  - Recognition and appreciation from service users and higher-level bodies

1.7.3.2. Conceptual framework of the research

A conceptual framework can be regarded as a map or travel plan and stems from the theoretical framework and concentrates, usually, on one section of that theoretical framework, which becomes the basis of the study. The latter consists of the theories or issues in which the study is embedded, whereas the former describes the aspects the researcher selected from the theoretical framework to become the basis of the research enquiry. The conceptual framework is the basis of the research problem (Kumar 2011:331). Conceptual framework/model/map is the assembly of concepts and abstractions or theory and conceptual models that are interrelated in a rational and explanatory manner to show relationships among them in schematic graphical representation (Polit & Beck 2012:722).

Regarding the relationship between structures, processes and outcomes, Donabedian (1988:1745-1746) posits that an organisation with the right structures and processes in place will produce better outcomes. The author adds that quality assessment aims at determining how successful care providers did their work and that quality monitoring generates constant surveillance that facilitates early detection and correction of any deviation from the standards. “Good structure increases the likelihood of process and good process increases the likelihood of good outcome” (Donabedian 1988 :1745-1746).

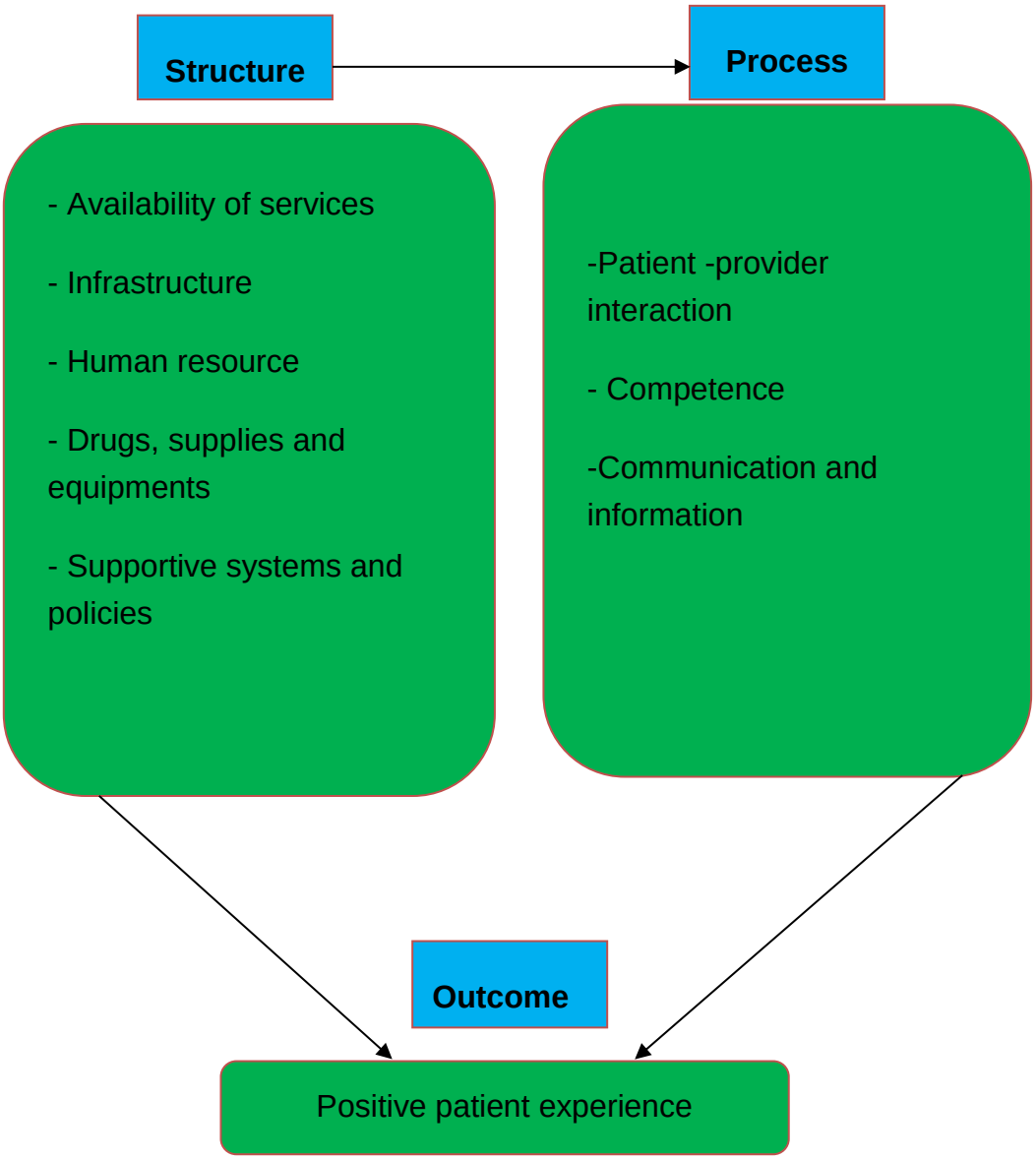


Figure 1.1: Conceptual framework: Adapted from the Donabedian triad of quality of healthcare

Source: Donabedian1988:1745-1746

- **Structure of care**

The structure of care describes the attributes of the settings and inputs in which care occurs. This includes the attributes of material resources (facilities, equipment and money), human resources (number and qualification of personnel) and organisational structures (medical staff organisation, methods of peer review and reimbursement) (Donabedian 1988:1745-1746).

The structure of quality of care is defined as the resources that must be supplied for the activities to be carried out, like the physical structure, people, equipment and materials. Evaluation of the quality that relies on such structural elements implicitly assumes that well-qualified people with well-appointed and well-organised settings will provide high quality care (EMOH 2016a:s4).

According to TB care II Quality improvement for TB and MDR-TB hand book (TB Care II 2013:1-4), the major dimensions of quality of care related to the input or structural factors are:

- **Access to services:** This describes factors such as geographic, economic, social, organisational or linguistic barriers like the ability to reach at-risk groups for instance poor and homeless persons. The major barriers to accessing TB care services such as the financial and geographical factors were included in the study.

- **Physical infrastructure and comfort:** These factors relate to the physical appearance of the facility, cleanliness, comfort, privacy and other aspects important to patients. For instance, the physical set-up should allow patients to wait in well-ventilated waiting areas, avoiding overcrowding of hallways.

❖ **Process of care**

Describes what is done in giving and receiving the care. It includes the patients' activities in seeking care and carrying it out and the practitioner's activities in a making a diagnosis and recommending or implementing the treatment (Donabedian 1988: 1745-1746). The process of care is also described as the tasks or steps that must be carried out until the activity is completed. It concerns patient-centredness, equity, timeliness, efficiency, effectiveness and safety of care. It is about what is actually done in giving the care (EMOH 2016a:s4). The dimension of quality of TB care related to the process components of the conceptual framework that determine the improvement of the quality of TB care services are discussed below. According to TB Care II Quality improvement for TB and MDR-TB handbook (TB Care II 2013:1-4), these major factors are :

- **Technical performance**: the degree to which the tasks carried out by health workers and facilities meet expectations of technical quality and adhere to TB standards. The adherence to standards, guidelines and protocols by the health professionals working in TB clinics and by HCs were considered and assessed in this study.

- **Interpersonal relations**: the trust, respect, confidentiality, courtesy, responsiveness, empathy, effective listening and communication between TB care providers and TB patients in an environment that is free from discrimination and stigmatisation. The compassion, respect and dignity given to TB patients by the providers and the responsiveness of HCs to the patients' needs were assessed in this study.

- **Continuity of services**: Continuity means that the patient receives the complete range of TB services that he or she needs, without interruption, or unnecessary repetition of diagnosis or treatment, such as provision of counselling, psychosocial support either on-site or through referral. Delivery of care by the same healthcare provider throughout the course of care and appropriate and timely referral and communication between providers. In this study, the continuum of care and the TB referral and linkage were assessed in the public HCs of Addis Ababa delivering TB care.

- **Safety of care:** Safety means minimising the risks of injury, infection, harmful side effects, or other dangers related to service delivery. In this study, the implementation of TB infection-prevention measures to ensure the safety of the staff and TB patients was assessed.

- **Efficiency of service delivery**: the ratio of the output of services to the associated cost of producing those services. Efficient services provide optimal rather than maximum care to the patient and community. They provide the greatest benefit with the resources available. This study assessed the HCs and the health professionals for efficiency of the service in terms of the efficiency gain to the patient by reducing unnecessary TB diagnostic tests or treatment.

- **Choice**: where appropriate and feasible, patients have the right to choose the health services they can access when needed, and to be informed of the choice of free TB quality services when patients access DOT facilities instead of non-DOT or untrained providers. When appropriate, a client has the right to choose care provider, insurance plan or treatment. The study examined the freedom of the TB patients to choose their healthcare provider and decide on their treatment.

❖ **Outcomes of care**

Outcomes of care denote the effect of the care on the health status of patients and population. Improvements in the patients' knowledge and salutary changes in patients behaviour included in the broader term of health status and the degree of the patient's satisfaction on the care (Donabedian 1988: 1745-1746). They also describe the outputs or results of the activities carried out and denote to what extent the goals of the care have been achieved (EMOH 2016a:s4). The outcome component of the conceptual framework is aligned with the outcome dimension of TB care quality, as stated in the TB Care II Quality improvement for TB and MDR-TB handbook (TB Care II 2013:1-4).

- **Effectiveness of care**: The degree to which desired results (outcomes) of care are achieved. The quality of the outcome of TB care was assessed in terms of achievement of the national and global targets of TB treatment outcomes and patient satisfaction on the quality of care.

1.8. OVERVIEW OF THE RESEARCH DESIGN AND METHODOLOGY

The detailed research design and methodology is presented in Chapter 3 of the study. A brief outline of the research design and methodology used in this study are presented in the following sections.

1.8.1. Research design

Research design is the research structure and procedures necessary to acquire answers to research questions or issues (Babbie 2017:107, Kumar 2014:122; Pandey & Pandey 2015:18).

Convergent parallel mixed-methods designis a mixed-methods research design that is pragmatism based. It is more useful for gaining a holistic understanding of research problems being studied than a picture derived from either quantitative or qualitative data sets alone. A convergent parallel mixed-methods design was used for the first phase of the study. This was done to develop a holistic understanding of the views of TB patients and TB care providers (Creswell & Creswell 2018:15; Dawadi, Shrestha & Giri 2021:29; Pardede 2019:230-243). However, there is also an element of sequential study design in this research (Creswell & Creswell 2018:15; Polit & Beck 2010:742-743).

This forms part of this study because in the first phase of the study, the quantitative and qualitative parts were used as the basis for the development of strategies to optimise the quality of TB care services in the second phase of the study.

The methodology used for the development of strategies primarily was a combination and synthesis of the findings from the first phase of study (see the detail in Chapter 6). The final strategies were developed by applying two rounds of the Delphi technique to reach a consensus and enhance the validity of the strategies (see details in chapters 3 and 6). The objectives and methods used in the study are summarised in Table 3.1.

1.8.2. Research methods

Research methods are techniques and procedures for gathering and analysing data (Corbin & Strauss 2015:3). Research methods include the setting, participants, instruments, and methods of data collection and analysis (Johnson & Christensen 2014:666). The research methods used in this study are outlined briefly in the following sections.

1.8.2.1. Study setting and population

A study setting or contextrefers to the place or location (community, organisation or agency) where the study takes plac (Taylor, Bogdan & DeVault 2016:73). The setting for this study was the public HCs functioning under the Addis Ababa City Administration. The two relevant study populations in the first phase of this study were the TB patients and TB care-providing health professionals found in the selected HCs. The participants in the second phase of the study were TB experts and managers working on the TB programme at the national, regional and facility levels; university and medical college lecturers; and advisors from non-governmental organisations.

1.8.2.2. Sampling and sample size

Samples were drawn from different populations in the quantitative and qualitative parts of the first phase of the study as well as in the development of the strategy in the second phase of the study using multilevel relationship mixed-methods sampling design (Onwuegbuzie & Collins 2012:292) (see the detail in Chapter 3.4.1). Convenience sampling was used to recruit 445 TB patients and purposive sampling was used to recruit tenhealth professionals in the first phase of the study. In the second phase of the study, purposive sampling was also used to recruit 13 TB experts and managers for validation of the strategies.

1.8.2.3. Data collection instrument, process, management, and analysis

Data were collected using a questionnaire and an in-depth interview guide for the quantitative and qualitative part of the research in the first phase. A validation checklist

was used for data collection in the development of strategies in the second phase of the study (Johnson & Christensen 2014:316; Dinku 2015:103-104; Thomas 2017:373; Kumar 2014:170-199).

The quantitative data were analysed using descriptive and inferential statistical models. The qualitative data were transcribed, and thematic analysis was employed. The final strategies were developed by integrating and synthesising information from phase I and II of the study.

Table 1.1: Summary of objectives of Phase I and Phase II research processes

Phase I		Phase II
Part 1	Part 2	
Describe the quality of TB care services, according to the perspective of TB patients.	Explore the experiences of healthcare providers in TB care service delivery.	Develop strategies to optimise the quality of TB care services.
Recognise and explain the need to enhance the quality of TB care services in patients' perspective	Identify and explain the need to enhance the quality of TB care services from the perspective of providers.	Presenting the strategies for high-level experts and specialists in the service, Presenting strategies for high-level TB experts and managers in the TB field or service
Explore and describe previous research studies on the quality of TB care services locally, nationally, and globally.		

1.9. **ETHICAL CONSIDERATIONS**

Issues related to respecting the rights of participants, the institution and scientific integrity of the research addressed in detail in Chapter 3 (Johnson & Christensen 2014:202; Glasgow Caledonian University 2015:4).

The approval to conduct the study was granted by the Unisa Department of Health Studies: Research Ethics Committee (REC) and Addis Ababa City Administration Health Bureau Institutional Review Board (IRB) (See annexure C). Official permission to collect data in the HC was obtained from the sub-city health office (See Annexure D). Informed consent was obtained from each of the individual study participants orally and in written form. The researcher acknowledged all the consulted literature, individuals, and institutions that contributed to the completion of this study.

Finally, 11 strategies were developed after obtaining and incorporating comments from the panel of experts in the second round Delphi technique validation, attaining the required degree of consensus, and gaining final approval from the research supervisor. Chapter 6 of the study goes through the specifics of the strategy formulation processes.

1.10. **STRUCTURE OF THE THESIS**

The content of the thesis is organised in interrelated and integrated chapters as described below.

Chapter 1: Orientation to the study

Chapter 2: Literature review

Chapter 3: Research design and methodology

Chapter 4: Analysis, findings and discussion of quantitative part of the study

Chapter 5: Analysis, findings and discussion of qualitative part of the study.

Chapter 6: Integration of the quantitative and qualitative research findings and development of strategies

Chapter 7: Conclusions and recommendations

1.11. **CONCLUSION**

Chapter 1 introduced the background of the study problem in the world, Africa and Ethiopia, specifically in Addis Ababa. It also outlined the purpose, objectives, and significance of the study. The next chapter is a literature review about the study.

CHAPTER 2

LITERATURE REVIEW

2.1. INTRODUCTION

The previous chapter presented the general overview of the study. The background to the study deals with the burden of TB globally, the African continent and Ethiopia. Factors related to the quality of TB care services in Addis Ababa were also presented.

In this chapter, literature related to the quality of TB care services is reviewed. Literature is used to integrate and compare the findings of other researchers. In addition, the literature will be used and applied to position the study in perspective in relation to other studies that have reported on the quality of TB care services.

2.2. CAUSE OF TUBERCULOSIS

TB is caused by *Mycobacterium tuberculosis* (MTB) and it is one of the oldest infectious diseases known to humankind (Government of Nepal Ministry of Health and Population Department of Health Services National Tuberculosis Centre 2019:2). The rod-shaped bacillus mostly affects the lungs, causing pulmonary TB, but it can also affect other organs and bones like the spine where it is then referred to as EPTB (EMOH 2017a:14). *Mycobacterium bovis* and *Mycobacterium africanum* can also affect humans but not nearly as much as MTB (EMOH 2017a:12).

The disease spreads when people who are sick with pulmonary TB expel the baccili into the air, for example, by coughing. The TB bacilli enter the body through the lungs and spread to other parts of the body through the blood, the lymphatic system or through other ways. TB is a curable and preventable disease, according to the WHO TB factsheet (WHO 2018a).

2.3. CLASSIFICATION AND CASE DEFINITION OF TB

According to the National Guidelines for Management of TB, DR-TB and Leprosy Ethiopia (EMOH 2017a:46-50), TB can be classified as bacteriologically confirmed TB and clinically diagnosed TB. This is based on bacteriological test confirmation. TB cases can also be categorised based on anatomic site of the TB disease, previous treatment history, drug resistance, and HIV status of TB patients. DR-TB can also be classified as mono-resistant TB (resistant to one first-line anti-TB drug only), poly-resistant TB (resistant to more than one first-line anti-TB drug), multi-drug resistant TB (resistant to at least both

Isoniazid and Rifampicin) and extensive drug-resistant TB (any TB resistant to fluoroquinolone and at least one of the injectable drugs such as Kanamycin, Amikacin or Capreomycin) and Rifampicin-resistant TB (resistant to Rifampicin) (WHO 2020a:1-47). The classification of TB (based on different criteria mentioned above) and their definitions are presented in Table 2.1.

Table 2.1: Classification and definitions of types of tuberculosis

Classification basis	Types of TB patients	Definitions
Anatomical site of TB disease	Pulmonary tuberculosis	Any bacteriologically confirmed or clinically diagnosed case of TB involving the lung parenchyma or the trachea-bronchial tree.
	Extra-pulmonary tuberculosis (EPTB)	Any bacteriologically confirmed or clinically diagnosed case of TB involving organs other than the lungs
History of previous treatment	New patients	Patients have never been treated for TB or have taken anti-TB drugs for less than one month.
	Previously treated	Patients who have received anti-TB drugs for one or more months in the past and who are again diagnosed with TB.
Registration group for DS/DR-TB patient	New TB	Patients that have never been treated for TB or have taken anti-TB drugs for less than one month.
	Relapse	Patients who were declared cured or treatment completed at the end of their most recent treatment course and are now diagnosed with a recurrent episode of TB.
	Treatment after failure	Patients who were declared treatment failure in their most recent course of treatment as per national protocol
	Treatment after LTFU	Refers to patients who were declared LTFU at the end of their most recent course of TB treatment and have now decided to be treated with full course of TB treatment
	Others	Refers to patients who have previously been treated for TB but whose outcome after their most recent course of treatment is unknown
	Transfer in	A patient who is transferred to continue treatment at a given reporting unit after starting treatment in another reporting unit.
HIV status of a patient	HIV-positive TB patient	Refers to any bacteriologically confirmed or clinically diagnosed case of TB with documented evidence of HIV infection.
	HIV-negative TB patient	Refers to any bacteriologically confirmed or clinically diagnosed case of TB with documented evidence of HIV negative result
	HIV status unknown TB patient	Any bacteriologically confirmed or clinically diagnosed case of TB who has no result of HIV testing and no other documented evidence of enrolment in HIV care.
Drug resistance	Rifampicn resistant TB (RR-TB)	Resistance to Rifampicin detected using phenotypic or genotypic methods, with or without resistance to other anti-TB drugs.
	Multidrug-resistant TB (MDR-TB)	Resistant to at least Isoniazid and Rifampicin
	Extensive TB drug resistant (XDR-TB)	Resistant to Isoniazid and Rifampicin (MDR) as well as any fluoroquinolone and any of the second-line injectable anti-TB drugs (Capreomycin, Kanamycin and Amikacin).

Source:EMOH (2017a:46-50)

TB treatment outcomes are also classified, and the outcomes are reflected in Table 2.2 below.

Table 2.2: Drug-susceptible TB treatment outcome classification and definitions

Outcome	**Definitions**
Cured	A pulmonary TB patient with bacteriologically confirmed TB at the beginning of treatment who was smear- or culture-negative in the last month of treatment and on at least one previous occasion.
Treatment completed	A patient who completed treatment but without evidence of sputum or culture negative results in the last month of treatment and on at least one previous occasion.
Treatment failure	A TB patient whose sputum smear or culture is positive at month five or later during treatment.
Died	A patient who dies during the course of TB treatment.
Lost to follow-up	A patient who has been on treatment for at least four weeks and whose treatment was interrupted for eight or more consecutive weeks.
Not evaluated	A TB patient for whom no treatment outcome is assigned. This includes cases “transferred out” to another treatment unit as well as cases whose treatment outcome is unknown to the reporting unit.
Moved to MDR-TB	TB patients who were found to have RR-TB or MDR-TB before the fifth month of treatment and who were referred to MDR TB unit and started on a full MDR-TB treatment regimen (i.e., patient is moved to the second-line treatment register)
Treatment success	The sum of cured and completed treatment.

Source: EMOH (2017a:46-50)

TB patients whose treatment outcomes become RR-TB or MDR-TB strain during the treatment of drug susceptible TB should be included in the cohort of DR-TB. They should be excluded from the cohort of the drug-susceptible TB while calculating the treatment outcomes. MDR-TB treatment outcomes are also classified and presented in Table 2.3 below.

Table 2.3: Multi-drug resistance treatment outcome classification and definitions

Outcome	**Definition**
Cured	Treatment completed according to national recommendations without evidence of failure and three or more consecutive cultures taken at least 30 days apart are negative after the intensive phase.
Treatment completed	Treatment completed according to national recommendations without evidence of failure but no record that three or more consecutive cultures taken at least 30 days apart are negative after the intensive phase.
Treatment failure	Treatment terminated or need for permanent regimen change of at least two anti-TB drugs
Died	A patient who dies during the course of TB treatment.
Lost to follow-up	A patient whose treatment was interrupted for two consecutive months or more.
Not Evaluated	A TB patient for whom no treatment outcome is assigned. This includes “transferred out” cases with unknown outcome at reporting unit.
Moved to MDR-TB	TB patients who were found to have RR-TB or MDR-TB before end of intensive phase of treatment and who were moved to regimen beyond the standard RR/MDR TB regimen.

Source: EMOH (2017a:46-50)

2.4. **TUBERCULOSIS TRANSMISSION AND ASSOCIATED FACTORS**

TB is a contagious and airborne disease spread from person to person by air. TB infection spreads when TB germs are ejected into the air when a person infected with TB sneezes, coughs, or speaks while near an exposed individual for a long time. Aerosolised MTB is caused by the spreading of droplet nuclei that remain infectious when suspended in the air for a long time and distance (Centers for Disease Control and Prevention (CDC) 2011:1-2).

Risk factors for the transmission of MTB are distance and duration of contact with the source person, infectiousness of the source person and the immune status of the exposed person (WHO 2019b:2).TB is transmitted when the infected and untreated pulmonary TB patient coughs or sneezes while the contact person inhales the infected droplet nuclei from the air. The risk of infection depends on individuals, time and extent of exposure to the droplet nuclei and the concentration of the infected droplet (EMOH 2016b :1).

The South African Department of Health (2014:9-10) states that the three major factors that determine the likelihood of MTB transmission are: the amount or number of expelled organisms, their concentration in the air and duration of exposure to an infected person or air. TB infection occurs when tubercle bacilli begin to multiply in alveolar macrophages and spread to multiple organs through the blood stream. The rapid multiplication of the bacilli is stopped by the immune response of the body, usually after six to 14 weeks to prevent active TB development as a result of the latent TB infection in persons with immunity (EMOH 2017a:12).

Exposure to tubercle bacilli for the first time results in the development of a primary TB infection, which is asymptomatic and only confirmed by a positive tuberculin skin test from four to six weeks after exposure. Primary TB infection in individuals with normal immunity can usually result in non-clinical disease or no progression to activie TB in 90% of those exposed, hypersensitivity reactions, pulmonary and pleural complications functions such as lobar collapse and TB pneumonia and disseminated diseases like military disease, lymphadenopathy, meningitis and pericarditis (South African Department of Health 2014:8-10). In addition, secondary TB, also referred to as reactivation disease, occurs due to re-infection or latent bacilli reactivation from a sensitised host months or years after developing primary infection and resulting in lung cavitations and destruction (EMOH 2016b:1-2). The pleura, joints, spine, genitourinary tract, lymph nodes, abdomen, and nervous system are among the common sites prone to EPTB.

Co-infection of TB refers to the prevalence of TB infection among PLWHAs in which TB is transmitted fast. It spreads in the body quickly, diagnosis is difficult and there is a high chance of relapse, fatality and increased probability of drug resistance (South African Department of Health 2014:9-10).

The findings of a study in Ethiopia revealed that the prevalence of TB-HIV co-infection among PLWHAs is significantly associated with a CD4 level less than 200mm^3, WHO clinical stage 3 and HIV patients who did not receive INH prophylaxis. ART treatment initiation is recommended in the CD4 level range of 200-500mm^3. The study recommended the establishment of facilities to strengthen provision of INH prophylactic

therapy and implementation of early sensitive rapid diagnostic test (Negussie, Debalke, Belachew & Tadesse 2018:1-5).

Another study also revealed that HIV co-infection, old age, rural residence and retreatment cases were among the main factors related to poor treatment outcome. The overall national treatment outcome was below the WHO target for TSR of 90% (Seid, Ayalew, Muche, Gebreyohannes & Abegaz 2018:1).

2.5. GLOBAL AND NATIONAL BURDENS OF TUBERCULOSIS

In 2014, WHO declared that TB was one of the most infectious diseases globally because there were nine million TB cases and 1.5 million deaths that year. More than a third of individuals with contagious TB diseases were undiagnosed and untreated globally in 2014 (Reves et al 2016:1-4).

TB continues as a public health problem worldwide since a third of the world population isestimated to be living with latent TB infection (Rosenthal, Gabrielian, Engle, Hurt, Alexandr, Crudu, Sergueev, Kirichenko, Lapitskii, Snezhko, Kovalev, Astrovko, Skrahina, Taaffe, Harris, Long, Wollenberg, Akhundova, Ismayilova, Skrahin, Mammadbayov & Gadirova 2017:3267-3268).

During the period 1998-2015, the HBC list was widely used in the context of TB. Since 2015, the three concepts -TB, TB/HIV and MDR-TB – have been used. These three concepts would be used for the period 2016-2020, as shown in Figure 2.1. Each high-burden list contains 30 countries that are defined as the top 20 in terms of absolute number of cases and an additional ten countries with the most severe burden in terms of case rates per capita that do not already appear in the “top 20” and meet a minimum threshold in terms of absolute number of cases (10 000 per year for TB, 1 000 per year for TB/HIV and MDR-TB) (WHO 2016:11-14).

The high-burden lists account for 85-89% of the global burden. There are overlaps among the lists. There are 48 countries found in at least one of the three high-burden lists. The 14 countries found in all three high-burden lists (see the central diamond in the Figure 2.1) are: Angola, China, DR Congo, Ethiopia, India, Indonesia, Kenya, Mozambique, Myanmar, Nigeria, Papua New Guinea, South Africa, Thailand and Zimbabwe (WHO 2016:11-14). Africa and Asia have the highest TB incidence and TB/HIV prevalence of all the continents (Zenebe et al 2016:1-8).

There were around 10.4 million new TB cases globally, among these 5.9 million (56%) were men, 3.5 million (34%) women and 1.0 million (10%) children. About 1.2 million (11%)

of all new TB cases were from TB patients who are living with HIV. The six countries that have the largest proportion of new cases (60%) are India, Indonesia, China, Nigeria, Pakistan and South Africa. Globally, the decline in the incidence of TB was only 1.5% from 2014 to 2015 (WHO 2016:1-3).

To achieve the End-TB strategy target of 2020, the decline rate needed to be accelerated at the rate of 4-5% annually. There were 480 000 new cases of MDR-TB and an extra 100 000 patients with RR-TB who were newly eligible for MDR-TB treatment. Forty-five percent of the 580 000 cases were from India, China and the Russian Federation. In 2015, there were 1.4 million TB deaths and 0.4 million of these deaths were HIV patients. TB was among the top ten causes of death globally in 2015 even though the number of TB disease decreased by 22% in the period between 2000 and 2015 (WHO 2016:1-3). WHO identified the three high-burden country lists for TB, TB/HIV and MDR-TB, which would be used during the period 2016-2020, as shown in Figure 2.1 below (WHO 2015a:9; WHO 2020b:204).

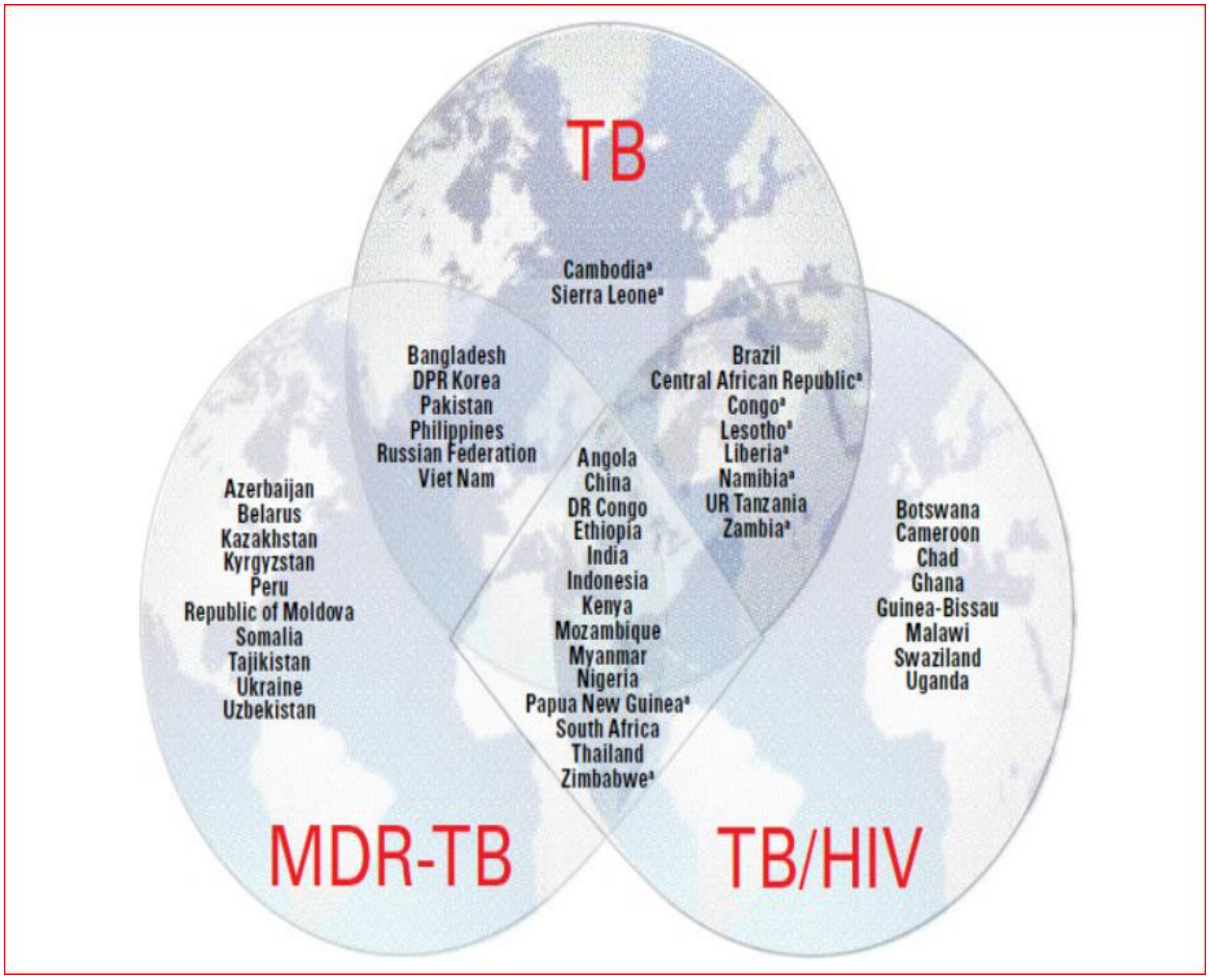


Figure 2.1: Three high-burden country lists for TB, TB/HIV and MDR-TB used by WHO during the period 2016-2020, and their areas of overlap

Source: WHO 2020b:204

Based on the WHO understanding of the immediate need to tackle this yearly worldwide health and economic burden, the End TB Strategy and 2016-2020 global plan were released. The Stop TB partnerships the 2025 targets of TB case detection and treatment plan. The plan aimed on detection and treatment rate of 90% and cure rate of 90% from the detected TB cases. In 2014 WHO estimated that there were 200 000 new TB cases in Ethiopia ranking the country tenth among the world's 22 high burden countries for TB and fourth in sub-Saharan Africa. In Ethiopia, there are an estimated 32 000 deaths every year (more than 80 people per day) (Revers et al 2016:1-4).

2.6. BURDEN OF DR-TB AND CONTRIBUTING FACTORS

Limited treatment options and sub-optimal treatment outcomes of MDR-TB and XDR-TB posed additional challenges for TB prevention and control efforts (Alene, Yi, Viney, McBryde, Yang, Bai, Gray, Clements & Xu 2017:1). A few TB programmes in HBCs can diagnose and treat chronic TB patients affected by MDR-TB. In 2009, a series of actions to combat MDR-TB and XDR-TB were endorsed by the 62nd WHA through a resolution targeted at prevention and control of MDR/XDR-TB. Delegates of member states agreed to strengthen measures to allow the universal access to MDR/XDR-TB diagnosis and quality treatment. The measure used to control TB treatment effectiveness, the prevalence of TB in the community and the setting of service delivery determines the risk of TB transmission (Seung, Keshavjee & Rich 2015:1-20).

Risk factors ofMDR-TB

- Failure to respond to a first-line DOTS regimen
- Relapse after a full course of treatment with a first line regimen
- Treatment after defaulting from treatment with a first line-regimen
- Exposure to unknown causes of MDR-TB
- Exposure to TB institutions with high prevalence of MDR-TB such as prisons and hospitals
- Living in areas or countries with a highprevalence of MDR-TBHIV co-infections

Source: Seung et al 2015:1-20

The WHO global TB report states that TB treatment combined with ART saved 53 million lives between 2000 and 2016, globally. TB mortality per 100 000 population also declined by 37% in this period. In this period, 1.7 million TB deaths occurred among HIV negative TB patients. The death of 0.4 million TB patients among people living with HIV was also recorded. The huge gap between TB detection and treatment due to MDR-TB has becomea major hindrance to world efforts to end TB (WHO 2017:4-147).

A systematic review and meta-analysis study on MDR-TB on Ethiopian settings and its association with previous anti-TB treatment in Ethiopia shows that the prevalence of MDR-TB among newly diagnosed TB patients and previously treated TB patients is 2% and 15% respectively (Eshetie, Gizachew, Dagnew, Kumera, Woldie, Ambaw, Tessema

& Moges 2017:1-12). Ethiopia is among the high MDR-TB burden countries with more than 1 600 cases in 2018. The WHO estimates 0.71% of newly notified and 16% of previously treated persons with TB have RR/MDR-TB in the country. Since 2005, Ethiopia has carried out three successive national TB drug resistance surveys. The most recent survey from 2017 to 2018 indicates a dramatic decline in the incidence of DR-TB. Ethiopia started implementing programmatic management of DR-TB in 2009 in a hospital in Addis Ababa. In the following few years, treatment expanded to 67 hospitals across the country using the decentralised ambulatory model of care. In 2019, the RR/MDR-TB treatment coverage in Ethiopia was 46%. Ethiopia is among the top five MDR-TB burden countries with a high (72%) successful treatment outcome (EMOH 2020a:20-22).

Poor treatment outcomes such as death of RR/MDR-TB patients are very high in Ethiopia. This could be attributed to the decentralisation of treatment sites, which might contribute to the poor quality of TB care services provided by less-experienced TB care providers. Delayed treatment initiation and early adverse events of TB medication might have contributed to the deaths, as LTFUs tend to concentrate in the intensive phase of the TB treatment. The high prevalence of under nourishment and TB/HIV co-infection rate highlights the importance of ensuring quality in the co-management of co-morbidities and potential drug-drug interactions (EMOH 2020a:23).

2.7. GLOBAL AND NATIONAL TB PREVENTION AND CONTROL STRATEGIES

2.7.1. Global TB prevention and control strategy

There have been an evolution and implementation of several global and national strategies to control the prevalence of TB and end TB. The aim of the DOTS strategy was to enhance the commitment of governments to case detection, standardisation, and management of short course chemotherapy for at least confirmed sputum smear-positive TB cases, establishment, and strengthening of an essential anti-TB drug supply system and monitoring and evaluation system for TB programmes. The focus of the stop TB strategy was the expansion and enhancement of high-quality TB DOTS, addressing MDR-TB, TB/HIV and other challenges in the programme, like strengthening the healthcare system and promoting providers' engagement, empowering the community and TB patients as well as enhancing research on TB programmes. The global TB strategy designed for post-2015 TB control has three pillars, that is, integrated patient-centred TB care and prevention, bold policies and supportive systems and intensified research and innovation (Raviglione 2016:17). The global TB strategy is shown in Figure 2.2.

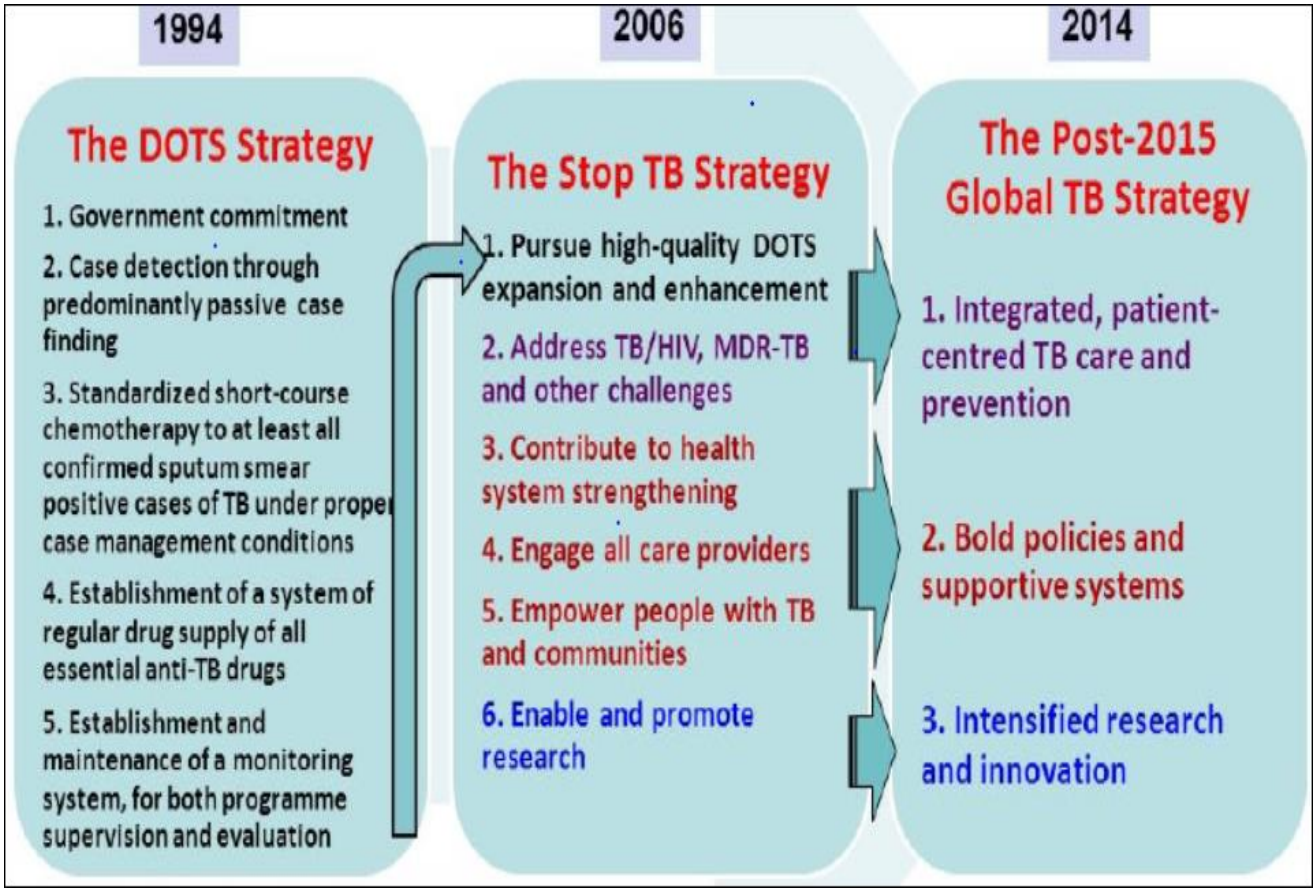
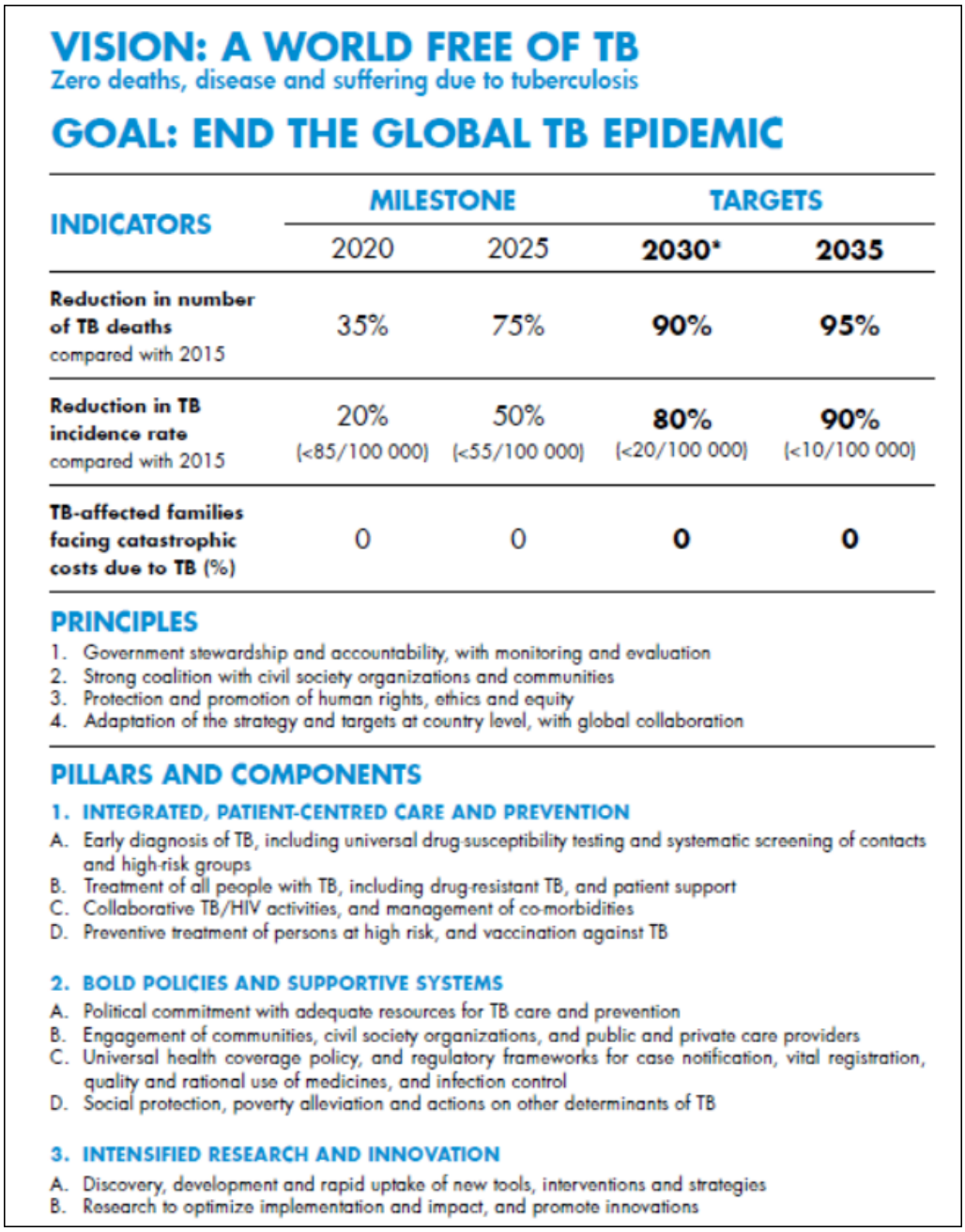


Figure 2.2: Evolution of global strategies to control tuberculosis

Source: Raviglione (2016:17)

The SDGs were formulated in 2015 with the consensus of leaders from 193 United Nations member countries who gathered to discuss the future in the execution of the 17 ambitious goals in the 15 years before the end of 2030 (WHO 2020b). WHO, in its 2014 assembly, approved the End-TB Strategy, a global strategy with targets for TB prevention, care and control post-2015. The aim was to reduce the TB death rate by 95% compared to 2015, reduce the incidence rate of TB by 90% and ensure no TB-affected households face catastrophic costs related to TB by the end of 2035 (WHO 2015b:3). The strategy proposed key milestones and targets to be achieved in every five strategic years in 2020, 2025 and 2030. The targets were linked to SDGs (2030) and envisioned the eradication of TB by 2035 (WHO 2016:1). These are shown in Figure 2.3.



VISION: A WORLD FREE OF TB

Zero deaths, disease and suffering due to tuberculosis

GOAL: END THE GLOBAL TB EPIDEMIC

INDICATORS	MILESTONE		TARGETS	
	2020	2025	**2030***	**2035**
Reduction in number of TB deaths compared with 2015	35%	75%	**90%**	**95%**
Reduction in TB incidence rate compared with 2015	20% (<85/100 000)	50% (<55/100 000)	**80%** (<20/100 000)	**90%** (<10/100 000)
TB-affected families facing catastrophic costs due to TB (%)	0	0	**0**	**0**

PRINCIPLES

1. Government stewardship and accountability, with monitoring and evaluation
2. Strong coalition with civil society organizations and communities
3. Protection and promotion of human rights, ethics and equity
4. Adaptation of the strategy and targets at country level, with global collaboration

PILLARS AND COMPONENTS

1. INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION

A. Early diagnosis of TB, including universal drug-susceptibility testing and systematic screening of contacts and high-risk groups
B. Treatment of all people with TB, including drug-resistant TB, and patient support
C. Collaborative TB/HIV activities, and management of co-morbidities
D. Preventive treatment of persons at high risk, and vaccination against TB

2. BOLD POLICIES AND SUPPORTIVE SYSTEMS

A. Political commitment with adequate resources for TB care and prevention
B. Engagement of communities, civil society organizations, and public and private care providers
C. Universal health coverage policy, and regulatory frameworks for case notification, vital registration, quality and rational use of medicines, and infection control
D. Social protection, poverty alleviation and actions on other determinants of TB

3. INTENSIFIED RESEARCH AND INNOVATION

A. Discovery, development and rapid uptake of new tools, interventions and strategies
B. Research to optimize implementation and impact, and promote innovations

Figure 2.3: Goals, principles, pillars and components of end-tuberculosis strategy

Source: WHO (2015b:3)

The Lancet Global Health Commission proposed a framework or strategies for improving the quality of TB care services to realise the global commitment to ending TB and freeing the world of TB. The framework presented the core reinforcing global and country-level functions to ensure data-driven, right-based and person-centred TB care services. The framework focuses primarily on the provision of quality of TB care and active TB case detection while at the same time implementing all activities in TB programmes (Reid & Goosby 2020:4).

The framework for improving the quality of TB care services is outlined in Figure 2.4.

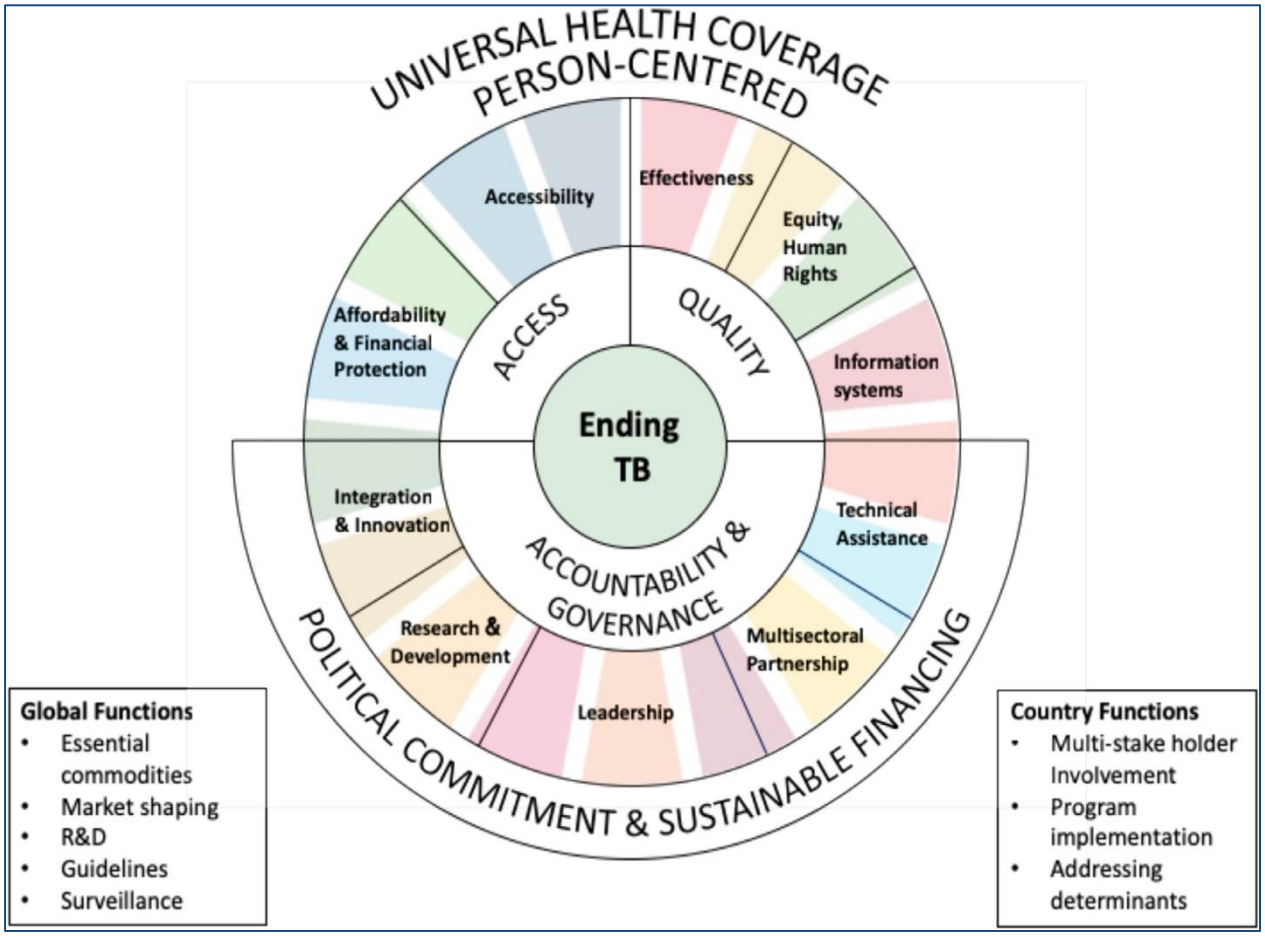


Figure 2.4: Conceptual frameworks for ending tuberculosis in the era of Sustainable Development Goals

Source: Reid & Goosby 2020:4

Mulder et al (2018:7) briefly define Patient care cascade as follows: “Also known as the continuum of care, the cascade starting with all persons with TB in a community, via access to healthcare, identification as presumed TB, evaluation for TB, diagnosis of TB, initiation of TB treatment, notification to a successful treatment outcome. This approach considers drop-offs along the different points in the cascade, and can be represented as an onion model”

“The cascade of care is a model for evaluating patient retention across sequential stages of care required to achieve a successful treatment outcome” (Subbaraman et al 2019:1). It is used to enhance the capacity of the TB programmes. The care cascade strategy can add value in the implementation of the three nineties (90-90-90) targets of the stop TB campaign.

It is envisioned to reduce the incidence of TB by 90% based on the End-TB Strategy 2035. The targets include providing appropriate therapy for 90% of TB patients and reaching 90% of underserved or high-risk populations and enabling 90% of them to attain treatment success by 2025. It is also a strategy for programme monitoring and identification of gaps in the quality of care (Subbaraman et al 2019:12-13).

Oyediran (2019:12-13), in a study on quality of TB services assessment in Nigeria, found that TB patients are satisfied and adhere to treatment when they had effective interaction and trusted the providers and have knowledge about their illness and treatment options available.

2.7.2. National TB prevention and control strategy

The health sector policy of Ethiopia prioritises health promotion and disease prevention. It also considers delivery of essential health services using the primary healthcare approach as important. Universal health coverage (UHC) ensures that all people have access to good quality health services when they need it without any financial obligations. Ethiopia has also adopted the essential health service package (EHSP) to guide health services important to public health (EMOH 2020a:10-11). The health policy was implemented through a series of five-year plans, with the national health sector development programme implemented from 1996 to 2000 and a health sector transformation plan implemented from 2016 to 2020. Ethiopia established a national TBL control programme by merging the TB and the leprosy programmes in 1994. Consecutive five-year national TB and leprosy strategic plans were also developed in line with the health sector development programme and HSTP has been implemented (EMOH 2020a:10-11).The summary of the national TBL strategic plan 2021 to 2025 is shown in Table 2.4.

Table 2.4: Vision, mission, objective and programme impacts of the national TBL strategic plan 2021 to 2025

Vision	The vision of the health sector is to see a healthy, productive and prosperous society.
Mission	The mission of the health sector is to promote health and wellbeing through providing and regulating a comprehensive package of health services of the highest possible quality in an equitable manner.
TBL programme general objective	The general objective of the TBL programme is to contribute to the mission of the health sector by ending the TB epidemic and leprosy as public health problems in Ethiopia.
TBL programme impact	• Reduce TB incidence by 80% compared to 2015. • Reduce TB deaths by 90% compared to 2015. • Zero families facing catastrophic costs due to TB. • Reduce leprosy prevalence from 0.3 per 10 000 to 0.1 per 10 000 populations by 2025/26. • Reduce the proportion of people with leprosy diagnosed with grade-2 disability to below 5% by 2025/26.
TBL-NSP Outcomes	• Diagnose and treat at least 783 332 people with TBby 2025/26. • Diagnose and treat 109 666 children with TBby 2025/26. • Diagnose and treat 673 666 adults with TB by 2025/26. • Diagnose and treat 10 511 persons with RR/MDR-TB by 2025/26. • Provide TB preventive treatment to eligible persons at high risk of TB by 2025/26. • Diagnose and treat 10 000 persons with leprosy by 2025/26. • Leprosy preventive therapy provided for 9 000 people by 2025/2026.
TBL-NSP Strategic Objectives	• Address gaps across the patient pathway. • Prevent infection and active disease. • Provide people-centred quality services. • Enhance bold policies and strengthen supportive systems. • Promote research and innovation.

Source: EMOH (2020a:43-60)

To improve the case notification rate and treatment outcomes, Ethiopia implemented the DOTS strategy in 1992 to accelerate the decentralisation of the TB programme. In Ethiopia, the health service coverage is generally low, with significant variation across geographical areas like rural/urban settings. This is partly due to low adult literacy, particularly among rural women. Health-seeking behaviour is, therefore, generally low in Ethiopia. Passive smear-positive TB case detection in less-advantaged communities is very low compared to the global target. Active case finding is useful in areas where there is a resource shortage to improve early case detection (Dangisso et al 2014:2).

TBL-related stigma at community and healthcare settings and self-stigma are major challenges in Ethiopia. A national survey showsa mean TB-related stigma score of 18.6% for the general population, 21.3% for TB patients and 20.5% for their families (EMOH 2020a:40-50).

“The patient pathway analysis (PPA) methodology was developed to better understand the alignment between patient care-seeking and TB service availability. The results can inform programmatic priority setting and planning for more patient centred availability of services. The PPA aims to describe the steps TB patients take from the initial point of seeking care to the point of being cured. At the same time, the analysis reviews the availability of TB screening, diagnosis, and treatment at various levels of the health system” (Seabrook, Durham, Brown, Chaphiv, Osberg, Hanson, Parwati & Ngari 2017:7).

A TB PPA study done in Ethiopia shows that only 45% of the people with presumptive TB have accessed diagnostic technology at the site where treatment was initiated. This implies that the remaining 55% must use facilities elsewhere to access TB laboratory services. A significant number of health facilities do not provide TB diagnostic services.In public health facilities, microscopy coverage is 70% and Xpert test coverage is 19% (EMOH 2020a:43).

Both passive and active TB case-finding approaches, including intensive case finding in health facilities, largely rely on an initial symptom-based screening. The national TB diagnostic algorithm does not recommend the use of CxR for screening purposes, as there is generally limited access and interpretation capacity of CxR (EMOH 2020a:43). A study on community TB care linkages in Ethiopia shows that 72% of the health facilities provide community-based DOTS services using health extension workers (HEWs). Seventy-eight percent of the health facilities provide home-based TB treatment and care services using trained TB treatment supporters (TTS) in the community.

It also shows that 40% of the health facilities were implementing patient-managed home-based treatment, which was not part of the guidance provided by the national clinical TB, MDR-TBL management guidelines (Khatri & Davis 2020:42-44).

In the past five years, communities' contributions to TB case notification have been on the decline. HEWs keep records of their referrals of those with presumptive TB diagnosis to HCs. However, feedback is not often provided. In 2019, community-level TB notification contributed 22% of the notified all forms of TB cases nationally. In 2018, the NTP missed an estimated 51 000 people with all forms of TB or about 31% of the estimated incident cases, despite the commitment to reach 90% of estimated TB cases.

Furthermore, over 54% of the estimated RR/MDR-TB cases were also missed during the same period. The country is currently in the implementation stage of the second health sector transformation strategic plan, which provides the technical and strategic priorities for ending the TB epidemic and eliminating leprosy in Ethiopia. It illustrates the aspiration of the country within the context of Ethiopia's progress to achieving UHC and SDGs (EMOH 2020a:43-60).

2.8. PROGRAMMATIC MANAGEMENT AND QUALITY OF TB CARE SERVICES

2.8.1. TB programme management and coordination

Effective and efficient programme management, partnerships and coordination are important to ending TB. This requires looking into broad-based multi-sectoral actions, namely engagement of affected communities and civil societies, including stakeholders like government ministries, local government structures, and the private sectors, the communities that can make donations as well as communities targeted for service delivery.

Ethiopia is committed to various political and technical recommendations related to ending the TB epidemic. Most advocacy-related activities have taken place in the country in an ad hoc (for specific purpose) manner, rather than with systematic and continuous engagement of parliamentarians and regional councils. The achievements are the result of effective programme management, coordination and partnerships to address TB in Ethiopia (EMOH 2020a:112).

Leadership is a cornerstone for the quality of healthcare service. It assists and promotes the development of a habit of progressive learning and improvement that ensures the healthcare service is always focused on compassionate, respectful and patient-centred, safe and effective care. All board members of the health facilities, senior leaders,

managers, subject matter leaders and managers of the facilities are responsible for designing and building a culture of promoting quality and commitment to implement evidence-based quality improvement actions at all levels (Health Service Executive 2016:9-24).

The key components of leadership roles for ensuring quality include communicating a shared vision regarding quality, supporting quality by outlining norms, beliefs and values and developing objectives and outcomesfor quality. Staff and patient engagement as well asresource mapping and mobilisation are also important (Health Service Executive 2016:9-24).

The health service delivery is governed by the EMOH and regional health bureaus (RHBs), which are autonomous and accountable to their regional councils. The governance structure follows the political administrative structure and extends to Woreda level. The MOH is mandated to formulate national policies, strategies and standards in consultation with RHBs. The governance includes administrative decentralisation to RHBs and Woreda health offices and comprises consultation forums and joint decision-making processes. Weak referral coordination at various levels and suboptimal public-private partnership across health facilities are the major challenges (EMOH 2020a:11-14).

A qualitative study done in Nigeria shows that low levels of involvement and ownership of facility managers as well as long waiting time, human resource shortages, a poor culture of organisational safety, lack of continuous capacity-building training, and poor safety practices and adherence to occupational health principles are among the major factors contributing to TB transmission in the healthcare facilities (Oladimeji, Tsoka-Gwegweni & Udoh 2017:1-11). That study identifies TB drug shortage, low DOTS service coverage, infrastructure inadequacy, low government budget allocation and funding, stigma and discrimination from providers and community, low patient awareness and knowledge about TB, poor adherence to providers' advice and treatment, lack of nutritional and financial support and TB/HIV co-infection as some of the major barriers to improving the quality of TB care services in settings where resources are limited. The study recommended the implementation of case finding and active TB/TB diagnosis through adoption of modern TB diagnostic techniques and expanding current best practices in programme implementation and TB care (Oladimeji et al 2017:1-11).

The findings of a study in the Philippines show that screening and diagnosis of TB through X-rays (91%), sputum tests using microscopy and GeneXpert (88%), GeneXpert only (27%), onsite testing (27%) and offsite testing (55%) were implemented in the HCs providing TB care services. Generally, the turnaround time for test results was three days

from offsite laboratories and in case of onsite laboratories the turnaround time for laboratory specimen test result was two days and three days for Xpert test result delivery (Alva & Cloutier 2019:28-29).

A study in Ethiopia on the burden of TB and challenges related to TB screening and diagnosis found that poor specimen and patient referral systems, shortage of supplies and reagents and interruption of Xpert MTB/RIF assay and CxR services frequently hampered efforts in TB screening, diagnosis and treatment in the health facilities. Proper management and coordination of the service is very important to addressing the challenges (Mohammed, Oljira, Roba, Ngadaya, Ajeme, Haile, Kidane, Manyazewal, Fekadu & Yimer 2020:1).

The health system in Ethiopia relies on a tiered network of laboratories that include national and regional reference and hospital/HC laboratories with an increasing degree of specialised testing capacity towards the apex. The country has one national and nine regional reference laboratories, which provide both solid and liquid TB culture services and drug sensitivity tests for first and second-line anti-TB medicines using molecular and phenotypic tests. This variation in testing capacity across different tiers necessitates reliable specimen referral linkage within the network to ensure access. Additionally, there are arrangements for inter-laboratory back-up testing support to ensure uninterrupted services emanating from operational issues, such as equipment failure, human resource, and supply shortages. National and regional laboratories serve as referral and backup testing supporting facility laboratories in the management of the TB laboratory service (EMOH 2020a:14).

Preventing TB through addressing TB determinants and ensuring comprehensive care calls for collaboration within and beyond the health sector. The United Nations General Assembly held the first high-level meeting on TB in 2018, where world leaders made a declaration that recognises that ending the TB epidemic requires stewardship and informed leadership from the highest levels of governments to enable ministries of health to guide a comprehensive and intensified response. Enabling and pursuing multi-sectoral collaboration at national and local levels is expected to achieve the health-related SDG targets. It also provides the essential framework for ending the TB epidemic (EMOH 2020a:88-93).

An article on the high quality health system “revolution”: ‘Reimaging TB-IPC’, written by Van der Westhuizen, Nathavitharana, Pillay, Schoeman and Ehrlich (2019:1-6) indicate that the high quality health system components were customised for the development of patient-centred TB-IPC framework in the re-imaging of TB-IPC practices and TB-IPC

programme implementation and integration into the wider health system components in the management of the TB programme. This framework explains human resource, patient safety and person-centred TB care services integration withoccupational health and safety, TB-IPC and reducing healthcare-associated infections and considering patient experience and stigma related to TB-IPC in the development of guidelines and measurement tools for the management and coordination of TB programmes at all levels, as depicted in Figure 2.5.

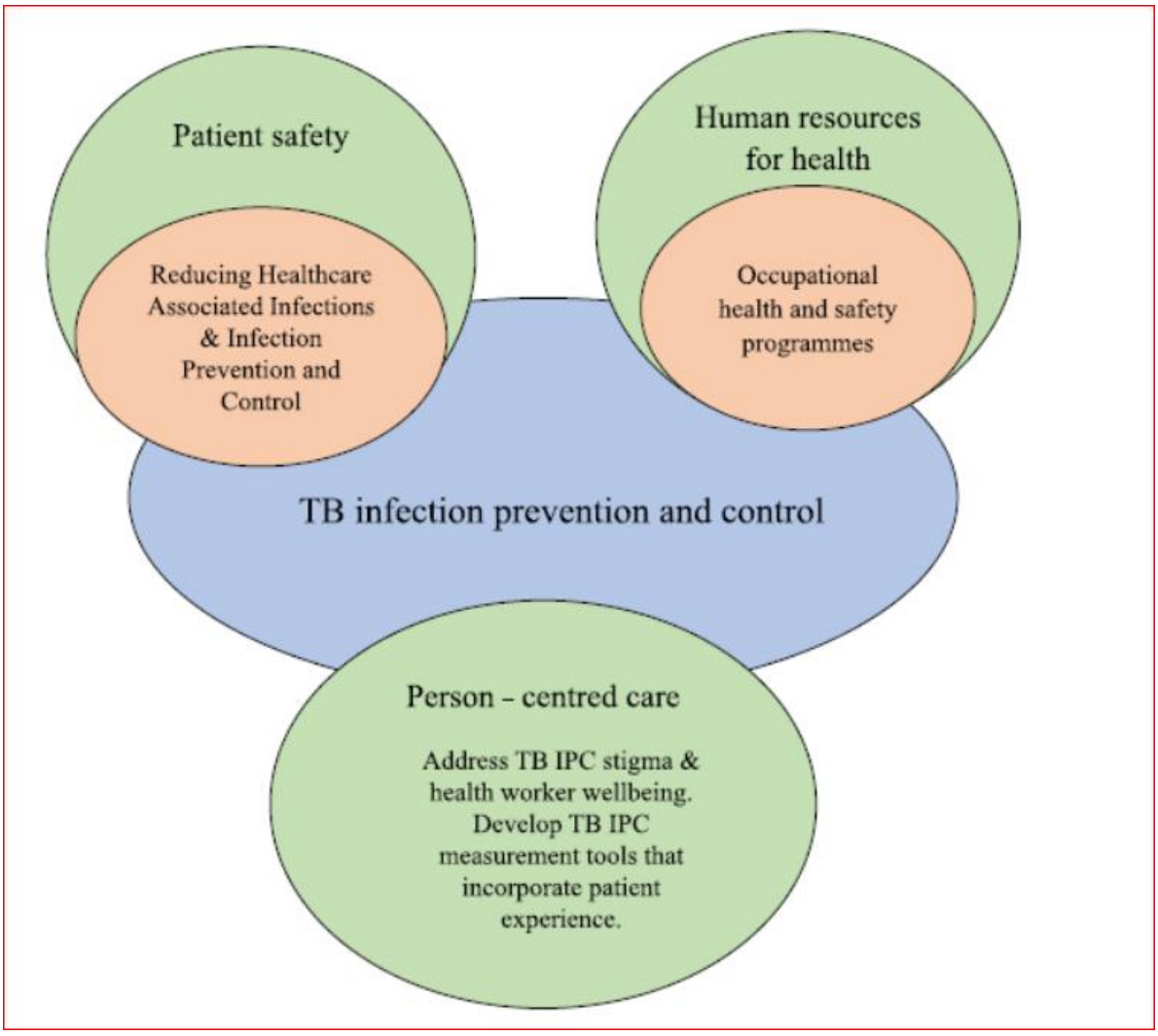


Figure 2.5: Patient-centred TB infection prevention and control framework

Source: Van der Westhuizen et al (2019)

2.8.2. Quality of TB care services

2.8.2.1. Introduction to health service quality

According to a Lancet Global Health Commission report, limited access to quality of care contributes an estimated 8.6 million deaths annually in 137 LMICs (Kruk et al 2018:e1196-1252). This commission further reports that among these deaths, 3.6 million were due to lack of access to care and five million of the deaths were due to poor quality of care despite having access to care. The DOTS service focused on ensuring the quality of TB diagnostics and TB medication with underestimation of the quality of TB care services and failure in prioritisation of quality of TB care. The study result shows that only less than

half of the presumptive (suspected) TB cases are managed correctly in LMICs, indicating that poor quality of care contributes more deaths than poor access to care (Kruk et al 2018:e1196-1252).

Poor quality care contributes approximately 60% of the deaths while poor utilisation of the health system accounted for the remainder. Ensuring high quality healthcare services can prevent around 900 000 deaths related to TB disease annually. The quality of TB care services should be the centre of a TB programme and embedded in TB care services at all levels (Kruk et al 2018:e1196-1252).

The three key components of a high-quality health system are the foundation, process of care and quality impacts as shown in Figure 2.6. The foundation is composed of the population, governance, platforms, workforce and tools. The individuals, the families and communities are parts of the populations served in the health system. People are the key agents in providing and using the health services ensuring accountability and improving the outcome of care. Responsiveness of the healthcare system determined factors such as knowledge, health need and preference of users. Well strengthened governance, financing and policies are very important for organising care and ensuring accountability to enhance the desired patient outcomes (Kruk et al 2018: e1200-1207).

The process of care includes the competent care and systems resulting in positive user experiences. Evidence-based patient care process includes proper assessment, diagnosis, treatment, and counselling of patients. Prevention and detection, safety, continuity and integration as well as timeliness of care are considered key elements to a competent health system. Positive patient experience enhances confidence in the system, retention and adherence to treatment.

The quality impacts also made up of better health, confidence in health system and economic benefit. The process and impact of care are better measurement of quality of health system functionality instead of inputs. The high-quality health system originated from the known health system quality improvement and health system concepts and principles such as the Donabedian model for quality, the Deming quality cycles and health system building blocks of WHO and the Jurdan Trilogy. Getting the health reform right is also present in this framework (Kruk et al 2018: e1201).

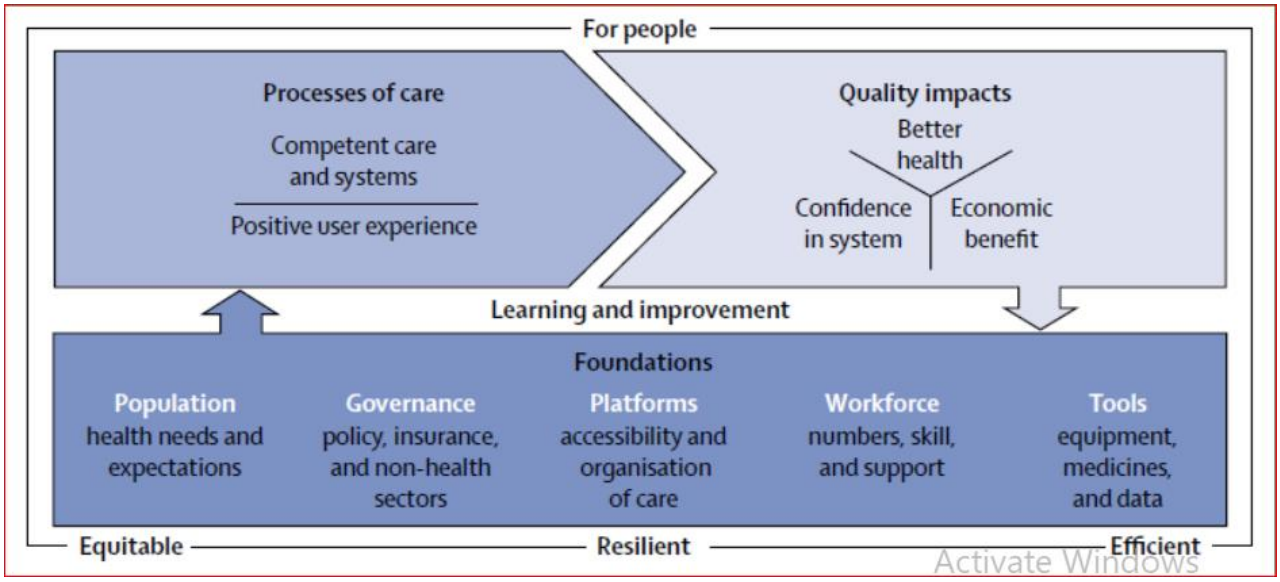


Figure 2.6: High-quality health system framework

Source: Kruk et al (2018: e1200)

Producing better health, enhancing users' trust and confidence and generating economic benefits are among the key expectations from the high-quality health system. Governance of quality, health workforce transformation, redesigning and defining service delivery and creating high demand for high quality care are the key universal actions to invest in the high quality health system foundations (Arsenault et al 2019:1-5).

The Ethiopian view about quality in the healthcare sector is that the health institutions,the workforce and activities should be targeted at promoting, restoring or maintaining health (Woldegebriel, Kitaw & Beshah 2014:2). The quality of the healthcare services is ensured when the healthcare facilities are able to provide healthcare that is safe, effective, efficient, patient-centred, equitable and timely (EMOH 2016c:12)

A study done on the evaluation of DOT strategy in Ethiopia focusing on patient-centredness and satisfaction reveals that in order to respect TB patients' preferences, the healthcare delivery system needs to be flexible. This may include allowing the patient to take the medication at a health facility, community or workplace with adherence monitoring by mobile technology or TTS.

TB care providers need a good working environment that motivates them to provide patient-centred care. If the working environment or health facility is conducive to the healthcare providers, they will be satisfied, work hard and achieve significant results expected of them.

TB patient satisfaction is determined by different factors related to how conducive the working environment is in the health facility. This includes cleanness and ventilation of the patients' waiting area, outpatient department, diagnostic areas, and rest room, including the compound. Short patient waiting times to get treatment, laboratory and diagnostic reagent availability, vital and essential drug availability and presence of guidelines and directives in the health facility are among the major determinants of increased patient satisfaction. Another factor is the confidence of the staff in their working environment (Woldeyes 2016:52-54).

2.8.2.2. Dimensions of quality in TB care serviceand factors affecting quality of TB care

2.8.2.2.1. *Overview of TB Care service quality measurements*

A qualitative literature review of quality measurement tools such as indicators, tools, models and/or frameworks from 106 books and articles written by Endeshaw (2019:106-117) explains that healthcare services quality scholars have not reached common consensus regarding factors that determine the quality of healthcare services and quality measurement tools. Developing countries and healthcare facilities are recommended to develop their own model and tools to measure the quality of healthcare services in the local context and improve the perceived quality of healthcare services.

In an article about the quality of TB care services assessment 'The unique contribution of patient and provider perspectives in identifying and addressing gaps in the quality of TB services', Colvin, Silva, Garfin, Alva, Cloutier, Gaviola, Oyediran, Rodrigo and Chauffour (2019:1-7) indicate that different tools and approaches have been applied to measure and determine the quality of TB care services in high TB burden countries. Patient exit interviews, provider interviews, observations, and facility audits are among the methods used to assess the quality of TB services. It can be done alone or in combination.

The comments assessment tools used are: service provision assessment, Sara, quality of care as seen through the eyes of the patient (Quote) and quality of TB services assessment (Colvin et al 2019:1-7).

Service provision assessment, Sara and Quote are used to measure the quality of TB care services with the perspective of TB patients or TB care providers only. The Quote tool measures quality of TB care services in nine dimensions from TB patients' perspective. The nine dimensions are: availability of TB care services, communication and information in TB care services, professionals' competence in TB care, patient-

provider interaction and counselling, affordability of TB care services, support for TB patients, infrastructure for TB care, TB/HIV relationship and stigma related to TB (Colvin et al 2019:1-7).

Quality of TB services assessment is used to assess the quality of TB screening, diagnosis, treatment, supportive systems and other contextual factors through interviewing TB patients and care providers. It also includes auditing the services and reviewing the registers (Colvin et al 2019:1-7).

2.8.2.2.2. *Patient factors related to quality of TB care*

A standardisation and harmonisation of socio-demographic variables done by Hoffmeyer-Zlotnik (2016:1-8) states that the commonest demographic and socio-economic variables used are gender, age, marital status, educational level, occupation or source of livelihood, professional status, number of family members in the household and average income.

The findings of a study conducted by Woldeyes (2016:82-85) show that of the 601 TB patients who participated in the study a majority (82%) was between 18 and 44 years old, 56% were males, 36% were self-employed and 14% were unemployed, 12.2% were housewives and 2% were students.

In a study report on assessment of the quality of TB care services in Ethiopia, 57% of the TB patients that participated were male, 70% had gone beyond primary and 20% secondary education levels, while 37% were self-employed and 11% were unemployed (Khatri & Davis 2020:38).

These findings reveal that men are more likely to contract TB than women are. This disparity in gender might be because males have higher frequent mobility than females due to the roles they play in society and better health-seeking behaviour.

In the study, assessment of the quality of TB care services in Ethiopia, 70% and 20% had gone beyond primary and secondary educational level, respectively (Khatri & Davis 2020:38). In the studies by Woldeyes (2016:82-85) and Khatri and Davis (2020:38), 36% and 37% of the TB patients were self-employed, respectively.

2.8.2.2.3. *Timing of seeking TB care services, diagnosis and initiating treatment in public HCs*

Currently**,** cascade of TB care is a strategy and model for monitoring and evaluating TB programmes on sequential stages of TB care services to identify the gaps on the quality

of TB care services in order to achieve the TB treatment outcomes successfully (Subbaraman et al 2019:1-13). The utilisation of the health services shows the health seeking behaviour of the population in the community. The availability of vital and essential drugs, laboratory and imaging services, accessibility of health facilities, level of education and health literacy, values and cultural beliefs and service cost, the political issues, socio-demographic characteristics and the level of the health facilities directly or indirectly influence the health-seeking behaviour of the community (Kruk et al 2018:e1208).

A systematic review regarding factors associated with delays in healthcare-seeking behaviours among patients suspected of having TB written by Pires, Martins, Chicumbe and Fronteira (2018:241-247) found that seeking healthcare late was the major challenge in TB prevention and control in rural and urban settings. Poor health literacy, low academic status, joblessness, distance from the healthcare facilities, age and female gender were associated with low early healthcare-seeking behaviour (Shiferaw & Zegeye 2019:1-8). The waiting time from suspecting a patient for TB to treatment initiation was seven days for more than 50% of TB patients (Bulage, Sekandi, Kigenyi & Mupere 2014:1-11).

Findings of a study on delay in TB diagnosis and treatment in Ethiopia showed that half the TB patients (50%) seek treatment more than three weeks after developing symptoms. Sixty percent of the patients experienced delayed diagnosis, or they were not diagnosed during the first visit to the health facility. The average time for getting diagnosis is 7.6 weeks after developing symptoms (Shiferaw & Zegeye 2019:1-8).

Another study done on quality of TB care services assessment in Ethiopia indicates that 71% of TB patients seek or access healthcare after three weeks after the onset of symptoms. The time between testing and notification of results was 45% on the same day, 27% within two days, 18% within a week, 3% within one to two weeks and 7% within more than two weeks. The time between diagnosis and treatment initiation was 30% within the same day, 55% within two days, 12% within a week and for the rest it was after one to two weeks or longer (Khatri & Davis 2020:69-70).

2.8.2.2.4. *Availability of resources and readiness in public HCs*

Service readiness in public HCs is the capacity of the HCs to deliver TB care services. Readiness index is a score of readiness from measurement of the composite score of information regarding a specific or general domain of readiness. Availability of essential medicines, diagnostic equipment, standard precautions and amenities, availability of TB

trained staff and guidelines are the main domains for health facilities TB care services readiness assessment (Ethiopian Public Health Institute 2016:1-126).

It is difficult to measure the quality of care in terms of the structural dimensions. There is inaccurate data, and it is not complete. The data routinely collected regarding staffing, clinical capacity-building training and infrastructure in the health system are not standardised and it is difficult to compare countries with data from another (Akachi & Kruk 2017:6).

The most common barriers for TB patients to get TB care services were distance, cost of the test, language, transportation cost, lack of availability of TB drugs, inconvenient service times and stigma from providers and other people in healthcare settings (Oga-Omeka 2021:1)

A study by Asemahagn, Alene and Yimer (2020a:3) on geographical accessibility, readiness and barriers of health facilities to offer TB care services in East Gojjam zone of the Amhara regional government of Ethiopia shows that the coverage of TB care services ranges from 10% to 85% and the average coverage was 23%. The readiness index of TB care services was 63.5% on average. Sputum microscopy examination was not available in 38.6% of the health facilities.

The diagnosis readiness index was 63% and the diagnosis supply availability index was 41%. TB treatment and diagnosis guidelines and availability of trained staff was 53%. The major challenges in ensuring TB care service readiness in the health facilities were geographical inaccessibility, shortage of TB supplies and commodities, poor support for TB programme implementation and clinical management practices, budget constraints and shortage of trained laboratory providers (Asemahagn et al 2020a:3).

The availability and utilisation of the national TB diagnosis, clinical management and programmatic implementation guidelines and protocols are very crucial to the standardisation of the TB care services and implementation of the TB programme. The national TB clinical management guidelines for TB diagnosis and treatment were available in 44% of the health facilities, MDR-TB diagnosis and treatment guidelines were available in 18% facilities and TB/HIV treatment guidelines were available in 9% of health facilities, excluding health posts (Getachew, Bekele, Defar & Tadesse 2015:145-159).

The findings of the study in Ethiopia are that 70% of the facilities reporting GeneXpert for diagnosis did not have the machine in their facilities and were using the catchment referral network for Xpert test. The onsite GeneXpert testing facilities had challenges in making

available a cartridge for Xpert MTB/RIF and 12% of the facilities did not have at least one cartridge for Xpert MTB/RIF (Khatri & Davis 2020:38-41). Another study also shows that the availability of TB dugs was relatively good but 72% of the health facilities were stocked out of Isoniazid. The stock out of laboratory supplies (sealable sputum containers) was reported in 35% of the facilities. Fluorescence microscope and bio-safety cabinet or hood were available and functioning only in 49% and 11% of the health facilities, respectively (Khatri & Davis 2020:47-49).

IPC is practised in the healthcare facilities through providing priority for coughers (89%), cough triage (86%), separate waiting area (74%) and separate designated specimen collection area (85%), and staff screening for TB (58%) (Alva & Cloutier 2019:38-41). The study in Nigeria found facilities having triage for coughers (35%), facilities asking about cough routinely (79%), staff screening for TB (47%), adequately ventilated waiting area (81%), designated specimen collection area (61%), personal protective equipment (PPE) such as N-95 masks and FFP or filtering face plate (25%) like the study in the Philippines showed (Oyediran 2019:30).

The findings of the study in Ethiopia showed that 74% of urban health facilities had IPC infrastructure and practice were implementing cough triage, surgical masks for drug-susceptible (DS)/DR-TB presumptive and confirmed patients (60%), separate waiting area (53%) and staff screening practised (41%) and designated sputum collection area (48%) of facilities. Running water and hand-washing facilities were available in 82% health facilities and halfthe facilities, respectively (Khatri & Davis 2020:51-53).

2.8.2.2.5. *Availability of TB care services*

Availability of TB care service is the physical presence of theservice in the health facilities. The availability of TB diagnostic services, medicines and other commodities are among the items in the domain commonly used for assessing the availability of TB care services in the HCs. Ensuring physical (availability), economic (affordability) and cultural (ethnic, gender and age) accessibility of quality healthcare services is a vital component in improving UHC (Ethiopian Public Health Institute 2016:85).

Ensuring access to TB diagnostic and treatment service is very important for improving early detection, treatment initiation, adherence, and outcomes of TB patients. However, the patient pathway assessment findings from 13 TB HBCs, which are contributing 92% of global missed TB cases, indicate that either TB diagnostic or treatment services or both were found in a third of the facilities only. The poorly coordinated and networked TB diagnosis services, referral linkage and financial constraints were among the major

challenges to accessing quality TB care services (Reid, Arinaminpathy, Bloom, Bloom, Boehme, Chaisson, Chin, Churchyard, Cox, Ditiu, Dybul, Farrar, Fauci, Fekadu, Fujiwara, Hallett, Hanson, Harrington, Herbert, Hopewell et al 2019: 1336).

TB diagnostic services were provided in 69% of the health facilities, excluding health posts, and 59% of the health facilities, excluding health posts, used only sputum smear for diagnosis of TB. Guidelines for MDR-TB diagnosis and treatment were available in 44% of the health facilities for TB diagnosis, treatment and follow up services and TB/HIV treatment guidelines were available in 9% of the health facilities, excluding health posts (Getachew et al 2015:145-159).

A study conducted on increasing access to TB services from patient pathway analysis (Fekadu, Hanson, Osberg, Makayova, Mingkwan & Chin 2017:696-701) found that the health extension workers are referring more than a third of TB patients for diagnostic services to HCs. Microscopy services were provided in most HCs (80%) whereas Xpert test was providedin a few HCs. A quarter of the patients notified for TB were not bacteriologically confirmed despite the availability of radiography and microscopy diagnostic services in the networked referral services.

The findings of a study done in Ethiopia by Khatri and Davis (2020:41-44) show that HIV testing and counselling services are provided for confirmed and presumptive TB patients in 98% and 94% of the health facilities, respectively. Eighty-five percent of the health facilities provided TB preventive therapy (TPT) to PLHIV, 46% to children aged 5-15 years and 71% to children under five. Among the facilities involved in the study, 91% provided Cotrimoxazole preventive therapy (CPT) for TB/HIV co-infected patients (Khatri & Davis 2020:41-44).

A study done in the Philippines reports that most TB patients who participated in the study accepted the average time of 20 minute spent for getting treatment and consultation services as normal and 81% of the TB patients agreed that privacy during diagnosis and treatment was acceptable (Alva & Cloutier 2019:41).

The findings of another study in Nigeria indicate that the average waiting and consultation time spent was 49 minutes. This average time spent was acceptable for 90% of TB patients. Eighty-four percent of the TB patients indicated that their privacy was respected during examination and 25% expressed concern about auditory or conversation privacy (Oyediran 2019:41).

2.8.2.2.6. *Communication and information in TB care services*

The findings of a study done by Woldeyes (2016:1-144), on the evaluation of the DOT strategy in Ethiopia concerning patient-centeredness and satisfaction, indicate that the organisation of the healthcare system and quality of care delivered determine the health-seeking behaviour of the community. Smooth, transparent, and friendly communication between patient and provider is important for improved continuity of healthcare services utilisation and health-seeking behaviour. When patients are visiting a healthcare facility for treatment regularly, having a consistent medical care provider is important. Most TB patients (90%) had good communication with healthcare providers in their interaction during treatment follow up. TB patients who had good communication with healthcare providers were more likely to receive patient-centred TB care services (adjusted odd ratio (AOR)=3.2, 95% CI (1.6, 6.1)) compared to TB patients who had poor communication.

TB care providers communicated and shared information about the duration of treatment with 92% of the TB patients,regular medication intake importance (91%), importance of completing treatment (89%), side effects management (50%), danger signs management (66%), treatment follow-up sputum test (59%) and the side effects of TB drugs (64%) (Khatri & Davis 2020:57). In addition, the findings of another study in Nigeria done by Oyediran (2019:12-13) indicate that 99% of TB patients had a better understanding of TB curability, 94% were informed about the treatment duration and 58% were informed about thecauses of TB. On the other hand, a huge gap was found on understanding the means of TB transmission.

2.8.2.2.7. *Providers' competence*

Provider competence is defined as the ability of a health worker to perform according to predefined standards. Competence encompasses knowledge, skills, abilities and traits. Healthcare professionals gain competence through pre-service education, in-service training and work experience. Competence is a major determinant of provider performance as represented by conformity with various clinical, non-clinical and interpersonal standards. Measuring competence is essential for determining the ability and readiness of health workers to provide quality services (Kak et al 2001:28).

Providing patient care,employing evidence-based practices,working in interdisciplinary teams,applying quality improvement team and utilisation of informatics are the core competencies that all healthcare providers should have in order to meet patient needs and improve clinical outcomes (Institute of Medicine 2003:45-46).

Factors related to healthcare providers, patients and health facilities determine the competence of the providers and provision of competent quality healthcare services. Improvement of the knowledge, skills, and attitudes of TB care providers related to TB care services is very important to developing competent TB care providers. In addition, national and global situations determine the competence of healthcare providers and healthcare services. TB diagnosis and treatment accuracy are crucial to reducing stigma, cost and potential side effects of TB medications for TB patients and their families (Mosadeghrad 2014:77-88).

An article on measuring and improving the quality of TB care: framework and implications from the Lancet Global Health Commission (Arsenault et al 2019:1-3) indicates that the accuracy of TB diagnostic services in identifying TB by TB care providers ranges from 52% in Ethiopia to 86% in Tanzania across the six SSA countries despite efforts to provide competent TB care service. Many countries are still using outdated diagnostic technologies and making decisions on unreliable smear microscopic test results. The interruption of TB progression and transmission depends on early detection and treatment.

Governments should focus on clinical competence of TB care services. NTPs must emphasise ways of improving TB care providers' capabilities on proper TB diagnosis and national TB treatment guideline adherence. In addition, patient-centredness, patient-provider respect and trust, timeliness and continuity of TB care services should be assessed and monitored to improve clinical competence of TB care services. TB care service competence improvement efforts must support the development of new strategies, measuring indicators and data management systems.

A study in Nigeria done by Oyediran (2019:32-36) found that transportation of laboratory specimens or samples to other facilities was done in 39% of the health facilities. Rapid diagnostic tests through GeneXpert MTB/RIF test were provided in 36% of the health facilities and it took four days to get laboratory test results off-site and only 54% of TB care providers were trained on TB. TB care providers should be competent in taking patient history, physical examination, offering appropriate timely diagnostic tests and interpreting the test results, providing DOTS service properly and tracing and investigating contacts of index TB cases.

The findings of a study in Ethiopia conducted by Khatri and Davis (2020:38-69) indicate that among the TB patients who were on treatment, only 58% received diagnosis evaluation with GeneXpert, smear microscopy, clinical assessment and CxR. Of these patients, 58% had diagnosis evaluation, 81% had bacteriological confirmation test

(GeneXpert or smear microscopic test) and the rest (19%) were examined clinically or using the X-ray machine. Lack of a strong TB screening system and tools for tracking presumptive TB contributed to low TB screening at the health facilities. Two-thirds (60%) of the providers did not have any training in clinical management of TB or had less than two years' experience.

In addition, only 52% of the health facilities received TB programme-specific supportive supervisions. Clear national strategies should lead to the improvement of healthcare providers' competence. Although national continuous professional development programmes have been integrated with the national health workforce transformation agenda, which is creating a motivated, compassionate and competent health workforce, health facilities should be equipped with appropriate equipment and drugs to enable healthcare providers to deliver efficient and effective high quality TB care services (EMOH 2017c:1-130).

2.8.2.2.8. *Patient-provider interaction and counselling in TB care services*

A study done in the Philippines by Alva and Cloutier (2019:45) reveals that providers' understanding and their actions in TB diagnosis and treatment services are very crucial to enhancing rapport and trust. TB care providers communicated clearly with 90% of the TB patients, treated patients with dignity and respect (60%), listened intently (49%), accommodated the needs of patients (43%), addressed and understood fear of patients' illness (36%) and respected full behavioural change suggestion (23%) and were open-minded about TB patients' cultural beliefs (22%).

A systematic review and meta-analysis study on the cascading of TB care services in the public sector of India by Reid and Goosby (2020:1) reports that from an estimated 2 700 000 TB cases, the NTCP evaluated 72% (1 938 027) TB patients, diagnosed 60% (1 629 906) successfully and registered 53% (1 417 838) for treatment. Under the same programme, 45% (1 221 764) of the TB patients completed treatment successfully and 39% (1 049 237) met the best possible TB treatment outcome. The findings show that pre-treatment LTFU, newly diagnosed smear-positive TB patients and the recurrence of post-treatment TB are the main stages of patient loss that contribute the transmission of TB progressively.

A study on estimation of losses and methodological challenges of TB care cascade in South Africa conducted by Naidoo, Theron, Vaughan, Rangaka, Chihota, Pillay and Brey (2017:S702-S713) reports that only 53% of 532 005 TB cases successfully completed treatment. TB cases were lost at each stage of care cascade, with 5% lost at test access,

13% during diagnosis, 12% during initiation of the treatment and 17% during completion of the treatment. All drug-susceptible TB patients had an overall loss of 54% and 52% of the TB patients with co-infection were also lost. Only 22% of RR-TB patients completed their treatment successfully with the highest loss score.

Of the total TB patients, 92% had treatment supporters and the supporters observed while the patient swallowed the drug for an average 5.4 days per week. Moreover, of the total TB patients, 33% had health professional treatment supporters from the facility or community, 56% had family member treatment supporters and 2.2% had co-worker treatment supporters while 7.6% of the patients did not have treatment supporters (Khatri & Davis 2020:59).

A study done in Nigeria by Oyediran (2019:12-13) indicates that counselling and consultation was provided in individual or private rooms in 52% of the facilities and the privacy of TB patients during examination was respected for 84% of the TB patients. The providers' skills on counselling were very high, with discussion on curability (98%) and family protection (90%). TB patients who had no access to DOTS (40%), provider observed during medication swallowing (42%), distance (22%), financial barrier faced (18%), language barrier (19%), provider turned face away (19%) and community discrimination (16%) due to having TB (Oyediran 2019:12-13). The information reported from provider for TB patients during counselling consistently greater than the information reported from TB patients as received from the provider about TB diagnosis and treatment (Colvin et al 2019:1-7).

Regarding treatment by care providers, 16% of the TB patients reported that TB care providers disrespected them and 17% said they were treated differently because they had TB and 10% felf discriminated against or stigmatised by the care providers. The perceived stigma of TB patients within their communities was more than that in healthcare settings, as no one wanted to eat with them (25%). Sixty-two percent of the TB patients believed they could avoid transmitting TB germs to others through social distancing (Khatri & Davis 2020:63-66)

Alva and Cloutier (2019:45) found that TB patients had difficulty in affording TB care services and were paying for blood tests (30%), X-ray (64%), consultation (17%) and they failed to visit the health facilities due to transportation and other costs (9%). Treating TB patients with respect and dignity and reducing the costs of TB treatment are important in building rapport and trust in TB care services. Regarding affordability of TB care services, the cost of different diagnostic tests and their affordability was a major concern for TB patients. The findings show that 75% of the patients paid for X-ray, 48% paid for blood

tests, and 27% paid for sputum examination while 4% was unable to go to the health facilities due to the cost of medical care or transportation, 4% made informal payments and 5% paid for routine healthcare service. The cost and affordability of different diagnostic tests were a major concern for TB patients (Khatri & Davis 2020:67).

2.8.2.2.9. *Supportive systems and policies for TB care services*

The major policies and supportive system components of the End-TB Strategy are UHC, establishing regulatory framework to ensure sustainable supply chain management of essential medicines, reagents and supplies, improving the quality of TB care and TB infection control to meet the targets of the strategy. The political commitment of the governments in ensuring adequate staff availability, creating incentive mechanism, improving infrastructure and accessibility, availability of standards, protocols and guidelines, information communication and technology, involvement of stakeholders to improvement service affordability and financial burden protection to alleviate poverty are also among the major policies and supportive system components (WHO 2016:9).

Alva and Cloutier (2019:28-29), in a study in the Philippines, report that food baskets/nutritional support were provided in 26% of DS-TB treatment facilities and in 9% of facilities providing DR-TB treatment. Distribution of monthly support packages in the treatment facilities for DS-TB and DR-TB was 11% and 13%, respectively. Only 5% of the TB patients received nutritional support from 75% of TB patients desired to have nutritional support (Khatri & Davis 2020:67-68).

In 2016, US$6.6 billion was earmarked for TB prevention and care in LMICs, 84% of which was generated from local domestic sources. In low-income countries, like Ethiopia, the NTP depends on global donors for most (90%) of their financing sources. In LMICs, investments dropped by US$2 billion, resulting in a shortage on US$8.3 billion required that year. This yearly gap was expected widen to US$6 billion by 2020, unless funding improved. Globally, WHO expected an improvement in overall healthcare financing (WHO 2016:9).

The economic consequences of TB include loss of income and productivity during diagnosis and treatment. In Ethiopia, since the majority of TB cases occur among young adults and children, TB commutatively exacts a heavy economic cost, impeding Ethiopia's drive towards becoming a middle-income country (Revers et al 2016:1-4). Vulnerable individuals and households could face financial barriers in accessing services, as the sixth national health account of Ethiopia indicates that around 44% of TB expenditure comes from households' own pockets at the time of service use (EMOH 2020a:40-50).

A study in the Philippines done by Alva and Cloutier (2019:42) indicates that TB programmatic supportive supervision from the higher level bodies provided for 89% of TB care providers or facilities focussing on timeliness and completeness of data and TB drug supply chain management. Only 30% of the TB care providers provided and discussed the TB programme performance in the health facilities. The TB care quality improvement suggestions given by TB care providers were training (50%), infrastructure improvement (30%) and procurement and availability of additional medical equipment like X-ray machine, GeneXpert, medical supplies, and additional trained staff.

A study on quality of TB care services assessment in Nigeria by Oyediran (2019:44) suggests that TB programme monitoring and evaluation should be implemented through continuous assessment of TB care service and programme performance using timely, accurate and actionable data.TB monitoring is over sighting and supervision of actives continuously to ensure its implementation according to plan. The health facilities that reported receiving supportive supervision and feedback were 83% and 58% in the past 12 months, respectively. The TB care providers who reported getting supportive supervision from the higher bodies were 81% of TB care in 12 months.

Establishment of a consistent monitoring and evaluation system with regular communication between the highest and lower level of the health system is crucial. The analysed data at each level of the health tier system is used to improve the quality of TB treatment and performance. Conducting regular supervision and establishing timely feedback mechanisms is vital to solving performance problems and verifying the quality of data and information (EMOH 2016b:85). The supervisions focused on pharmacy (82%), TB data completeness and timeliness (93%), discussion on performance (84%), written feedback (66%) (Khatri & Davis 2020:54).

2.8.2.2.10. *Satisfaction of patients in TB care services*

Patient satisfaction in TB care service delivery is a vital part of TB care service quality and highly impacts services utilisation and adherence to treatment. A study by Oyediran (2019:12-13) reveals that most TB patients (91%) were satisfied with the process of TB care services and the time spent in getting the services.

A cross-sectional study on patient satisfaction during clinical consultation in Uganda done by Sengooba, Kirenga, Muwonge, Kyaligonza, Kasozi, Mugabe, Boeree, Joloba, Okwera and PanACEA Consortium (2016:1-9) indicates that 91% of the TB patients were satisfied with the clinical consultations. Clinicians' personal manner (91.6%), time spent with the provider (85.4%), technical skills (91.6%), explanation of the procedures and treatment

(87.6%) were the major predictors of high scoring on TB patient satisfaction. The major predictors of low TB patients' satisfaction were waiting time (61.8%), convenience of consultation room (53.4%) and easily getting appointment by phone (21.3%). The treatment outcome could be improved by addressing the predictors of low TB patients' satisfaction with TB care service quality.

The satisfaction of TB patients on provision of TB DOTS service was 67%. Healthcare providers' timely presence, healthcare facilities' overall features, nutritional and transportation support were among the key factors to improving patient experience and satisfaction. The implementation of the DOTS programmes should focus on the improvement of patient satisfaction in general, as reported in the study done in Ethiopia by Getahun and Nkosi (2017:1). Another study on the assessment of the quality of TB care services in Ethiopia also recorded overall TB patients' satisfaction of 89% in which they were either satisfied or very satisfied. The five-point Likert scale evaluation result of the level of TB patient satisfaction on the quality of TB care service showed very dissatisfied (2%), dissatisfied (4%), neither satisfied nor dissatisfied (4%),satisfied (51%) and very satisfied (38%) (Khatri & Davis 2020:68-69).

A systematic review of 35 studies on patient experience and satisfaction conducted by Cazabon, Pande, Sena, Daftary, Arsenault, Bhatnagar, O'Brien and Paia (2020:1-9) indicates variation of patient experience and satisfaction measurement tools and low study quality in general. Most of the study findings show a high score of satisfaction, which might be due to low awareness, understanding and education about the dimensions of quality of TB care services as well as fear of sanctions when getting service in future. There is a need for the standardisation of the TB patient satisfaction and experience measurement tools to compare the level of satisfaction among the health systems, regions, and countries to ensure patient-centredTB care service.

The quality of TB care services in Ethiopia, particularly in public HCs of Addis Ababa city administration, is not well studied and a clear strategy has not been developed yet to optimise the quality of TB care services in public HCs.

2.9. **CONCLUSION**

In summary, TB programmes and healthcare facilities are primarily concerned with coverage and access to TB diagnostic and treatment services, while overlooking TB care quality (Arsenault et al 2019:4). Only half of presumptive (suspected) TB cases are handled appropriately in LMICs, highlighting that poor quality of care kills more people than a lack of access to care (Kruk et al 2018:e1196-1252). The resources (inputs),

processes (the way things will be done), and outcomes (the expected results of the activity) are the three interconnected parts of care that define the quality of care and its outcome. Healthcare facilities that have the proper structures and processes in place will achieve better results. When healthcare facilities are able to deliver healthcare that is safe, effective, efficient, patient-centred, equitable, and timely, the quality of healthcare services is maintained (EMOH 2016c:12).

Extensive evidence found through review of literature shows that low levels of facility managers' involvement and ownership, low DOTS service coverage and patient-centredness, shortage of TB drugs and other supplies, infrastructure inadequacy, low budget allocation and funding, stigma and discrimination from providers and community, low patient awareness and knowledge about TB, poor adherence to providers' advice and treatment, lack of nutritional and financial support, TB/HIV co-infection, human resource shortages, a poor culture of organisational safety practices and adherence to occupational health principles, lack of continuous capacity-building training and poor adherence to the national TB programme and clinical management guidelines are among the major challenges to improving the quality of TB care services in settings where resources are limited (Oladimeji et al 2017:1-11).

It is also important to note that in high-TB burden countries, many tools and approaches have been used to assess and determine the quality of TB care services (Colvin et al 2019:1-7). Scholars in healthcare services quality have not achieved a consensus on the elements that define the quality of healthcare services and quality measurement tools. It is advised that developing nations and healthcare facilities build their own model and tools for measuring the quality of healthcare services in their local context and improving the perceived quality of healthcare services (Endeshaw 2019:106-117). In Ethiopia, there are no specific strategies in place to improve the quality of TB care services in public health centres. The quality of TB care services and the factors that determine it should be studied, and strategies for improving the quality of TB care services should be designed.

Chapter 2 introduced literature review about the quality of TB care services globally, in Africa and Ethiopia, specifically in Addis Ababa. The next chapter dwells on the research design and methodology of the study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1. INTRODUCTION

In the previous chapter, a literature review of the quality of TB care services globally, in the African region and Ethiopia, specifically in Addis Ababa, was presented in detail. This chapter discusses the research design and methodology used to assess the quality of TB care services in public HCs of Addis Ababa in detail.

3.2. RESEARCH APPROACH

A research approach includes the plans, procedures and methodology to investigate a problem. Based on the mode of inquiry, there are three types of research approaches, namely qualitative, quantitative and mixed-methods (Kumar 2014:11).

Research methods are techniques and procedures used to gather data and analysing it (Corbin& Strauss 2015:3). In this study, a mixed-methods approach was used.

3.2.1. Mixed-methods approach

A mixed-methods approach employs both quantitative and qualitative research methods (Kumar 2014:14). Mixed-methods research involves the combination of qualitative and quantitative methods or characteristics of these methods (Johnson & Christensen 2014:33). Ultimately, mixed-methods research is the integration of quantitative and qualitative data in a study (Creswell & Creswell 2018 :14).

The purposes of mixed-methods research studies include development of interventions, building of theories, generation and testing of hypothesis, and development and testing of research instruments (Polit & Beck 2010:302). In this study, a mixed-methods study was used to obtain complementary information and the triangulation of methods for a better understanding of the quality of TB care services from providers' and patients' perspectives to develop strategies.

3.2.2. Quantitative approach

Quantitative research follows a structured and more rigid methodology than qualitative research. It has a narrow focus and uses bigger sample sizes. It aims to quantify and generalise to the entire research population where possible (Kumar 2014:14).

Quantitative methods usually involve structured instruments such as questionnaires that could be administered individually or in a structured way during face-to-face interviews. It could also be an analysis of the primary and/or secondary data (Nardi 2018:1-23).

In this study, the quantitative approach was used to describe the quality of TB care services in Public Health Centres of Addis Ababa in the perspectives of TB patients. The collected quantitative data were used in the development of strategies to optimise the quality of the TB care services in combination with the qualitative data.

3.2.3. Qualitative approach

Qualitative research follows a versatile, less structured and open approach to investigation than quantitative research and aims to describe rather than measure. Qualitative research is about an in-depth understanding of a phenomenon and uses smaller samples than quantitative research. It explores perceptions and feelings rather than using facts and figures (Kumar 2014:14).

Qualitative research is a research approach that allows the researcher to gather data and interpret them. In the process, the researcher and the participants become part of the research process. The study participants become co-researchers in a way. It is aimed at exploring areas that are often not yet studied in-depth (Corbin & Strauss 2015:3). Qualitative research is ideal for doing exploratory studies (Nardi 2018:1-23). The qualitative part of this study was used to explore the quality of TB services in public HCs of Addis Ababa from the providers' perspectives.

3.3. RESEARCH DESIGN

Research design is the research structure and procedures necessary to acquire answers to research questions or issues (Kumar 2014:122). Research designs give specific direction for the procedures that are used in a research study (Creswell 2014:295). A research design forms the framework for data collection and analysis. It is a blueprint that is followed in a study.

Research methodology is the philosophical and theoretical assumptions developed from specific paradigms for systematic inquiry of the research problem. Therefore, the research design is a map that is typically developed to guide the study (Pandey & Pandey 2015:18). Research designs are classified as descriptive, correlational or exploratory based on the objectives. Descriptive and exploratory studies can use a cross-sectional point of departure (Babbie 2017:107).

3.3.1. Descriptive research design

In descriptive research, the focus is on description instead of examining relationships or associations. It aims to explain a phenomenon, service or programme systematically. It can also provide information about the living conditions of a community or describe attitudes towards a problem. Descriptive research focuses on giving a description or picture of the status or characteristics of a situation or phenomenon (Kumar 2014:13).

Survey research is a non-experimental research method using an instrument like a questionnaire (Johnson & Christensen 2014:407). When a survey is done trends, views or opinions of a sample of the population are investigated (Creswell 2014:296). In this study, a descriptive cross-sectional study was employed in the quantitative part to research views of TB patients regarding the quality of TB services that they are using.

3.3.2. Exploratory research design

Exploratory research is undertaken to explore either an area or programme where not much is known. Exploratory (formative) research is conducted to gain familiarity with a phenomenon or to gain new insights into it (Pandey & Pandey 2015:9). It helps the researcher to become familiar with the phenomenon and gather information to set priorities (Peniel 2016:6). The three purposes of implementing an exploratory study are:

- To satisfy the researcher's curiosity and desire for a better understanding of the phenomenon,
- To do a feasibility study prior to a more extensive study and
- To develop methods to be used in a subsequent studies (Babbie 2017:92).

The researcher also used the exploratory research in the qualitative part of the study to explore and gain in-depth understanding of TB care providers' experience in the provision of quality TB care services.

3.3.3. Convergent parallel mixed-methods design

Convergent parallel mixed-methods design is an admired and efficient mixed-methods research design that is based on pragmatism theoretical assumptions. It is more useful for gaining a holistic understanding of research problems being studied than a picture derived from either quantitative or qualitative data sets alone (Dawadi et al 2021:29).

Convergent parallel mixed-methods design aims to get complementary data sets on the same issue and compare them by collecting quantitative and qualitative data simultaneously in a single phase, analysing both data sets independently, and integrating

the data sets at the interpretation stage (Pardede 2019:230-243).

A convergent parallel mixed-methods design was used for the first phase of the study. It is the collection of both the qualitative and quantitative data at the same time. The data are merged after interpreting them (Creswell & Creswell 2018:15). The researcher used a convergent parallel mixed-methods design in this study. Both qualitative and quantitative approaches were used during data collection, data analysis and interpretation of the data. This was done concurrently.

This was done to develop a holistic understanding of the views of TB patients and TB care providers. The analysed quantitative and qualitative data were merged and synthesised for a better understanding of the quality of TB services so that appropriate strategies could be formulated. As was explained above, this study used a convergent parallel mixed-methods design. However, there is also an element of sequential study design in this research.

Sequential mixed-methods design involves the collection of data for one phase prior to the next to facilitate the design of the second phase of the study (Polit & Beck 2010:742-743). Sequential mixed-methods design involves two separate phases of study in which the first phase is used as the basis for building the second study on data collection and analysis (Creswell & Creswell 2018:15).

A sequential mixed-methods design forms part of this study because in the first phases of the study, the quantitative and qualitative parts were used as the basis for the development of strategies to optimise the quality of TB care services in the second phase of the study. The steps used in the final section of the research, namely the strategy formulation, are elaborated in the relevant chapters. The objectives and methods used in the study are summarised in Table 3.1.

Table 3.1: Summary of the objectives and methods used in the study

Objectives	Methodology	Population	Sample	Sampling method	Data collection	Rigour of study	Data analysis	Phases
Objective 1: To describe the quality of TB care services according to the perspective of TB patients.	Quantitative	TB patients	TB patients on treatment follow-up	Convenience	Structured questionnaires	Measures used to ensure validity	Analysis of the data by SPSS version 21	Phase 1:Data gathering and interpretation
Objective 2: To explore the experiences of healthcare providers in quality TB care service delivery.	Qualitative	Healthcare providers	TB care providers/Focal person	Purposive/ Expert	In-depth interview	Measures to ensure trustworthiness	Coding and thematic analysis of interview	
Objective 3: To develop strategies for optimisation of the quality of TB care services.	Integration and synthesis of results from quantitative and qualitative parts of research strategy formulation methodology	Healthcare providers, programme managers	TB experts, programme owners and academicians on the area of study.	Purposive	Evidence from survey and qualitative study, literature support and interim strategy	Validation by experts	Evaluators recommendation and development of the final strategies by synthesis	Phase 2: Strategy formulation

3.4. RESEARCH METHODS FOR QUANTITATIVE AND QUALITATIVE PARTS (FIRST PHASE) OF THE RESEARCH

Research methods are techniques and procedures for gathering and analysing data (Corbin & Strauss 2015:3). Research methods include the setting, participants, instruments, methods of data collection and analysis (Johnson & Christensen 2014:666). The first phase of the study has two sections using different research methods. This phase of the study mainly focused on the collection of data, analysis and interpretation of the data. The purpose was to create an in-depth understanding and build a knowledge base regarding the quality of TB services for the development of strategies in the second phase of the study.

3.4.1. Study setting and population

A ***study setting or context*** refers to the place or location where the study takes place. In other words, it refers to the place where data is collected. It is the community, organisation or agency where the study is conducted. It includes a description and profile of the community (Taylor, Bogdan & DeVault 2016:73). The setting for this study was public HCs functioning under the Addis Ababa City Administration.

Addis Ababa is the capital and the biggest city of Ethiopia, which was founded in 1886. Responsibility for the federal government of Ethiopia and the chartered city management is administered from Addis Ababa. The headquarters of Uneca and the Organisation of African Union (OAU) are seated in the city, making the city a diplomatic city for Africa (Dinku 2015:5). Addis Ababa City Administration is composed of tensub-cities administratively. The healthcare service, organisation, coordination and delivery in the city are the responsibility of Addis Ababa City Administration Health Bureau. Each sub-city administration has its own health office or department responsible for healthcare service, organisation and delivery in the sub-city.

There are 105 public HCs providing healthcare services in the Addis Ababa City Administration. The HCs are accountable to their respective sub-city health offices.The Ethiopian Health Centres Reform Implementation Guideline (EHCRIG) enhanced the establishment of a HC governing board, as per the nationalhealthcare financing strategy framework. The governing board has the mandate and autonomy to oversee strategic planning, budgeting, resource mobilisation and overall performance of the public HCs.The medical director of the public HC is appointed by the governing board and endorsed by the

sub-city health office. The medical director of the HC is responsible for leading and managing all the operations and functions of the public HC (EMOH 2016d:1-25). The structure and the major departments of the public HC, as recommended by the EHCRIG, are presented in Figure 3.1 below.

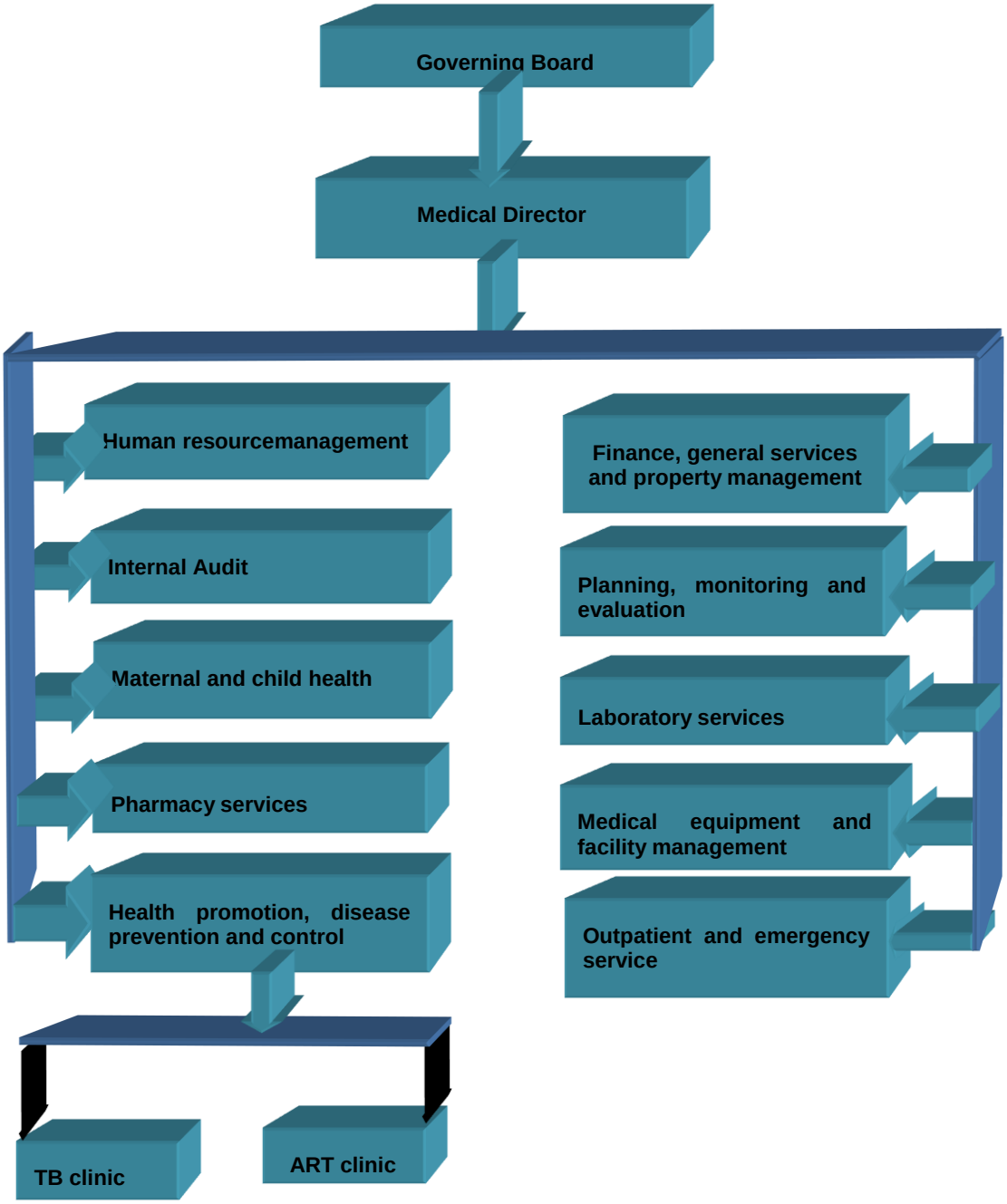


Figure 3.1: Structure and major departments of public health centres

Source: Ethiopian Health Centres Reform Implementation Guideline (EMOH 2016d:1-25)

With an estimated 165 000 persons (151/100 000 population) infected with all kinds of TB, 1 600 MDR-TB incident cases and 24 000 (22/100 000 population) TB deaths in 2018, Ethiopia is one of the 30 nations with the highest TB, TB/HIV and MDR-TB burdens worldwide. The incidence of HIV-positive TB was estimated to be 7 per 100 000 population during the same period. Finding missing individuals with TB is the largest programmatic gap in eliminating the TB epidemic in the country in all scenarios (TB, TB/HIV and MDR-TB) (EMOH 2020a:23).

The national HIV prevalence among the general population in Ethiopia is 0.88%, with a 3.26% prevalence in Addis Ababa. In 2020, the national HIV incidence in the general adult population was estimated to be 0.13% (0.16% in females and 0.11% in males), with 13 000 new HIV infections (8 000 females and 5 000 males). Sixty-seven percent of new infections occur in people under the age of 30, and the prevalence of HIV varies significantly across the population. Women between the ages of 15 and 49 account for 62% of all HIV infections, with prevalence rate double that of men in the same age group. The prevalence of HIV in urban areas (2.9%) is seven times higher than in rural areas (0.4%) (EMOH 2020a:29-30).

HIV co-infection rate among all types of TB patients who were nationally reported and tested was 5%, with a downtrend in 2018. Ninety-two percent of nationally notified TB patients knew their HIV status in the same year. In Ethiopia, WHO estimated that 7 600 people are infected with both TB and HIV. Of this number, 4 816 (63%) were notified to the national programme, and 4 393 started ART (91% and 58%, respectively, of those notified and estimated with TB/HIV co-infection). On the other hand, out of the 79% of estimated PLHIV who knew their HIV status in early 2020, 89% were on ART and 91 percent were virally suppressed. Furthermore, among children aged 14 years, ART coverage is much lower: 26% for children aged 0-4 years, 46% for those aged 5-10 years, and 58% for those aged 10-14 years. In Ethiopia, both HIV-related TB mortality and the prevalence of co-infection have decreased substantially in recent decades. This is due to the country's enhanced ART coverage and universal ART (test and treat) policy, as well as a decrease in HIV infection among the general population (EMOH 2020a:29-30).

Population is the set of persons within a group of people or objects that are of research interest for the study (Thomas 2017:142). The study population is the sub-set of the target population, which possess all the elements necessary for the study (Johnson & Christensen 2014:250). “Multilevel relationship mixed-methods sampling design involves the use of two or more sets of samples that are extracted from different levels of the study (that is, different populations)” (Onwuegbuzie & Collins 2012:292).

The two relevant study populations in the first phase of this study were the TB patients and TB care-providing health professionals found in the selected HCs. Furthermore, the participants in the second phase of the study were TB experts and managers working on the TB programme. The researcher elaborates on the study populations in the quantitative and qualitative sections as well as in the strategy development section.

3.4.2. Sampling process for health centres

Sampling refers to the process of selecting a section of participants or respondents from the bigger population (Kumar 2014:382). Not all individuals in a study setting can be used to gather data for the research, therefore, a section of the population is used. Sampling is the process of drawing a sample from the population (Johnson & Christensen 2014:248). It is, therefore, the selection of a number of participants or respondents from a defined study population as the representatives of that population (Pandey & Pandey 2015:41).

A sample is the set of respondents or participants selected or taken from the larger population (Johnson & Christensen 2014:250). It refers to the group of respondents or participants drawn from a population to represent the whole. Sampling is necessary to save money, time and other resources (Bernyas, Brown, Chantler, Alison, Green, Guise, Rhodes, Smith 2014:177). Sampling frame is the list of all the elements of the study population that can be identified. It is a list of the whole population that is eligible and could be included during the sampling process (Johnson & Christensen 2014:673). Sampling unit or sampling element is the basis for selecting a sample (Kumar 2014:231-382). The sampling units in this study were the TB patients under treatment and healthcare providers working at TB clinic in the HCs selected for the study.

Simple random sampling technique was used to select the sample of public HCs that were used in the study. Simple random sampling is a probability sampling technique commonly used to select samples from the study population in which each element in the population has a chance of being selected (Kumar 2014:185). According to Johnson and Christensen (2014:267), the rule of thumb that can be used is that if the population is very small (less than 50) take 30-50% for a sample; if the population is of medium size (100-500), take 20-30% for a sample and take 10% of the sample if the number of units is very large (500-1 000). Since the total number of HCs is 105, falls under the medium category (100-500), 35% (37) of the HCs from the sub-cities were included in the study proportionally.

The HCs were selected randomly by using the fishbowl method. Names of the HCs from respective sub-cities were written on a paper and 37 HCs were drawn. Patients and healthcare workers of these centres were included in the study. The sampling process of selecting the HCs is presented diagrammatically in Figure 3.2.

3.5. QUANTITATIVE PART OF THE STUDY

3.5.1. Sampling

Convenience sampling is a sampling strategy that uses individuals from the study population that are the most easily accessible, available and willing to participate in the study (Thomas 2017:316). Convenience sampling was used to recruit TB patients who were either in the intensive treatment phase or continuation phase of the treatment. The researcher regarded the convenient sampling technique as the appropriate and most feasible strategy to collect information from the TB patients.

The patients who were accessible, available and willing to participate in the study while they were coming to the TB clinic either to receive their daily medication dose in the intensive phase of TB treatment or collecting their weekly medication dose in the continuation phase of the treatment during the data collection period were included to achieve the proposed sample size.

The sample size was determined by using the table for sample size for various populations with sizes between ten and 500 million with a 95% confidence level (Johnson & Christensen 2014:267). The sample size needed can be affected by the study purpose, the size of the population, sampling error allowable and the risk for bad sample selection. It is also important to consider the level of confidence and level of precision. These are crucial factors in determining sample sizes for the variables being measured.

A single proportion formula was used to determine the sample size as follows (Israel 1992:1-5):

$$n_0 = \frac{P\,(1-P)z2}{d2} \qquad n_0 = \frac{0.5(1-0.5)\ 3.8416=384}{0.0025}$$

Where n_0=sample size, p=maximum variability (the estimated proportion of an attribute that is present in the population=50%, (α/2)=desired confidence level (reliability coefficient) of 95% (Z=1.96 found on statistical table) and d=desired level of precision 5% (d=0.05). From the above calculation, the sample size (n_0) was found to be 384.

The sample size (n_o) was adjusted using the adjustment formula for finite population as follows (Israel 1992:1-5):

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \qquad 364 = \frac{384}{1 + \frac{(384-1)}{7025}}$$

Where n=sample size and N=population size

In the 2009 Ethiopian fiscal year, there were 7 025 TB patients getting treatment from public HCs. The sample size was calculated based on the adjusted sample size formula for the finite population to get the desired precision and confidence. In addition, a 25% non-response rate was anticipated and added in the sample to compensate for the non-respondents (Israel 1992:4-5). Finally, a total sample of TB patients required for using the research instrument, namely a structured questionnaire, was 455 TB patients. The researcher used 12 respondents from each HC and 13 respondents in the one of the HCs to achieve the maximum number of respondents proposed in the study. The sampling techniques and procedures used in the selection of the HCs and patients are presented in Figure 3.2.

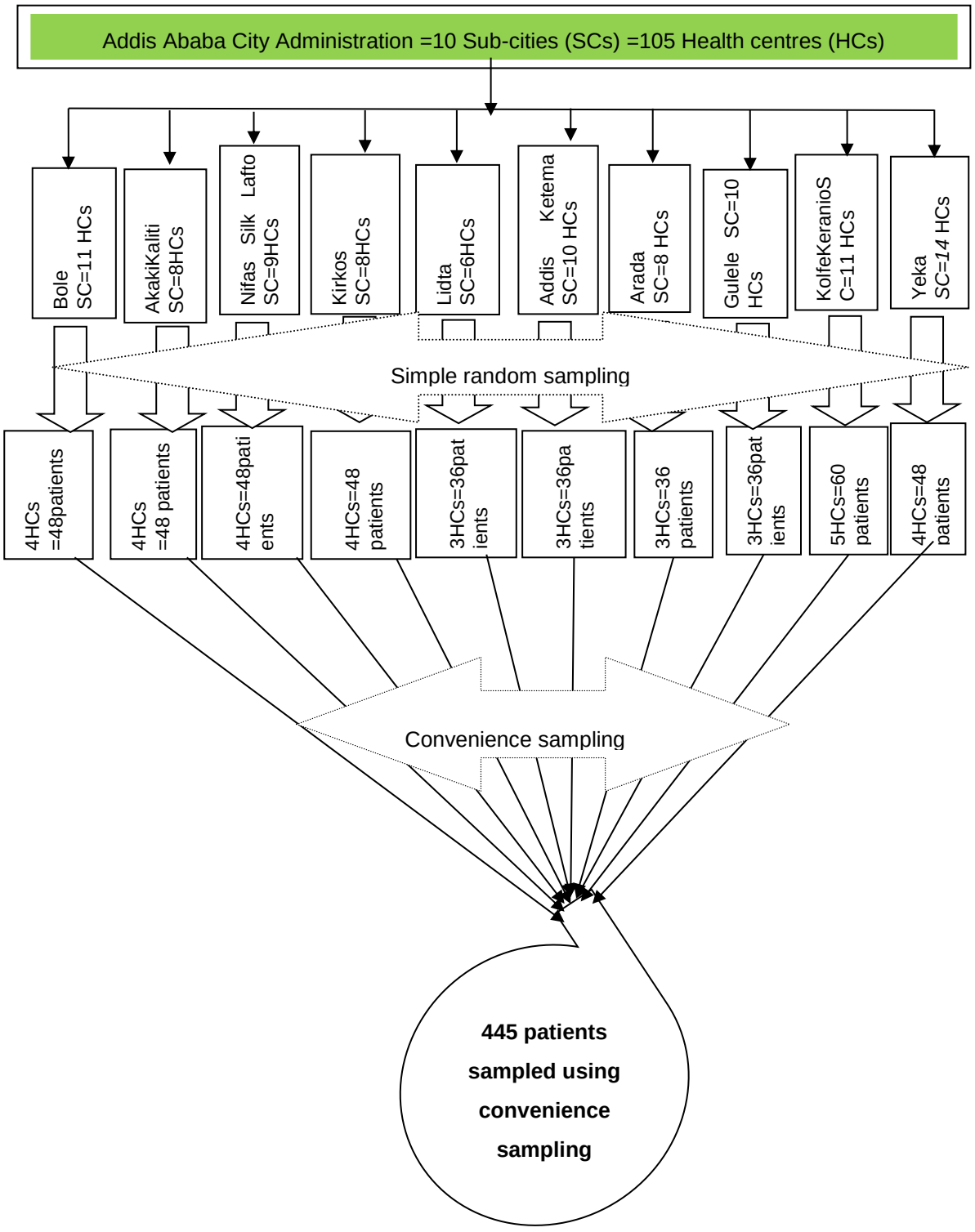


Figure 3.2: Diagrammatic representation of sampling procedures and techniques

Source: Megene, Yesuf, Melese and Babure (2018:335)

3.5.1.1. Selection criteria for convenience sample

- TB patients who are on treatment for more than 15 days
- Patients aged 18 years and above
- Pulmonary and EPTB patients
- Patients who are informed of the study and present on the day of data gathering and who are willing to participate in the study.
- Patients who have given informed consent to take part in the study

3.5.1.2. Exclusion criteria for convenience sample

- TB patients who are unable to communicate for any and all reasons, like mental illness
- TB patients who are less than 18 years old
- Patients on the intensive phase treatment for less than 15 days
- Health professionals who are TB patients
- Newly transferred in TB patients with less than 15 days
- Patients who did not give informed consent to take part in the study

3.5.2. Data collection instrument

A questionnaire was used as the data collection instrument for the quantitative part of the study. Research instruments are tools used for collecting information (Kumar 2014:170-199). When a questionnaire is used during an interview, it is a method to gather information regarding feelings, attitudes, beliefs, values, personality and behavioural intensions of the study participants (Johnson & Christensen 2014:316).

The standardised TB care services quality performance assessment questionnaire from “Quality of care as seen through the eyes of the patients” (Quote TB Light tool) developed by Massaut, van den Broek & van der Kwaak (2009:1-33) was adapted to fit within the context and conceptual framework of this study. The questionnaire was adapted using the Donabedian model of quality of healthcare, which was used as the conceptual framework of this study. During a workshop where the Quote-TB Light questionnaire was introduced, the person that offered the workshop said the following about the questionnaire: “Quote TB Light is a management tool to help NTPs programmes assess the quality of TB services through the eyes of the patient” (Challenge TB 2015).

The mentioned questionnaire that was adapted was used for collecting the quantitative data

regarding the quality of TB services from the TB patients' perspectives in this study. The researcher used a questionnaire as instrument because it is less expensive, fast to obtain data from a large group of respondents and useful to apply a standard format for all participants in the study.

The internal reliability of the questionnaire items relating to Cronbach's alpha co-efficient was calculated using SPSS software version 21. Cronbach's alpha is a reliability test statistic commonly used to illustrate that data collecting instruments designed or adapted for research projects are consistently fit for purpose and dependable in addressing specific research questions. Cronbach's alpha values of 0.7 or above are commonly accepted and give an indication of the instruments' internal consistency. The Cronbach's alpha value for the overall instruments in this study was 0.80, indicating that the modified questionnaires had an appropriate level of internal consistency and applicability to assess the quality of TB care services from the perspectives of TB patients (Taber 2018:1273–1296).

3.5.3. Pre-testing of data collection instrument

Pre-testing a data collection instrument means that a preliminary test of the research instrument is done to determine whether it is suitable for the study prior to using it in the actual study (Johnson & Christensen 2014:298). It also involves checking if the individual questions are understood by potential study respondents before conducting the actual study (Kumar 2014:191). The purpose is to determine the understandability and the ability of the questionnaires to gather the intended information prior to conducting the actual study. In this study, the questionnaire was given to the study supervisor to check. Suggested changes were made and after that, it was administered. Because the questionnaire had to be administered by research assistants who had to ask the questions and record the answers, it was also pre-tested in this way on several participants and changes were made as deemed necessary (See annexure E1 and E2).

3.5.4. Validity and reliability of quantitative part of the study

3.5.4.1. Validity

Validity refers to the correctness or truthfulness of the findings of the research. Validity is the accuracy of inferences or interpretation of data (Johnson & Christensen 2014:384-676). It is an indicator that the instrument measures what it purports to measure (Bernyas et al 2014:177).

3.5.4.1.1. *Content validity*

Content validity refers to the ability of the instrument to measure and cover what it is intended to measure. It is the ability of the research instruments to address the part of the study it is intended to address (Kumar 2014:214). The data collection instrument was adapted from the Quote-TB Light questionnaire and framed in the conceptual framework, the Donabedian model. This instrument could, therefore, investigate quality of TB services and address issues related to structure, process and outcome of TB care services.

3.5.4.1.2. *Face validity*

Face validity refers to the linkage of the research instrument to the objectives of the study (Kumar 2014:214-216). The data collection instruments were framed to address the research questions. The Quote-TB Light questionnaire was used previously in other studies (Sugiharto 2012). Also, the involvement of the experts working in TB programmes with TB patients on treatment enhanced the validity of the study. In case of this study, the relevant objective was to assess the quality of TB care services.

3.5.4.1.3. *Construct validity*

Construct validity refers to the ability of an instrument to measure the construct that it is intended to measure and what it is designed to measure (Kumar 2014:215-367). In this study, construct validity was enhanced by using questions from the Quote-TB Light questionnaire developed by Massaut et al (2009) and used in more studies (Sugiharto 2012).

3.5.4.1.4. *Criterion-related validity*

Criterion-related validity refers to the ability of the research instrument to measure external criterion-related issues. It deals with the success of measures and the ability to forecast some outcomes (Babbie 2017:488). Criterion-related validity was not done for this study.

External validity refers to the degree to which results of a study can be generalised. This study was done in a specific context and generalisation is only valid for this study context and not in other contexts (Johnson & Christensen 2014:400-855). In this study, the external validity of the study was enhanced by using multiple sites in the study context.

3.5.4.2. Reliability

Reliability is the consistency, stability or repeatability of the study (Johnson & Christensen 2014:384). In this study, to enhance the reliability of the findings a mixed-methods approach was used for triangulation and complementation of the results from the quantitative part with the qualitative part.

The data collectors were trained on the data collection process and instrument. They were all trained to do it in the same way. Questions were asked in the Amharic language. The researcher was available throughout data collection if the data collectors needed him or had any queries. The data collection instruments were pre-tested. The researcher's communication with the research supervisor took place regularly since the initiation of the study, through the data collection process until the finalisation of the research study.

The research was approved ethically by Unisa and AACAHB ethics review bodies, which mean that these review bodies also viewed and reviewed the research processes. The researcher is an expert in TB treatment and care, the study area and could explain and substantiate all aspects of the study.

To provide clear guidance, a fieldwork guide containing general introductions such as how to introduce the interview, the purpose of the study, researchers' expectations from respondents, risks and discomforts, benefits, confidentiality, right to participate or withdraw, willingness to sign the consent form, and data collection instructions for research assistants was prepared.

3.5.5. Data collection process

The quantitative data were collected using the structured questionnaire during face-to-face interviews. The duration of quantitative data collection was 31 days, from 10 March to 10 April 2020. The questionnaires were used and filled in by the data collectors after getting consent from the respondents to participate in the study. On average, it took 30-45 minutes to complete the questionnaire during an interview. The completed questionnaires were collected by the healthcare centres' supervisors. Some of them were also data collectors. The completed questionnaires were stored by the researcher daily. The soft copy data were stored in password-protected file and the filled questionnaires were also stored in a locked file cabinet after entering data into the computer program.

3.5.6. Data management and analysis

Data analysis is an ongoing process during a study (David 2018:2012). It embraces a range of activities of both the qualitative and quantitative data analysis and the steps undertaken in the process. To ensure the quality of the data collected in the field, a fieldwork guide was developed for the research team. The field work guide gives guidance on a clear description of the objectives and sampling procedures of the study; instruction sheets on how to ask questions and how to introduce an interview as well as how to record the answer (Pandey & Pandey 2015:70).

The quantitative data were entered into EPI Info software version 7.2.1.0 then exported to SPSS software version 21 for data cleaning and analysis. The statistical models for cross-tabulation and logistic analysis for quantitative data analysis were used to describe the relationships.

3.6. QUALITATIVE PART OF THE STUDY

3.6.1. Sampling

Purposive sampling was used to sample the health professionals. Purposive sampling is also called judgmental sampling. It is used when there is a specific reason to select a particular individual or group that has specific characteristics important to the study. The participants need to be available during the data collection process and they are chosen purposively for the qualitative part of the study (Nardi 2018:126).

The participants who were purposively selected for this study were working at TB clinics from the selected HCs. They understood the quality of TB services in the study context. The researcher selected the most experienced senior health professional at each TB clinic. The researcher selected at least one healthcare professional from the selected HCs that were part of the quantitative study in each of the ten sub-cities.

The researcher continued with data gathering until saturation of data was achieved. When the tenth participant was interviewed, no more new data emerged. Therefore, ten healthcare professionals participated in the qualitative study. The selected participants' occupations were public health officers and professional nurses.

3.6.1.1. Selection criteria for purposive sample

- Health professionals working in selected TB clinics.
- Health professionals who have work experience for more than six months in the TB clinic and who are the most senior professional in the TB clinic.
- Health professionals who are willing to participate in the study.
- Health professionals who have given informed consent to take part in the study

3.6.1.2. Exclusion criteria for purposive sample

- Health professionals who have work experience of less than six months in TB clinics and are not the most senior employees in the TB clinic.
- Health professionals who received information of the study and who are not willing to participate in the study.
- Health professionals who have not given informed consent to take part in the study.

3.6.2. Data collection instrument

Interview guides are instruments used for collecting interview data during an in-depth interview (Thomas 2017:373). This type of instrument includes a main question focused on the aim of the research, which is done as well as a list of topics and discussion points that the researcher plans to address. It is not a questionnaire but rather a framework of key areas in the study that should be covered (Johnson & Christensen 2014:319-860).

The in-depth interview guides were prepared after consulting literature. The in-depth interview guide was prepared after the quality of TB services assessment tools of a study in the Philippines was consulted (Measure Evaluation 2019:1-54). It guided the questions for the in-depth interview. It also incorporated probing questions to clarify the key points in each question that could be addressed and getting better understanding about the problem.

3.6.3. Pre-testing of the data collection instrument

An in-depth interview was conducted with one participant that fitted the selection criteria of the qualitative part of the study. Changes that were deemed necessarywere made to the

instrument. The study supervisor also evaluated the main question and probing questions on the instrument and gave input (See annexure F1 and F2).

3.6.4. Trustworthiness of the qualitative part of the study

Trustworthiness is the term used to describe the rigour of a qualitative study. In this study credibility, conformability, dependability and transferability were attended to and each of these aspects are discussed below.

3.6.4.1. Credibility

Credibility refers to the internal validity in a qualitative study. It means that the study should be believable or credible. The study should represent the views of the study participants. Since a qualitative study focuses on experiences, perceptions and feelings of the study participants, the participants should be involved to judge if the finding of the study is a reflection what they shared (Kumar 2014:368).

In this study, the researcher collected all the interview data. Study participants were probed to get a clear picture and enough data until data saturation was reached. The participants had the chance to get clarification on issues of concern regarding the study objectives and instrument before and at the time of collecting the data. The participants also had the opportunity to make recommendations on the improvement of the quality of TB services.

The researcher collected data until data saturation was achieved. Prolonged engagement meant that the researcher was engaged in the research on the field until completion of the data collection and throughout the study if participants wished to share more or additional information.

The interviews were done and recorded in Amharic, and the researcher translated the audio recordings into English language text after repeated listening and familiarisation with the data, as he is proficient in the language. The translation was checked and verified by a researcher with experience in qualitative research and fluent in English. Credibility was also achieved in this way. The researcher is familiar with public health policy and research planning, implementation and evidence generation. The fact that the researcher has more than ten years' experience in clinical and public health practice helped in better understanding and interpretation of the findings and conclusions from the qualitative study (Mung'omba 2016:117).

3.6.4.2. Conformability

Conformability, according to Padgett (2012), “is achieved by demonstrating that the study’s findings were not imagined or concocted but, rather, firmly linked to the data”.

In this study, the researcher acknowledged all the participants and referred to the sources. The study's findings were backed by suitable quotes as evidence from the transcribed texts, indicating that the findings are based on the participants' reflections (Elo, Kääriäinen, Kanste, Pölkki, Utriainen & Kyngäs 2014:6). The research methodology was reviewed by the supervisor and others. The research instruments were also pre-tested prior to the study. The study supervisor acted as co-coder after examining the data.

3.6.4.3. Dependability

Dependability or auditability means that the procedures used in the study were well documented (Padgett 2012: 205). It, therefore, means achieving the same logic if the study is repeated. Dependability refers to the acceptability of a study in which a supervisor or peer evaluates and interprets the data to make sure that the data and the conclusions are dependable. It is similar to reliability in quantitative study (Kumar 2014:369). Both the researcher and supervisor could track the research findings and get the same findings if the research is done again.

3.6.4.4. Transferability

Transferability refers to the probability that findings of the study could be transferred or applied in other settings. It is, therefore, important to describe the study setting, methodology and sample in detail so that transferability to other settings can be demonstrated. This was done in this study. The implication is that although it does not mean exactly the same as in quantitative studies, it does allow to an extent for generalisation of the study findings to another population, settings or context (Kumar 2014:385).

In this study, the researcher merged quantitative and qualitative data through the application of the mixed-methods approach, different samples, and various data sources and data analysis approaches on the quality of TB care services in the study. Field notes were taken and documented simultaneously while conducting the in-depth interview to contextualise the situation (Phillippi & Lauderdale 2018:381-388).

3.6.5. Data collection process

The researcher collected qualitative data using the in-depth interview guide. The duration of qualitative data collection was 35 days, from 8 April to 13 April 2020. The in-depth interview conversations were recorded using an audio after getting informed consent from the interviewee. Field notes were written simultaneously while conducting the in-depth interview to support the recorded conversations. On average, it took 26-58 minutes to complete the in-depth interview with the in-depth interview guide. The field notes and audio records were stored by the researcher after completing the data daily.

3.6.6. Data management and analysis

The qualitative data were transcribed into text then analysed using ATLAS.ti version 8.4.24.0, which was the latest version received from University of South Africa with consent. In the coding, familiarisation with the transcribed data, preliminary code formation, generating themes, reviewing themes, defining and labelling themes, and writing up, the six phases of thematic analysis for qualitative data analysis were employed. Furthermore, the data were not only analysed with ATLAS.ti, but the supervisor also participated as a co-coder and coded the data, and the researcher and co-coder came to an agreement on the themes and categories.

3.7. DEVELOPMENT OF STRATEGY (SECOND PHASE OF THE STUDY)

The purpose of the second phase or final section of this study is to develop strategies for optimisation of the quality of TB care services.

3.7.1. Objective of the second phase of the research

The objective of Phase II of the study was to merge the findings of phase I step 1 and step 2 of the study in order to develop strategies for optimisation of the quality of TB care services in public HCs of Addis Ababa, Ethiopia.

3.7.2. Strategies formulation methodology

The methodology used for the development of strategies primarily was a combination and synthesis of the findings of the study from the first phase to develop the interim strategies based on the recommendations provided and literature review. The Delphi method is a way

for establishing a consensus on how to solve a given problem. It is recommended for application in healthcare settings to establish dependable consensus among experts in a group or panel of experts in two or more rounds to address a defined problem (Eubank, Mohtadi, Lafave, Wiley, Bois, Boorman& Sheps 2016:1-15).

The Delphi technique is applied in different research contexts for designing a solution to a research problem. It is mostly used in case of lack of clear evidence on the solution of the problem and expert or stakeholders' consultation is very important to reach a consensus. Panel members' information anonymity, ensuring provision of feedback for the panel members in a controlled manner, iterative survey and feedback and achieving consensus through frequent iteration of two to three rounds of surveys and feedback are the key aspects of the Delphi method. The main advantages of the Delphi technique are collection of non-confrontational opinions from the stakeholders and experts, absence of group pressure and reducing the chance of missing relevant information (Santaguida, Dolovich, Oliver, Lamarche, Gilsing, Griffith, Richardson, Mangin, Kastner & Raina 2018:1-14) .

In this study, the final strategies were developed based on scientific policy or strategy formulation procedures and application of two rounds of Delphi techniques to reach a consensus and enhance the validity of the strategies. The fact that there was limited evidence and no previously known proven strategies that could optimise the quality of TB care services in public HCs of Addis Ababa are described in detail in Chapter 5.

3.7.3. Setting and population

The participants in the second phase of the study were TB experts and managers working on the TB programme at the national, regional and facility levels; university and medical college lecturers; and advisors from non-governmental organisations. The researcher believed that the participants had both better subject matter and profound knowledge about TB programme and TB care services. They also had considerable experience on policymaking and strategy designing at the regional and national levels.

3.7.4. Sampling

Purposive sampling was also used in the second phase of the study for the selection of 13 participants. These participants were the most experienced TB care providers, master trainers regarding TB programme and health service quality, lecturers and mentors, TB

programme managers and advisors at the regional and national levels, and researchers at academic and health institutions.

3.7.5. Data collection instruments

The combination and synthesis of the findings from the first phase of the study was implemented as the primary methodology to identify the challenges, demands and propose solutions that enabled the researcher to design the six themes that emerged from the first phase study findings. As implementation of the second phase of the study, the proposed interim strategies were outlined.

The researcher developed criteria for validation of each of the proposed interim strategies designed to optimise the quality of TB care services by adapting the evaluation criteria from previous similar studies (Dinku 2015:103-104, Matlakala 2012:195).

The validation checklist presents nine validation criteria and description as well as the 11 interim strategies, which were categorised under each identified theme. The validation criteria had fiveLikert scales. The defined value of each Likert scale ranges from the lowest value score of very low (1) to the highest value of very high score (5). There was also a blank space provided for evaluators to make any additional remarks, suggestions or feedback for the strategies under each theme at the end of the table. The validation criteria were prepared in the English language because all the participants in the study could communicate in English (see Annexure F3).

3.7.6. Data collection process

The data collection method was distribution and returning of the structured validation checklist via email. The validation checklist, consent form for participation, IRB review and ethical approval letter, and executive summary of the research were sent via email or otherwise, depending on the choice of each of the participants in the first round Delphi technique iteration. The time taken to fill and evaluate the validation checklist was 25-30 minutes and the filled validation checklists were sent back within three days.

All the participants in the first round Delphi technique responded timely. Then the researcher incorporated the feedback from the panel of experts and amended the interim strategies accordingly. The amended interim strategies with the feedback were shared with the panel of experts for the second round Delphi technique validation.

3.7.7. Data analysis

Before starting data analysis, the completeness and quality of the data were checked immediately after the strategy evaluation was completed. The evaluators' scores and mean values, including percentages, were determined using simple calculation.

The final strategies were developed by integrating and synthesising information from phase I and II of the study. Finally, 11 strategies were developed after obtaining and incorporating comments from the panel of experts in the second round Delphi technique validation, attaining the required degree of consensus building, and gaining final approval from the research supervisor. Chapter 6 of the study goes through the specifics of the strategy formulation processes.

3.8. ETHICAL CONSIDERATIONS RELATED TO DATA COLLECTION

Ethics considers moral principles and, therefore, focuses on the question of what is right and wrong (Thomas 2017:317). Research ethics guides research studies using a set of principles (Johnson & Christensen 2014:672). Ethical research principles guide the relationship between the researcher and research participants. The four principles that are important in all research contexts, especially where humans are involved, are: autonomy, non-maleficence, beneficence and justice. These principles frame decisions about the ethical issues in the study (Glasgow Caledonian University 2015:1-16).

3.8.1. Respecting the rights of participants

3.8.1.1. Autonomy

Autonomy means that each potential study participant can make his or her own decision regarding involvement in the study without any external influence or coercive force (Glasgow Caledonian University 2015:4).

When any potential study participant is approached to give consent to take part in a study, he or she should be informed about the research purpose, procedure, benefits, risks, time and other resources it could take from the potential participant and confidentiality issues of the study. Only when the participant knows what the study entails could the participant agree (or refuse) to participate in the study (Johnson & Christensen 2014:202).This is called informed consent.

All the data collectors were orientated regarding the approaches of inviting prospective study participants to take part in this research study. They were also taught the correct way to get informed consent for participation.

In this study, informed consent was obtained from each of the individual study participants orally and in written form after explaining objectives and advantages of the study. It enabled them to decide if they wanted to participate on their own without any coercion. They were informed that they were free to participate or withdraw from the study without any consequences.

3.8.1.2. Justice

Justice is the way of keeping and managing the rights of the research participants fair and equal (Glasgow Caledonian University 2015:5). The research assistants or data collectors were selected carefully. All the research participants would benefit from the results of the research. Training was provided to protect the study participants. Precise recording of the answers as given by participants of the study also contributed to the principle of justice.

3.8.1.3. Beneficence and non-maleficence

The core element in the principle of beneficence is non-maleficence, in other words, to do no harm. In the process, the well-being of the participants should be promoted and protected (Glasgow Caledonian University 2015:5). Non-maleficence is keeping the research participants from inflicting harm and discomfort. Beneficence is about doing good and acting for the benefit of each of the participants and prioritising their welfare. The approach should be such that the benefits outweigh the risks (Bernyas et al 2014:177).

The researcher believed that the study participants would benefit from the improvement of the quality of care through the implementation of the strategies that would be developed to optimise the quality of TB services. There was no transportation cost compensation during interview and data collection. This was because the TB patients were coming for their usual TB treatment follow up, while TB care workers came to work in the HCs.

Just a few participants experienced discomfort and had bad emotions due to the poor-quality TB care services that were provided. However, the data collectors were aware of the eventualities and managed it smoothly by assuring the improvement of the services in the future. There was enough information provided for the participants prior to consenting to

participate in the study to assure them there was no way they would be harmed by taking part in the study and the importance of taking their time to participate in the study (Glasgow Caledonian University 2015:5-6).

3.8.1.4. Ethical issues related to privacy and confidentiality

Confidentiality means that the identities of the research participants is not revealed or disclosed to consumers of the research study or any other individuals other than the researcher and his co-workers (Johnson & Christensen 2014:139-142). The soft copy data were stored with password-protected file and the hard copy data were stored in a locked cabinet to ensure confidentiality and to protect it.

Anonymity is related to confidentiality. It concerns refraining from linking the data obtained from the participants to a specific participant, that way protecting the identity of the participants (Johnson & Christensen 2014:142, Kumar 2014:286).

In this study, the individual interview questionnaires were coded anonymously and none of the study participants' names was linked to the findings of the study. The data gathered and the information collected were not shared.

Privacy is protecting the right of participants to choose to disclose information or not. Participants, therefore, could choose that information on their patient records might not be used for research purposes. Privacy also includes for example refusing to undergo medical examinations for the purpose of a study, which was not relevant to this study. Participants, therefore, may choose to withhold information during the research process.

The researcher provided adequate information for the participants about their full rights to agree and sign the consent to participate in the study or the right to withdraw at any time during the interview without any consequences.

3.8.1.5. Veracity

Veracity refers to reporting data obtained in a study objectively, honestly and comprehensively (Johnson & Christensen 2014:141). It also relates to the issue of informed consent in the sense that the researcher should share information about the study that the potential participant is invited to take part in, in an honest and open manner.

3.8.2. Respecting the rights of the institution

An institutional ethics research review board is a committee at a teaching institution that reviews all the research proposals that are planned to be done at that institution whether it is a student, staff member or group connected to that institution that plans the research. The purpose of such a review board is to ensure that ethical research is done and to evaluate the level of risk or harm involved for the research participants and institutions involved in the research study (Creswell & Creswell 2018:248). It deals with the ethical acceptability of the proposed study and proposed research procedures (Johnson & Christensen 2014:141-153).

The approval to conduct the study was granted by the Unisa Department of Health Studies: REC reference number (REC-012714-039 (NHREC)) and by Addis Ababa City Administration Health Bureau IRB.

Official letters were written to health facilities involved in the study including the respective sub-city health offices. When collecting data, the data collectors provided the ethical clearance letter (See Annexure A) and support letter from the university (See Annexure B), ethical clearance letter the Addis Ababa City Administration Health Bureau IRB (See Annexure C) and the permission letter to collect data in the HC from the sub-city health office (See Annexure D). The data collectors submitted the letters to the medical director of the HC in order to have access to TB patients and the health service providers for data gathering.

3.8.3. Domain specific ethical concerns

It was necessary to consider sensitive areas of the research such as the vulnerable groups: children under 18 years and patients with mental disorders. In this study, HIV/AIDS patients needed special consideration in terms of ethics. These areas are susceptible to ethical and legal risks (Thomas 2017:44).

In this study, TB patients who were not able to communicate (mentally challenged patients), TB patients under the age of 18 years and patients on intensive phase treatment for less than 15 days were excluded from the study. Health professionals who were TB patients were also not included in the study. The privacy of TB patients with HIV/AIDS was protected by not linking their personal profile with the report.

3.8.4. Scientific integrity of the research

It is important to present study findings accurately, with honesty and scientific integrity. The researcher should not fabricate or falsify any findings. The researcher should explain the research design and method used to collect and analyse the data meticulously. This enables coming to a reasonable conclusion. It is also important to credit the contribution of other researchers to the scientific world in a study and to avoid plagiarism (Johnson & Christensen 2014:150).

The researcher acknowledged all the consulted literature, individuals and institutions that contributed to the completion of this study. Plagiarism was avoided and ethical research standards were adhered to in this study during planning, data collection, analysis and reporting of the results. The qualitative data were collected by the researcher himself to minimise evaluators' variation bias and maintain originality.

3.9. CONCLUSION

In this chapter, the study design, research approach, methods, sampling and sampling procedures, data collection process and research instruments, rigour of the study as well as the ethical procedures were presented and discussed in detail. In the next chapter, data analysis and findings of the quantitative section of the study will be presented.

CHAPTER 4

ANALYSIS AND FINDINGS OF QUANTITATIVE PART OF THE STUDY

4.1. INTRODUCTION

In the previous chapter, the study design and research methodology were presented and discussed in detail. In this chapter, the quantitative data handling, management, analysis, presentation and description of the findings of the study are presented. The next chapter presents results of the qualitative part of the study.

4.2. QUANTITATIVE DATA COLLECTION, MANAGEMENT AND ANALYSIS

The quantitative data were collected using a questionnaire, where research assistants asked the respondents the questions on the questionnaire and recorded the respondents' responses. The questionnaire was in three parts.

The first part consisted of socio-demographic information, and the second part was composed of general questions about TB services. The third part consisted of ten sub-areas of questions related to the availability of TB services and healthcare professionals, communication and information for TB services, patient-provider interaction and counselling, TB and HIV, infrastructure for TB services, professionals' competence, affordability and support, stigma and level of satisfaction. The last question asked respondents to make recommendations for the improvement of the quality of TB services (See Annexure E1).

There were 12 research assistants, who were all health professionals. Seven of them had a master's degree, four were first-degree holders in health sciences, and one was a PhD candidate in epidemiology. All the research assistants were orientated in all aspects of the research project, for example, how to obtain informed consent from the respondents appropriately. The questionnaire was translated from English to Amharic, which is the official language in Ethiopia. An experienced quantitative researcher, who was proficient in English, also checked and verified the translation. The research assistants asked the respondents questions in Amharic. The English and Amharic versions of the questionnaire are attached as Annexure E1 and E2 respectively.

The research assistants provided ethical clearance letters from Unisa (See annexure A) and the Addis Ababa City Administration Health Bureau IRB (see Annexure C) to collect data in the HCs. Although the Addis Ababa City Administration Health Bureau gave permission for the research, each of the medical directors of each of the HCs were considerately asked for permission to access potential respondents to complete questionnaires. The consent to participate in the study was obtained from the respondents after reading the study information sheet (see Annexure E).

The research assistants were given 455 questionnaires, but 441 respondents participated in the study, indicating a response rate of 97%.

The researcher employed Epi Info software version 7.2.1.0 in conjunction with SPSS software version 21. This was done to acquire the additional benefits of both software program characteristics. Epi Info software version 7.2.1.0 was used for data entry and monitoring the quality of data throughout the conversion of collected data to text using a computer. The data entry format was designed by a statistician based on the content of the questionnaire with the guidance of the researcher. Epi Info software was applied in data entry because of its user-friendly programmability capabilities in generating a data entry template, viewing, monitoring, and controlling data input, and its applicability for research (CDC 2016:1-36). A senior public health specialist with advanced experience in data analysis was also used and consulted.

Data entered in Epi Info were exported to SPSS software version 21, which is a recognised statistical package used for data cleaning and advanced statistical analysis. The data were cleaned up by running frequency tables and graphs to cross check data and results (Sabine & Everitt 2004).

In the analysis of the quantitative data, simple descriptive statistical analysis as well as inferential cross tabulation and binary logistic statistical analysis were used (Valveny & Gilliver 2016:37-42) (see the detail in Annexure G and H).

All items related to measuring quality dimensions of TB services were converted from categories to continuous numerical variables, where respondents could choose among the responses: “never”, “sometimes”, “most of the time” and “always”. These responses were converted to a range of 1 to 4 for positively worded statements and 4 to 1 for negatively worded statements. The scores of the respondents on each statement in the TB service

quality dimensions were converted to percentages by using the data transformation function in the SPSS for computing variables. Variable transformation and recoding were done to reduce the number of values that had to be entered for computation, fitting with statistical analysis assumptions, better presentation and understanding of TB services quality dimensions (DeCoster, Gallucci & Iselin 2011:197-209; Navarro 2015:3980).

The results were considered as overall composite scores of each TB quality dimension. Since these composite scores were continuous data, the researcher used them to calculate the mean, median and mode values. The median value of the composite scores was used as the cut off point for the categorisation of TB services quality dimensions. A composite score greater than or equal to the median value was considered as good TB service while a scoreless than the median was considered as poor TB service (Alene, Adane, Yifiru, Bitew, Adane & Koye 2019:2-3).

The responses to items designed to measure communication and information for TB services; infrastructure for TB services, professional competency in TB services and TB and HIV relationship service integration were indicated as “Yes” or “No” and were assigned a score range from 0 to 1. The responses’ scores range from 0 to 1 was used for positively worded statements and 1 to 0 for statements worded negatively. Each score of the respondents on each statement in TB services quality was converted to numerical value, summed, and converted into a percentage using the data transformation function in the SPSS for computing variables to describe the relationship between the variables. These results were considered as new overall composite scores of each TB service quality dimension (Boone & Boone 2012).

Since these new composite scores were continuous data, the researcher the frequencies in SPSS to calculate the mean, median, and mode for each dimension of TB service quality. Finally, the median score of the new composite scores was used as a cut off point for the categorisation of TB services quality dimension. A value of the composite score equal or greater than the median value was considered as a good TB service quality dimension and a value less than the median considered as poor TB service quality dimension (Alene et al 2019:2-3).

The overall level of satisfaction was expressed numerically as a range from 1 to 5, with 1 =“I am very dissatisfied”, 2 =“dissatisfied”, 3 =“neutral”, 4 =“satisfied” and 5 =“very satisfied”. This five-point Likert scale was changed into a continuous scale from which the mean,

median and standard deviation values were calculated and converted to percentages to make the data suitable for binary logistic analysis. A dichotomous categorical variable was created by using the SPSS variable transformation, computation and recoding features where a value greater than and equal to the median value was regarded as “satisfied” and a value less than the median as “dissatisfied” (Woldeyes 2016:70-71).

In this study, simple descriptive analysis was employed to describe the respondents' socio-demographic data. The cross-tabulation analysis part of the data analysis in the study was employed to determine the association between socio-demographic characteristics and quality dimensions of TB services such as service availability, communication and more. To investigate the relationships between categorical variables and variables, binary logistic regression analysis was used (Mertler & Reinhar 2016:1-12).

The Crude Odd Ratios (COR), Adjusted Odd Ratios (AOR) and P-values with confidence intervals of 95% were calculated to measure the relationships and associations among the variables (Valveny & Gilliver 2016:37-42).

4.4. **DESCRIPTIVE ANALYSIS OF SOCIO-DEMOGRAPHIC DATA**

This part of the results described the socio-demographic variables of the study respondents. The mean, median, mode and standard deviation were used in this section. The data reflect the questions asked in part one, Question 1-7 of the questionnaire. Responses are presented in Table 4.1 below.

Table 4.1: Socio-demographic characteristics of respondents

Characteristics (n=441)	Responses	Frequency	Percentage
Gender	Male	242	54.9
	Female	199	45.1
Age	18-24	118	26.8
	25-34	170	38.5
	35-44	77	17.5
	45-54	33	7.5
	55 and above	43	9.8
What is your ethnicity?	Oromo	100	22.7
	Amhara	172	39.0
	Tigre	23	5.2
	Gurage	81	18.4
	Other	65	14.7
What is your religion?	Islam	105	23.8
	Orthodox Christianity	302	68.5
	Others	34	7.7
What is your marital status?	Unmarried	201	45.6
	Married	204	46.3
	Divorced	21	4.8
	Widowed	15	3.4
What is your educational level?	Illiterate	54	12.2
	Primary (1-6)	87	19.7
	Senior secondary (7-8)	93	21.1
	Secondary and preparatory (9-12)	128	29
	Diploma and above (tertiary)	79	17.9
What is the main source of your livelihood or income?	No employment	110	24.9
	Informal sector	85	19.3
	Student	24	5.4
	Employed in public sector	39	8.8
	Self-employed	138	31.3
	Housewife	45	10.2

In the study, 242 (55%) of the respondents were male and 199 (45%) were female. The majority, 170 (38.5%) of the respondents, were between 25 and 34 years of age and only 33 (7.5%) of the respondents were between 45 and 54 years of age.

Most, 172 (39%), of the respondents were from the Oromo ethnic group, whereas 100 (23%) were of Amhara ethnicity, 81 (18%) were Gurage, 23 (5%) Tigre, and the rest 65 (15%) were from other ethnic groups.

Most of the respondents, 302 (69%), were Orthodox Christians and 105 (24%) Muslims, while 34 (8%) of the respondents were followers of other religions. Among the respondents, 204 (46.2%) were married, 201 (45.6%) were not married, 21 (4.8%) were divorced and the remaining 15 (3.5%) respondents were widowed.

The educational levels of the respondents were as follows: 128 (29%) attended secondary and preparatory school, 93 (21.1%) attended senior secondary school, 87 (19.7%) attended primary school only and the rest of the respondents, 54 (12.2%) were illiterate.

Data showed that the main sources of the respondents' income were as follows: 138 (31.3%) were self-employed, 110 (24.9%) were not employed, 85 (19.3%) were employed in the private sector, 39 (8.8%) were employed in the public sector, 24 (5.5%) were students and the rest, namely 45 (10.2%), were housewives, who depended on other sources of income.

4.5. **TB DIAGNOSIS AND RELATED ISSUES**

Part two of the questionnaire was designed to understand the potential capacity of TB programmes in case finding (screening), respondents' awareness, and behaviour on timely care seeking and more. The data reflect the questions in part two of the questionnaire, questions 1-4. The responses are presented in Table 4.2.

Table 4.2: General questions about diagnosis and treatment

Characteristics (n=441)	Responses	Freq (No)	(%) Age
When were you diagnosed with TB after onset of symptoms?	Within three weeks (or less) after the onset of symptoms	198	44.9
	Three to eight weeks after the onset of symptoms	141	32.0
	Nine weeks or more after the onset of symptoms	102	23.1
After diagnosis, when did you start TB treatment?	Within two days	295	66.9
	Within seven days	124	28.1
	Only after eight days or more	22	5.0
What was/were the reason (s) for your visit to the HC when TB was diagnosed? You may choose more than one answer.	TB diagnosis	104	23.6
	Collecting medication	158	35.8
	Medical care	169	38.3
	Sputum examination follow up	10	2.3
If the participant was previously diagnosed as TB positive, and if he/she was on treatment and defaulted, try to determine the reason for defaulting from the respondent	Not defaulter	435	98.6
	Defaulter	5	1.1
	Treatment failure	1	0.2

Data from the first question showed that most, 198 (44.9%), of the respondents were diagnosed with TB within three weeks or less after the onset of symptoms, 141 (32%) were diagnosed within three to eight weeks and the remaining 102 (23.1%) were diagnosed with TB within nine weeks or more after the onset of symptoms.

The second question's data showed that 295 (66.9%) of respondents started treatment within two days, 124 (28.1%) started treatment within seven days after diagnosis and the remaining 22 (5%) started treatment eight days or more after a diagnosis was made.

Data related to the third question showed that 169 (38.3%) of the respondents came to the HC to seek general medical care and health information and 158 (35.8%) of the respondents visited the HC to collect medication. Another 104 (23.6%) of the respondents came to the HC for possible TB diagnosis and the remaining ten (2.3%) respondents came to the HC for sputum follow-up results after they were diagnosed with TB.

The data related to the fourth question showed that among the respondents, 435 (98.6%) were non-defaulters, five (1.1%) were defaulters and only one (0.2%) respondent was treatment failure patient.

4.6. SERVICE DELIVERY IN THE HEALTH CENTRE

Part three of the questionnaire was subdivided into nine sections labelled as sections A, B, C, D, E, F, G, H and I. Each section will be handled separately.

4.6.1. Section A: Availability of TB services and healthcare professionals

Section A investigated the availability of TB services and healthcare professionals. It consisted of ten questions to which respondents could respond by marking one of the following: “never”, “sometimes”, “most of the time” and “always”. Responses for this subsection are presented in Table 4.3.

Table 4.3: Availability of TB services and healthcare professionals

Characteristics (n=441)	Responses	Frequency	Percentage
The waiting time (s) before being served by healthcare providers of this HC is/are acceptable.	Never	11	2.5
	Sometimes	67	15.2
	Most of the time	156	35.4
	Always	207	46.9
You are attended to by the same healthcare providers in this HC.	Never	12	2.7
	Sometimes	64	14.5
	Most of the time	135	30.6
	Always	230	52.2
The service hours of this HC to get TB treatment is convenient for you.	Never	14	3.2
	Sometimes	49	11.1
	Most of the time	131	29.7
	Always	247	56.0
The HC offers sputum examination services for those who need it.	Never	71	16.1
	Sometimes	46	10.4
	Most of the time	105	23.8
	Always	219	49.7
Drugs are available when you require them.	Never	68	15.4
	Sometimes	31	7.0
	Most of the time	99	22.4
	Always	243	55.1
Language barriers make it difficult to obtain TB services in this HC.	Never	349	79.1
	Sometimes	32	7.3
	Most of the time	22	5.0
	Always	38	8.6
You have to go to another health unit for TB services or treatment.	Never	295	66.9
	Sometimes	53	12.0
	Most of the time	37	8.4
	Always	56	12.7
This HC is easy to reach (distance convenient).	Never	58	13.2
	Sometimes	76	17.2
	Most of the time	122	27.7
	Always	185	42.0
TB services at this HC are available during working hours.	Never	28	6.3
	Sometimes	48	10.9
	Most of the time	127	28.8
	Always	238	54.0
The specific healthcare providers you come to see in this HC are available.	Never	17	3.9
	Sometimes	32	7.3
	Most of the time	128	29.0
	Always	264	59.9

The waiting time to get treatment was always acceptable for 207 (46.9%) of the respondents and it was acceptable most of the time for 156 (35.4%) of them. The waiting time to treatment was sometimes acceptable for 67 (15.2%) of the respondents, whereas it was never acceptable for 11 (2.5%) of them.

Among the study respondents, 230 (52.2%) said they were always attended by the same healthcare provider and 135 (30.6%) were attended by the same healthcare provider most of the time. Of the remainder, 64 (14.5%) were sometimes attended by the same healthcare provider while 12 (2.7%) of them were never attended by the same healthcare provider.

The time of treatment was always convenient for 247 (56%) of the respondents and it was convenient most of the time for 131 (29.7%) of them. The time of treatment was sometimes convenient for 49 (11.1%) of the respondents, whereas 14 (3.2%) said it was never convenient for them.

According to 219 (49.7%) of the respondents, the HCs always provided sputum examination service for those who needed it while 105 (23.8%) indicated the HCs provided the service most of the time. On the other hand, the HCs sometimes provided sputum examination services, according to 46 (10.4%) of the respondents, whereas 71 (16.1%) said sputum examination service was never provided to those who needed it.

Of the 441 study respondents, 243 (55.1%) indicated that TB drugs were always available, 99 (22.4%) indicated drugs were available most of the time when they needed them, and 31 (7%) said TB drugs were sometimes available. On the other hand, 68 (15.4%) of the respondents indicated that drugs were never available when they needed them.

Most, 349 (79.1%), of the respondents never faced language barriers in accessing TB services and 32 (7.3%) of the respondents sometimes faced difficulties. On the other hand, 22 (5.0%) of the respondents faced language barriers in accessing TB servicesmost of the time, whereas 38 (8.6%) of the respondents never faced difficulties.

Of the study respondents, 295 (66.9%) never went to another health facility to get TB services or treatment, whereas 53 (12%) of the respondents sometimes went to other facilities to get TB services or treatment. Of the remainder, 37 (12.7%) of the respondents went to another department or facility to get TB services or treatment most of the time, while 56 (12.7%) always got TB services or treatment at other facilities.

The HCs were never easy to reach and convenient for 58 (13.2%) of the respondents and sometimes, HCs were easy to reach and convenient for 76 (17.2%) of the respondents. On the other hand, the HCs were always accessible and friendly for 185 (42%) of the respondents while most of the time they were accessible and friendly for 122 (27.7%) of them.

The TB services were always available during the clinic's operating hours for 238 (54%) of the respondents and they were available most of the time for 127 (28.8%) of the respondents, while they were sometimes available for 48 (10.9%) of the respondents. However, for 28 (6.3%) of the respondents, TB services were never accessible during the clinic's operating hours. The specific healthcare providers that the respondents expected to see them in the HCs were always available for 264 (59.9%) of the respondents and they were available most of the time for 128 (29%) of the respondents. On the other hand, the specific healthcare providers were sometimes available for 32 (7.3%) of the respondents, whereas they were never available for 17 (3.9%) of them.

4.6.2. Section B: Communication and information for TB services

Section B investigated communication and information about TB and its treatment. It consisted of eight questions to which the respondents could respond with a "Yes" or "No". Data for this subsection are presented in Table 4.4.

Table 4.4: Communication and information for TB services

Characteristics (n=441)	Responses	Freq (No)	(%
Did the healthcare providers in this HC tell you when you will not be spreading TB to others?	Yes	288	65.3
	No	153	34.7
Did the healthcare providers in this HC tell you that TB can be cured?	Yes	329	74.6
	No	112	25.4
Did the healthcare providers in this HC inform you about the importance of observed treatment?	Yes	304	68.9
	No	137	31.1
Did the healthcare providers in this HC inform you about the side effects of TB drugs?	Yes	270	61.2
	No	171	38.8
Did the healthcare providers in this HC tell you about the need for sputum tests at given points during your treatment schedule?	Yes	270	61.2
	No	171	38.8
Did the healthcare providers in this HC tell you for how long you will be on the TB treatment?	Yes	359	81.4
	No	82	18.6
During your visits to this HC, do health providers tell you about how to store your drugs obtained for your treatment?	Yes	291	66.0
	No	150	34.0
Does the health provider in this HC tell you when next to come back for TB services?	Yes	406	92.1
	No	35	7.9

Most, 288 (65.3%), of the respondents were briefed by the healthcare providers concerning when they would no longer be at risk of spreading TB to others, while 153 (34.7%) of the respondents were not informed. Of the 441 study respondents, 329 (74.6%) were informed about the curability of TB and 112 (25.4%) were not briefed. Most, 304 (68.9%), of the respondents were informed about the importance of DOTS by the healthcare providers whereas the rest 137 (31.1%) of them were not informed.

Two hundred and seventy (61.2%) of the respondents were enlightened about the side effects of TB drugs while 171 (38.8%) of them were not informed. Most, 270 (61.2 %), of the respondents were informed about the importance of sputum tests at given intervals during the treatment period, however, 171 (38.8%) of them said they were not informed.

Three hundred and fifty-nine (81.4%) of the respondents were briefed about the duration of the TB treatment by healthcare providers, but 82 (18.6%) of them were not informed. Most, 291 (92.1%), of the respondents were taught about TB drug storage by TB service providers, whereas 35 (7.9%) of them were uninformed. Four hundred and six (92.1%) of the respondents were told when their next appointment for TB services was, however, the remaining 35 (7.9%) were not informed.

4.6.3. Section C: Patient-provider interaction and counselling in TB services

Section C investigated the interaction between the respondents and healthcare providers. It was composed of eight statements and respondents could respond by indicating one of the following: “never”, “sometimes”, “most of the time” and “always”. Responses for this subsection are presented in Table 4.5.

Table 4.5: Patient-provider interaction and counselling in TB services

Characteristics (n=441)	Responses	Freq (No)	(%
The healthcare providers treat you with respect during your visits to this HC.	Never	25	5.7
	Sometimes	94	21.3
	Most of the time	118	26.8
	Always	204	46.3
The healthcare provider listens sensitively to you during your visits to this HC.	Never	16	3.6
	Sometimes	118	26.8
	Most of the time	109	24.7
	Always	198	44.9
The healthcare providers explain things in a way you can understand during your visits to this HC.	Never	22	5.0
	Sometimes	115	26.1
	Most of the time	100	22.7
	Always	204	46.3
You have enough time to discuss your problems with the healthcare provider during your visits to this HC.	Never	32	7.3
	Sometimes	115	26.1
	Most of the time	118	26.8
	Always	176	39.9
Healthcare providers discuss how to deal with your problems with you.	Never	63	14.3
	Sometimes	111	25.2
	Most of the time	111	25.2
	Always	156	35.4
You experience discrimination because you have TB during your visits to this HC.	Never	343	77.8
	Sometimes	28	6.3
	Most of the time	35	7.9

	Always	35	7.9
Your privacy is respected during examination at this HC.	Never	56	12.7
	Sometimes	63	14.3
	Most of the time	115	26.1
	Always	207	46.9
You are informed how TB can affect your everyday life by the healthcare providers.	Never	78	17.7
	Sometimes	76	17.2
	Most of the time	104	23.6
	Always	183	41.5

Most, 204 (46.3%), of the respondents were always treated with respect, whereas 118 (26.8%) of them were treated respectfully most of the time. Ninety-four (21.3%) were sometimes treated with respect while 25 (5.7%) were never treated respectfully by the healthcare providers. One hundred and ninety-eight (44.9%) of the respondents were always listened to sensitively, while 109 (24.7%) were listened to sensitively most of the time. Of the remaining respondents, 118 (26.8%) were sometimes listened to sensitively, whereas 16 (3.8%) of them were never listened to sensitively.

A majority 204 (46.3%) always found explanations given by the healthcare providers clear and understandable, while 100 (22.7%) found them clear most of the time. Of the rest of the respondents, 115 (26.1%) sometimes got clear explanations and 22 (5%) never got any understandable explanation. Regarding time to discuss their problems with their healthcare providers, 176 (39.9%) of the respondents always found the duration adequate and 118 (26.8%) had enough time to discuss their problems most of the time. Of the rest of the respondents, 115 (26.1%) sometimes had adequate time while 32 (7.3%) said they never had adequate time for discussion during their visits.

Most, 156 (35.4%), of the respondents stated that TB service providers always discussed with them ways of managing and solving their problems and 111 (25.2%) said they discussed them most of the time. One hundred and eleven (25.2%) of the respondents sometimes discussed ways to manage and solve their problems, however, 63 (14.3%) said they never discussed them. More than three-quarters of the respondents, that is, 343 (77.8%), never experienced discrimination during their visits to the HC, whereas 28 (6.3%) were sometimes discriminated against, 35 (7.9%) were discriminated against most of the time and 35 (7.9%) always experienced discrimination.

The privacy of 207 (46.9%) of the respondents was always respected during examination and that of 115 (26.1%) of the respondents was respected most of the time. Sixty-three (14.3%) of the respondents' privacy was sometimes respected during examination and only 56 (12.7%) of them indicated that their privacy was never respected during examination. Most of the respondents, 183 (41.5%), were always informed about how TB can affect their everyday life, 104 (23.6%) were informed most of the time and 76 (17.2%) were sometimes informed about how TB could affect their life. However, 78 (17.7%) said they were never informed.

4.6.4. Section D: TB-HIV relationship

Section D investigated the link between TB and HIV. It was composed of five questions to which the respondents could respond by indicating “Yes” or “No”. Data for this subsection are presented in Table 4.6.

Table 4.6: TB-HIV relationships

Characteristics (n=441)	Responses	Freq (No)	(%
Did healthcare providers in this HC inform you about the link between TB and HIV? (If the answer is no, go to 4).	Yes	351	79.6
	No	90	20.4
Were you informed by the healthcare providers in this HC how to prevent HIV infection?	Yes	320	72.6
	No	37	8.4
Were you informed where to get HIV treatment in case you might need it?	Yes	326	73.9
	No	31	7.0
After being diagnosed with TB, were you advised to take an HIV test?	Yes	407	92.3
	No	34	7.7
In case of being HIV positive, were you supported in taking TB and HIV treatment at the same time?	Yes	25	5.7
	No	11	2.5
	Not applicable	405	91.8

Most, 351 (79.6%), of the respondents were informed about the link between TB and HIV, while 90 (20.4%) said they were not informed about it. Of the remaining respondents, 320 (72.6%) were briefed about HIV infection prevention, while 37 (8.4%) were not informed about it. Most, 326 (73.9%), respondents were told where they could get HIV treatment service should they need it and 31 (7%) were not informed. After they were diagnosed with TB, 407 (92.3%) respondents were advised to have an HIV test but 34 (7.7%) said they did not get that advice. Of the total number of respondents (n=441), 36 (8.2%) were HIV positive whereas 405 (91.8%) were HIV negative. Of the 36 positive cases, 25 (69.4%) were supported to receive TB and HIV treatment services at the same time while 11 (30.6%) did not get that support.

4.6.5. Section E: Infrastructure for TB services

Section E assessed the buildings and the surrounding infrastructure aspects of the TB clinic. It was composed of six questions to which respondents could respond by indicating “Yes” or

“No”. Responses for this subsection are presented in Table 4.7.

Table 4.7: Infrastructure for TB services

Characteristics (n=441)	Responses	Freq (No)	%
Is this HC clean?	Yes	341	77.3
	No	100	22.7
Is there safe drinking water in this HC?	Yes	187	42.4
	No	254	57.6
Are the toilets in this HC usable?	Yes	239	54.2
	No	202	45.8
Are there enough comfortable places to sit when you have to wait in this HC?	Yes	214	48.5
	No	227	51.5
Are people who come in with a cough given priority by the health providers?	Yes	300	68.0
	No	141	32.0
Are TB patient waiting rooms and corridors well ventilated?	Yes	359	81.4
	No	82	18.6

Most, 341 (77.3%), of the respondents indicated that the HCs were clean, however, 100 (22.7%) indicated that they were unclean. Regarding potable water, a majority 254 (57.6%) of the respondents pointed out that there was no safe drinking water in the HC, though 187 (42.4%) reported its availability. While 239 (54.2%) of the respondents indicated that the available toilets were usable, 202 (45.8%) said they were unusable. Two hundred and twenty-seven (51.5%) of the respondents perceived that the patient waiting areas were not adequate and comfortable, whereas 214 (48.5%) stated that the patient waiting areas were adequate and comfortable. Most, 300 (68%), of the respondents said coughing patients were given priority, however, 141 (32%) stated that no priority was given to coughers. TB patients' waiting rooms and the corridors were considered well ventilated by 359 (81.4%) of the respondents yet 82 (18%) perceived them as poorly ventilated.

4.6.6. Section F: Professionals' competence about TB procedures and tests

Section F assessed the professionals' competence about TB procedures and tests. It was composed of five questions to which the respondents could answer "Yes" or "No". Data for this subsection are presented in Table 4.8.

Table 4.8: Professionals' competence about TB procedures and tests

Characteristics (n=441)	Responses	Freq (No)	(%
Were you physically examined during your first visit to this HC?	Yes	246	55.8
	No	195	44.2
Was your sputum examined when you were diagnosed with TB?	Yes	335	75.9
	No	106	24.0
Did you get the test results in less than two days when you gave your first sputum for TB test?	Yes	299	67.8
	No	142	33.2
Were your close contacts examined by the TB HC?	Yes	194	44.0
	No	247	56.0
Is there a treatment observer (observed swallowing) checking on your daily intake of TB drugs?	Yes	301	68.2
	No	140	31.7

Two hundred and forty-six (55.8%) of the respondents were examined physically during their visit to the HC, whereas the rest 195 (44.2%) were not physically examined. Most, 335 (75.9%), of the respondents had a sputum examination done when they were diagnosed with TB and the rest, 106 (24%), did not have it done. A majority 299 (67.8%) of the respondents received test result in less than two days, whereas 142 (33.2%) got test results after more than two days with the first sputum testing. Examination of close contacts was not done for 247 (56%) of the respondents, whereas the close contacts of the rest, 194 (44%), of the respondents were examined. Most, 301 (68.2%), of the respondents, had a regular treatment observer to check and follow their treatment adherence, however, 140 (31.7%) did not have one.

4.6.7. Section G: Affordability and support for TB services

Section G assessed the affordability and support for TB services. It consisted of four questions related to costs and support for TB service. The respondents could respond by marking one of the following: “never”; “sometimes”; “most of the time” or “always”. Data for this subsection are presented in Table 4.9.

Table 4.9: Affordability and support for TB services

Characteristics (n=441)	Responses	Freq (No)	(%
How often do you have to pay for your regular TB services (e.g. sputum tests, TB drugs, X-rays, etc.)?	Never	377	85.5
	Sometimes	26	5.9
	Most of the time	5	1.1
	Always	33	7.5
How often do you have to pay a tip in order to receive TB services?	Never	432	98.0
	Sometimes	6	1.4
	Most of the time	0	0
	Always	3	0.7
How often do costs like transport prevent you from coming to the HC?	Never	379	85.9
	Sometimes	34	7.7
	Most of the time	15	3.4
	Always	13	2.9
How often do you receive transport and/or other cost support from the HC?	Never	423	95.9
	Sometimes	7	1.6
	Most of the time	10	2.3
	Always	1	0.2

Most, 377 (85.5%), of the respondents never paid for regular TB service, whille, the rest, 64 (14.5%), did. Almost all the respondents, 432 (98%), did not pay tips to receive TB services, although the remaining nine (2%) respondents said they did. Most, 379 (85.9%), of the respondents were never prevented from going for treatment due to costs related to TB treatment and other indirect costs like transportation fees. However, 34 (7.7%) of the respondents sometimes failed to go for treatment due to these costs involved. On the other hand, 38 (6.3%) of the respondents were sometimes prevented from getting TB services due to costs related to TB treatment. Most, 423 (95.9%), of the respondents never got any

financial support for transportation, nutrition and other expenses from the HCs. On the other hand, seven (1.6%) indicated they sometimes got support, ten (2.3%) got support most of the time and only one (0.2%) always got support.

4.6.8. Section H: Stigma to TB patients

Section H assessed TB-related stigma the respondents faced. It consisted of four questions related to stigma related to TB treatment. The respondents could respond by marking “never”; “sometimes”, “most of the time” or “always”. Data for this subsection are presented in Table 4.10.

Table 4.10: Stigma to respondents during service delivery

Characteristics (n=441)	Responses	Frequency	Percentage
When you receive TB services, the healthcare provider talks to you the same way as when you receive services other than TB.	Never	38	8.6
	Sometimes	67	15.2
	Most of the time	122	27.7
	Always	214	48.5
The healthcare provider serves you in a friendly manner.	Never	26	5.9
	Sometimes	78	17.7
	Most of the time	99	22.4
	Always	238	54.0
The healthcare provider welcomes you into the HC when you visit for TB services.	Never	29	6.6
	Sometimes	68	15.4
	Most of the time	112	25.4
	Always	232	52.6
The healthcare provider turns his/her face away when speaking to you.	Never	360	81.6
	Sometimes	33	7.5
	Most of the time	30	6.8
	Always	18	4.1
You are treated with dignity when you visit the healthcare centre.	Never	25	5.7
	Sometimes	45	10.2
	Most of the time	140	31.7
	Always	231	52.4

Regarding TB-related stigma the respondents faced, 214 (48.5%) of the respondents indicated that healthcare providers always talked to them in the same way they talk to patients coming for healthcare services other than TB care services, 122 (27.7%) said they were treated in the same way most of the time while 67 (15.2%) said sometimes they were treated the same way. However, 38 (8.6%) of the respondents felt the healthcare providers never talked to them the way they talked to patients seeking other healthcare services.

Most of the respondents, 238 (54%), indicated they were always served in a friendly manner during their visit to the HC, while 99 (22.4%) were treated in a friendly manner most of the time. Of the remaining respondents, 78 (17.7%) were sometimes served in a friendly manner; and 26 (5.9%) indicated they were never treated in a friendly manner.

Most of the respondents, 232 (52.6%), indicated that the healthcare providers always welcomed them when they went for TB services, 112 (25.4%) felt welcome most of the time, while 78 (17.7%) felt welcome sometimes. However, 29 (6.6%) of the respondents never felt welcome.

According to 360 (81.6%) of the respondents, the healthcare providers never turned away their faces from them during communication, 33 (7.5%) indicated they sometimes turned away their faces and 30 (18.4%) said they turned away most of the time. On the other hand, 18 (4.1%) of the respondents indicated that healthcare always turned away their faces from them. Most respondents, 231 (52.4%) indicated they were always treated with dignity and 140 (31.7%) were treated with dignity most of the time. Of the rest of the respondents, 45 (10.2%) indicated they were sometimes treated with dignity, while 140 (31.7%) felt they were never treated with dignity.

4.6.9. Section I: Level of satisfaction

Section I was designed to determine the level of patient satisfaction. It consisted of a single standalone five-point Likert scale overall satisfaction measuring question. The respondents could respond by marking one of the following: “very dissatisfied”, “dissatisfied”, “neutral”, “satisfied”, and “very satisfied”. Data for this subsection are presented in Table 4.11.

Table 4.11: Level of satisfaction

Characteristics (n=441)	Responses	frequency	Percent
How much satisfied are you with the treatment and care services you have received at this HC so far?	Very dissatisfied	1	0.2
	Dissatisfied	74	16.8
	Neutral	72	16.3
	Satisfied	217	49.2
	Very satisfied	77	17.5

Almost half, 217 (49.2%), of the respondents were satisfied and 77 (17.5%) were very satisfied with the TB diagnostic and treatment services they have been receiving in the HCs so far. On the other hand, 74 (16.8%) of the respondents were dissatisfied and only one respondent was very dissatisfied with the TB diagnostic and treatment services they received. However, 72 (16.3%) of the respondents remained neutral. Given the opportunity to recommend the three most important things that should be done to improve TB services, most of the respondents recommended: improvement of the timeliness of TB services, flexibility of DOTS services, patient counselling and health education, patient-centredness of TB care services, facility infrastructure, and availability of safe drinking water.

4.7. CROSS-TABULATION AND LOGISTIC REGRESSION ANALYSIS OF SOCIO-DEMOGRAPHIC VARIABLES WITH QUALITY DIMENSIONS OF TB CARE SERVICES

The frequency distribution findings and descriptive analysis were used to gain insights and a better understanding of each variable's value; summarise the data and guide further data analysis. The cross-tabulation and logistic regression inferential statistics were used to determine whether there are any significant aspects that should be addressed. A cross-tabulation analysis was employed to link and describe the joint distribution between categorical variables and variables in the study at the same time. It was used to generate

frequency tables using the percentages computed in order to gain better insights about the relationship between the categorical variables and the quality dimensions of TB care service as well as their significance.

The results of the cross-tabulation analysis of the categorical variables and each quality dimension of TB care service were explored, interpreted, and presented in contingency tables (See the detailed reports in Annexure G1-G8).

Logistic regression analysis was employed to determine the degree of association and the relationships between the categorical socio-demographic variables and the categorical dichotomy TB services quality dimension variables, as well as the strength of the association between the variables in the study. All the inferences were done to see if there are important aspects that should be attended to in the strategies (see the detailed reports in Annexure H1-H7). Inferential statistics that were important for the formulation of the strategies were presented in this chapter.

4.8. DISCUSSION AND INTERPRETATION OF QUANTITATIVE RESEARCH FINDINGS

In this section, the results of the quantitative study were discussed. For the quantitative study, 445 questionnaires were distributed but 441 were completed, representing a response rate of 97%.

4.8.1. Demographic and socio-economic characteristics

Regarding the gender mix of the respondents, 242 (54.9%) were male and 199 (45.1%) were female. Two other studies conducted in Ethiopia had a similar gender compositions, with male respondents constituting 56% and 57% (Woldeyes 2016:82; Khatri & Davis 2020:38) respectively. It is not clear what this phenomenon might be attributed to. There could be a higher incidence of TB among men or it could indicate better health-seeking behaviour among males.

Most (82.7%) of the TB respondents were in the productive 18-45 years age group. This is similar to the study by Woldeyes (2016:82-85), who found that 82% of the respondents was in the 18-44 years age group. This might be attributed to greater mobility among men and, therefore, an increased chance of getting TB infection due to exposure.

In terms of educational level, like in the study by Khatri & Davis (2020:38), which found that 70% of the respondents only had primary school-level education and 20% secondary school level, this study found that 67% and 28% of the respondents had primary and secondary school level education, respectively.

Most (31.3%) of the respondents were self-employed, which was almost the same as the 36% and 37% Woldeyes (2016:82-85) and Auliana et al (2020:38), respectively, found in the studies conducted in Ethiopia.

4.8.2. TB diagnosis and related issues

A study by Gamtesa, Tola, Mehamed, Tesfaye and Alemu (2020:1-10) reflects that 65% of presumptive TB patients sought healthcare from appropriate health facilities, while 17% suspected of TB patients did not.

Cascade of TB care is now a strategy and model for monitoring and evaluating TB programmes on sequential stages of TB care services in order to identify gaps in the quality of TB care services and successfully achieve TB treatment outcomes (Subbaraman et al 2019:1-13).

Of the respondents in this study, 55.1% sought confirmation of diagnosis three weeks or more after the onset of symptoms while 44.9% sought healthcare earlier. Similarly, Shiferaw and Zegeye (2019:1-8), in a study in Ethiopia, found that 50% of the TB patients sought treatment more than three weeks after the onset of symptoms. On the contrary, Khatri and Davis (2020:69-70), in a study done in both urban and rural areas of Ethiopia, found that 71% of patients sought healthcare services three weeks after the onset of symptoms, while 29% sought healthcare earlier. The difference might be due to better access to healthcare services and health literacy of patients in urban settings.

In the current study, a majority 66.9% of the TB patients began treatment within two days of diagnosis, while 28.1% began treatment within a week of diagnosis. The remaining 5% began anti-TB treatment after one week of diagnosis. Khatri and Davis (2020:69-70) found a similar pattern in that nearly a third (30%) of the TB patients started treatment the day they were diagnosed while a majority 55% started treatment within two days.

The time between diagnosis and treatment initiation among the rest of the TB patients was 12% within one week, 2% within 1-2 weeks and more than two weeks (1%). A study by Alva

and Cloutier (2019:13) found that the majority of TB patients (80%) started treatment within a week of being diagnosed with the disease. Another study by Bulage et al (2014:1-12) also found that more than 50% of the TB patients started treatment a week after diagnosis.

There is a need to identify and fill gaps at each stage of the care cascade to improve the patient-centredness of TB care services.

4.8.3. Service delivery in the health centres

4.8.3.1. Availability of TB services and healthcare professionals

According to the Lancet Global Health Commission, insufficient access to quality care is responsible for the deaths of 8.8 million patients each year in 137 LMICs, 3.6 million of these deaths were caused by a lack of access to care, while 5 million were caused by poor quality of care despite having access to care (Kruk et al 2018:e1208).

Language and distance to HCs were among the barriers to accessing and receiving TB care services for 13.6 % and 30.4 % of TB patients, respectively. This is in line with the findings of a study by Oyediran (2019:46) that language and distance were among the most common barriers to TB care for 19% and 22% of TB patients, respectively.

According to the results of this study, 17.7% of TB patients found the waiting time before treatment unacceptable and 14.3% found the service hours to get treatment inconvenient. TB services, on the other hand, were not always accessible or available during working hours, according to 17.2 % of TB patients.

These findings are contrary to the findings of studies by Alva and Cloutier (2019:41) and Khatri and Davis (2020:59) that the average waiting time before treatment was acceptable to TB patients. However, like the current study, Oyediran (2019:41), in a study conducted in Nigeria, found that the service hours were inconvenient for some TB patients.

According to the current study's findings, 26.5 % of TB patients were hampered by a lack of sputum examination services. During their TB treatment, more than one-third of TB patients were referred or transferred to another health facility for TB diagnostic services from HCs. These findings are consistent with findings by Fekadu et al (2017:696-701) that microscopy TB diagnostic services were provided in most (80%) of the HCs but Xpert test was provided in a few HCs.

Getachew et al (2015:145-159) found that a quarter of the patients who were notified of having TB was not bacteriologically confirmed despite the availability of radiography and microscopy services. TB diagnosis services were provided in 69% of the health facilities, excluding health posts, and 59% of health facilities, excluding health posts, used only sputum smear for diagnosing TB. These results are broadly in line with the findings of the current study.

The findings of the current study showed that the TB patients' ethnicity, religion, marital status, educational level, and source of income had significant association with availability TB services and health professionals but on further examination, the association was insignificant (Annexure H-1).

4.8.3.2. Communication and information in TB care services

During consultation and treatment, TB patients were informed about the curability of the disease (74.6%), the duration of treatment (81.4%), and the risk of spreading TB to others (65.3%). The TB patients were also informed about the importance of DOTS (68.9%), side effects of TB drugs (61.2%), storage of TB drugs (82.1%), the importance of sputum follow-up tests (61.2%), and the next appointment for TB care services (92%).

This is almost consistent with the findings by Colvin et al (2019:4-5) and Oyediran (2019:12-13) that TB patients were briefed about TB curability (99%), treatment duration (94%) and causes of TB (58%), showing a huge gap in understanding ways of TB transmission.

Regarding TB communication and information services, the findings of this study are consistent with the findings of a study by Khatri and Davis (2020:57). That is TB care providers informed the patients about the duration of treatment (92%), the importance of taking medication regularly (91%), the importance of completing treatment (89%), side effects and danger signs management (66%), treatment follow-up sputum test (59%) and the side effects of TB drugs (64%).

Female respondents (AOR=0.87, 95% CI (0.57, 1.33) and Orthodox Christians (AOR=0.83, 95% CI (0.49,1.4) were less likely to receive good communication and information about TB and its treatment from TB care providers than male and Muslim TB patients. A significant association was found between communication and information, and educational level and source of income. However, after further examination the association was insignificant (Annexure H-2).

The findings indicate that good communication and information in TB services improves patient adherence to treatment, satisfaction, and trust in TB services.

4.8.3.3. Patient-provider interaction and counselling in TB services

This study found that TB care providers respected TB patients' privacy (73%), treated them with respect (73 %), and sensitively listened to them (66%). This is similar to the findings by Alva and Cloutier's (2019:41) that 81% of TB patients found privacy during diagnosis and treatment acceptable and Oyediran (2019:41) that 84% of TB patients felt their privacy during examination was respected, while 25% expressed concerns about conversation privacy. Similarly, Khatri and Davis (2020:63-66) found 84% of TB patients were treated respectfully. The disparity in scores between the current study and the cited literature could be attributed to urban TB patients having higher expectations of respect and privacy than rural TB patients do.

The findings of this study show that 84.2% of TB patients had adequate consultation time to treatment. This finding is in line with the findings of studies by Alva and Cloutier (2019:41), Khatri and Davis (2020:59), and Oyediran (2019:41), which found that the majority of TB patients agreed on consultation time to treatment. Educational level of diploma and above (AOR= 2.46, 95% CI (1.31, 4.61)) had significant association with patient-provider interaction and counselling service (Annexure H-3).

4.8.3.4. TB-HIV relationship

One of the quality dimensions of TB care services is the availability of integrated TB/HIV services. Most TB patients were informed about the link between TB and HIV, how to prevent HIV infection, where to get HIV treatment after being diagnosed with TB and provided CPT if they were TB/HIV co-infected patients. In accordance with the findings of this study, Khatri and Davis (2020:41-44) found that HIV testing and counselling services were available in 98% and 94 % of health facilities for confirmed and presumptive TB patients, respectively. TPT was provided by the health facilities for PLHIV (85%), 5-15-year-old children (46%), and children under five years (71%). Among the health facilities involved in the study, 91% provided CPT for TB/HIV co-infected patients.

4.8.3.5. Infrastructure for TB services

The findings of this study cast a new light on infrastructure problems for TB services related to lack of safe drinking water and clean usable toilets and other facilities in the HCs, which is consistent with findings by Megene et al (2018:332-347).

The findings of this study reveal that inconvenient settings, poor ventilation in the patient waiting areas and of patient waiting areas and corridors were among major infrastructure problems. Similar to the findings of this study, Baumgarten, Hilgert, Pinto, Zacharias and Bulgarelli (2018:1-4) found poor ventilation, inconvenient infrastructure for ensuring privacy during consultation and shortage of PPE as major problems. These findings highlight the need for quality TB infrastructure facilities to enhance TB infection prevention and control.

4.8.3.6. Professionals' competence about TB procedures and tests

This study found that both physical and sputum examination were done for 76% of the TB patients during their first visit. Furthermore, the study found that 66.8% of the TB patients got their laboratory test results in more than two days during their first sputum testing. This is contrary to the findings of studies by Alva and Cloutier (2019:28-29) and Khatri and Davis (2020:69-70) that the time between testing and notification of TB laboratory test results was within two days for most of the TB patients. However, the waiting time for laboratory test results in this study is consistent with the findings of a study by Bulage et al (2014:1-12) that it took at least three days to get laboratory test results.

Close contact tracing and testing was done for only 44% of the TB patient, which is in contrast with the findings of another done study in Ethiopia that 90% health extension workers are doing contact tracing for confirmed TB patients (Khatri & Davis 2020:43).

This study also found that more than two-thirds (68.3%) of the patients had a regular treatment supporter to check their daily intake of TB drugs. This is lower than the findings of Khatri and Davis (2020:59) that 92% of the TB patients had a treatment supporter.

Only engagement on informal sector and public sector as source of income (AOR=0.46, 95% CI (0.21, 0.99)) and (AOR=0.29, 95% CI (0.09, 0.95)) respectively had significant association with providers' competence on TB procedures and tests. Gender, age, ethnicity, marital status, and source of income had significant association with providers' competence on TB procedures but after further examination, the association was insignificant (Annexure H-5).

4.8.3.7. Affordability and support for TB services

Regarding affordability and support for TB services, 96% of the TB patients never received financial support for medical, transportation and nutrition expenses related to TB care services. These findings are similar to those of Alva and Cloutier (2019:28-33) that transportation and treatment costs were covered for 9% and 22% of TB patients only, respectively, out of the 65% and 87% TB patients, respectively, who needed financial support.

4.8.3.8. Stigma to TB patients

This study found that TB patients exprienced stigma related to TB diagnosis and treatment, with 23.8% indicating they were not treated in the same way, and 23.6% saying they were not treated in a friendly manner, while 22% felt unwelcome and 18.4% noticed the healthcare providers turned away their faces from them. These findings are in accordance with the finding of a study by Oyediran (2019:46) in which stigma from healthcare providers was 19%. These findings are also consistent with the findings of a study by Khatri and Davis (2020:63-66) that 16% of TB patients were not treated respectfully,17% of TB patients were treated differently due to having TB and 10% of TB patients faced stigma from provider.

Age group of 45-54 years (AOR= 0.35, 95% CI (0.13, 0.92)) and educational level of primary school (AOR = 2.35, 95% CI (1.03, 5.4)) had significant association with stigma related to TB diagnosis and treatment (Annexure H-6). The higher stigma in the current study might be due to the TB patients' better awareness and understanding about stigma and health literacy to explain stigma-related to TB care from the providers and the community.

4.8.3.9. Level of satisfaction

Getahun and Nkosi (2017:1), in a study in Ethiopia, found that a majority of TB patients was satisfied with TB services rendered. This study made similar findings, where nearly half (49.2%) were satisfied and 17.5% very satisfied. Only one respondent indicated that he was very dissatisfied and 17% indicated that they were dissatisfied while 16.3% marked the neutral option. This is also consistent with findings of a study by Khatri and Davis (2020:68-69) where the level of satisfaction score on each of the items on the Likert scale was as follows: very dissatisfied (2%), dissatisfied (4%), neither satisfied nor dissatisfied (4%), satisfied (51%) and very satisfied (38%).

Age (AOR=0.52, 95% CI (0.29, 0.94), Tigrie ethnicity (AOR=2.1, 95% CI (1.1, 4.1)), Gurage (AOR=4.9, 95% CI (1.4, 17.1)), and unmarried marital status (AOR=2.2, 95% CI (1.0, 4.8) all had a significant association with the level of satisfaction (Annexure H-7).

4.9. **CONCLUSION**

This chapter has analysed the quantitative data, presented and described the results and discussed the findings and literature as control. The next chapter presents the qualitative data analysis, presentation and discussion of the findings.

CHAPTER 5

ANALYSIS AND FINDINGS OF QUALITATIVE DATA

5.1. INTRODUCTION

This chapter focuses on analysis, presentation and description of the findings of the qualitative part of the study. The research findings are presented. The objective of the qualitative study was to explore the experiences of healthcare providers in TB care service delivery as well as factors related to delivery of TB services. The qualitative findings are integrated with quantitative findings in Chapter 6.

5.2. DATA COLLECTION PROCESS AND MANAGEMENT

The researcher collected the data. This way, the credibility of the findings of this qualitative part of the study was enhanced.

Some of the most senior employees providing TB services and those working in the clinics were invited to participate in this section of the study. For the qualitative part of the study, the first participant taking part in the in-depth interviewwas named as Participant-1, abbreviated as IIP1. After the first participant, each participant that followed was numbered in chronological order until saturation of data was achieved in the last and in-depth interview, who was Participant 10 (IIP10). There was one participant from each of the ten sub-cities of Addis Ababa. In the case of eight of the participants, data were collected in their offices. For the remaining two participants, a convenient private space was prepared. Data gathering was planned to take place until data saturation was achieved. The in-depth interview was guided by a prepared instrument or interview guide. Ten probing questions were included in the instrument (see Annexure F1). The duration of the data collection exercise ranged was from 26 to 58 minutes.

The researcher started each interview by greeting and introducing himself. Before doing the interview, the researcher presented the support letter from Addis Ababa City Administration Health Bureau and the respective sub-city health offices as well as the ethical clearance certificate from the University of South Africa. Managers were also shown these documents. The purpose of the study was explained in detail as well as procedures and possible duration of the interview. Potential risks, discomforts, benefits to participants and/or to society, confidentiality, the right to participation and withdrawal were explained.

Participants were requested to sign consent forms to indicate their agreement and for audio recording the interview. The researcher used an audio recorder to record the in-depth interviews. Field notes were also taken. The recorded data were stored on the researcher's personal laptop computer and protected with a password. The consent forms with signatures of the participants were stored in a locked file cabinet.

5.3. DATA ANALYSIS

The interviews and audio recordings were conducted in Amharic, the country's official working language. Because he is fluent in English, the researcher transcribed the audio recordings with direct translation into English language text after repeated listening and familiarisation with the data. Then after, a well-known and experienced qualitative research researcher who is proficient in English checked and verified the translation. The transcribed data were entered into ATLAS.ti version 8.4.24.0 and analysed in the first phase of analysis using the different phases of thematic analysis. The transcribed interview data were coded with a total 243 codes. Furthermore, the codes were also regrouped into 36 code groups or categories and six themes were identified.

After this first phase of analysis, the data were checked and analysed by an external coder. In this case, it was the study supervisor. The study supervisor worked with the data extensively and regrouped and renamed the codes as well as the themes and discussed with the researcher. Finally, 28 categories were identified, and six themes emerged, which fitted with the framework of the study (See Table 5.2).

5.4. RESULTS OF QUALITATIVE STUDY

The analysed data of the qualitative study are discussed below.

5.4.1. Socio-demographic characteristics of participants

The current profession, their role in the TB clinic and the duration of service provided in the TB clinicare discussed in this section. Among the ten participants, seven (70%) were male and three (30%) were female. The educational level of all the participants was a bachelor's degree. Eight (80%) were professional nurses and the remaining two (20%) were public health officers. Work experience in TB service provision ranged from a minimum of six months to a maximum of six years.

The participants were TB clinic focal persons, who were working in TB clinics and very essential in-service delivery. TB focal persons are in charge of providing TB services, monitoring adherence to treatment and ensuring accurate data registration and documentation. The socio-demographic characteristics of the participants are summarised in Table 5.1.

Table 5.1: Socio-demographic characteristics of participants

Participant number	Participant Code	Gender	Education level & profession	Years of experiencein TB clinic	Role in TB clinic
1	IIP1	Female	Bsc-Nurse	2	TB focal person
2	IIP2	Male	Bsc-Nurse	3.5	TB focal person
3	IIP3	Female	Bsc-Nurse	0.5	Team leader andTB focal
4	IIP4	Male	Bsc-Nurse	6	Matron andTB focal person
5	IIP5	Male	Bsc-Health officer	1	TB focal person
6	IIP6	Male	Bsc-Nurse	6	TB and IPC focal person
7	IIP7	Male	Bsc-Nurse	2	TB focal person
8	IIP8	Male	Bsc-Nurse	2	TB focal person
9	IIP9	Male	Bsc-Health officer	2	TB focal person
10	IIP10	Female	Bsc-Nurse	3	TB focal person

5.4.2. Findings

Six themes emerged from the data analysis with categories under each theme, as presented in Table 5.2.

Table 5.2: Themes and categories

Theme	Category
Theme 1: Availability of TB services	1.1. Community-based TB services
	1.2. Screening and detection of TB
	1.3. Diagnostic and imaging services
	1.4. TB-DOTS services
	1.5. Catchment, referral and linkage services
	1.6. Adherence and support
	1.7. Integration of TB/HIV services
	1.8. Cascade of TB services
Theme 2: Resource availability	2.1. Availability of guidelines, manuals and protocols
	2.2. Availability of professionals that can deliver TB services
	2.3. Availability of TB drugs
	2.4. Availability of other supplies
	2.5. Lack of allowance for professionals working in the TB environment
	2.6. Infrastructure and facilities
Theme 3: Communication and education in TB services	3.1. Patients' knowledge and education
	3.2. Counselling
	3.3. Interaction and communication with TB patients
Theme 4: Competencies and related issues	4.1. Competencies of healthcare professionals
	4.2. Standardisation of services
	4.3. Training of healthcare professionals
	4.4. Commitment and satisfaction of healthcare professionals treating TB patients
Theme 5: Issues regarding relationships between patients and professionals	5.1. Trust and respect
	5.2. Stigma
	5.3. Feelings resulting from relationships when treating patients
Theme 6: Support needs of patients, healthcare professionals and community	6.1. Needs of patients for adequate nutrition
	6.2. Economic and housing needs of patients
	6.3. Community needs related to TB

	6.4. Needs of health professionals related to supervision and programme support
	6.5. Need for TB infection prevention and control

5.4.2.1. Theme 1: Availability of TB services

The first theme focuses on the availability of TB services in public HCs. This theme has eight categories, which are discussed below.

5.4.2.1.1. *Category 1.1: Community-based TB services*

The participants recommended that to achieve the End-TB Strategy goal targets, community awareness creation and engagement in TB infection prevention and control, treatment and care support should be strengthened.

> *"The government has to ensure community awareness about TB disease and engagement on community-based TB infection prevention and control in order to achieve the End-TB Strategy goals." (IIP9)*

The participants affirmed that currently, community TB screening and direct linkage of the presumptive TB patients to the HCs by a family health team member is implemented. Due to this, the yields of community TB screening and TB case detection and linkage are improving.

> *"Currently, we are working on community TB screening with the engagement of family health team, and it is known that we are getting good results from this community TB screening. Previously...we were giving card presumptive TB patients to come to the public HCs for TB testing. Actually, they were not coming...The trained family health team members are responsible for bringing any presumptive TB patients directly to the HC..." (IIP1)*

> *"The family health teams have a TB contact screening and tracing form to track susceptible TB patients in the community and link them to the TB clinic. In case of having TB patients LTFU, a team composed of medical director, TB focal person and*

health extension workers go to the community to find the lost TB patient and link back to the treatment follow up." (IIP9)

On the other hand, the participants revealed that the community TB care programme implementation and performance is very low and needs further study and intervention, especially community TB detection.

"Community-based TB programme performance is very low, especially community TB detection, is very low and not more than one per quarter with the engagement of health extension workers. It needs further study to identify the factors associated with low community-based TB detection." (IIP7).

5.4.2.1.2. *Category 1.2: Screening and detection of TB*

HCs are implementing the patient-initiated pathway TB case-finding strategies in all outlets of services as confirmed by participants.

"Concerning screening and triage of coughers, first, all coughers are screened and identified at triage, we prepared and put a card labelled as 'C', which is used as a code to give priority for patients having cough then after we assign them to coughers outpatient department (OPD) for all necessary diagnosis and rule out other cases of cough. If the symptoms and signs of TB patients are suggestive of TB microscopic test (acid-fast bacilli) and GeneXpert, they will be tested for TB. If the TB test results are positive for TB, then the patient will be linked to TB clinic." (IIP1)

"The triage room identifies patients having clinical signs and symptoms then sends them to coughers' clinic by writing the symbol 'C' in red on the patient's card to indicate that the patient is presumptive TB patient and needs priority as well special attention on TB infection prevention during treatment in the outpatient department." (IIP7)

The participants revealed that contact investigation is done for all family members from smear-positive pulmonary TB patients and TB contacts under the age of 15 are provided RH as prophylaxis for TB infection control.

"In the implementation of DOTS services in this HC, all family members from smear-positive and negative pulmonary TB patients are screened for TB and children under 15 years, who would have tested negative for TB are provided RH TB preventive prophylaxis treatment with pyridoxine for three months." (IIP8)

"TB contact-tracing is done based on the TB register data elements to be registered. If the contacts are less than 15 years of age, they are screened for TB, and then if there are no clinical signs and symptoms of TB found, the under-15-year-old TB contacts will be provided RH as prophylaxis for TB infection control." (IIP7)

The participants affirmed that there is still a gap in screening, testing and linkage of presumptive TB patients in the HC.

"There are coughers screening at coughers triage for patients having clinical signs and symptoms of TB in the last 15 days even though some patients are missing from the screening and diagnosed with TB in other service delivery departments after they have already transferred from triage to departments." (IIP9)

5.4.2.1.3. *Category 1.3: Diagnostic and imaging services*

The study findings revealed the different bacteriological diagnostic and follow-up test services provided in the HCs and referred to catchment testing centres and other facilities.

All HCs provide the bacteriological diagnostic smear microscopy (acid-fast bacilli) test but sometimes there is an interruption in sustainability of the test and availability in some HCs, as stated by the participant.

"The two main diagnostic tests done for the patients, even though not available in this HC, are acid-fast bacilli sputum examination with florescent microscope and GeneXpert test for patient with productive cough..." (IIP9)

The participant revealed that they provide TB patients treatment follow-up testing for bacteriological-confirmed TB patients at second, fifth and sixth months of treatment and monitoring TB patients on DOTS TB services based on the national TB management guidelines.

"We provide treatment follows-up sputum test for bacteriological-confirmed TB patients at second, fifth and sixth months of treatment and monitoring TB patients on DOTS TB services. We have only acid-fast bacilli TB laboratory test and do not have GeneXpert test." (IIP1)

"Culture is not mainly ordered...even though ordered the time… get the test result is very long so that no one tries to order it. These are more or less the diagnostic services used to investigate TB patients." (IIP9)

The bacteriological genotypic molecular diagnosis of TB using GeneXpert MTB/RIF Assay test is provided in the MDR-TB TIC, selected TFC providing MDR-TB treatment follow up and regional referral laboratories, as affirmed by the participants.

"GeneXpert TB testing will be ordered for all presumptive TB patients since we have a GeneXpert machine in the HC. The GeneXpert test result will be given the patient within two hours after they provided the sample for testing." (IIP10)

Health centres that are not providing Xpert MTB/RIF testing refer the sample or the specimen to the testing centre in their catchment area.

"We are not providing GeneXpert test service in this HC..." (IIP3)

"We do not have GeneXpert test... We refer the sample for testing early in the morning and get the test results the same day in the afternoon." (IIP1)

In addition, the participant confirmed that radiological examinations are provided by referring the patient for examination to private or public facilities providing radiological examinations.

"Patients with dry cough are investigated by CxR *from private clinics. The healthcare provider working at OPD also orders ultrasound investigation and other investigation when the providers suspect any EPTB based on his/her clinical experience and skill...if the patient's case needs further investigation and senior professionals' decision, we refer the patient to hospitals, after decision the TB patient will come back for treatment follow up." (IIP6)*

“TB patient having cough with dry sputum or negative bacteriological test or suspected for EPTB ordered to CxR *radiological examination outside the HCs.” (IIP8)*

5.4.2.1.4. *Category 1.4: TB DOTS services*

The participants affirmed that the DOTS service is implemented starting from linking the TB patient from other service outlet to the TB clinic.

“The DOTS TB programme service is started from linking the TB patients from outpatient departments to the TB clinic for counselling service about taking the TB medication and initiation of the treatment follow-up services under direct observation of TB service providers at HCs for the first two months or 56 daily doses as part of intensive phase treatment. They will then come for follow up and take anti-TB medication for seven days on a weekly basis in the continuation phase of the treatment for four months or 112 daily doses.” (IIP10)

“All TB patients who are on anti-TB treatment take their medication on daily basis for the first two months unless otherwise there is an exceptional reason not to come to the HC. We receive three contact addresses from the TB patients during registration of the patient and putting on anti-TB treatment to trace the TB patients in case of LTFU and missing treatment follow-up schedule.” (IIP9)

The participants indicated that they provide DOTS services based on an agreement made with the patient during treatment initiation and treatment follow-up appointments. The study indicated that DOTS serviceis provided based the agreement during initiation of the treatment and treatment follow-up appointments with the patient.

“We provide TB DOTS services, treatment follow up sputum test for bacteriological-confirmed TB patients at second, fifth and sixth months of treatment and monitoring TB patients on TB DOTS care services. Drug-resistant TB patients who are transferred in take their treatment in our HC but their treatment follow-up tests are done in the treatment-initiating hospital...” (IIP1)

5.4.2.1.5. *Category 1.5: Catchment, referral and linkage services*

TB patient intra-facility referral and linkage of services were applied from all service outlets

to TB clinic after completion of TB diagnosis. However, some patients are missed during linkage.

> *"If the TB test results become positive for TB patient at outpatient department or other service outlets, then the TB patient will be linked to TB clinic for initiation of the anti-TB treatment." (IIP1)*

In case of diagnosis of HIV from TB clinic, the patient will be referred and linked to ART clinic for counselling and initiation of ART treatment, as stated by the participants.

> *"HIV counselling and testing is recommended and done for all TB patients. If the TB patient's HIV test result is positive, then the patient will be referred and linked to ART clinic." (IIP5)*

One of the catchment services is referral of sample specimens for diagnosis, treatment follow up and treatment response monitoring tests to ensure the provision of quality diagnostic services but there are challenges related to travelling to TIC and TFC.

> *"We provide MDR TB screening, drug supply, managing visible side effects on our scopes and provide treatment related to other diseases. The treatment follow-up testing and follow up is provided by treatment-initiating specialised hospitals (MDR-TB treatment initiating centre) in our catchment area. The patients should go to the treatment-initiating hospitals monthly for follow up." (IIP1)*

The participant stated that the HCs have a designated nearby HC/hospital/regional referral laboratory in their catchment area having GeneXpert machine to refer patients' specimen/samples for testing since it is impossible to avail the machine in all TB TFCs. However, they are not ready to provide all test needs of catchment HCs.

> "*We have only acid-fast bacilli TB laboratory test and do not have GeneXpert test. We send the sample to our catchment area sample referral site, which is the regional referral laboratory for TB patients who need GeneXpert test. We send the sample early in the morning and get the test results the same day in the afternoon." (IIP1)*

"Our HC has GeneXpert machine providing Xpert testing service for other five catchment HCs." (IIP4)

The participants explained that they knew the status and treatment outcomes of referred-out TB patients by communicating with the receiving health facility and the patient as well as their facilities or treatment supporters. In addition, the HCs provide feedback to the referring health facilities about the status and outcomes of transferred-in TB patients from other facilities but there were challenges in getting timely information and feedback.

"Transferred-in and transferred-out TB patients' health status and treatment outcomes are communicated based on the national TB programme guideline." (IIP9)

5.4.2.1.6. *Category 1.6: Adherence and support*

Regarding adherence and treatment support, the participants stated that the gaps in pre-treatment counselling led to TB patients LTFU or patients defaulting after taking the treatment for two months.

"*TB patient treatment service needs strict follow up due to many challenges like LTFU, defaulters, and treatment failure...TB patient adherence to treatment needs good counselling and health education about the use of TB drug, side effects of TB drugs, risks related to treatment during initial date of triage and diagnosis for TB. If there is a gap in pre-treatment counselling, the TB patients might be LTFU or default the treatment after they are taking the treatment for two months." (IIP2)*

The participants affirmed that all TB patients are provided anti-TB medication and swallow the tablets under the direct observation of TB service providers in the HCs daily in the intensive phase of TB treatment. Whereas in the continuation phase of the treatment, the patients collect the medication weekly and swallow the medication under direct observation of healthcare providers or treatment supporters.

"In the continuation phases of the treatment, the TB patients provided the TB patient treatment card and TTS card to monitor treatment adherence by reviewing both cards regularly. The TB patients are also asked to bring and show the empty TB drug blister

pack to make sure their compliance in taking the anti-TB drugs daily and adherence to the anti-TB drugs. The contact addresses of all the treatment supporters are registered to call them if there are any treatments follow-up and adherence problems." (IIP10)

5.4.2.1.7. *Category 1.7: Integration of TB/HIV services*

Integration of TB/HIV services is the availability and delivery of both TB and HIV services in the same HC. It is aimed at reducing the burden of TB among HIV patients (TB case-finding and providing IPT) and to reduce the burden of HIV among TB patients (HIV testing and counselling, CPT provision).

The participants explained that the TB service providers and ART care providers were working together to address the problems and betterment of the health of both ART and TB patients. HIV counselling and testing services were provided for all TB patients. If the TB patient had HIV-positive test result, they would be linked to an ART clinic.

"All TB patients are offered HIV testing and all of them are provided health education about TB/HIV relationships and difference, the importance of HIV testing and the problems associated with not testing HIV for TB patients. We're collaborating with the ART clinic on patients who are being transferred from the ART clinic to the TB clinic and vice versa. We solve any challenges in collaborations and working together." (IIP3)

"TB patients who are positive for HIV during the testing and linked to ART clinic to provide them antiretroviral therapy timely within the HC." (IIP1)

The participants confirmed that in order to reduce the burden of HIV in TB patients and reduce opportunistic infections in TB/HIV patients, all HIV-positive TB patients are provided CPT.

"All TB patients are screened and tested for HIV/AIDS unless they already have a unique ART number." (IIP9)

"To reduce the burden of HIV in TB patients and reduce opportunistic infection in TB/HIV patients, all HIV-positive TB patients are provided CPT." (IIP2)

5.4.2.1.8. *Category 1.8: Cascade of TB services*

Cascade of TB services emerged as a category under TB services availability. Cascade of TB services means there is the potential capacity of TB programmes for case finding (screening), TB patients' awareness creation and behavioural change on timely care-seeking, providing accessible TB diagnostic tests and detecting TB, initiating TB treatment and linkage to care, retaining the TB patient on TB service till treatment completion and cure from TB.

The participants confirmed that there are knowledge gaps and wrong attitudes about TB and these resulted in low patient health-seeking behaviour.

"Many TB patients consider TB as caused by cold air conditions." (IIP5)

"*The screened presumptive TB patients at the community…provided unique referral card to have TB testing at public HCs but most of them are not coming to the HCs due to different reasons." (IIP1)*

Most of the participants explained that there are problems regarding the earlydetection of TB diagnostic capacity of the HCs and TB diagnostic service providing health facilities. Due to these problems, the quality, patient-centredness and safety of TB services provided are not according to evidence-based guidelines and are sub-standard.

"*There should be continuous supply of TB GeneXpert reagents and good maintenance system for sustainability of GeneXpert test availability to ensure early TB detection and treatment." (IIP5)*

The participants indicated that there are gaps in appropriate diagnosis and ruling out of TB cases that lead to medical errors in the treatment of TB patients.

"Most of the time, the cases I faced and considered as medical error TB patients who are [patients] coming from hospitals with sudden diagnosis of TB without proper investigation and ruling out of diseases having similar symptoms and signs. The misdiagnosis and over-diagnosis of TB and considering any related cases as TB then after six months treatment with anti-TB drugs, explaining that it was not TB...." (IIP9)

Actions are needed to minimise medical errors in the treatment of TB patients. There is TB screening in all service outlets, but some TB patients are missed duringthe process of linkingthem toa TB clinic from service outlets, as described by the participants. This implies that there are gaps among providers in proper counselling and linkage of patients to the TB services.

"The TB patients who are positive for TB will be linked to TB clinic from all service outlets but some of them are missing." (IIP1)

The participants affirmed that there were patients who were diagnosed with TB and unable to continue the treatment due to economic and food problems and lack of support on economic and food-related issues.

"In near time, I faced a TB patient who was diagnosed with TB from the outpatient department. I advised him to have more food...He said, "What am I eating to take the medication? Why, I burn with the medication? I will not take the medication ..." "The TB patient refused the treatment and became an initial defaulter (initial LTFU*) ..." (IIP1)*

The participants stated that there were poor treatment outcomes due to different reasons related to the patient and healthcare quality problems. This shows the gaps in the TB programme in providing quality and effective TB services.

"Sometimes, due to different reasons, there will be poor treatment outcomes like RR-TB, MDR-TB and X-DR-TB-confirmed TB patients, LTFU *and death. Unfortunately, the TB patients' complete treatment outcome never becomes 100% successful. Annually, there might be one or two deaths in our HCs." (IIP4)*

5.4.2.2. Theme 2: Resource availability

The second theme is related to the availability of TB services in public HCs. This theme has four categories emerged and are discussed below.

5.4.2.2.1. *Category 2.1: Availability of guidelines, manuals and protocols*

Regarding guidelines, manuals and protocols, participants mentioned the following:

> *"Concerning TB guidelines, we are using our TB training participants' training manual, which was given during the training programme. We do not have any other SOPs (*standard operating procedures)*, clinical and programmatic TB management guidelines that are given from anybody else." (IIP1)*

The availability of SOPs and clinical and programmatic TB management guidelines is crucial, and the shortage should be addressed.

5.4.2.2.2. *Category 2.2: Availability of professionals that can deliver TB services*

One of the participants (IIP10) illuminated the shortage of TB service professionals as follows:

> *"In the TB clinic there is a gap in the availability of enough TB service providers. Because of this, I am working alone in the TB clinic currently even though this was not a problem previously. I am asking the HC to assign additional healthcare providers to the TB clinic."*

The participants recommended that there should be an adequate number of trained TB service professionals in the TB clinic.

Some participants stated that the health professionals' rotation from department to department without preparing and training them forTB services specifically compromised these services. This is explained by one of the participants (IIP7) as follows:

> *"I was transferred to another department from the TB clinic for three months then all the TB programmes collapsed so that the management reassigned me to the TB clinic at the recommendation of the sub-city TB programme officers."*

The findings reveal that TB service providers' desire to stay at TB clinics is contingent upon the willingness of the medical directors of the HCs.

5.4.2.2.3. *Category 2.3: Availability of TB drugs*

Availability of TB medication seems to be a problem and participants reacted as follows:

> *"First of all, concerning TB medication, there is critical shortage of TB drugs... there is a high burden of TB cases, but the anti-TB drugs supplied to us are not proportional to the number of case-load we have..." (IIP1).*

Another participant (IIP4) stated that the shortage of paediatric TB drugs is still a problem at the HC.

> *"Paediatric TB drugs shortage is still a problem due to limited supply for the low burden of TB in paediatrics."*

In addition, the participants explained the problem of the national supply management system in providing the requested anti-TB drugs timely.

> *"There is a delay in the re-supply of TB medication from Ethiopian pharmaceuticals supply agency and also a shortage of personal protective equipment; especially there were no surgical masks to provide to TB patients over the last 12 months.*" *(IIP2)*

The supply of TB medication is a serious problem.

5.4.2.2.4. *Category 2.4: Availability of other supplies*

Participants said the following regarding the availability of other stocks that are necessary in the clinics where they work.

> *"The TB investigation supply shortage is very challenging and causes interruption of acid-fast bacilli tests and GeneXpert tests frequently. The GeneXpert machine is available in one of our catchment HCs in our sub-city. Due to shortage of reagents, the healthcare providers are using GeneXpert machine for testing patients attending their*

HC only. For patients who need GeneXpert testing from our HC, the sample is sent to the regional reference laboratory. Currently, the regional reference laboratory receives only samples from very symptomatic patients who need mandatory GeneXpert testing." (IIP6)

More participants voiced this kind of problem

"Concerning medical supplies and reagents availability, there is interruption of laboratory reagents." (IIP8)

"There is interruption of TB diagnostic reagents to provide the TB diagnostic services." (IIP9)

In addition, the participants mentioned that there is a shortage of personal protective equipment.

"There is also a shortage of personal protective equipment; especially there were no surgical masks to provide for TB patients for the last one year." (IIP2)

Clearly, from this category, it emerged that lack of important stock and supplies is also a problem.

5.4.2.2.5. *Category 2.5: Lack of allowance for professionals working in TB environment*

Participants said the following regarding allowances:

"There should be risk allowance for TB serviceproviders since working in a TB clinic is risky." (IIP2)

"There should be risk allowance for TB care providers, like the emergency department, to motivate the professionals." (IIP4)

"There is no DOTS TB service on weekends in this HC so DOTS TB treatment follow-up patients [are] provided the next two days anti-TB drugs on Friday to take at their home by themselves. The HC management explains that the problem is the shortage of budget to pay extra hours' duty payment for TB care providers working on the weekends. In other HCs, the TB care [service] is provided including over the weekends." (IIP10)

Regarding additional allowances, participants made it clear that these allowances for professionals are not available for working in circumstances that may compromise their health.

5.4.2.2.6. *Category 2.6: Infrastructure and facilities*

Infrastructure and facilities emerged as a problem because regarding infrastructure and facilities participants said the following:

"There is no TB patient waiting area and designated sputum production area for TB patients to collect sample sputum specimen for TB testing." (IIP9)

"There should be designated sputum production and coughing area for patients to produce sputum for sample sputum test specimen." (IIP8)

Participants also mentioned that:

"There should be clean water supply and provision for TB patients to swallow the TB medication." (IIP3)

The participants indicated that the infrastructure and facilities are not ideal at all for the treatment of TB patients.

5.4.2.3. Theme 3: Communication and education in TB services

Patient-provider communication and education in TB services delivery emerged as a theme.

5.4.2.3.1. *Category 3.1 Patients' knowledge andeducation*

Participants said the following regarding patients' knowledge and, therefore, the health education that was needed:

> *"The community knows only the name of TB, but they did not understand the fatality of TB. So, there should be in-depth awareness creation and health education to the general population at the community level." (IIP7)*

The following was also said:

> *"The patients still believe that TB is caused by cold air conditions. Teaching TB patients that TB is caused by bacteria is very important in the first contact with the patient." (IIP5)*

In addition, participants said the following:

> *"TB health education is provided for tenminutes early in the morning at the patients' waiting area before the triage service every day by night duty emergency care service providers in addition to their emergency services provision." (IIP7)*

> *"Health education about prevention of transmission, balanced diet including homemade meals, open windows in any public transport and to choose walking instead of public transport..." (IIP5)*

Regarding educational materials, there were concerns:

"There is insufficient material available for patient health education and communication related to TB. The supply of information, education and communication materials such as leaflets, posters, brochures, pamphlets is not adequate to give and teach the patients about TB. As you see, here now we have very old posters. Once upon a time, I asked where I can get the patient education materials; they told me that you have to ask Addis Ababa City Administration Health Bureau or the ministry of health." (IIP1)

"...leaflets, posters for wall, brochures, pamphlets and etc supply and availability is not adequate to give and teach the patients about TB ..." (IIP1)

The importance of health education and the knowledge that TB patients need when they are treated was emphasized. Not being educated about TB leads to non-compliance. It seems as if there was a critical shortage of educational materials.

The participants of the study explained that misunderstanding about the causes of TB, curability of TB and the fatality still exist in the community.

5.4.2.3.2. *Category 3.2 Counselling*

Counselling seems to be a problem and it emerged as a category during the interviews:

"In TB services the first day approach to the TB patient is very important... If deep counselling is given and agreed on treatment schedule, there will be friendly close communication and understanding in the treatment follow up..." (IIP6).

"...good counselling and health education about the use of TB drug, side effects of TB drugs, risks related to treatment during initial date of triage and diagnosis for TB is important to treatment adherence..." (IIP2)

Counselling on a variety of aspects was mentioned:

“The family members are counselled on dietary content and intake improvement to enhance their immunity and health education on TB IPC as part of patient care.” (IIP8)

From the interviews, it became clear that counselling very important. Cooperation from patients is strengthened when counselling takes place.

5.4.2.3.3. *Category 3.3Interaction and communication with TB patients*

Participants said the following regarding interaction during communication with patients:

“...TB patients are very cooperative and comfortable for the providers provided thatthe providers are able to make sure that the providers are working for improving the health conditions of the TB patients and improve the effectiveness of the treatment outcomes of TB patients” (IIP9).

Other aspects of the communication also cameup:

“Primarily when the TB patients come for follow up the first time, we ask them about their background information and educational status, the place they live, economic status and nutritional counselling according to their ability to afford balanced diet or any food stuff available at home as well as health education on TB treatment Care follow up” IIP7.

Participants mentioned other aspects of communication like side effects:

“... We inform the TB patients that if in case you have any drug adverse side effects, you will be treated immediately here and also if you have vomiting during medication swallowing, we will replace the medication for you to swallow it again immediately and so they will understand what DOT mean as well its importance clearly...” (IIP2)

“*The MDR-TB treatment is complex due to the high number of TB drugs and the long*

duration of the anti-TB treatment compared to the treatment of drug susceptible TB. We have discussions on avoiding fatigue of the MDR-TB drugs follow up, respecting the time of taking the anti-TB drugs properly and discuss the progress of their health condition related to the treatment continuously." (IIP10)

The purpose of interaction and communication with the patients is to build trust, to be available to answer questions, like side effects, and to make patients aware through communication that the healthcare professionals are there for them. This is what participants pointed out.

5.4.2.4. Theme 4: competencies and related issues

The fourth theme that emerged addressed issues related to the competencies of the healthcare professionals.

5.4.2.4.1. *Category 4.1: Competencies of healthcare professionals*

Participants indicated that several competencies were necessary:

"The commonest questions we asked TB patients on the preliminary diagnostic assessment for understanding their attitude and knowledge about TB disease are: please explain to me any information you know about the TB disease? Is there any family member who has been treated of TB? or have you been treated of TB previously? But it varies among providers..." (IIP1)

It is clear that special diagnostic and assessment competencies are necessary.

"The first thing to prevent transmission of TB is identifying whether the patient is a sputum smear positive pulmonary or sputum smear negative pulmonary TB patient since the risk of TB transmission depends on the sputum test result positivity and negativity. The other thing is providing surgical masks and orienting about its utilisation on patients' arrival at the TB clinic, home ventilation maintenance, living style adjustment with family members, index case contact screening and tracing, providing RH preventive therapy for children aged less than 15 years with negative TB test result for three months." (IIP9)

Besides diagnostic competencies, competencies to accompany the patient in the new road to recovery while avoiding transmission are important.

> *"If the patient is a smear positive pulmonary TB patient, we immediately provide masks, educate about TB IPC like cough etiquette, home ventilation, care givers to provide balanced diet, specially milk, meat, egg and other high-protein content diets timely and frequently if they can afford." (IIP10)*

It is clear that participants felt that competencies to advise patients on the road forward are essential.

5.4.2.4.2. *Category 4.2: Standardisation of services*

Regarding the standardisation of TB services, the participants disclosed the following:

> *"There should be uniformity in DOTS services among the HCs. Some of the HCs provide DOTS service strictly on a daily basis whereas some of the HCs provide the drug for seven days/weekly. There must be a strict DOTS implementation guideline." (IIP2)*

It is clear that standardisation of services, especially DOTS, is a problem.

> *"There were two patients who did not have any signs and symptoms related to TB disease and just only having chronic joint pain were diagnosed as TB patients and switched onto anti-TB treatment for tento 12 months. This misdiagnosis and over-diagnosis of TB, and considering any related cases as TB, then after six months of treatment with anti-TB drugs explaining that it was not TB causes the loss of patients' trust in the TB care providers. This is literally a crime done on the patients both in private and public health facilities." (IIP9)*

Standardisation in diagnosis and treatment is also an important issue. The implication is that clinical practices should be standardised, and treatment decisions should be made timely.

> *"We counsel the presumptive TB patients to protect their families and others until*

we havea confirmatory investigation result at hand..." (IIP5)

The study finding indicates that some HCs are not providing DOTS TB services at the weekends and holidays. The interruption of DOTS for two days per week for two months affects TB patients' treatment adherence. This is, therefore, not standardised.

5.4.2.4.3. *Category 4.3: Training of healthcare professionals*

Training and availability of training programmes for TB healthcare professionals was mentioned:

> *"I started working in the TB clinic without having any training on TB programmes with my interest for TB care service provision. There should be TB care providers and other healthcare providers updating mechanism about the TB programme since most of the healthcare providers do not have the habit of reading updates." (IIP7)*

> *"There have been orientation trainings provided on updates before two years. Currently, we do not have any updates about the change of TB preventive therapy from INH to RH. We just heard from the sub-city health office TB officers on phone call after I got the letter shared from the health bureau. There are also HCs still providing INH as TB preventive therapy due to lack of uniform update and orientation training from the concerned body." (IIP8)*

Another participant stated:

> *"I did not have any training on the integrated TB/HIV programme management.I did not also have any refresher training or course on updated TB programmes in the last one year. There should be continuous refresher training on TB programmes to update the TB care providers." (IIIP5)*

There is a need for training opportunities.

> *"There should be education opportunity related to TB programme implementation." (IIIP7)*

The finding of the study reveals that there were gaps in the national TB care and treatment guidelines related to training. Training was not provided as necessary.

5.4.2.4.4. *Category 4.4: Commitment and satisfaction of healthcare professionals treating TB patients*

Participants made remarks that indicated thatit gives satisfaction to treat TB patients and that they are committed:

> *"I feel happy working with TB patients. This happens when I see treatment outcomes of the TB patients after initiation of the anti-TB treatment...The incentive package for TB care providers is almost nil, but my satisfaction and happiness is from the love of my profession and my patients' cure from the TB disease." (IIP8)*

> *"I feel happy working in the TB clinic. I understand that I am helping many TB patients. I got much training and good experience from TB clinic since I have been working in the outpatient department. I have been working with precaution and self-care on prevention of TB infection transmission. My future stay in the TB clinic depends on the willingness of the medical director and management council of the HC because there is professionals' rotation from department to department every one or two years." (IIP5)*

Commitment is clear because healthcare professionals do not gain from incentives:

> *"There is no incentive package for TB service providers, but our happiness is from improving the patients' health ..." (IIP7)*

For some, commitment sometimes lacks because of a lack of incentives:

> *"There is no incentive package for TB serviceproviders...It makes us dimotivated..." (IIP10)*

> *"The healthcare professionals working to save lives should have appropriate salary payment better or equivalent to other corporate organisations to provide patient-centred care and minimise medical errors by reducing healthcare providers stress*

about basic living amenities..." (IIP7)

Some healthcare professionals are committed despite a lack of incentives, as treating these patients leads to fulfilment, but others see it as a problem.

5.4.2.5. Theme 5.5: Issues regarding relationships between patients and professionals

As the fifth theme, issues regarding relationships between patients and professionals emerged. The data from the patients, and, therefore, the categories, somewhat overlapped.

5.4.2.5.1. *Category 5.1: Trust and respect*

Participants mentioned how they experience the issue of trust and respect as follows:

> *"To build trust from our TB patients, we respect working time, we tell them the truth about the medication, duration of the treatment, side effects of the medication, and the confidentiality of all the information provided [and that it] will be kept in that TB clinic only and we empower them to express their feelings freely." (IIP3)*

> *"If you can provide proper counselling and health education about TB and its treatment on the first day of contact and also if you let them tell you any challenges and problems face-to-face or calling with cellphone, their trust and confidence will be high so that patients feel that they are not stigmatised for being TB patients." (IIP2)*

There are even unusual circumstances that require special efforts to get respect from patients.

> *"I had one commercial sex worker TB patient...She was very reluctant and did not want to follow the TB treatment then I decided to approach her in a friendly manner then she continued to take the TB drug properly. Later, she told me that "I thought that I am taking the TB treatment to continue your friendship and for your respect." (IIP5)*

For TB treatment to be successful and for patients to continue with their medication regimens, trust and respect between patients and healthcare professionals are essential.

5.4.2.5.2. *Category 5.2: Stigma*

Participants indicated stigma as a problem affecting the treatment of TB patients:

> *"...some of the TB patients feel that being a TB patient and taking anti-TB treatment is shameful..." (IIP9)*

The participants also mentioned that to change the TB patients' feelings of being stigmatised and enhance their confidence and trust in the providers and TB services, the providers should provide in-depth health education and pre-diagnosis counselling during the first contact:

> *"TB patients want to have attractive approaches and good interaction with TB care providers...If TB care providers can provide proper health education about TB and its treatment on the first day of contact...trust and confidence will be high so that they feel that they are not stigmatised for being TB patients." (IIP2)*

> *"If you can provide proper counselling and health education about TB and its treatment on the first day of contact and also if you let them tell you any challenges and problems face-to-face or calling with cell phone, their trust and confidence will be high so that the patients feel that they are not stigmatised for being TB patients." (IIP2).*

The results show that healthcare professionals are aware of the fact that TB patients experience stigmatisation, and that the problem should be addressed. Patients who experience stigma are reluctant to report symptoms of TB or take treatment. TB service providers and other non-medical professionals are expected to reduce and avoid stigma related to TB to improve early TB diagnosis, treatment and adherence to TB treatment.

5.4.2.5.3. *Category 5.3: Feelings resulting from relationships when treating patients*

Participants mentioned that often the relationship with the patients was positive for them:

> *"I feel happy working with TB patients...The incentive package for TB service providers is almost nil, but my satisfaction and happiness is from the love of my*

profession and my patients' cure from the TB disease." (IIP8)

When patients are cured, it makes healthcare professionals feel good:

> *"There are things you feel. If a client comes to you with TB and becomes cured after treatment completion, it makes you very happy." (IIP4)*

> *"I feel happy working in the TB clinic. I understand that I am helping many TB patients. I got much training and good experience from the TB clinic since I have been working in the outpatient department." (IIP5).*

> *"Helping TB patients to cure from TB disease and improving their general health condition makes me satisfied and encouraged to provide TB services as well as stay long in the TB clinic." (IIP2)*

However, treating TB patients also leads to fear among healthcare professionals:

> *"There are fascinating and non-interesting things with working in the TB clinic. Sometimes when I hear that aTB service provider is infected with TB, I fear the risk of being infected with TB." (IIP6)*

Another one said the following:

> *"I have been working with precaution and self-care on prevention of TB infection transmission." (IIP5)*

Feelings also changed over time when working with TB patients:

> *"Previously, I was not even interested in coming to the TB clinic. My respect and attitude towards TB patients changed while I was working continuously in the TB clinic and observed the TB patients' respect for TB service providers and their satisfaction with the TB service provided in the TB clinic." (IIP3)*

Participants mentioned that working with TB patients, a positive relationship with them can be built and it was generally a good experience. However, for some it caused fear to an extent.

5.4.2.6. Theme 6: Support needs of patients, healthcare professionals and community

The sixth theme that emerged focused on needs in terms of support for patients, healthcare professionals and the community.

5.4.2.6.1. *Category 6.1: Needs of patients for adequatenutrition*

Many healthcare professionals observed that patients need adequate nutrition and cannot afford it:

> *"Nutritional assessment and counselling services are provided for all TB patients...TB patients with severely acute malnutrition and moderate acute malnutrition are not included in the national and HCs' nutritional treatment plan." (IIP10)*

> *"Nutritional assessment and counselling services are provided for all TB patients, but the challenges are providing nutritional support for severely acute malnutrition and moderately acute malnutrition TB patients. From my previous experience, having such three TB patients, nutritional support is provided only for ART patients and under five-year-old children only." (IIP9)*

Proper nutrition and the lack thereof was emphasized.

5.4.2.6.2. *Category 6.2: Economic and housing needs of patients*

Participants pointed out the issues of economic and housing needs of patients as follows:

> *"There should be...economic support (shelter) programme for TB patients with low socio-economic levels and the homeless to ensure adherence to anti-TB treatment as part of the national TB prevention and control programme. This might surely reduce the burden of drug resistance in street dwellers." (IIP2)*

> *"Most of the TB patients in our catchment population are homeless and have many questions for support related to economic…This is a common challenge experienced by TB service providers in TB case management…There should be economic and*

shelter support program for TB patients with low socio-economic level and homeless...” (IIP1)

Many participants mentioned these kinds of problems:

“I had one TB /HIV patient who was a street dweller and... The ART clinic healthcare providers contributed and collected money from the staff to support the patient financially...” (IIP5)

Proper nutrition and the lack therefore was emphasized:

“There are low socio-economic [status], poor TB patients and street dweller TB patients who cannot tolerate the burden of the TB drugs without having food support. Sometimes we collect money from some voluntary healthcare professionals in the HC and provide financial support for food.” (IIP10)

“Most TB patients have low immune status and low socio-economic status and do not have economic capacity to afford high-protein content meals like milk, eggs and meat. The street dweller TB patients complain about the difficulty of getting a balanced diet to adhere to the anti-TB treatment, but we cannot give any economic support beyond providing psychological support.” (IIP8)

Economic needs that are connected to housing needs and are connected to nutritional needs are one of the themes that emerged strongly.

5.4.2.6.3. *Category 6.3: Community needs related to TB*

Participants also indicated that communities need TB-related support, like education and awareness.

“The government should ensure community awareness about TB disease in order to achieve the End-TB strategy goals.” (IIP9)

“There should be continuous ... awareness creation in the community and general population about TB...” (IIP3)

Educational materials are needed:

"Leaflets, posters, brochures and pamphlets supply and availability is not adequate for creating awareness to the patients about TB..." (IIP1)

TB programme at the community level should be strengthened:

"If the TB programme at the community level was very strong, there would not be a high burden of TB cases in Ethiopia. All stakeholders should work in collaboration on the prevention and control of TB infections. There should be intensive TB programme implementation at the community level to reduce the burden of TB cases." (IIP7)

Participants conveyed the message that much can be done at the community level to address needs related to awareness about TB and information about it.

5.4.2.6.4. *Category 6.4: Needs of health professionals related to supervision and programme support*

Participants revealed that they, as healthcare professionals, need support as well.

"Supportive supervision is important but I do not think it is enough. Generally, there is supportive supervision still but there are many things [that are] not addressed and need improvement." (IIP7)

"The frequency of TB programme supportive supervision from the sub-city health office ranges from two weeks to more than six months and has no regularity in general." (IIP9)

"The supportive supervision teams from the sub-city health office TB programme are not coming for supportive supervision currently. There is no action plan developed and mechanism to provide written feedback from sub-city health office and partners." (IIP10)

There is a need for feedback:

"There was no formally written feedback given on the gaps identified and areas of improvement from the sub-city health office in the past year." (IIP5)

Low levels of supportive supervision, a lack of timely written feedback, and unsupportive approaches that focused on paper-based tasks rather than service delivery hampered efforts to enhance the quality of the services. There is also a need for review meetings:

> *"There were regular review meetings two years ago, but they are interrupted nowadays." (IIP8)*

> *"The regional TB programme performance review was conducted quarterly but it was interrupted in the last quarter." (IIP2)*

Furthermore, regular TB programme performance review meetings are crucial for performance monitoring and building accountability relationships, but they are not done regularly.

5.4.2.6.5. *Category 6.5: Need for TB infection, prevention and control*

Infection prevention and control is a need that participants mentioned:

> *"Coughers are screened at triage, once the patient diagnosed with TB got all the services in TB clinic to minimise contact, contact screened and provided INH for under-five children in the family..." (IIP6)*

There is a need for safe areas:

> *"We do not have a TB patient waiting area and designated sputum production area for TB patients to collect sample sputum specimen for TB testing" (IIP3, IIP8)*

Patients also need information on the issuefor circumstances in the home:

> *"We provide...advice on infection prevention at home during meals, sleeping in bedroom, opening windows and door to enhance home ventilation. The healthcare providers are not screened for TB." (IIP8)*

Basic TB-IPC information and skills at home are critical to reducing the risk of TB transmission among family members.

5.5. DISCUSSION AND INTERPRETATION OF THE QUALITATIVE RESEARCH FINDINGS

This part of the study discusses and validates findings from the qualitative part of the study using literature. The findings of this part of the study revealed that the public HCs could not provide comprehensive, competent and patient-centred quality TB diagnostic and treatment services that could enhance the desired TB treatment outcomes and positive patient and provider experience at the expected level.

5.5.1. Socio-demographic characteristics of participants

Among the ten participants, seven (70%) were male and the other three (30%) were female. The gender of the TB service providers is important in exploring the male and female TB service providers' experience and perspective on the quality of TB service provided in the HCs. The educational level of all the participants was a bachelor's degree. Eight (80%) were professional nurses and the remaining two (20%) were public health officers. Work experience of study participants in TB service provision ranges from a minimum of six months to a maximum of six years. All the study participants were TB clinic focal persons. TB focal persons are responsible for providing TB care, monitoring adherence to treatment and proper registration and documentation of the data.

5.5.2. Theme 1: Availability of TB services

Generally, most of the HCs are providing community-based TB care service, TB screening and case finding, TB diagnosis, TB DOTS and treatment follow up, contact screening and tracing, TB preventive therapy, LTFU and linking back to treatment follow up. The centres also provide HIV/AIDS screening and testing; nutritional assessment, counselling and support services, and TB patients transfer-in and transfer-out services. This is despite limitations in providing quality patient-centred care services based on the national guidelines and global standards of TB care services.

5.5.2.1. Category 1.1: Community-based TB services

Similar to the findings of this study, poor availability of community-based TB case-finding services and low performance in the implementation of community-based TB services were cited as a challenge for early TB case detection and treatment service availability in a study carried out in Ethiopia (Asemahagn et al 2020b:1460). Poor community awareness creation

and engagement in TB infection prevention, treatment and support to achieve the end-TB strategy goal targets was also addressed in the same study. Moreover, further studies and interventions are needed to improve the low performance in community TB detection and linkage to health facilities.

5.5.2.2. Category 1.2 Screening and detection of TB

This study found gaps in the provision of early facility-based presumptive TB case screening, testing and linkage to treatment services in the HCs. Similar findings were obtained from a study carried out in South West Ethiopia (Ereso, Yimer, Gradmann & Sagbakken 2020:7-12). The barriers are related to healthcare providers, patient and HCs factors such as lack of proper training, poor index of suspicion for TB, high burden of patients and lack of motivation mechanism for healthcare providers.

5.5.2.3. Category 1.3: Diagnostic and imaging services

A study was done in Oyo State, South West Nigeria (Oladimeji et al 2017:4-10) on the interruption of smear microscopy and genotypic molecular (Xpert MTB/RIF Assay) bacteriological diagnostic test services. The study found that the limited number of HCs providing genomic molecular testing, non-availability of radiological examinations, such as X-rays, and long turnaround time were among the key challenges to providing quality TB care services. This caused delayed TB case detection and misdiagnosis, diagnostic costs that are too high for examinations in private clinics, increased drug resistance and loss of patient trust in the providers and services provided in the HCs. Enhancing the availability and sustainability of high-quality TB diagnosis service, equipped with modern diagnostics and technologies is needed.

5.5.2.4. Category 1.4: TB DOT services

A study in Ethiopia (Woldeyes 2016:145-149) made findings similar to this study, namely lack of uniformity and regularity of DOTS, inconvenient and inflexible medication provision time, and poor patient-centredness are among the major challenges mentioned in the provision of DOTS. The DOTS programmes' implementation should focus on the improvement of TB patient satisfaction to enhance adherence to treatment and treatment outcomes (Getahun & Nkosi 2017:1).

5.5.2.5. Category 1.5: Catchment, referral and linkage services

Delays of test results or referral of specimen samples for TB diagnosis and treatment follow up and treatment response monitoring tests referral sites have been reflected as challenges in a previous study in Ethiopia (Asemahagn et al 2020b:1459). It was revealed in this study that there are no satisfactory levels of getting timely feedback and information about the status and treatment outcome of referred-out potential TB patients. This is similar to the findings of the study in India (Arora, Khanna, Sharma, Khanna & Shringarpure 2021:1685).

5.5.2.6. Category 1.6: Adherence and support

A literature review on factors influencing patient adherence to TB treatment in Ethiopia (Nezenega, Perimal-Lewis & Maeder 2020:1-15) had results similar to the findings of this study on the provision of poor pre-treatment counselling services and lack of regular communication. The observation of TB patients regarding their adherence to TB medication from either families or close friends was also like the mentioned study. The provision of poor patient adherence and support contributes to patient treatment LTFU and defaulting during treatment phases (Woldeyes 2016:148-149)**.** Development and integration of different treatment adherence improvement interventions and models are needed.

5.5.2.7. Category 1.7: Integration of TB/HIV services

Integration of TB/HIV services is the availability and delivery of both TB and HIV services in the same HC. It is aimed at reducing the burden of TB among HIV patients (TB case finding and providing IPT) and vice versa (HIV testing and counselling, CPT provision).

In this study, it was found that although most of the health professionals are not trained on integrated TB/HIV programme management, TB care providers are implementing provision of HCT services for all patients who tested positive to TB. This is incongruent with the findings of a study in Ethiopia (Sisay, Mekonen, Abera, Berhan, Kebede & Ferede 2018:76) that most of the TB cases were not counselled and tested for HIV. Similarly, a study in South Africa (Christian, Gerdtham, Hompashe, Smith & Burger 2018:1-10) found a low rate of HIV test offered.

Even though gaps in the provision of TB preventive therapy (RH) for all HIV patients in need have been detected, all TB patients are given need-based CPT. Contrary to this finding, Sisay et al (2018:76) found that IPT coverage and integration of ART in TB clinics is very

poor. This study revealed a nice interaction and coordination among TB and ART care providers on referral and linkage of TB/HIV patients. TB patients' complaints about the difficulties of taking medication for both TB and HIV at the same time, on the other hand, provide a barrier to treatment adherence.

A study in Ghana (Anku, Amo-Adjei, Doku & Kumi-Kyereme 2020:5) reported a cordial relationship related to TB/HIV collaborative activities among health professionals. Internal organisational structures of the service units, inadequate infrastructure, weak management and health professionals' engagement, inflexibility of DOTS and constraints in funding are the major challenges that should be addressed to appreciate the contribution of TB/HIV service integration.

5.5.2.8. Category 1.8: Cascade of TB services

Subbaraman et al (2019:1-13) define cascade of TB services as the potential capacity of TB programmes for case finding (screening), awareness creation and behavioural change of TB patients regarding care seeking in time, providing accessible TB diagnostic tests and detecting TB, initiating TB treatment and linkage to care, retaining the TB patient until treatment completion and cure from TB. This study found that there are gaps in TB patients' knowledge and attitudes related to TB, which resulted in low treatment-seeking behaviour and inadequate linkage to treatment at the community level. Following diagnosis at HCs, there is poor capacity for early TB detection and diagnosis. This has resulted in poor evidence-based, sub-standard services leading to medical errors in the treatment of TB patients as well as poor adherence and treatment outcomes.

Reid and Goosby (2017:245-246) found that defining each step of cascade in the TB care continuum enables TB programmes to visualise the implementation gaps from diagnosis to treatment completion.

Researchers (Shiferaw & Zegeye 2019:1-5; Pires et al 2018:241-247) found that values and cultural beliefs, socio-demographic characteristics (ageing and female gender), joblessness, low academic status, poor health literacy and distance from the healthcare facilities directly or indirectly influence the health-seeking behaviour of the community. Other factors influencing the health-seeking behaviour of the community were the level of the health

facilities and availability of vital and essential drugs, laboratory and imaging services and service costs. Improving community awareness about TB, enhancing health-seeking behaviour and facility readiness and service availability might contribute to improvement in treatment outcomes and the satisfaction of patients.

TB programme implementers and TB care service providers have to strive to improve availability and accessibility of comprehensive TB services in public HCs. There is a need for further studies to identify factors contributing to low community TB detection and development of interventions on the improvement of community TB programmes' implementation and performance.

5.5.3. Theme 2: Resource availability

The availability of resources has a paramount contribution towards ensuring the readiness and functionality of the HC providing TB care services. Availability and efficient utilisation of guidelines and policies, infrastructure, technologies, capable human resources, medical equipment, medication and supplies are instrumental to the strengthening of the capacity of the HCs to provide quality of TB care services.

5.5.3.1. Availability of guidelines, manuals and protocols

Khatri and Davis (2020:55) and Getachew et al (2015:145-159) mention the effects of a shortage of TB guidelines for clinical and programme management as well as manuals and SOPs in providing TB services and implementing TB programmes, which is in line with this study.

5.5.3.2. Availability of professionals that can deliver TB services

This study revealed a shortage of trained health professionals who can deliver TB services and it is affecting the quality of TB care services. In their study, Getnet, Demissie, Worku, Gobena, Tschopp, Farah and Seyoum (2021:1-14) also found a shortage and attrition of trained health professionals are affecting efforts to improve access and quality of TB care services. In addition, Gebreegziabher, Yimer and Bjune (2016:1-8) found that challenges related to shortage, attrition and high turnover of trained health professionals, which resulted in unplanned professionals' rotation from department to department without preparing and

training them for the provision of TB services, also resulted in compromising the quality of TB services.

5.5.3.3. Availability of TB drugs

A qualitative study in Nigeria (Oladimeji et al 2017:1-12) found that there was a critical shortage of paediatric fixed doses of TB medication. Similarly, the current study revealed that shortages and inefficient utilisation of TB drugs, especially shortages of the paediatric TB drugs, a lack of additional doses for EPTB patients and challenges related to the timely delivery of the requested anti-TB drugs from the national supply management system, are among the major problems related to input.

Studies in Ethiopia (Asemahagn et al 2020b:1455-1565; Khatri & Davis 2020:47-49) made similar findings and pointed out that the shortage of TB medication is a major barrier to improving the quality of TB care services.

5.5.3.4. Availability of other supplies

The shortage of TB laboratory reagents and other supplies, PPEs, and lack of laboratory equipment, diagnostic technologies and their maintenance were among the major problems to achieving the end-TB targets.

Asemahagn et al (2020b:1455-1465), Khatri and Davis (2020:38-49) and Mohammed et al (2020:1) found major supply-related barriers to offering quality TB diagnostic services such as a lack of GeneXpert machines and fluorescence microscopes. They also found frequent stock out of cartridges and falcon tubes for Xpert MTB/RIF, TB laboratory reagents for acid-fast bacilli test and other laboratory supplies such as sputum containers, sealable, bio-safety cabinet or hood and PPE as barriers to offering quality TB diagnostic services.

Alva and Cloutier (2019:42), in a study in the Philippines, reflect the need to make available equipment such as GeneXpert and X-ray machines; and other TB-related supplies to improve TB care service providers' ability to provide quality TB care services.

5.5.3.5. Lack of allowance for professionals working in TB environment

Marchal, Giralt, Sulaberidze, Chikovani and Abejirinde (2019:1-8) found that financial incentives stimulate and enhance extrinsic motivation of the professionals providing TB services, which enables better adherence to treatment by TB patients. In the current study, almost all participants reported a lack of financial incentives and allowances for professionals working in TB clinics and in circumstances that might compromise their health. Ogbuabor (2020:4) mentions similar complaints about the lack of financial incentives and allowances for professionals working in TB environments. This demotivates health professionals and increases the professionals' attrition and turnover in TB clinics.

5.5.3.6. Infrastructure and facilities

Primary Health Care Performance Initiative (2019:1-15) reported that although infrastructure is not taken into consideration and is sometimes regarded as a luxury, it is a critical component to achieving good quality services. Well-designed infrastructure improves providers-patient communication, privacy and good waiting experiences. It reduces the risk of infection and patients' anxiety.

Similar to the findings of this study, Getnet et al (2021:1-14), and Megene et al (2018:338), in their studies in Ethiopia, found inconvenient infrastructure and facilities for the treatment of TB patients. A lack of ideal designated patient-waiting areas, coughing and sputum production areas, and clean water supply were among the major challenges most participants in this study mentioned. In addition, the findings of Baumgarten et al (2018:1-8) as well as results from a study Alva and Cloutier (2019:42) in the Philippines indicate the importance of improving TB clinics' infrastructure and facilities to improve the quality of TB services.

Similarly, a lack of clean water for swallowing TB medication at TB clinics was also mentioned as a challenge in the study of De Schacht, Mutaquiha, Faria, Castro, Manaca, Manhiça and Cowan (2019:7) in Mozambique. This indicates the importance of improving TB clinics' physical infrastructure and basic amenities. The existing supply management system is limited in its response to the high demand for essential laboratory equipment and diagnostic technologies, TB medication, reagents and other supplies.

5.5.4. Theme 3: Communication and education in TB services

5.5.4.1. Patients' knowledge and education

The findings of this study affirmed that low levels of patients' knowledge, attitudes and practices regarding TB affect the behaviour of individual TB patients or the community in seeking timely TB care and adherence to TB treatment.

Studies done in Mozambique and Kenya (De Schacht et al 2019:1; Mbuthia, Olungah & Ondicho 2018:1-6) found low levels of patient knowledge in the community and a misconception about TB, its causes, the means of transmission and curability. Akeju, Wright and Maja (2017:264-265) also found that low TB treatment adherence was attributed to poor knowledge about TB.

A qualitative study involving a meta-synthesis (Oga-Omenka, Wakdet, Menzies & Zarowsky 2021:17) points out the importance of strengthening consistent community awareness and programmed health education regarding TB at all levels for improving patient diagnosis and treatment adherence.

Similar to the findings of this study, Asemahagn et al (2020b:1461-1462) and Getnet et al (2021:8) also found challenges related to shortages of appropriate educational materials or teaching aids in TB clinics in the provision of regular health education.

5.5.4.2. Counselling

This study found that cooperation from TB patients during their treatment is strengthened when in-depth patient-centred counselling takes place and all clinical decisions are guided by patient values (Médecins Sans Frontières 2017:14-15).

Ongoing patient counselling was not focused on addressing TB patients' emotional and psychological challenges rather it focused on adherence to TB medication. Similarly, a study in Ethiopia (Khatri & Davis 2020:18) reported that only half of TB patients got one-on-one patient-centred counselling services. However, there is a discrepancy between the patients and providers reports.

Because the counselling services reported as provided by providers to patients during counselling were consistently greater than the counselling services reported as received by

TB patients from providers about TB diagnosis and treatment, there were differences in the counselling services provided and received (Colvin et al 2019:1-7).

5.5.4.3. Interaction and communication with TB patients

Poor patient-provider interaction and communication are among the major factors hindering adherence to TB treatment (Nezenega et al 2020:5). A study done in Ethiopia (Sahile, Yared & Kaba 2018:7) found that most of the TB patients have good patient-provider interaction and communication whereas a few TB patients have negative encounters with health professionals. The study found the need to revisepatient-provider interaction and communication improvement strategies to enhance adherence to TB treatment and patient satisfaction.

Enhancing awareness, advocacy and public communication about TB and TB programmes through mass media and other communication platforms has a significant contribution in the prevention of TB transmission, early health-seeking behaviour and treatment adherence.

5.5.5. Theme 4: Competencies and related issues

5.5.5.1. Competencies of healthcare professionals

The findings of this study affirmed that filling gaps regarding special assessment and diagnostic competencies is instrumental in ensuring effective patient history taking, physical examinations, diagnostic testing and interpretation of the findings, implementation of DOT services, and contact tracing and investigation.

According to the Lancet Global Health Commission (Arsenault et al 2019:3) in LMICs, many health professionals fail to diagnose TB, there are delays in treatment initiation and poor adherence to treatment guidelines. There are also gaps in the competence of healthcare professionals. This study made similar findings. Another study that was done in Ethiopia (Asemahagn et al 2020a:1460-1461) found that healthcare professionals had sub-optimal competencies such as failing to detect TB in patients and treating them incorrectly with broad-spectrum antibiotics.

In addition, Christian et al (2018:1-10) found that health professionals obtained only half of the essential history of the patient related to TB. They did not ask about household TB contact and gave limited information about the importance of returning to the TB clinic for test results. They also prescribe medication inappropriately, indicating sub-optimal clinical competence of health professionals.

5.5.5.2. Category 4.2: Standardisation of services

The findings of this study reflect that accurate diagnosis and early treatment are important in avoiding the burden of stigma, cost, and potential side effects of TB medication for these patients and their families.

Similar to the findings of this study, Lancet Global Health Commission (Arsenault et al 2019:3) also report that outdated diagnostic technologies are used and there are gaps in equipping HCs with appropriate infrastructure, medical equipment and diagnostic technologies to provide TB services based on latest evidence-based guidance.

There is a need to improve the competencies of health professionals through continuous capacity building, motivation and standardisation of services, improving clinical TB diagnostic and treatment services with current diagnostic and imaging technologies.

5.5.5.3. Training of healthcare professionals

Congruent with the findings of this study, evidence from a study done by Alva and Cloutier (2019:42) in the Philippines, a study done by Khatri and Davis (2020:53) and a study done by Asemahagn et al (2020b:1461) in Ethiopia reported that healthcare professionals were not given the necessary training.

Gebreegziabher et al (2016:5), in a study in Ethiopia, also found gaps in adherence to the national TB care and treatment guidelines. DOTS implementation is not adhered to and patients are provided with TB medication to take at home, even at the intensive phase of treatment.

5.5.5.4. Commitment of healthcare professionals treating TB patients

A qualitative study in Burundi (Carlsson, Johansson, Eale & Kaboru 2014:1-9) found that patient education and communication, medication provision and treatment follow up are among key responsibilities of health professionals in supporting patients' adherence to treatment.

Some healthcare professionals are committed to treating TB patients, despite a lack of incentives. Others found it a problem, which is congruent with the findings of studies done in Ethiopia (Gebreegziabher et al 2016:5; Asemahagn et al 2020b:1461-1462).

5.5.6. Theme 5: Issues regarding relationships between patients and professionals

5.5.6.1. Trust and respect

The findings of the current study indicate that for TB treatment to be successful and for patients to continue with their medication regimens, trust and respect between patients and healthcare professionals are essential. Similarly, a study in Ethiopia (Gashu, Gelaye & Tilahun 2021:8) indicated that good relationships are a cornerstone for building trust and patient engagement during treatment.

On the contrary, a study conducted in Ethiopia (Nezenega et al 2020:5) and Nepal (Marahatta, Yadav, Giri, Lama, Rijal, Mishra, Shrestha, Bhattrai, Mahato & Adhikari 2020:8-9) reported that health professionals were disrespectful to their patients and exhibited unprofessional behaviour.

Patient-provider trust and respect in TB care relate to the mutual understanding, respect and trust that develop when care providers engage patients during the planning of their treatment. Providers are expected to be respectful and gain mutual trust and confidence to enhance patient-centred quality TB care services. This improves adherence to treatment and patient satisfaction (Oyediran 2019:12-13).

5.5.6.2. Stigma

This study indicates that health professionals are aware of stigma as a problem that impacts early health-seeking behaviour and adherence to TB treatment. The study also reveals that

TB patients have percieved stigma at the community level, with the fear of discriminatory attitudes and acts towards them incongruent with a study in Ethiopia (Getnet et al 2021:6). Similarly, a study in Nigeria (Oladimeji et al 2017:8) found stigmatisation common in communities where the TB patients come from and health professionals working at the TB clinics.

5.5.6.3. Feelings resulting from relationships when treating patients

Health professionals working in some TB clinics experienced positive feelings resulting from progress in patients' recovery and cure. Similar findings are reported in a study carried out in South Africa (Musie & Wolvaardt 2021:8) that points out that health professionals have either positive emotions or negative emotions regarding their relationships with the TB patients in the TB clinics.

A study done in Ethiopia pointed to similar findings namely that the negative emotions of healthcare professionals working in TB clinics are related to fear of being infected with TB, the risk of exposing their families to TB infections and concerns about continuing with their job due to the fear for acquiring MDR-TB (Gebreegziabher et al 2016:5).

5.5.7. Theme 6: Support needs of patients, healthcare professionals and community

5.5.7.1. Needs of patients for adequate nutrition

This study found that patients need adequate nutrition but could not afford it. This is congruent with the findings of a study done in public health facilities in Addis Ababa (Mussie, Yimer, Manyazewal & Gradmann 2019:1-16). It was also found that due to a lack of nutritious diet and a lack of financial capacity to cover expenses, adherence to treatment becomes a challenge to TB patients. Although the cost of nutrition is a problem and something that always increases, providing a nutritious diet during initiating and continuing treatment is very critical (Marguari, Basri, Indrasari & Sebayang 2020:40). Poor nutrition of TB patients is one of the major patient-related barriers limiting the rate of recovery from TB disease (Oladimeji et al 2017:6).

TB drugs have side effects, hence the need for a nutritious diet. The lack of an adequate diet results in the disruption of adherence to TB treatment for the patients. Availing support for

nutrition could facilitate the works of health professionals and enhance adherence to treatment (Carlsson et al 2014:1).

5.5.7.2. Economic and housing needs of patients

The results of this study indicated that TB patients experience economic needs that are connected to housing, transportation and nutrition. Marahatta et al (2020:10) made similar findings, namely that economic barriers are often cross-cutting and these are some of the most prominent barriers impacting on early health-seeking behaviour and adherence to treatment. Similarly, other studies (Mussie et al 2019:7; Oladimeji et al 2017:8) found challenges in lower economic settings of coping with the cost of transportation, food, housing and other expenses related to TB treatment

A qualitative meta-synthesis (Oga-Omenka et al 2021:11) found that direct and indirect costs of treatment such as transport costs or fees related to illegal charges are among the major barriers to the diagnosis and treatment of TB. Financial support from family is important to tackle barriers related to cost.

5.5.7.3. Community needs related to TB

Most of the TB patients only know the name of the disease called TB but have poor knowledge about the prominent symptoms of the TB disease. This leads to most patients visiting private clinics to seek treatment before coming to public HCs and taking non-prescribed medication from private pharmacies and failing to be cured. Lack of knowledge and feeling healed after taking the medication for two months resulted in poor adherence to treatment (Marahatta et al 2020:11).

Datiko, Yassin, Tulloch, Asnake, Tesema, Jamal, Markos, Cuevas and Theobald (2015:3-9) revealed that Ethiopia has been implementing a community-based programme called health extension programme (HEP) designed to improve community health literacy and health service utilisation. This provided the chance to integrate tailored made community-based TB interventions in the community. Positive results came from the evaluation of the community-based TB intervention packages.

Lack of targeted and adequate information source for the community about TB resulted in low community awareness and poor knowledge of patients about TB (Asemahagn et al 2020b:1459).

A literature review (Elfiyunai & Pandin 2021:1) indicated that TB patients need social support from the community HEWs and community TTS. Patients need health information, motivation, supervision, and support to promote treatment adherence.

Like in this study, another study done in Ethiopia found that the shortage of information, education and communication materials is a challenge to providing health education for the patients and their attendants (Getnet et al 2021:8-14).

5.5.7.4. Needs of health professionals related to supervision and programme support

This study found that low coverage of supportive supervision, lack of timely written feedback and unsupportive approaches focusing on paper-based activities rather than the service delivery hindered the efforts to improve the quality of services. Madede, Sidat, McAuliffe, Patricio, Uduma, Galligan, Bradley and Cambe (2017:1-10), in their study, pointto the impact of a supportive supervision intervention on health workers. They concluded that supportive supervision as an intervention improves health professionals' participation. It also reduces the intention to leave and seek other employment, and work-place burnout. Improving human resource management and providing regular supportive supervision boosts health professionals' motivation and retention. Other studies also came to these conclusions (Asemahagn et al 2020b:1462; Avortri, Nabukalu & Nabyonga-Orem 2019:1-6).

Providing opportunities for supervisors and mentees to work together in the service;sharing knowledge and understanding of the situation at the grassroots level; provision of regular constructive feedback; structuring and designing the supportive supervision objectively and early notification of the supportive supervision visit to the health facilities help improve the effectiveness of supportive supervision (Avortri et al 2019:3).

The management support for TB services are very low in some of the HCs. The management are not willing to give health professionals a chance to state their challenges and listen to theircomplaints. This is congruent with another study done in Ethiopia (Getnet et al 2021:11). Ogbuabor (2020:6) reports that regular TB programme performance review meetings are used for improving accountability relationships.

5.5.7.5. Need for TB infection prevention and control

The findings of this study indicate that early morning opening of TB clinics, screening all coughers at triages and all service outlets; and establishing coughers' outpatient department

for diagnosis and treatment of patients with cough are practised by health professionals for TB-IPC despite the shortage of rooms and inconvenient infrastructures in the HCs. This is congruent with the findings of a study done in Nepal (Shrestha, Bhattarai, Thapa, Basel & Wagle 2017) that indicated that most of the health professionals have a positive attitude towards improving TB-IPC practices.

Although health professionals are ready to provide information on TB-IPC related issues to the patients and their families, the efforts are hampered with lack of training on TB-IPC, information, education and communication materials and PPE in congruent with the finding of a previous study in Ethiopia (Labena, Kassa & Gambura 2021:2114-2120).

The finding of this study affirmed that, a lack of designated patient waiting areas and sputum production areas for TB patients are among the major challenges hindering TB-IPC in the HCs. This is similar to the findings of a study done by Labena et al (2021:2115).

Strengthening implementation of TB-IPC measures on managerial and administrative levels and sustainable availability of TB-IPC supplies and PPE in all HCs are very important to improve TB-IPC practices.

5.6. **CONCLUSION**

This chapter presented the qualitative data analysis, writing a literature control as well as the discussion of the results. The next chapter presents the integration of the results in the first phase of the study and development of the strategy.

CHAPTER 6

INTEGRATION OF THE QUANTITATIVE AND QUALITATIVE RESEARCH FINDINGS AND DEVELOPMENT OF STRATEGIES

6.1. INTRODUCTION

In the previous chapter, the major findings from the qualitative data analysis were presented. This chapter describes the integration of the quantitative and qualitative research findings and the development of strategies for the optimisation of the quality of TB care services. The identified gaps from the findings of the study and literature review informed this development process.

6.2. INTEGRATION OF THE QUANTITATIVE AND QUALITATIVE RESEARCH FINDINGS

The integration of the quantitative and qualitative research findings is intended to gain potential insights into the areas of the research where the findings intersect. A mixed-methods study yields variety in the insights and gives a broader understanding than considering the findings of qualitative and quantitative studies separately (Bryman 2007:8-9). The quantitative and qualitative findings were combined to gain new insights and a better understanding of how the findings diverge from one another or complement each other (Guetterman, Fetters & Creswell 2015: 2).

6.2.1. Availability of TB services

The availability of TB services was investigated in the quantitative part of the study, and nearly a third of the respondents perceived poor TB service availability. The findings indicated challenges such as long waiting times for treatment, inconvenient service hours to obtain treatment, inconsistent follow-up by the same provider, and referral to another facility for TB diagnosis due to a lack of TB diagnosis service.

The qualitative part of this study's findings is in line with the above. Participants felt that there are numerous challenges affecting the availability and provision of TB services. Yet, in accordance with national guidelines, community and facility-based TB screening and detection services, diagnostic and imaging services, TB treatment and DOT services, catchment, referral and linkage of services, contact tracing and investigation services, adherence and support services, and integrated TB/HIV services are provided.

The major challenges identified in the availability and provision of TB screening and diagnostic services are inadequate performance in the implementation of community-based TB services, interruption of smear microscopy and GeneXpert (Xpert MTB/RIF Assay) bacteriological diagnostic test services, a limited number of HCs providing genomic molecular testing, and a long turnaround time to get test results.

This leads to a delay in detection and misdiagnosis of TB as well as high cost of patients' diagnostic examinations in private clinics. It also leads to increased drug resistance and a loss of patient trust in the providers and services.

The quantitative study revealed that nearly a third of the respondents take their TB medication without having a regular treatment observer to check and monitor their adherence. The qualitative study showed poor one-on-one pre-treatment counselling services, a lack of uniformity and regularity of the provision of TB DOT services; inconvenient and rigid service provision hours and insufficient home-based follow-up related to TB medication for families or treatment supporters. Patient-centredness is also a challenge mentioned in the provision of DOT services.

The qualitative study indicated that there are long turnaround times for TB diagnosis, treatment follow-up, and treatment response monitoring tests. The study also revealed a low level of timely feedback and information regarding the status and treatment outcomes of TB patients referred to receiving health facilities.

The quantitative research revealed that there was a lack of well-integrated collaborative TB/HIV services. Gaps were revealed in the provision of HIV counselling and testing (HCT) services for all patients who tested positive for TB. The qualitative study also indicated that HIV counselling and testing (HCT) services are provided for all patients; and that there is good coordination and collaboration among TB and ART care providers on referrals and the linkage of TB/HIV patients.

The qualitative study indicated that there are gaps in the provision of TB-preventive therapy for HIV patients in need and inflexibility of DOT and identified a lack of training on integrated TB/HIV programme management for TB healthcare providers. The implementation of DOT programmes should focus on improving the patient-centredness of TB services and increasing adherence to treatment. Different treatment adherence-improvement interventions and models must be developed and integrated.

6.2.2. Resource availability

According to the qualitative study, there is limited availability of TB guidelines, manuals, protocols, and SOPs. These are all critical, and any relevant body should address the shortage. The qualitative study pointed out that there is a shortage of TB-trained health professionals in TB clinics. Some of this is result of the unplanned rotation of health professionals without preparing them for TB services. These contribute to an inadequate service quality.

The findings of both the quantitative and qualitative studies revealed a shortage of TB drugs when they are needed. Problems with the national supply management system for the provision of requested anti-TB drugs on time are the key challenges related to TB drug availability. The supply system does not consider the high prevalence of TB cases in health facilities. This includes paediatric TB drugs and extra doses for pulmonary TB patients who would have been transferred.

Limited capacity and availability of TB diagnostic services were revealed in both quantitative and qualitative parts of the research. This includes shortages of TB laboratory reagents and other supplies, as well as a lack of laboratory equipment.

A lack of financial incentives and allowances for professionals working in TB clinics and working in circumstances that may compromise their health were mentioned.

Both qualitative and quantitative parts of the research revealed the presence of inadequate infrastructure for TB services. Infrastructural issues for TB care include a lack of safe drinking water, clean and useable ablution facilities, comfortable and ventilated patient waiting areas and hallways, suitable dedicated coughing and sputum production areas and appropriate spaces for triage and OPD.

6.2.3. Communication and education in TB services

The quantitative research found that there is a lack of communication and provision of information in TB care services. Nearly a third of the respondents reported that they were not informed about the duration of the transmissible phase of TB, the curability, the importance of DOT, the duration of treatment, the side effects of TB drugs, proper drug storage, and the importance of treatment monitoring tests.

During in-depth interviews, participants of the qualitative part of the study indicated that they explained causes, transmission, and therapy of TB. The meaning of test results, importance of taking TB medication regularly, dosage and possible side effects of medication and duration of therapy was discussed. Additionally, information about nutrition, TB/HIV co-infection, and basic information about and skills for TB-IPC were given. Participants mentioned that patients had limited knowledge about TB.

Other challenges were shortage of educational materials or teaching aids in TB clinics to provide regular health education. Furthermore, patient-centredness in TB counselling services was lacking and there was room for improvement in communication. Patients' practices and attitudes regarding TB also needed attention.

6.2.4. Competencies and related issues

The quantitative study found that more than a third of the respondents perceived that healthcare professionals' competencies were not adequate regarding clinical procedures and tests related to TB. It was also found that a third of the respondents were not examined physically or a sputum test was not done. They received their test results after two days. No treatment observer checked on their daily treatment adherence. Determining which persons had close contact with TB was not done for more than half of the respondents.

The qualitative study revealed that several participants felt that masks and education about personal hygiene should be provided, and cough etiquette and the protection of contacts and household members from TB transmission should be prioritised. Attention should be given to the issue of coughing patients during examination and when doing TB diagnostic tests. A separate clinic for coughers could be established and early opening of TB clinics could reduce contact time with other patients.

Most participants explained that they ask their patients about the recent and past medical history. They determine patients' knowledge, attitudes, and perspectives about their readiness to follow their TB treatment. They enquire about the availability of support, and the existing and anticipated barriers to adhering to treatment.

However, the failure by healthcare professional to screen and detect TB in patients and then in appropriately treating patients with broad-spectrum antibiotics were mentioned as problems. Inadequate medical and diagnostic equipment and reliance on outdated diagnostic technologies are among the major challenges in the provision of competent

evidence-based TB services, according to the qualitative study. Areas that require intervention to guarantee the availability and delivery of adequate TB services are developing healthcare professionals' competence, standardising services and enhancing diagnostic capacity.

6.2.5. Issues regarding relationships between patients and professionals

According to the results of the quantitative study, nearly a third of the respondents were not satisfied with the interaction with healthcare providers and the counselling services. More than a third of the respondents had issues with stigma related to TB diagnosis and treatment. Furthermore, a fifth of the respondents felt they were not treated with the same warmth and friendliness as when they visited other services. For example, some professionals turned their faces away when talking to TB patients.

The qualitative study participants revealed that healthcare professionals are aware that TB patients experience stigmatisation, and that the problem should be addressed. Patients, who experience stigma, are reluctant to report symptoms of TB.

It was mentioned that TB patients perceived stigma at the community level and fear discriminatory attitudes and actions directed against them. The TB patients (respondents) indicated that they prefer taking their medication in a facility far away from their residence to avoid stigma from the community. Some of the respondents indicated they do not like to have treatment supporters so that they can hide their condition and avoid stigma.

The study also revealed that stigma is an issue that has an impact on TB patients' treatment. TB care providers and other non-medical workers are expected to reduce stigma associated with TB to improve early TB diagnosis and treatment, and adherence to TB treatment.

The qualitative research revealed that health workers have mixed feelings about their relationships with TB patients and their employment in TB clinics. The positive feelings stemmed from the trust and respect they get from patients, as well as their recovery and cure from TB. The participants' negative emotions stemmed primarily from their fear of contracting TB and the potential of infecting their family members.

6.2.6. Support needs of patients, healthcare professionals and the community

This study's findings revealed that most of the patients had never received financial assistance or support for transport, nutrition, housing or any other TB-related needs. This resulted in very high costs for TB patients as well as poor adherence to TB treatment.

One of the themes that emerged was the connection between economic needs and housing as well as nutritional needs. There is a need for financial support programmes for TB patients with low socio-economic status and the homeless.

Patients with TB require health information, motivation, supervision, and encouragement to adhere to their treatment plan. The community-based TB programme should be reinforced. TB advocates, who have been treated for TB and cured from TB could be the best motivators by sharing their personal life experiences with TB and their life change. Enablers and incentives could significantly contribute to enhancing the cured TB patients' and other community members' motivation and behavioural change towards supporting TB patients' treatment adherence (Macq, 2007:1-34).

The findings of this study revealed that poor TB treatment adherence and patient satisfaction in HCs were mainly due to a lack of nutritional and financial support for patients, a lack of provider motivation and incentives, and poor community awareness, engagement and empowerment in TB services.

Low levels of supportive supervision, a lack of timely written feedback, and unsupportive approaches that focused on paper-based tasks rather than service delivery hampered efforts to enhance service quality, according to the findings of this study.

Although regular TB programme performance review meetings are critical to improving accountability, they are not held regularly. In some HCs, managerial support for TB care is minimal. Some HC managers do not offer health professionals a chance to express their concerns and have their complaints heard. In order to institutionalise goal-oriented individual and facility-based changes aimed at improving the quality of TB services, healthcare professionals must be empowered and take a proactive role (Singh & Rangnekar 2020:42-43).

The finding of the study revealed that despite a shortage of rooms and cumbersome infrastructure at HCs for TB-IPC, health professionals have been preventing TB infection by

opening TB clinics early in the morning, screening coughers at triage and service outlets, and establishing a special coughers' outpatient unit. These efforts are hampered by a lack of training on TB-IPC, inadequate information, education and communication materials and PPE. To enhance TB-IPC practices at HCs, it is essential to strengthen the implementation of TB-IPC measures.

The study revealed that HCs are unable to provide integrated, comprehensive, competent, and patient-centred quality TB services at the intended level. Based on the findings and literature review, strategies and key interventions must be developed to improve the quality of TB care services.

6.3. STRATEGIES FOR OPTIMISATION OF THE QUALITY OF TB CARE SERVICES

The development process and development of strategies have their own steps and scientific procedures. This is necessary to enhance and standardise the strategies. The starting point of strategy development is evidence generation and synthesis. The key steps in the development and formulation of strategies are defining and outlining the strategy, setting aims and objectives, setting out the scope and guiding principles, providing evidence, identifying themes, developing preliminary and interim strategies, validation of the interim strategies by a panel of experts and incorporating the experts' opinions, finalisation and presentation of the strategy (Matlakala 2012:176-178).

6.3.1. Strategies described

A strategy "is a series of broad lines of action intended to achieve a set of goals and targets set out within a policy or programme" (WHO 2018b:69). Strategy can also be defined as "statements of action or courses of action, in other words, how services may work towards meeting the statements of achievement set out. Strategies need to provide sufficient information for all stakeholders to successfully implement them" (Queensland Health 2015:26 :41).

6.3.2. Purpose of development of strategies in this study

The purpose of the development of strategies in this study is to optimise the quality of TB care services provided in the public HCs in Addis Ababa and to enhance the patient-centredness of these services.

6.3.3. Scope of the strategies

The strategies are applicable to different healthcare settings and can be used by healthcare providers working in TB clinics and HCs, public HC managers, health departments or offices, TB programmers, health bureau and ministry of health with some contextualisation. Healthcare workers working in TB services provision and programmes will be the main users of these strategies.

Moreover, the strategies were developed using scientific policy and strategy formulation procedures. Two rounds of Delphi technique were used to reach consensus on the final strategies and to enhance the validity of the strategies. The evaluators of the strategies were prominent public health experts from different levels in the healthcare settings, ranging from experts from public HCs where services are rendered to ministerial level. Experts from non-governmental organisations and academic institutions were also included in the process. This way, rigour for this section of the research was enhanced.

6.3.4. Guiding principles

The development and implementation of the strategies was guided by basic guiding principles adapted from the Ethiopian National TB and Leprosy Strategic Plan (TBL-NSP) (EMOH 2020a:57) and Malawian quality management policy for the health sector (Malawian Ministry of Health & Population 2017:8).

“The principles are:

1. People-centred TB prevention and care: a prevention and care service focusing on organising and planning around the health needs and expectations of affected people and communities;

2. Evidence-based decision-making: all programme and clinical decisions are made based on evidence-generation and with current diagnostic evidence;

3. Equity and quality: healthcare does not vary in quality because of personal characteristics such as gender, ethnicity, geographical location, and socio-economic status;

4. Efficiency and effectiveness: healthcare service is delivered in a manner that maximises the impacts and an output per the resources used and minimises wastage; and services are provided based on scientific knowledge to all who have the potential to benefit;

5. Transparency and accountability: actions are visible, predictable, and understandable through sharing relevant and accessible information; and all stakeholders are answerable for their actions and there is redress when duties and commitments are not met;

6. Community participation: community structures are empowered to participate in quality assurance and quality improvement initiatives in the health sector;

7. Compassion and integrity: the humane qualities of empathy, sensitivity, kindness, and warmth throughout all levels of the health system, and moral and ethical principles are followed in the provision of quality health services; and

8. Innovation and excellence: new concepts, ideas, services, processes, and products aimed at improving quality of care are introduced; and services are provided, and clients' expectations are managed consistently and in line with standards" (EMOH 2020a:57; Malawian Ministry of Health & Population 2017:8).

6.3.5. Evidence and themes identified that are related to the Donabedian model of quality of care

The Donabedian model of quality of care, as described in Chapter 1 of this study, was used to frame the study. The major thematic areas for intervention were identified based on evidence from the research for the study. After considering and examining the themes, it was clear that the themes were aligned with the Donabedian model. Figure 6.1 illustrates how the Donabedian model was applied and aligned.

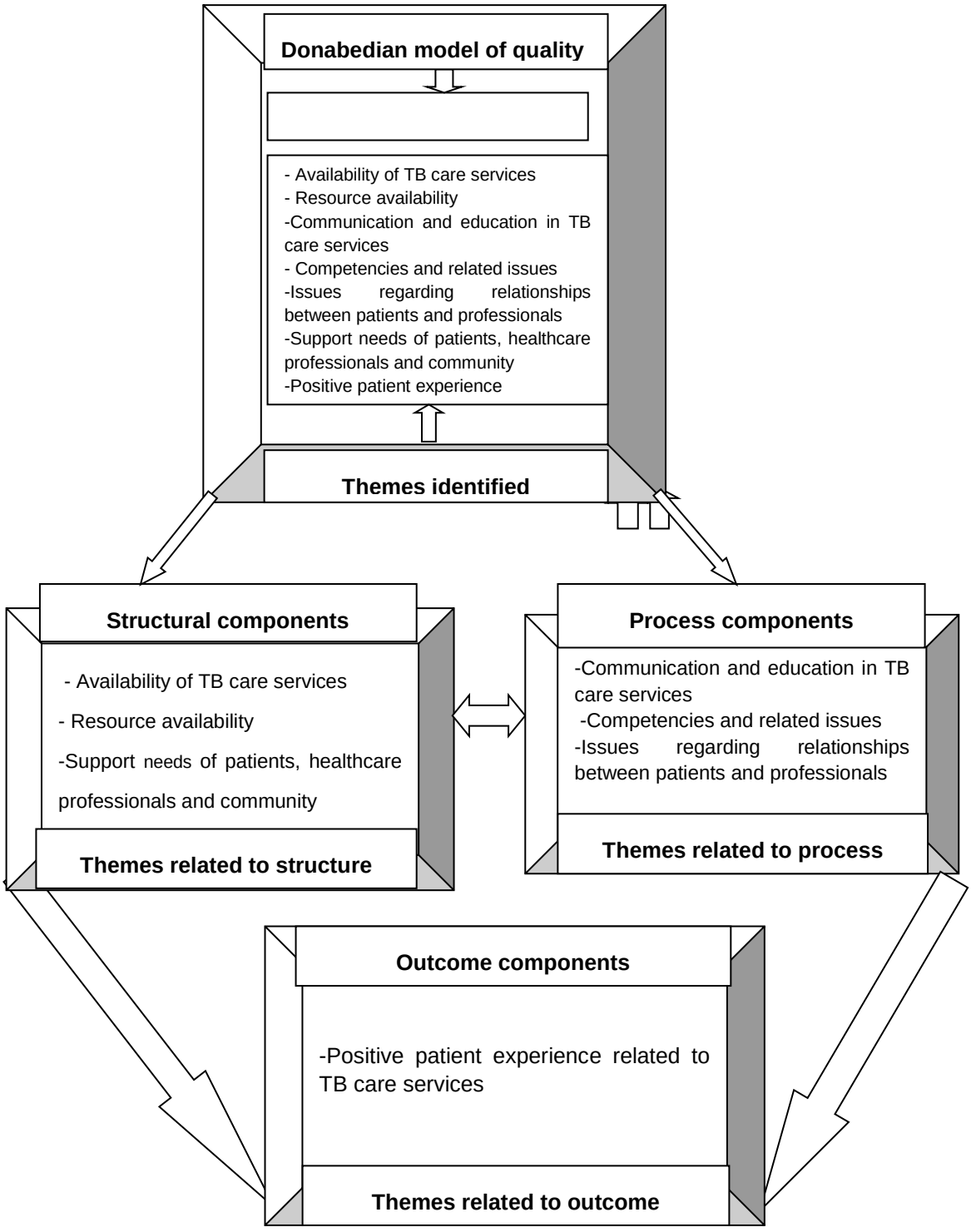


Figure 6.1: Framework showing alignment with the Donabedian model of quality of care

6.3.6. Preliminary strategies and their operationalisation

In this section, the development and formulation of the preliminary strategies based on the research for the study and literature integration are presented. The themes identified from the research findings are presented diagrammatically in Figure 6.2.

Figure 6.2: Diagrammatic presentation of the identified themes

The format of the proposed strategies will be presented in tables 6.1 to 6.6 and it will include the strategies, actions relevant to the strategies and rationale of the strategies.

6.3.6.1. Strategy to address theme 1: Improvement of the availability of TB care services

Community-based TB care services, TB diagnostic services, TB DOT and treatment follow-up services, contact screening and tracing, provision of TB prevention therapy, linking back LTFU for treatment, HIV/AIDS screening and testing, nutritional assessment, counselling and support are all components of TB services that should be available and accessible. The current collaboration and performance of community TB care services have limitations, and there is a gap in community empowerment and engagement.

TB programmes and health facilities should implement and strengthen community awareness about TB. Screening for community TB, case detection, and linkage through family health teams are also important in reducing TB transmission. Empowering community members on TB infection prevention and making information on TB treatment and care services available are vital to improving their own health. Health centres are expected to screen and detect presumptive TB in all age groups, taking into account close contacts in the previous three months who have a potential risk of developing TB (WHO 2019b:1-52).

The acid-fast bacilli test is interrupted in some HCs and the GeneXpert MTB/RIF assay testis ordered only for special groups of TB patients due to a shortage of reagents and supplies for the diagnosis of TB, such as cartridges and falcon tubes. Because of the lengthy turnaround time, healthcare providers in the HCs did not usually order the bacteriological diagnostic TB culture test for TB diagnosis and drug sensitivity tests.

The DOT services should be adaptable, and providers should be aware of the situations in which it will not be practical. Regarding the DOT service, it appears patients do not feel responsible for their own health, as a healthcare provider is required to observe them taking their medication. Furthermore, most TB clinics have set morning hours, forcing clients to fit into providers' schedules rather than their own.

There is a need to escalate TB care by implementing TB monitoring programmes and quality of TB care services in TB programmes and public HCs to fill the current gaps in proper screening and diagnosis of TB cases, TB patients that are missed during the linking process to TB clinics from service outlets, and poor treatment outcomes (Subbaraman et al 2019:1-18). Table 6.1 shows the strategy for the optimisation of the availability of TB care services.

Table 6.1: Strategy for the improvement of the availability of TB care services

Actions of strategy	Rationale
Community-based TB services - Enhance community awareness regarding TB and engagement on community-based TB infection prevention and control - Intensify screening pathways of community TB screening and family health teams	 - To improve community engagement and empowerment regarding TB infection prevention, treatment and care services - To reduce TB transmission and prevalence
Screening and detection of TB - Enhance patient-initiated pathways of TB screening in all service outlets and in the HCs and standardise intra-facility linkage of the presumptive TB cases - Train all healthcare providers concerning TB programme implementation and clinical management of TB	 - To enhance early TB case detection and linkage to treatment - To improve providers' capacity for TB case detection and linkage to treatment
Diagnostic and imaging services - Enhance availability and sustainability of high-quality TB diagnostic services (acid-fast bacilli microscopy, Xpert MTB/RIF Assay test and other modern diagnostic modalities) for early diagnosis of TB and drug resistance at all HCs and catchment centres	 - To improve early TB detection and diagnosis of drug resistance - To enhance health providers' evidence-based clinical decision-making capacity - To reduce drug resistance - To improve patient trust and confidence
TB DOT services - Ensure patient-centredness of DOT TB services rather than only providing TB drugs - Ensure consistency in the implementation of TB DOT services at all HCs - Introduce flexible medication provision times at TB clinics considering patients' preferences instead of a fixed time for all patients	 - To meet the physical, social, psychosocial and spiritual needs of the patients - To offer the patient the chance to choose their preferred and most convenient and accessible HC - To improve treatment follow-up schedule without inconvenience - To adjust TB clinics' fixed time schedules in the mornings which force clients to fit into providers' schedule rather than their own

Catchment, referral and linkage of services - Develop digitalised TB test result delivery system for diagnostic, treatment follow-up and response monitoring test specimen from catchment laboratories to HCs - Develop and standardise drug-resistant TB patient protocol for referral, feedback and communication between TFCs and TICs - Develop and standardise TB patients' transfer-in and transfer-out of protocol to ensure continuity of TB care	- To reduce laboratory test results' turnaround time - To improve TB patient intra-facility referral and linkage services - To ease the drug resistant TB patient referral linkage and feedback between TFCs and TICs - To reduce LTFU and double reporting
Adherence and support - Integrate different models of treatment adherence monitoring and support systems, including technological models (facility, home and work-place DOT services) - Develop a TB patient's incentive scheme	- To make TB patients' preferences the heart of adherence support and monitoring programme - To motivate TB patients to adhere to their treatment
Integration of TB/HIV services -Provide training for all TB care providers on integrated TB/HIV programme management - Strengthen the provision of TB preventive therapy (RH) for all HIV patients for those needed	- To improve the knowledge, practice and attitudes towards TB care providers regarding integrated TB/HIV service delivery - To reduce the burden of TB among HIV patients
Cascade of TB care services - Introduce and implement the TB care cascade approach to identify gaps and develop interventions for monitoring and improving the quality of TB services	- To improve retention of TB patients for consecutive stages of TB care - To continuously improve the quality of care - To strengthen community TB services such as awareness creation about TB and improving health-seeking behaviour, improving the health and diagnostic centres' capacity to detect TB cases early (screening), and linkage to treatment and care - To retain TB patients for care until treatment completion and/or cure from TB - To address gaps related to all the aspects mentioned above

6.3.6.2. Strategy to address theme 2: Improvement of resource availability

The availability of resources in the HCs is crucial to ensuring the functionality and readiness of these centres so that quality TB services can be provided. Providers must adhere to the national diagnostic and treatment protocols. Therefore, the availability of guidelines, manuals and protocols is very important to enhance providers' capacity and standardise TB services.

The HCs should prepare trained and experienced TB healthcare providers before transferring them from department to department, when necessary, biannually or annually. Challenges related to shortage of TB drugs and other supplies should be addressed. Proper stock management of TB drugs, reagents, and supplies should be applied to reduce unplanned stock shortages and to ensure continuous availability and sustainability of all the mentioned supplies and PPE.

The availability and implementation of TB care providers' incentive schemes such as monetary, performance-based recognition and continuous short-and long-term training and education opportunities are important to improve TB care providers' motivation in providing quality and patient-centred care. Well-designed TB facilities taking IPC into account are important to reduce healthcare facility-associated TB infections.

Table 6.2: Strategy for the improvement of resource availability

Actions of strategy	Rationale
Availability of guidelines, manuals and protocols - Ensure availability of clinical and programme management guidelines, SOPs and protocols at all TB clinics and service outlets - Ensure the availability of information, education and communication material -	- To improve the capacity of the providers and standardise TB services - To enhance awareness and knowledge of the providers, patients and care givers
Provider availability - Address shortage of trained TB healthcare providers - Prepare and capacitate TB healthcare professionals when the transfer of providers becomes necessary	- To reduce waiting time from consultation to treatment in TB clinics - To enable the healthcare professionals to spend enough time with their clients - To enhance patient trust because healthcare professionals are properly educated/prepared - To reduce healthcare professionals' caseload
A**vailability of drugs, reagents and other supplies** - Ensure continuous availability of TB drugs, reagents and supplies through proper quantification, forecasting and stock management	- To ensure continuous and sustainable availability of TB drugs (all TB drug regimens), TB diagnosis reagents and supplies (cartridge and Falcon tube) and PPE - To eliminate stock unavailability
Incentive availability - Prepare and introduce risk allowance and incentive packages for TB healthcare professionals - Strengthen performance-based recognition and reward	- To motivate TB healthcare professionals to render quality TB services - To create positive competition among HCs and thereby enhance performance
Infrastructure and facilities - Improve hygiene, safety, and comfort in TB patient waiting areas - Ensure availability of designated TB patient waiting areas, coughing and sputum production areas and hand hygiene areas, ablution facilities - Improve the availability of clean and safe water for the TB patients	- To improve the hygiene and safety of patients, providers and patient attendance - To reduce healthcare-associated TB infections and reduce risk

6.3.6.3. Strategy to address theme 3: Improvement of communication and education in TB services

Effective communication between patients and providers is instrumental in improving TB patients' adherence to treatment and satisfaction with TB services. It also enhances trust in TB providers' competence.

The implementation of PPA could be applied to address patients' adherence to TB treatment (refer to Chapter 2). Seeking healthcare early and adhering to treatment are important to reduce the prevalence of TB and to improve treatment outcomes.

Patients' knowledge, attitudes, and practices regarding TB influence behaviour of individual TB patients as well as community members. Client-centred counselling is focused on effective communication during pre-diagnosis, initial and ongoing stages of TB. Communication is, therefore, essential for improving TB patients' adherence to treatment. Continuing counselling should address the emotional and psychological issues of TB patients as well.

Barriers to effective interpersonal communication should be addressed in TB services by developing and implementing a communication protocol. Community mobilisation and improvement of intersectoral collaboration, as well as fostering mass media engagement could be emphasized.

Table 6.3: Strategy for the improvement of communication and education in TB services

Actions of strategy	Rationale
Patients' knowledge and education	
- Enhance patients' knowledge and health-seeking behaviour - Promote adherence to TB treatment through implementation of PPA	- To solve individual, group and system-level barriers related to poor health-seeking behaviour and treatment adherence through communication, advocacy, and social mobilisation - To enhance knowledge of TB patients and community members in seeking timely TB care - To improve adherence to TB treatment
Counselling and health education	
- Ensure patient-centredness of TB counselling services - Conduct regular patient satisfaction surveys and address problems	- To provide counselling in such a way that patients' adherence to treatment will be enhanced - To promote the implementation of patient-centred services - To improve the relationship between patient and provider and contribute towards positive patient experiences
Interaction and communication	
- Effective interpersonal communication at TB care facilities - Develop protocols for positive patient-provider communication systems	- To overcome barriers in interpersonal communication between healthcare professionals and TB patients, their family members and treatment supporters - To standardise and promote approachable communication between patients and healthcare providers

6.3.6.4. Strategy to address theme 4: Improvement of competencies and related issues

Improving the competencies of healthcare professionals providing TB care is essential to providing an integrated service at an optimal level. Standardisation, improvement and implementation of DOT is important to promote a culture of safety and trustworthiness in TB care. Patient-centredness in TB care is also essential for services offered in public HCs. The conflicting practice of providing DOT services and treatment in most HCs but not providing care at some HCs on weekends should be addressed. TB diagnosis and treatment services should be standardised using current diagnostic and imaging technology. Evidence-based clinical decision making will be improved in this way.

Incentive packages for TB healthcare professionals might increase these professionals'

desire to offer competent and comprehensive care and increase their commitment to optimal performance. Best practices in this regard should be investigated and considered for adoption. Continuous professional development and capacity-building programmes as well as benchmarking best practices are required.

Table 6.4: Strategy for the improvement of competencies and related issues

Actions of strategy	Rationale
Competencies of healthcare providers - Ensure timeliness of TB care services through reducing long waiting time to consultation and implementing same-day appointment system - Develop and implement telemedicine for consultation of TB patients during non-clinic days and hours to ensure availability of healthcare professionals - Build capacity through continuous professional development programmes and supervision and mentorship - Improve turnaround time of diagnostic and imaging services - Adhere to the national TB clinical management guidelines	- To implement quick appointment system and direct walk-in visit without appointment - To reduce long patient waiting time and improve duration of consultation time (telemedicine) - To improve health treatment outcomes. - To reduce providers' load and burnout, shorten waiting time for consultation - To improve efficiency and effectiveness of healthcare professionals rendering TB services - To standardise clinical TB care
Standardisation of services - Standardise clinical TB diagnostic and treatment services with current diagnostic and imaging technologies	- To reduce unnecessary costs and unintended outcomes - To use evidence-based TB treatment and diagnostic guidelines
Incentives and package - Benchmark best practices and develop incentive package for TB care providers - Strengthen performance-based recognition for best performers	- To improve the TB care providers' motivation when providing patient-centred TB care - To enhance performance of healthcare providers
Availability of training - Strengthen CPD programmes to include training of healthcare professionals concerning management of TB - Optimise and encourage healthcare professionals and programme managers to utilise their own data for decision making and improving services in that way	- To improve adherence to the national TB care and treatment guidelines - To improve providers' knowledge, attitudes and practice on provision of appropriate patient-centred integrated TB care services - To improve quality of clinical practices in TB care

6.3.6.5. Strategy to address theme 5: Improvement of issues regarding relationships between patients and professionals

TB patients expect healthcare professionals to respect them and thereby promoting mutual trust and confidence. Ensuring patient privacy and confidentiality and engaging the community in TB care quality improvement will contribute towards a better provider-patient relationship. Patients with TB are experiencing stigma and discrimination in healthcare settings, communities, and the workplace. To reduce the stigma and raise community awareness, social media platforms should be developed involving prominent figures from the communities.

There is a need for TB programme-specific quality improvement systems that are linked to the larger health system quality improvement initiatives. It should be a continuous process. Some TB care providers are concerned about contracting TB because of working in TB clinics. It is necessary to ensure the safety of care providers by creating safe working conditions.

Table 6.5: Strategy for the improvement of issues regarding relationships between patients and professionals

Actions of strategy	Rationale
Building trust and respect - Develop and implement a patient charter - Develop or use a tool to measure the level of trust and respect in TB services - Foster a culture of continuous improvement of TB care services	 - To enable patients to advocate for their right to respectful and compassionate TB care - To promote patient-provider respect, trust and confidence - To prioritise TB quality improvement, focus areas
Stigma related to TB - Create community awareness and enhance advocacy using social media platforms involving prominent public figures to reduce stigma related to TB. - Develop protocols for patient privacy, confidentiality and communication.	 - To enhance support from community members and providers to the patient. - To reduce stigma attached to TB by the providers - To reduce loss of housing, employment and maintain social bonding
Feelings of providers - Ensure providers' safety through sustainable supply of PPE - Strengthen continuous support and encourage feedback from the managers - Undertake staff satisfaction and patient experience survey	 - To reduce TB care providers' turnover - To improve TB care providers' efficiency - To create a safe working environment

6.3.6.6. Strategy to address theme 6: Improvement of support needs of patients, healthcare professionals and community

In addition to receiving proper TB care, TB patients need support to address their economic and psychological issues. No economic and nutritional support programmes or systems are

in place to support TB patients who are from low socio-economic backgrounds, and they are, therefore, experiencing nutritional and economic challenges. Nutritional and financial support programmes for TB patients with socio-economic challenges should be implemented to encourage adherence to TB treatment.

Political will and commitment of the government at all levels is needed to allocate an adequate budget and to mobilise other resources. Partnerships with the private sector should be strengthened and stakeholders coordinated to ensure patient-centred TB care services in public HCs. It is also necessary to develop and implement supportive policies and strategies.

This study indicated that supportive supervision programmes are mostly focused on paper-based activities and feedback is provided on an irregular basis. Supportive supervision programmes should, therefore, be reframed. Though it is not being done consistently, regular TB programme performance review meetings are very useful for sharing best practices and learning from the best performers. TB healthcare professionals are not satisfied with support received from management structures of the HCs. The TB-IPC procedures and patient safety measures should also be applied.

Table 6.6: Strategies to address of support needs of patients, healthcare professionals, and community

Actions of strategy	Rationale
Nutritional and economic support programme - Develop and introduce nutritional support programmes and schemes for patients in need - Strengthen and enhance private sector engagement with programme implementation	 - To enhance treatment adherence through addressing nutritional problems of patients in need like street dwellers and homeless TB patients - To establish a strategy to reduce the high cost of treatment and loss of income due to treatment
Supportive systems and policies - Public health communication and education through mass media to the community and other sectors - Provide adequate financial support and funding for TB programme implementation at all levels - Activate partnerships and collaboration among key stakeholders	 - To introduce public policies and promote government commitment to the TB programme - To improve collaboration among providers, the community and other sectors - To enhance government commitment and political will on budget allocation - To strengthen the implementation of national policies and strategies on all TB activities
Support, monitoring and evaluation - Standardise supportive supervision packages and tools with the emphasis on patient-centredness - Strengthen the current supportive supervision and feedback system; and its regularity - Ensure regular performance review meetings and learning opportunities platforms - Revitalise and strengthen performance-based recognition and reward programmes	 - To strengthen patient-centred TB care system rather than the current system. - To improve the TB care service performance through revitalisation of current supportive supervision system. - To motivate TB care providers
TB infection prevention and control (TB-IPC) - Create awareness about TB-IPC measures and communicate this message - Establishing designated service areas such as waiting areas and sputum production areas	 - To promote community TB-IPC - To reduce healthcare-associated TB infections - To ensure providers' work-place safety and environmental safety in the HCs

6.3.7. Presentation of the proposed interim strategies and key interventions

The proposed interim strategies originating from each theme and key interventions for the implementation of each interim strategy are presented as follows.

6.3.7.1. Presentation of the interim strategies originating from each theme

Participants in both the quantitative and qualitative studies were asked to suggest recommendations on how to optimise the quality of TB care services at public HCs. The researcher integrated suggestions and recommendations from participants and respondents in the quantitative and qualitative parts of the study, as well as the study's findings and preliminary strategies presented in tables 6.1 to 6.6 above in the formulation of the proposed interim strategies for each of the six themes that emerged.

The researcher proposed 11 interim strategies from the six themes for optimising the quality of TB care. These interim strategies originated from recategorisation, reduction and merging of similar preliminary strategies on the same issues, supplemented by extensive literature review and validated by a panel of experts.

The interim strategies proposed are aligned with the strategic objectives and directions of the TB and Leprosy National Strategic Plan (2021/22-2025/26 G.C) and the second Health Sector Transformation Strategic Plan (2020/21-2024/25 G.C) (EMOH 2020a:1-119; EMOH 2020b:1-119). The proposed interim strategies were presented to the supervisor of the research and amendments were made in agreement with the researcher.

Table 6.7: Presentation of the interim strategies from each theme

Theme	Strategy
Theme :1 TB care services availability	1. Improve availability and accessibility of comprehensive quality TB diagnostic and treatment services
	2. Ensure continuity of services through strengthening of catchment areas' TB care services quality, referral linkage and feedback system
Theme 2: Resource availability	3. Improve availability and efficient utilisation of TB medications, reagents, supplies and medical equipment
	4. Improve TB physical infrastructure, basic amenities and TB infection prevention and control (TB-IPC) measures or precautions implementation to enhance TB IPC practices.
Theme 3: Communication and education in TB services	5. Enhance awareness, advocacy and public communication on TB through mass media and other communication platforms for prevention of transmission, early health seeking and treatment adherence
	6. Improve patient-centredness of TB counselling and treatment services
Theme 4: Competencies and related issues	7. Improve providers' competence through continuous capacity-building, motivation and standardisation of services
Theme 5: Issues regarding relationships between patients and professionals	8. Enhance patient-provider respect and trust in TB care services
	9. Foster a culture of continuous improvement of TB care services quality
Theme 6: Support needs of patients, healthcare professionals and community	10. Activate partnerships, resource mobilisation and collaboration among key stakeholders
	11. Strengthen a regular supportive supervision, mentorship and feedback system.

6.3.7.2. Presentation of the interim strategies and key interventions

The researcher proposed key interventions for the implementation of the interim strategies from the rationale presented in tables 6.1 to 6.6 above, evidence from findings of the study and literature to achieve the goal of developing strategy.

The researcher presented the proposed interim strategies and key interventions to the research's supervisor, and changes made in agreement with the researcher before presenting the interim strategies and key interventions to a panel of experts for validation to become the final strategies and key interventions presented in Table 6.11.

The proposed interim strategies and key interventions were validated by a panel of experts using Delphi technique for building consensus on the validity of the strategy. "The Delphi is a group facilitation technique that seeks to obtain consensus on the opinions of 'experts' through a series of structured questionnaires (commonly referred to as rounds)" (Hasson, Keeney & McKenna 2000:1009-1010). The Delphi approach is well-known for being a quick and relatively easy method of conducting an email survey. The approach is not convenient for face-to-face conversations (Lee, Lee & Chang 2020:3).

The researcher employed two rounds of Delphi survey for the validation of the interim strategies to establish consensus on the validity of the strategies for optimisation of the quality of TB care. "There is no restriction on the number of rounds that can be conducted but two or three rounds are most common; the decision on the number of rounds required for any study is made at the discretion of the researcher" (Lee et al 2020:12).

The quantitative and qualitative data were analysedin the first phase of this study to generate evidence for the development of the preliminary strategies and rationale. "Subsequent rounds are analysed to identify convergence and change of respondents' judgements or opinions. Ascertaining the level of collective opinion often entails the use of descriptive and inferential statistics" (Hasson et al 2000:1008-1015).

In the first round Delphi survey, the participants' consent form, ethical clearance and IRB approval letter from the university and Addis Ababa City Administration Health Bureau, executive summary of the study findings, and validation checklist for interim strategies were sent to purposively selected senior HC medical directors, sub-city health office disease prevention and control team leaders, regional level public health experts working on TB programme implementation, university academicians, clinicians, public health experts, and

researchers, senior public health experts working on TB programme from partners and directors, and the director general working on TB programme and health service quality improvement at the ministry level via email. All the invited experts were delighted to participate in the validation and responded promptly.

In the second round Delphi survey, after incorporating the feedback from all members of the panel of experts in the first round Delphi survey, the researcher submitted the interim strategies back to the panel of experts to review and incorporate their feedback. Like the first round Delphi survey, all participants responded promptly. The proposed interim strategies and core-interventions are presented next.

Strategy 1: Improve availability and efficient utilisation of TB medication, reagents, supplies and medical equipment

- Ensure continuous availability and sustainability of TB drugs, reagents and supplies through proper quantification, forecasting and stock management.
- Ensure sustainable availability of TB-IPC supplies and PPE in all HCs
- Introduce timely preventive and curative maintenance system for diagnostic medical equipment.

Strategy 2: Improve TB physical infrastructure, basic amenities and TB-IPC measures or precautions implementation to enhance TB-IPC practices

- Enhance advocacy, communication and awareness-creation on TB-IPC measures for healthcare providers, patients, and care givers.
- Ensure availability of trained HCWs in IPC and TB-IPC guidelines.
- Implement TB screening at all service outlets, such as OPD, IPD, IMCI, and chronic care unit.
- Ensure TB clinics are well ventilated during patient diagnosis and treatment.
- Ensure availability of appropriate designated TB patients waiting area, and a separate coughing and sputum production space.
- Improve the cleanness, comfort and safety of TB patient waiting areas and clinics.

- Improve the availability of clean and safe water for the TB patients.
- Strengthen regular healthcare providers TB screening
- Strengthen the implementation of the four TB-IPC measures (managerial, administrative, environmental and personal protective control measures) at all levels of health facilities.

Strategy 3: Improve availability and accessibility of comprehensive quality TB diagnostic and treatment services

- Enhance patient-initiated pathways of TB screening in all service outlets and client pathway analysis for identifying missing cases.
- Enhance the availability and sustainability of high-quality TB diagnosis services (acid-fast bacilli microscopy and Xpert MTB/RIF Assay tests and other modern diagnostic modalities) for early diagnosis of TB and drug resistance at all HCs or nearby catchment diagnosis centres.
- Enhance the provision of TPT for all eligible HIV patients in need.
- Ensure consistency in the implementation DOT services at all HCs.
- Ensure patient-centredness of DOT TB care services rather than providing TB drugs.
- Revise and introduce flexible TB medication provision times at TB clinics based on patients' preferences rather than fixed time for all TB patients.
- Introduce and implement the TB care cascade approach to identify gaps and develop interventions for monitoring and improving the quality of TB care services.
- Improve community TB screening and DOT services quality and accessibility by empowering HEWs and family health teams to take responsibility for their actions.

Strategy 4: Ensure continuity of services through strengthening of catchment areas' TB care services quality, referral linkage and feedback system

- Standardise intra-facility referral and service linkage.
- Develop and standardise TB patients transfer-in and transfer-out protocol to ensure continuity of TB care services.
- Develop and standardise drug-resistant TB patient referral, feedback and communication protocol between TFCs and TICs.
- Strengthen clinical mentorship and logistic support for TFCs from TICs.

- Develop a digitalised TB diagnosis test result delivery system from catchment laboratories to HCs.
- Strengthen regular catchment TB care services performance evaluation meetings and learning platforms.

Strategy 5: Enhance awareness, advocacy and public communication on TB through mass media and other communication platforms for prevention of transmission, early health seeking and treatment adherence

- Public health communication and education through mass media to the community, patients and providers.
- Enhance community awareness about TB disease to reduce community, healthcare setting, workplace and school stigma related to TB.
- Enhance the role of local mass media on raising awareness about TB and TB care and prevention service utilisation.
- Improve community TB screening, case detection, and linkage through the strengthening of community TB care using family health teams.
- Ensure the availability of adequate patient education and job aids for TB care providers.
- Establish regular media for a on the role of the media in raising awareness, advocating, and mobilising all key stakeholders on TB programmes.
- Provide adequate information and adherence support for better treatment outcomes.
- Ensure the availability of TB information, education and communication materials.

Strategy 6: Improve patient-centredness of TB counselling and treatment services

- Promote patient privacy and confidentiality and develop communication protocols that foster positive patient-provider communication systems.
- Enhance health-seeking behaviour and adherence to treatment through the implementation of PPA behavioural approaches.
- Enhance effective TB patients' group education and life experience learning platforms.
- Conduct regular patient-satisfaction surveys and take corrective action on the findings.
- Integrate different models of treatment adherence monitoring and support systems

(facility, home and workplace, technology (video), text messages and phone call DOT services) based on the patient's condition.

- Develop TB patients' motivation and incentive schemes or packages to enhance adherence to treatment.
- Design and adopt a nutritional assessment, malnutrition identification, and counselling and treatment approach.

Strategy 7: Improve providers' competence through continuous capacity-building, motivation and standardisation of services

- Ensure the availability of TB care providers based on programme standards.
- Strengthen CPD programmes for orienting and training healthcare providers on clinical management of TB and TB programme implementation and monitoring and evaluation.
- Strengthen integrated TB/HIV programme management by training all TB care providers and service linkage.
- Ensure the availability of TB clinical and programmatic management guidelines, SOPs and protocols at all service outlets and TB clinics.
- Improve adherence to the national TB clinical management guidelines through continuous clinical mentorship.
- Optimise and encourage healthcare providers and programme managers on documentation, analysis and utilisation of their own data for decision making and improving the quality of TB care services alongside with clinical management of TB.
- Benchmark best practices and develop incentive packages for TB care providers.
- Strengthen performance-based recognition and reward best-performing providers and HCs.
- Standardise and upgrade clinical TB diagnostic and treatment services with current diagnostic and imaging technologies.
- Strengthen continuous support and feedback system from the managers.

- Conduct regular TB care provider satisfaction surveys and resolve issues to reduce turnover.

Strategy 8: Enhance patient-provider respect and trust in TB care services

- Ensure the availability and efficient utilisation of trained TB care providers.
- Prepare and capacitate experienced TB care providers before rotating them from department to department.
- Standardise and implement the patient charter in all HCs.
- Develop a tool to measure the level of trust, compassion and respect in TB care services and integrate with the performance evaluation system.
- Ensure timeliness of TB care services through reducing long waiting time to consultation and implementing a same-day appointment system.
- Improve TAT of diagnostic and imaging services.
- Develop and implement a tele- (mobile/SMS) or digital TB patient consultation system for non-clinic hours and days.

Strategy 9: Foster a culture of continuous TB care services quality improvement system

- Prioritise TB quality improvement focus areas based on the national health sector transformation plan, national TB strategic plan, national quality strategy and health sector transformation in quality.
- Develop and introduce TB care services quality improvement manual and training packages.
- Establish a system of TB clinical audit and link to quality improvement.
- Develop and implement mentorship and coaching packages and tools.
- Integrate TB care service quality improvement with existing QI team.
- Provide financial support for quality improvement projects.
- Incorporate graduated TB care service quality improvement projects into the

quality submit programmes topics at all level.

- Strengthen benchmarking and best experience-sharing learning platforms.
- Perform continuous/regular monitoring and evaluation of key TB programme treatment outcome indicators to improve TB care services quality.
- Introduce a TB quality journal and print booklets annually.

Strategy 10: Activate partnerships, resource mobilisation and collaboration among key stakeholders

- Strength community ownership and engagement on community TB care and prevention.
- Develop and introduce economic and nutritional support programmes and schemes for TB patients in need.
- Mobilise adequate financial and other resources locally and internationally for the implementation of TB programmes at all levels.
- Strengthen regular partnership and collaboration for with key partners and stakeholders on TB programme implementation and service quality improvement.
- Establish a health insurance scheme and support TB programme implementation to reduce medical catastrophic costs.
- Strengthen and enhance private sector engagement on TB care services and programme implementation.

Strategy 11: Strengthen regular supportive supervision, mentorship and feedback system

- Standardise the supportive supervision packages and tools to emphasise on patient-centredness of TB care services.
- Strengthen regular supportive supervision and feedback system in DOT-implementing HCs.
- Enhance mentorship on the implementation of the TB programme.
- Strengthen regular performance review meetings and learning platforms on case finding and detection, treatment adherence and treatment outcomes of the programme.
- Revitalise and strengthen performance-based recognition and reward programmes.

6.3.8. Validation of strategies

Criteria were developed and used to validate the strategies to ensure their practical effectiveness, feasibility, and acceptability in optimisation the quality of TB care services. The developed and formulated interim strategies were sent to the panel of experts (section 6.3.7). The experts invited to participate in the study were selected purposively based on their experience in clinical practice, TB programme implementation, healthcare quality improvement, and TB research.

6.3.8.1. Criteria used for evaluation of the proposed strategies

The researcher developed criteria for the evaluation of the proposed strategies, which present nine evaluation criteria and descriptions to validate the interim strategy designed to optimise the quality of TB care services (Dinku 2015:103-104).

The criteria were used to evaluate 11 strategies under the identified six themes and each strategy was also evaluated based on validation criteria on the 5-point Likert scale. The Likert scale values range from very low (1) to very high (5), that is, 5=very high, 4=high, 3=medium, 2=low and 1=very low for each evaluation parameter.

There was also a blank space in the remark column provided for evaluators to write any suggestions or feedback for the strategy under each theme at the end of the table, as shown in Table 6.8 below.

Table 6.8: Criteria for evaluation of the proposed strategies

Criteria	Very low (1)	Low (2)	Medium (3)	High (4)	Very high (5)
Clarity The strategy is easy and simple to understand					
Specificity The focus of the strategy is TB care services quality					
Reliability The strategy can be used on other HCs consistently					
Effectiveness The strategy can optimise the quality of TB care services in the HCs					
Validity The strategy is developed based on evidence and can be justified					
Relevance The strategy is appropriate for optimising the quality of TB care services					
Applicability The scope and users of the strategy are clearly defined					
Acceptability The strategy is practical and acceptable to the TB programmes and stakeholders					
Achievability The strategy will be implemented to improve the quality of TB care services					

6.3.8.2. Presentation and description of validation results

The TB strategy validation checklist had two major sections. The first section was on general information of the evaluators comprising evaluators' profession, academic level, occupation and work experience.

The second section of the TB strategy validation checklist was on the evaluation of the strategy, which was in three parts. The first part presented evaluation criteria and description, the second part presented themes, strategies, validation criteria and scores and the third part presented the strategies and key interventions (see Annexure F3.

6.3.8.2.1. *Profiles of evaluators*

The researcher invited 13 senior public health experts and managers at different levels in the health sector, who were involved in the implementation of TB programmes, TB care services, teaching and TB research.

All the invited evaluators willingly participated in the validation. The participants' level of education and qualification, occupation and their position, organisation and work experience are presented in detail in the following Table 6.9.

Table 6.9: Profiles of evaluators

Evaluator	Qualification& educational level	Occupation and position	Organisation	Work experience
Evaluator 1	BSc (public health), Master of Public Health (MPH)	TB/MDR-TB programme senior technical advisor	Health bureau	25 years
Evaluator 2	MPH, MBA, PhD fellow	Director General for Medical Service	Ministry of health	11 years
Evaluator 3	BSc (public health), MSc in Health Monitoring and Evaluation	Health programme and projects M&E and operational research consultant	Consultancy	25 years
Evaluator 4	Medical doctor (MD), MPH	Clinician & Researcher	Specialised hospital	8 years
Evaluator 5	MD, MPH, PhD	Technical manager & public health expert	Ministry of health	18 years
Evaluator 6	BSc (public health), MSc in Applied Human Nutrition	Team leader, disease prevention & control team	Sub-city health office	16 years
Evaluator 7	Medical doctor, MPH	Team leader, disease prevention & control team	Sub-city health office	25 years
Evaluator 8	MPH	Medical director	Public HC	20 years
Evaluator 9	MD, MPH, MBA	Expert public health professional and director	International NGO	18 years
Evaluator 10	MPH, PhD candidate	Director, disease prevention and control directorate	Ministry of health	12 years
Evaluator 11	Internist/PCCM/Assistant professor of medicine	Physician/academician	University	21 years
Evaluator 12	MPH/health service management	Head of Sub-city Health Office	Sub city health office	15 years
Evaluator 13	MPH	National TB Programme (NTP) manager	Ministry of health	20 years

Source: Research data

6.3.8.2.2. *Presentation and description of scores of strategies from evaluators*

The designed interim strategies were emailed to senior programme managers and senior experts, who were deemed a great fit for validation of the strategy given their experiences. They were purposively selected from universities, health institutions and partners having experience on TB programme implementation and TB care services. The participants were invited to take part in the validation of the strategies provided general information about the study and validation of the strategy with email attachment of the key documents. The participants' consent form, ethical clearance and IRB approval letter from the university and Addis Ababa City Administration Health Bureau, executive summary of the study findings and validation checklist for the interim strategies were provided through email.

The two rounds of Delphi technique were applied for better standardisation of the strategies. The strategies had 45 scores from each evaluation criteria designed. The scores provided for each strategy by the evaluators were summed and the mean value and percentage were also computed, as summarised in Table 6.10. The minimum mean score was 39.5 (88%) out of 45 points and the maximum was 42 (93%). A mean score of 34 (75%) out of 45 was used as a cut-off point in deciding the effectiveness, feasibility and acceptability of the strategies for the improvement of the quality of TB care services.

Hasson et al (2000:1011) state that there is no universally agreed level of percentage used as a cut-off point for consensus in Delphi technique. The percentage of consensus or agreement level among the respondents should be at least 51% for building consensus, as cited in McKenna (1994:1222); Sumsion (1998:153-156) recommends an average of 70% while Sharkey and Sharples (2001:398-408) suggest 80% as the cut-off point.

The findings of the validation study imply that all the developed strategies had a high mean score greater than or equal to 34 (75%) considered as valid for implementation. The total mean score of the strategies was 41.2 (92%) out of 45 points, with a very high score of validation to implement the strategies for the improvement of quality of TB care services, as presented in Figure 6.3.

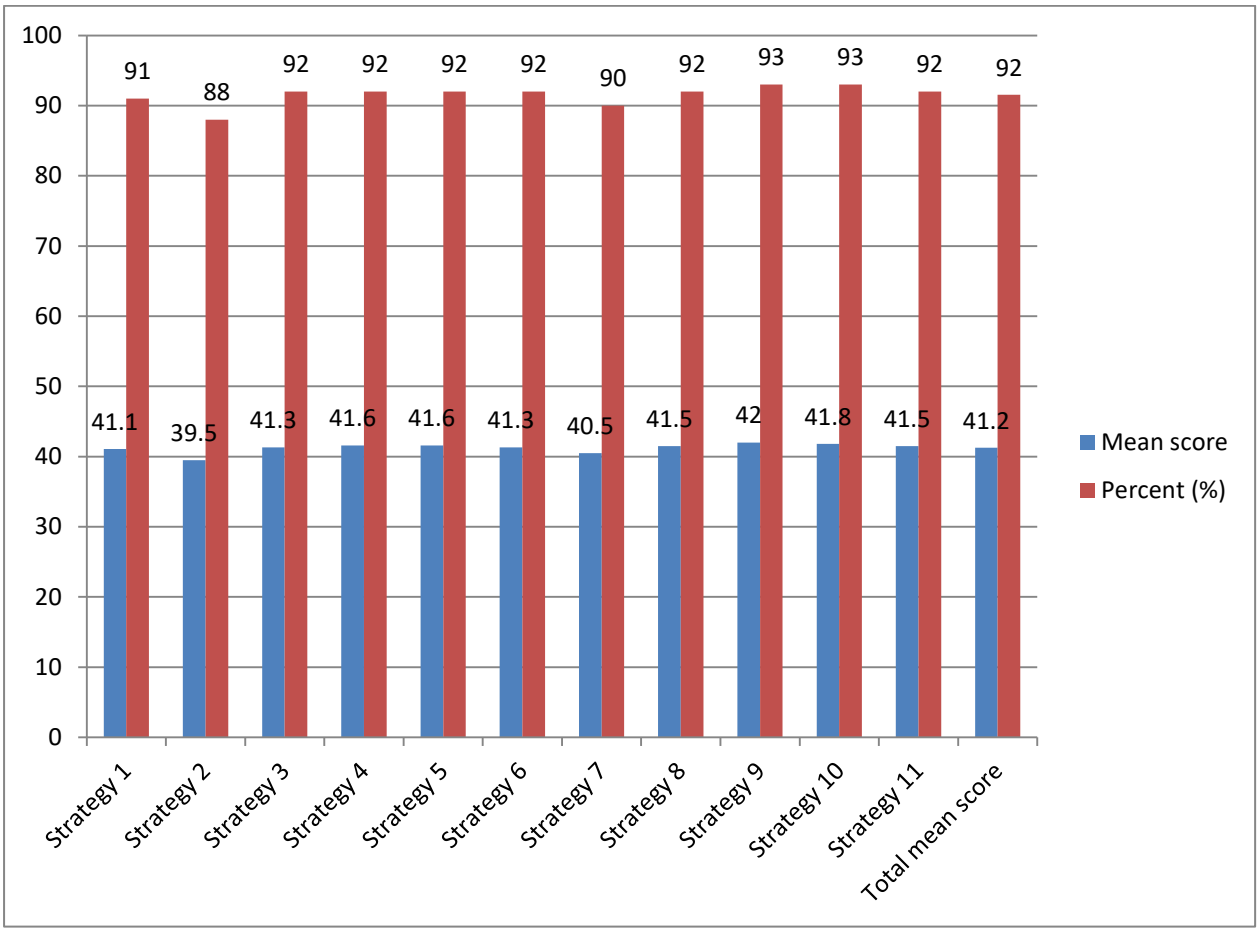


Figure 6.3: Mean scores and percentages of each strategy

Source: Research data

The total scores of each strategy provided by each evaluator, the mean scores and percentages of all the strategies were computed and presented as shown in Table 6.9. The score of each strategy from each evaluator were computed, summarised and presented in tables from Annexure Table 1 to Annexure Table 13 and annexed (see Annexure I).

Table 6.10: Summary of mean scores of the strategies from evaluators

Strategy	Evaluators														
	Evaluator 1	Evaluator 2	Evaluator 3	Evaluator 4	Evaluator 5	Evaluator 6	Evaluator 7	Evaluator 8	Evaluator 9	Evaluator 10	Evaluator 11	Evaluator 12	Evaluator 13	Mean score	Percent (%)
Strategy 1	45	43	38	36	41	44	40	45	37	36	43	41	45	41.1	91
Strategy 2	36	43	32	31	41	44	45	45	29	37	42	43	45	39.5	88
Strategy 3	45	43	36	33	45	45	45	45	37	33	43	42	45	41.3	92
Strategy 4	43	43	37	38	41	45	45	45	39	37	45	38	45	41.6	92
Strategy 5	44	43	34	40	43	45	45	45	39	35	43	40	45	41.6	92
Strategy 6	43	43	28	41	45	45	43	45	37	40	45	37	45	41.3	92
Strategy 7	32	43	35	42	41	45	45	45	37	33	42	41	45	40.5	90
Strategy 8	45	43	35	39	45	45	45	45	37	30	45	41	45	41.5	92
Strategy 9	43	43	34	43	43	45	45	45	36	34	45	45	45	42.0	93
Strategy 10	45	43	33	42	45	45	45	45	36	37	44	39	45	41.8	93
Strategy 11	41	43	36	42	45	45	45	45	36	30	42	45	45	41.5	92
Total mean score														41.2	92

6.3.8.2.3. *Evaluators' feedback on the strategies and key interventions*

There were 79 key interim interventions proposed under the 11 strategies to implement the strategies designed. The key proposed interim interventions were also emailed to the evaluators to review each key interim intervention and comment in the remark column provided in the table.

Most evaluators reviewed and commented on key interventions that should be considered and incorporated to enhance validity of the strategies.

Almost all evaluators stated that the developed interim interventions were well designed to achieve the objectives of the strategies development. The researcher reviewed the comments one by one and aligned with the strategies and interventions based on the

recommendations provided by the evaluators considering their relevance to optimising the quality of TB care services. The feedback and comments provided on strategies and key interventions under the strategies are presented as followed.

Strategy 1: Improve availability and efficient utilisation of TB medication, reagents, supplies and medical equipment

One evaluator stated that making available products is not only an essential strategy, but a necessity for any health programme, including the TB programme. However, TB-specific supply chain and equipment maintenance systems will not make the health system effective. Therefore, the strategy is modest on specificity, applicability and achievability (Evaluator 9).

Strategy 2: Improve TB physical infrastructure, basic amenities, and TB-IPC measures or precautions implementation to enhance TB-IPC practices

Regarding strategy 2, evaluators commented and recommended that consideration to cough-triage should also be included to prioritise patients accordingly, as it is a reliable method of infection prevention within health institutions. Moreover, INH is included in TPT and therefore, 3HP and 3 RH should be considered, especially in short-course treatment regimens. Considering that contact tracing at the community level has a good impact on early prevention and treatment of the disease (Evaluator 7).

Another evaluator commented that TB-IPC is a modest strategy, as it focused mainly on IPC at TB clinics in practice. A TB programme will benefit from general IPC for airborne/aerosol transmission strategy, as evidence shows that non-TB clinic sites/wards are more at risk than TB clinics in spreading TB because the others are dealing with clients of unknown TB status. Strengthening screening of healthcare providers for TB is an important part of TB-IPC in health facilities but is being least practised so far (Evaluator 9).

The last comment on this strategy was that since the TB control programme is an integrated service, physical infrastructure for infection control will be the responsibility of the facility in general not specifically that of the TB programme (Evaluator 11).

The researcher reviewed the strategies and key interventions to ensure the inclusion of the mentioned recommendations and made corrective alignment to the key interventions.

Strategy 3: Improve availability and accessibility of comprehensive quality TB diagnostic and treatment services

The evaluators recommended and commented that: “Aside from the maintenance of diagnostic equipment, interventions need to [be] inclusive of basic and advanced supplies/apparatus for diagnostic purposes” (Evaluator 7).

One of the evaluators suggested that TB case finding is a long-standing challenge for TB programming in Ethiopia and globally. Hence, client pathway analysis followed by tailored interventions would benefit the programme in identifying missing cases. TB diagnostics, especially point-of-care like Xpert, are critical for early, reliable and client-friendly strategies for both drug susceptible and resistant TB.

The evaluator also stated that he did not think that DOT service provision model is a client-centred approach. It looks at clients as if they are not responsible for their own health such that a provider should observe them taking their medicines, and most TB clinics have fixed time in the mornings, forcing clients to fit into the providers’ schedule than their own. The evaluator added that community TB care is underutilised in the Ethiopian context where there are 10 000 HEWs and networks of volunteers. However, again, it should not be the responsibility of the provider to observe directly; rather empower patients to take responsibility for their actions (Evaluator 9).

The researcher reviewed the strategies and key interventions to ensure the inclusion of the recommendations and made corrective alignment tothe key interventions.

Strategy 4: Ensure continuity of services through strengthening catchment areas’ TB care services quality, referral linkage and feedback system

The general suggestions on the interventions of this strategy were that the intra- and inter-facility referrals are generally weak not only for the TB programme but also for other essential programmes. Implementing the proposed strategy in a broader health system framework benefits all programmes, including the TB programme (Evaluator 9).

Strategy 5: Enhance awareness, advocacy and public communication on TB through mass media and other communication platforms for prevention of transmission, early health seeking and treatment adherence

On strategy 5, concerning ACSM strategies which need to be tailored to clients' socio-cultural and economic context, recommendations were that it would be better to focus on modalities that can reach individuals with quality time of engaging them then informing them rather than spending resources on reaching them in mass media as suggested by Evaluator 9.

The researcher made modifications on the strategy and interventions to enhance stakeholder engagement rather than only informing.

Strategy 7: Improve providers' competencies through continuous capacity-building, motivation and standardisation of services

One evaluator questioned the feasibility of the intervention of providing training for all healthcare providers on clinical management of TB and TB programme implementation and monitoring and evaluation under theme 4 (Evaluator 3). Another evaluator recommended the consideration of a CPD programme, as this would make it in-service training and other learning platforms sustainable and more meaningful for HCWs (Evaluator 9). The researcher modified the intervention for better feasibility in implementation.

There is a need for programme managers or health system administrators to clarify their position on the concept of rotating staff from department to department from the perspectives of both clients and providers to balance client satisfaction with provider satisfaction (Evaluator 9). The evaluators added that the implementation of an isolated incentive package for TB care providers might create partiality in the health system (Evaluator 11).

The researcher made amendments considering the relevance of the comments and recommendations on the improvement of the strategy's validity and implementation of interventions.

Strategy 9: Foster a culture of continuous TB care service quality improvement system

On this strategy, one evaluator stated that "this is a nice strategy document. One thing that was not included was the data and information system related issues; otherwise, the strategy contains the dimensions of high-quality health systems." The evaluator also commented on the development and introduction of TB care services quality improvement manual and training packages and recommended, saying rather than developing packages based on a specific programme it would be better to do it for all primary healthcare unit programme

areas. Quality improvement is crosscutting for all programmes in primary healthcare as well as developing and implementing mentorship and coaching packages and tools for all programme areas not specifically for TB (Evaluator 5).

Another evaluator stated the importance of a programme-specific quality improvement system. However, it should be with the bigger health system quality improvement imperatives, that is, system-level quality improvement will take the nation long in a sustainable manner. So, it should prioritise the programme to focus on every year and give the frame for subsequent programmes to build upon for longer and meaningful changes (Evaluator 9). The evaluator recommended conducting small-scale regular patient satisfaction assessment at treatment centres to identify gaps and improve service quality and these should be the components of quality improvement, which were already included in the interventions designed (Evaluator 3).

The setting of criteria for mentor selection based on their capacity of mentorship should be considered to avoid inconsistency in different facilities and taking precautions on implementing and practising isolated performance-based recognition as reward for TB programme only would be difficult to implement were mentioned (Evaluator 11). The researcher reviewed the relevance of the recommendations and comments for the validity of the strategy as well as status of implementation. The recommendations and comments were accepted and incorporated in the strategy accordingly.

Strategy 10: Activate partnerships, resource mobilisation and collaboration among key stakeholders

The evaluators assured that all the interventions are perfectly designed to improve the quality of TB care services. The main strategy and key interventions implementation need strong leadership, health information system, committed and competent healthcare providers and programme implementers at all levels (Evaluator 6).

One evaluator suggested that it would be good if a TB programme works more on the costing of its strategy, especially for determining the catastrophic cost perspective, as the country lacks national representative information on this except a few studies in health facilities settings. Engagement of the private sector has been there for more than a decade. However, the number of private facilities involved, and workplace TB implementation stagnated. The strategy on engaging the private sector might need a different look to capture their

contribution in service provision and financing (Evaluator 9). One evaluator suggested considering the developed strategy work for TB-HIV, MDR-TB and TB under special settings or population. The scope of the strategy, responsible body for implementation and clear standards should be in place under each strategy (Evaluator 11).

6.3.9. Final validated strategies and key interventions

Final strategies and key actions generated from the interim strategies and key actions that were submitted to a panel of experts and eventually validated.

6.3.9.1. Final strategies

Based on the results of the validation, available evidence, and modification of the interim strategies, the researcher and the study's supervisor agreed and constructed the final 11 strategies. Outlined below are the final strategies developed for improvement of the quality of TB care services.

Strategy 1: Improve availability and efficient utilisation of TB medication, reagents, supplies and medical equipment

Strategy 2: Improve TB physical infrastructure, basic amenities and TB-IPC measures or precautions implementation to enhance TB-IPC practices

Strategy 3: Improve availability and accessibility of comprehensive quality TB diagnostic and treatment services

Strategy 4: Ensure continuity of services through strengthening of catchment areas' TB care services quality, referral linkage and feedback system

Strategy 5: Enhance awareness, advocacy and public communication on TB through mass media and other communication platforms for prevention of transmission, early health seeking and treatment adherence.

Strategy 6: Improve patient-centredness of TB counselling and treatment services

Strategy 7: Improve providers' competence through continuous capacity-building, motivation, and standardisation of services.

Strategy 8: Enhance patient-provider respect and trust in TB care services

Strategy 9: Foster a culture of continuous TB care services quality improvement

Strategy 10: Activate partnerships, resource mobilisation, and collaboration among key stakeholders.

Strategy 11: Strengthen a regular supportive supervision, mentorship and feedback system

6.3.9.2. Final key interventions under each strategy and theme

The final key interventions under each strategy and themes after validation and incorporation of the recommendations and feedback are presented in Table 6.11.

Table 6.11: Final key interventions under each strategy and theme

Theme	Strategy	Key interventions
Theme :1 TB care services availability	1.1. Improve availability and accessibility of comprehensive quality TB diagnostic and treatment services	• Enhance patient-initiated pathways of TB screening in all service outlets and client pathway analysis for identifying missing cases. • Enhance the availability and sustainability of high-quality TB diagnosis services (acid-fast bacilli microscopy and Xpert MTB/RIF Assay tests and other modern diagnostic modalities) for early diagnosis of TB and drug resistance at all HCs or nearby catchment diagnosis centres. • Enhance the provision of TPT for all eligible HIV patients in need. • Ensure consistency in the implementation DOT services at all HCs. • Ensure patient-centredness of DOT TB care services rather than providing TB drugs. • Revise and introduce flexible TB medication provision times at TB clinics based on patients' preferences rather than fixed time for all TB patients. • Introduce and implement the TB care cascade approach to identify gaps and develop interventions for monitoring and improving the quality of TB care services. • Improve community TB screening and DOT services quality and accessibility by empowering HEWs and family health teams to take responsibility for their actions.
	1.2. Ensure continuity of services through strengthening of catchment areas' TB care services quality, referral linkage and feedback system	• Standardise intra-facility referral and service linkage. • Develop and standardise TB patients transfer-in and transfer-out protocol to ensure continuity of TB care services. • Develop and standardise drug-resistant TB patient referral, feedback and communication protocol between TFCs and TICs. • Strengthen clinical mentorship and logistics support for TFCs from TICs.

		• Develop a digitalised TB diagnosis test result delivery system from catchment laboratories to HCs. • Strengthen regular catchment TB care services performance evaluation meetings and learning platforms.
Theme 2: Resource availability	2.1. Improve availability and efficient utilisation of TB medications, reagents, supplies and medical equipment	• Ensure continuous availability and sustainability of TB drug, reagents and supplies through proper quantification, forecasting and stock management. • Ensure sustainable availability of TB-IPC supplies and PPE in all HCs. • Introduce a timely preventive and curative maintenance system for diagnostic medical equipment.
	2.2. Improve TB physical infrastructure, basic amenities and TB infection prevention and control (TB-IPC) measures or precautions implementation to enhance TB IPC practices.	• Enhance advocacy, communication and awareness-creation on TB infection prevention and control measures for healthcare providers, patients and patient care givers. • Ensure availability of trained HCWs in IPC and TB-IPC guidelines • Implement TB screening at all service outlets (OPD, IPD, IMNCI, and chronic care unit etc). • Ensure TB clinics are well ventilated during patient diagnosis and treatment • Ensure availability of appropriate designated TB patients waiting area and a separate coughing and sputum production space • Improve the cleanness, comfort and safety of TB patient waiting areas and clinics • Ensure the availability of clean and safe water for the TB patients. • Strengthen regular healthcare providers TB screening. • Strengthen the implementation of the four TB-IPC measures (managerial, administrative, environmental and personal protective control measures) at all levels of health facilities.

Theme 3: Communication and education in TB services	3.1. Enhance awareness, advocacy and public communication on TB through mass media and other communication platforms for prevention of transmission, early health seeking and treatment adherence	• Public health communication and education through mass media to the community, patients and providers. • Enhance community awareness about TB disease to reduce community, healthcare setting, workplace and school stigma-related to TB. • Enhance the role of local mass media on raising awareness about TB and TB care and prevention service utilisation. • Improve community TB screening, case detection and linkage through the strengthening of community TB care using family health teams. • Ensure the availability of adequate patient education and job aids for TB care providers. • Establish regular media for a on the role of the media in raising awareness, advocating and mobilising all key stakeholders on TB programmes. • Provide adequate information and adherence support for better treatment outcomes. • Ensure the availability of TB information, education and communication materials.
	3.2. Improve patient-centredness of TB counselling and treatment services	Promote patient privacy and confidentiality and develop communication protocols to foster positive patient-provider communication systems. Enhance health-seeking behaviour and adherence to treatment through implementation of PPA behavioural approaches. Enhance effective TB patients' group education and life experience learning platforms. Conduct regular patient-satisfaction surveys and take corrective action on the findings. Integrate different models of treatment adherence monitoring and support systems (facility, home and workplace, technology (video), text messages and phone call DOT services) based on the patient's conditions. Develop TB patient motivation and incentive schemes or packages to enhance adherence to treatment.

		Design and adopt a nutritional assessment, malnutrition identification, and counselling and treatment approach.
Theme 4: competencies and related issues	4.1. Improve providers' competence through continuous capacity-building, motivation and standardisation of services	• Ensure the availability TB care providers based on programme standards. • Strengthen CPD programmes for the orientation and training of healthcare providers on clinical management of TB and TB programme implementation and monitoring and evaluation. • Strengthen integrated TB/HIV programme management by training all TB care providers and service linkage. • Ensure the availability of TB clinical and programmatic management guidelines, SOPs and protocols at all service outlets and TB clinics. • Improve adherence to the national TB clinical management guidelines through continuous clinical mentorship. • Optimise and encourage healthcare providers and programme managers on documentation, analysis and utilisation of their own data for decision making and improving the quality of TB care services alongside with clinical management of TB. • Benchmark best practices and develop incentive packages for TB care providers • Strengthen performance-based recognition and rewardbest-performing providers and HCs • Standardise and upgradeclinical TB diagnostic and treatment services with current diagnostic and imaging technologies • Strengthen continuous support and feedback system from the managers • Conduct regular TB care provider satisfaction surveys and resolve issues to reduce turnover.
	5.1. Enhance patient-provider respect	• Ensure the availability and efficient utilisation of trained TB care providers.

Theme 5: Issues regarding relationships between patients and professionals	and trust in TB care services	• Prepare and capacitate experienced TB care providers before rotating them from department to department. • Standardise and implement the patient charter in all HCs. • Develop a tool to measure the level of trust, compassion and respect in TB care services and integrate with the performance evaluation system. • Ensure timeliness of TB care services through reducing long waiting time to consultation and implementing a same-day appointment system. • Improve TAT of diagnostic and imaging services • Develop and implement a tele (mobile/SMS) or digital TB patient consultation system for non-clinic hours and days.
	5.2. Foster a culture of continuous improvement ofTB care services quality	• Prioritise TB quality improvement focus areas based on the national health sector transformation plan, national TB strategic plan, national quality strategy and health sector transformation in quality. • Develop and introduce TB care services quality improvement manual and training packages. • Establish a system of TB clinical audit and link to quality improvement. • Develop and implement mentorship and coaching packages and tools. • Integrate TB care service quality improvement with existing QI team. • Provide financial support for quality improvement projects. • Incorporate graduated TB care service quality improvement projects into the quality submit programme topics at all levels. • Strengthen benchmarking and best experience-sharing learning platforms. • Perform continuous/regular monitoring and evaluation of key TB programme treatment outcome indicators to improve TB care services quality.

		• Introduce a TB quality journal and print booklets annually.
Theme 6: Support needs of patients, healthcare professionals and community	6.1. Activate partnerships, resource mobilisation and collaboration among key stakeholders	• Strength community ownership and engagement on community TB care and prevention. • Develop and introduce economic and nutritional support programmes and schemes for TB patients in need. • Mobilise adequate financial and other resources locally and internationally for the implementation of TB programmes at all levels. • Strengthen regular partnership and collaboration fora with key partners and stakeholders on TB programme implementation and service quality improvement • Establish a health insurance scheme and support TB programme implementation to reduce medical catastrophic costs. • Strengthen and enhance private sector engagement on TB care services and programme implementation.
	6.2. Strengthen a regular supportive supervision, mentorship and feedback system.	• Standardise the supportive supervision packages and tools to emphasise on patient-centredness of TB care services. • Strengthen regular supportive supervision and feedback system in DOTS implementing HCs. • Enhance mentorship programme on the implementation of the TB programme. • Strengthen regular performance review meetings and learning platforms on case finding and detection, treatment adherence and treatment outcomes of the programme. • Revitalise and strengthen performance-based recognition and reward programmes.

6.4. CONCLUSION

In this chapter, quantitative and qualitative results were integrated, and strategies for the optimisation of the quality of TB care services and key interventions to implement the strategies developed. The developed interim strategies were submitted via email and validated using a panel of experts who had experience in TB care services and programme implementation using the Delphi technique. Finally, 11 strategies with key interventions developed for improvement of quality of TB care services. In the next chapter, conclusions and recommendations of the study are presented.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1. INTRODUCTION

The previous chapter highlighted how the integration of quantitative and qualitative research findings resulted in the development of strategies for the optimisation of the quality of TB care services. The validation process was also discussed. The conclusions and recommendations are addressed n this chapter. Furthermore, the study's contributions and limitations are highlighted.

TB programmes and public HCs mainly focus on measuring coverage and access to TB diagnosis and treatment services, overestimating TB treatment performance as a result. Measuring the quality of TB care services and user experience are woefully underappreciated (Arsenault et al 2019:4; Ikeda et al 2019:2; Naidoo et al 2019:4; Pai & Temesgen 2019:12). This led the researcher, who has been working on public health and leading health service quality improvement at different levels of the health sector in Ethiopia with global experience for more than ten years, to study the topic.

This observation was later supported by the findingsof other researchers that only less than half of the presumptive (suspected) TB cases are managed correctly in LMICs. The main contributor to mortality is the poor quality of care rather than poor access to care. Poor quality of care contributes 60% of deaths, while poor utilisation of the health system resulted in the remaining 40% of deaths from disease and health conditions that need healthcare services, as stated by the Lancet Global Health Commission (Kruk et al 2018:e1196-1252).

In this study, the researcher achieved the three study objectives, which were to:

- Describe the quality of TB care services in the perspective of TB patients. This objective was achieved using the quantitative approach in the first phase of the study and it is reflected in in Chapter 4.
- Explore TB care providers' experience on provision of quality TB care services. This objective was achieved using the qualitative approach in the first phase of the study and it is reflected in Chapter 5.
- Develop strategies for the optimisation of the quality of TB care services – this objective was achieved by integrating the quantitative and qualitative research findings and to develop strategies and it is described in Chapter 6.

7.2. SUMMARY OF RESEARCH DESIGN AND METHOD

The purpose of the study was to develop strategies for the optimisation of the quality of TB care services. A convergent parallel mixed-methods design was employed in the study. The study populationsfor the quantitative and qualitative sections were TB patients who were on TB treatment and follow-up and healthcare providers working in TB clinics for the first phase study, respectively.

Research assistants presented and completed a structured questionnaire that was wasused to collect the quantitative data. Qualitative data were collected during in-depth interviews. Data from quantitative and qualitative partsofthe study were integrated and used as the basis for the development of strategies for the optimisation of the quality of TB care services in the second phase of the study. Strategies were formulated based on the challenges and needs that were identified in the first phase of the study using the six themes that emerged from that first phase's findings. The interim strategies were validated by a purposively selected panel of experts. The 11 strategies were finalised after receiving and incorporating the feedback from the panel of experts.

7.3. CONCLUSIONS

The following sections present the conclusions and recommendations from the findings of the study.

7.3.1. Conclusions from quantitative study

Most of the respondents in the quantitative study were male, married, in the 18-45 yearsage group, attained education beyond primary and secondary school level and earned their livelihoods from self-employment. This means most respondents were in the productive age group, engaging in socio-economic activities and had attained an educational level that allowed for a reasonable level of health literacy. Possibly, this contributed to the ability of the respondents to evaluate the quality of TB care services they receive and the daily challenges of TB.

The quantitative study revealed that nearly a third of the TB patients had poor patient-provider interaction and counselling services, and faced stigma related to TB diagnosis and treatment services, signalling a high stigma rate. Nearly a third of the TB patients take their TB medication without having a regular treatment observer to check and monitor their adherence.

Most patients had never received financial assistance or support for transport, nutrition, housing or any other TB-related needs. This resulted in very high costs for TB patients as well as poor adherence to TB treatment. In addition, nearly a third of the respondents was not satisfied with the interaction with healthcare providers and the counselling services.

7.3.2. Conclusions from qualitative study

In the qualitative part of the study, health professionals working in TB clinics discussed their current professional involvement in TB care, their role in the TB clinic, and the duration of their employment in the TB clinic. Most participants were males with a bachelor's degree and acting as a TB focal person. A TB focal person is a healthcare professional in charge of TB care services in a public HC (Izudi et al 2020:150).

The participants were employed as TB healthcare professionals in TB services for six months to six years. They oversaw the delivery TB care, monitoring treatment adherence, and management of the TB programme in the HCs.

Engaging TB healthcare professionals in this study was critical to the gathering of useful data. The data revealed the problems in the provision of TB care services, their potential solutions, and they provided suggestions for the development of the strategies that resulted from the study.

The six themes that emerged from the study findings were:

Theme 1: Availability of TB services

Low performance in the implementation of community-based TB services, interruption of GeneXpert (Xpert MTB/RIF Assay) bacteriological diagnostic test services and a long turnaround time to get test results in the HCs were among the major challenges in the availability and provision of TB screening and diagnostic services.

In addition, a lack of uniformity and regularity in the provision of TB DOT services, inconvenient and rigid service provision hours, and poor patient-centredness were among the major challenges identified in the provision of DOT services.

Theme 2: Resource availability

A shortage of guidelines, manuals and protocols, trained TB care providers, medical, equipment and technology, drugs, reagents, supplies andlaboratory equipment

maintenance-related problems, and inadequate infrastructure and facilities hampered efforts to provide quality TB care.

Theme 3: Communication and education in TB services

Insufficient levels of patients' knowledge regarding TB resulted in attitudes and practices that are inadequate. The shortage of items used in educating patients on health, and inadequate patient-centredness during the counselling of patients were the problems identified.

Theme 4: Competencies and related issues

Delivering optimal TB care was hampered by problems with the process of screening and detection of TB in patients, prescribing unsuitable treatment like broad-spectrum antibiotics, and a lack of current medical and diagnostic equipment. Healthcare professionals' competencies need to be strengthened and updated. Service standardisation and diagnostic capacity also needs to be enhanced, while healthcare professionals' commitment to treatingTB patients needs to be improved.

Theme 5: Issues regarding relationships between patients and professionals

TB patients have perceived stigma at the community level with the fear of discriminatory attitudes and acts towards them. The healthcare professionals are aware that TB patients experience stigmatisation, and that the problem should be addressed.

The health workers have mixed feelings about their relationships with TB patients and their employment in TB clinics. On the one hand, positive feelings stemmed from increased patients' trust and respect for them, as well as their recovery and cure from TB, while, on the other hand, negative emotions primarily stemmed from the health workers' fear of contracting TB and the potential of infecting their family members.

Theme 6: Support needs of patients, healthcare professionals and community

Lack of nutritional and economic support for TB patients has emerged as a key barrier to adherence to TB treatment. In their healthcare planning and programme implementation, TB patients and communities demand TB-related support, such as health information and education, motivation, supervision and encouragement.

Efforts to improve the quality of TB care services were hindered by poorly coordinated and inconsistent supportive supervision, a lack of timely written feedback, and

unsupportive methods that relied on paper-based chores rather than service delivery. Optimising the implementation of TB-IPC managerial, administrative and natural ventilation methods is important.

7.3.3. General conclusions

With considerable evidence, the study found that public HCs are not offering integrated, comprehensive, competent, efficient, and patient-centred TB care services at the required level. Quality improvement should be at the core of the national TB programme and TB care services at HCs, and implementation of the strategies for optimisation of the quality of TB care services is critical. The quality of TB car services might be different from the findings of the study if the study was implemented at national level.

7.3.4. Final strategies

After the validation process the 11 strategies listed below were the final strategies the researcher came up with:

Strategy 1: Improve availability and efficient utilisation of TB medication, reagents, supplies and medical equipment.

Strategy 2: Improve TB physical infrastructure, basic amenities and TB-IPC measures or precautions implementation to enhance TB-IPC practices.

Strategy 3: Improve availability and accessibility of comprehensive quality TB diagnostic and treatment services.

Strategy 4: Ensure continuity of services through strengthening of catchment areas' TB care services quality, referral linkage and feedback system.

Strategy 5: Enhance awareness, advocacy, and public communication on TB through mass media and other communication platforms for prevention of transmission, early health seeking and treatment adherence.

Strategy 6: Improve patient-centredness of TB counselling and treatment services.

Strategy 7: Improve providers' competence through continuous capacity-building, motivation, and standardisation of services.

Strategy 8: Enhance patient-provider respect and trust in TB care services.

Strategy 9: Foster a culture of continuous TB care services quality improvement.

Strategy 10: Activate partnerships, resource mobilisation, and collaboration among key stakeholders.

Strategy 11: Strengthen a regular supportive supervision, mentorship, and feedback system.

7.4. RECOMMENDATIONS

7.4.1. Recommendations for healthcare leaders and policy makers

The researcher made the following recommendations, which are relevant to MOH, RHB and sub-city health offices, which are based on the findings of the study.

- TB drugs, reagents and other supplies management systems should be strengthened to ensure sustainable availability of pharmaceuticals (see strategy 1).
- Adherence to TB treatment and patient-centredness should be enhanced by integrating different models of treatment-adherence monitoring and support systems (refer to strategy 3).
- The TB patient intra-facility referral and linkage system should be strengthened to improve DR-TB patient referral linkage services and provision of timely feedback between TFCs and TICs (see strategy 4).
- A digitalised TB test result delivery system should be designed to reduce turnaround time to test results (refer to strategy 4).
- The community and TB patients' engagement and empowerment strategies should be tailored to clients' socio-cultural and economic contexts and focus on modalities that can reach individuals by engaging and informing them, rather than spending resources on reaching the clients through mass mediaonly (refer to strategy 5).
- TB patients and healthcare professionals' motivation should be enhanced by implementing incentive mechanisms (refer to strategy 7).
- Continuous TB care service quality improvement systems should be designed for TB programmes, in line with the national quality strategy (refer to strategy 9).
- Adequate and sustainable TB programme financing should be ensured by enhancing political commitment, community mobilisation and engaging media houses at all levels (refer to strategy 10).
- Developing and introducing economic and nutritional support programmes for TB patients in need could helpreduce TB catastrophic costs (refer to strategy 10).
- Conducting regular supportive supervision and mentorship and introducing feedback systems could improve the implementation of TB programmes and

enhance providers' competence (refer to strategy 11).

- Regular TB programme performance review meetings, learning opportunities and performance-based recognition programmes should be revitalised (refer to strategy 11).
- Support should be provided for the implementation of the developed strategies for improvement of the quality of TB care services (refer to Chapter 6).

7.4.2. Recommendations for healthcare professionalsand public health centres

The researcher made the following recommendations, which are based on the findings of the study, for implementation and use by healthcare professionals and public HCs.

- The availability and appropriate use of TB guidelines, manuals and protocols and TB drugs, reagents and other supplies should be monitored regularly (refer to strategies 1 and 2).
- Health centres could improve patients' and healthcare professionals' safety by establishing designated patient waiting, coughing and sputum production areas; and clean hand washing and rest rooms as well as making clean and safe water available (see strategy 2).
- The DOT services should be flexible, follow a client-centred approach and the providers should understand the situations in which it will not be applicable practically (see strategy 3).
- Health centres should enhance community and stakeholder engagement on improving the quality TB care services (see strategy 5).
- Treatment adherence monitoring and support systems could be strengthened, and different adherence monitoring models or mechanisms should be implemented (see strategy 6).
- Health centres should conduct regular patient satisfaction surveys and act on the findings to improve the patient-provider relationship and patient experience on TB services (see strategy 6).
- Healthcare professionals should adhere to the national TB diagnostic and treatment guidelines, manuals, and protocols (see strategy 7).
- Healthcare professionals should have adequate clinical evaluation and diagnostic test evidence prior to initiating TB treatment and HCs should ensure sustainable availability and provision of TB diagnostic services as per the national guidelines (see strategy 3 and 7).

7.4.3. Recommendations for future research

Regarding future research, the researcher recommends that:

- Research should be done on effectiveness of the developed strategies and could be done as a post-doctoral study.
- Further studies are needed to identify factors contributing to the inadequate levels of detection of TBin communities in order toplan interventions for improvement in this area.
- Research should be done on patient-centredness of TB care services and how user experience can be improved. Measurement tools can be developed in the process. Mixed methods could probably also be used in such a study.
- High costs related to TB diagnostic and treatment services should be investigated.
- The level of TB healthcare and professionals' level of satisfaction could be explored.
- Stigma-related factors relating to TB patients and healthcare facilities should be researched.
- Evidence-based decision making in TB diagnosis and treatment services could be examined in future research.
- Quality of paediatric TB care services in public HCs should be explored.
- Future studies could explore integration of quality improvement in TB programme implementation.
- Impact of TB programme supportive supervision from supervisory bodies concerning the improvement of TB care services could be researched.
- Utilisation of data for TB care quality improvement could be investigated in future studies.
- The current study could be replicated at national level.

7.5. CONTRIBUTION OF THE STUDY

The overarching goal of the study was to describe and explore the quality of TB care services and design strategies for optimisation of the quality of TB care services in public HCs in Addis Ababa, Ethiopia.

The quality of TB care services in public HCs has never been thoroughly researched and explored in prior TB programme studies in Addis Ababa. The study is unique in the sense that it was designed to describe and explore the quality of TB care services from the point of view of both care providers and patients. The mixed-methods methodology allowed for this. The study used a quantitative study to assess and describe the quality of TB care

services through the eyes of the patients, and a qualitative study to explore the providers' experiences and points of view on providing quality TB care services.

Strategies for optimisation of the quality of TB care services in public HCs in Addis Ababa, Ethiopia, which are the first of their kindin the field of TB care, were developed based on evidence from the study findings and literature review.

The strategies address the structural, process and outcome aspects of the Donabedian model of quality of healthcare as well as the Institute of Medicine quality dimensions of safety, timeliness, efficiency, effectiveness, patient-centredness and equitability of TB care services.

In two rounds, the strategies were validated by a panel of experts composed of unquestionable experts from various levels and centres in the field of TB care. The study's final findings will be made available to policymakers, programme implementers, researchers and the health facilities engaged in the study. The final research will also be published in internationally recognised and accredited journals.

7.6. **LIMITATIONS OF THE STUDY**

The study has the following limitations: The study was conducted in the public HCs of Addis Ababa. Therefore, the findings are only relevant to the public HCs of Addis Ababa and are not generalisable to other parts of the country. The level of TB patients' satisfaction was researched using a Likert-scale questionnaire where research assistants recorded the respondents' answers. It is possible that some could have given a preferred rather than an honest response. The formulated strategies were developed based on evidence from the findings of the study and literature review. Therefore, it might be difficult to apply them to settings other than the study setting; and might need modification and customisation before doing so.

It is important to note that while the developed strategies and interventions in the current study were validated by a panel of experts, the limitation lies with their functional aspects, as they have not been tested through an intervention programme or workshop approach to ensure their applicability and appropriateness. To determine whether the proposed strategies and interventions are relevant, acceptable and feasible, they will be tested and implemented as a post-doctoral research through intervention programmes or a series of workshops.

7.7. PERSONAL REFLECTION

I was glad to get the opportunity to explore and contribute towards research in the global agenda to ensure a TB-free future. Even though the study was very demanding and time consuming, it was a golden opportunity to learn from the work of others, including TB patients in the quantitative study and TB care providers in the qualitative study, as well as from very experienced teams from a panel of experts on strategy validation.

7.8. CONCLUDING REMARKS

HCs are not providing comprehensive quality TB diagnostic and treatment services at the expected levels. Shortage and inefficient utilisation of resources and inconvenient facility infrastructure, inadequate awareness creation, advocacy and public communication about TB and weak partnerships, resource mobilisation and collaboration among key stakeholders were among the major challenges to providing quality TB care services. Other challenges identified are low patient-provider respect and trust, gaps in providers' competence and inadequate supportive supervision and feedback system from different higher-level bodies and poor integration of continuous quality improvement into TB care services.

The findings highlighted that the TB care services provided in the HCs are limited to provide competent and patient-centred quality TB care services that can enhance the desired TB treatment outcomes and positive patient and provider experiences. Building on the findings and literature, six thematic areas and 11 final strategies with key interventions were developed and validated by a panel of experts for optimising the quality of TB care services.

It was also a remarkable opportunity for TB care providers to express their own experiences and emotions. It is hoped and foreseen that these strategies will be extremely helpful for TB programme implementers, TB care providers, and HCs in ensuring the provision of competent and patient-centred quality TB care services that can improve desired TB treatment outcomes and pleasant patient and provider experiences.

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ANNEXES

ANNEXURE A: APPROVAL FROM THE UNIVERSITY

UNISA university of south africa

RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES
REC-012714-039 (NHERC)

6 December 2017

Dear Yesuf Abas Hassen

Decision: Ethics Approval

HSHDC/819/2017
Yesuf Abas Hassen

Student No.:6190-868-1
Supervisor: Prof ADH Botha
Qualification: D Litt Et Phil
Joint Supervisor:

Name: Yesuf Abas Hassen

Proposal: Assessment of tuberculosis care services in public health facilities of Addis Ababa, Ethiopia

Qualification: **DPCHS04**

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted from 6 December 2017 to 6 December 2022

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on. 6 December 2017

The proposed research may now commence with the proviso that:

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

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

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

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

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

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

Kind regards,

Prof JE Maritz
CHAIRPERSON
maritje@unisa.ac.za

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

Prof A Phillips
DEAN COLLEGE OF HUMAN SCIENCES

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
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ANNEXURE B: SUPPORT LETTER FROM THE UNIVERSITY

UNISA university of south africa

26 February, 2020

UNISA-ET/KA/ST/29/26-02-20

Addis Ababa Health Bureau

Public Health Research and Emergency Management Directorate

Addis Ababa

Dear Madam/Sir,

The University of South Africa (UNISA) extends warm greetings. By this letter, we want to confirm that Mr. Abas Hassen Yesuf (student number 61908681) is a PhD student in the Department of Health Studies at UNISA. Currently, he is at the stage of data collection on his doctoral research entitled "***Assessment of tuberculosis care services in public health facilities of Addis Ababa, Ethiopia.***"

This is therefore to kindly request you to assist the student in any way that you can. Attached, please find the ethical clearance that he has secured from the Department of Health Studies. We would like to thank you in advance for all the assistance that you will provide to the student.

Sincerely,

Dr. Tsige GebreMeskel Aberra

Director

UNISA REGIONAL LEARNING CENTRE
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ANNEXURE C: SUPPORT LETTER FROM THE ADDIS ABABA CITY ADMINISTRATION HEALTH BUREAU

በአዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ
CITY GOVERNMENT OF ADDIS ABABA

ቁጥር Ref.No. [illegible]
ቀን Date 19/6/2012

To

Addis ketema sub-city health office
Akaki sub-city health office
Arada sub-city health office
Bole sub-city health office
Gulele sub-city health office
Kirkos sub-city health office
Kolfe Keranio sub-city health office
Lideta sub-city health office
Nifasilk lafto sub-city health office
Yeka sub-city health office

Addis Ababa

Subject: Request to access Facilities to conduct approved research

The letter is to support Abas Hassen Yesuf of "*Strategies to improve the Quality of Tuberculosis Care Services in Public Health Centers of Addis Ababa, Ethiopia*". The study proposal was duly reviewed and approved by Addis Ababa health bureau IRB, and the principal investigator is informed with a copy of this letter to report any changes in the study procedures and submit an activity progress report to the Ethical committee as required .Therefore, we request the facility and staffs to provide support to the principal investigator

With Regards

Daniel Damtew W/teklie
Public Health Research and Emergency Management Directorate Director

CC

Abas Hassen Yesuf

Ethical Clearance Committee

Addis Ababa

ፍትሃዊና ጥራቱን የጠበቀ የጤና አገልግሎት ለሁሉም

ስልክ Tel. 251-115-51-3911 | ፋክስ FAX: 251-115-51-56-89 | ኢሜል E-mail: aahb@ethionet.et | ፖ.ሳ.ቁ P.O.BOX 30738 | አዲስ አበባ ኢትዮጵያ Addis Ababa, Ethiopia

መልስ ሲጽፉልን የእኛ ቁጥር ይጠቀሱ In replaying please quote our Ref.No.

ANNEXURE D: LETTER REQUESTING PERMISSION TO CONDUCT A RESEARCH

To: **Addis Ababa City Administration Health Bureau**

Subject: Requesting permission and support to conduct a research

Abas Hassen Yesuf is a doctoral student at University of South Africa (UNISA) in the Department of Health Studies and has already got an ethical clearance and approval from the higher degree committee of theuniversity for conducting a research on "**Strategies for improvement of the quality of tuberculosis care services in public health centres of Addis Ababa, Ethiopia".**

The researcher will collect data from the hospitals in Addis Ababa city through individual interview and using questionnaire after getting the proper ethical clearance from Addis Ababa City Administration Health Bureau where the study is going to be conducted. He is expected to communicate the result of the study to the Federal Ministry of Health Ethiopia, Addis Ababa Regional Health Bureau and other relevant bodies.

The researcher kindly requests your esteemed office to permit and support the study in the public health centres of Addis Ababa City Administration. The researcher is looking forward to have the usual cooperation and support from your office.

With best regards

Abas Hassen Yesuf (61908681)

Tel: +251-910342855

Email: 61908681@mylife.unisa.ac.za/abashassen55@gmail.com

Prof. ADH BOTHA

Telephone nr (s): +27828217148

Email: adh.botha@gmail.com

ANNEXURE E: INFORMED CONSENT FORMS AND DATA COLLECTION INSTRUMENTS

INVITATION TO TAKE PART IN A RESEARCH PROJECT AND INFORMED CONSENT TO PARTICIPATE IN AN INDIVIDUAL STRUCTURED FACE-TO-FACE INTERVIEW FOR A RESEARCH STUDY

1. GENERAL INTRODUCTION

Good day.

My name is _____. I have been tasked to collectdata for the study '***Strategies to Improve the Quality of Tuberculosis Care Services in Public Health Centres of Addis Ababa, Ethiopia***'. This study is conducted by Abas Hassen Yesuf, a doctoral student at the University of South Africa (UNISA).

I invite you to take part in this study. I would like to ask you some questions about the quality of tuberculosis care services in this health centre as you perceive it. This kind of study can also be called a survey.

1.1. PURPOSE OF THE STUDY

The purpose of this study is to develop strategies to optimise the quality of TB care services in the public health centresof Addis Ababa in Ethiopia.

1.2. WHAT IS EXPECTED FROM YOU IN THIS STUDY?

If you volunteer to participate in this study, you will be asked to take part in an individual interview. I will ask the questions and then you will be required to give honest answers. It will take approximately 30-45 minutes. It will not be possible to identify you through your responses. Your answers will be recorded anonymously.

1.3. WILL THERE BE ANY RISKS AND DISCOMFORT?

There will be no harm or risk if you take part in this study. It will just take some of your time.

1.4. ARE THERE BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY?

There will be no direct benefitor payment that would be gained by you if you take part in

this study. However, the results of this study can contribute to improving the quality of TB care services in public health facilities inAddis Ababa.

1.5. ETHICAL CLEARANCE FOR STUDY AND CONFIDENTIALITY

This studyhas been approved by the UNISA ethical review board and the researcher also obtained permission from Addis Ababa City Administration Health Bureau to conduct the study.

The researcher, Abas Hassen Yesuf, is responsible for ensuring confidentiality at all times. The data obtained from you and others will be stored in a locked cabinet for five years and will be destroyed after five years. Only electronic copies of the data will be kept with password protection after five years. The result of the study will be communicated to all that can use the recommendations of the study through journal articles or other opportunities like meetings with supervisors or staff involved in delivering this service.

1.6. IS PARTICIPATION VOLUNTARY?

You can choose whether you want to participate in this study or not. There is no obligation to be part of the study. If you choose not to be part of the study, there will be no discrimination against you.

1.7. CAN I WITHDRAW FROM THE STUDY? (RIGHTS OF RESEARCH PARTICIPANTS)

If you volunteer to participate in this study, you may withdraw at any time when answering the questions. You have the full right to withdraw your consent at any time and discontinue participation without consequence. Also if you have any question or anything that is not clear you can directly contact the researcher, Abas Hassen (cell phone +251910342855 or e-mail: abashassen55@gmail.com).

1.8. STUDY PARTICIPANT CONSENT FORM

If you clearly understand the information provided above and are willing to participate, please sign the consent form below:

I _____ (your name) the undersigned, was well informed about the study and its objectivesstudy. I understand that all the information that I provide will be kept confidential and usedfor this study only. I also understand that my name will not be disclosed. Identification is not required. I have the right not to discuss issues that I do not want. If I want to withdraw from the study, I will not be obliged to continue or give reasons for doing so. My agreement to participate in this study is with the assumption thatthe information that I provide during the discussion will help greatly to develop strategies to optimise the quality of TB Care Services in Public Health Centres of Addis Ababa, Ethiopia.

Signature of participant _____Date: _____

Signature of witness _____Date:_____

2. DATA COLLECTIONINSTRUCTIONS FOR RESEARCH ASSISTANTS

1. Before collecting any information, presentthe ethical clearance and cooperation lettersto the head/representative of health centre.
2. Before conducting the interview, read the **study information sheet above** to the potential respondents for them to be well informed about the study so that they can decide whether they want to participate. Only after this has been done, do youget the **participant's consent.**
3. For all the questions, record exactly what the respondentssay.
4. For all the close-ended questions, respondents must choosefrom the given answersand circle their choice.If *other* is an option, please write what *"other"* means to the participant ("*other*" must be specified).
5. For open-ended questions, the participantmust write the answer in the space providedon the form.
6. If the participant has general comments, they should write them at the end of the question.

I, _____ (name of research assistant who is doing the interview), undertake to keep all information that the study participant shares with mestrictly confidential.

Signature of research assistant _____Date: _____

Signature of witness _____Date:_____

ANNEXURE E1: Patient face-to-face interview questionnaire (English)

PART ONE: SOCIO-DEMOGRAPHIC CONDITIONS

This section asks for your socio-demographic information. Please mark your answer.

Number	Questions related to your TB	Responses: mark please
1.	Gender	1. Male | 2. Female
2.	Age	Age in years: _____
3.	What is your ethnicity?	1. Oromo | 2. Amharic 3. Tigrie | 4. Afar 5. Other, specify
4.	What is your religion?	1. Muslim | 2. Orthodox 3. Protestant | 4. Catholic 5. Other, specify
5.	What is your marital status?	1. Unmarried | 2. Married 3. Divorced | 4. Widowed 5. Other, specify ……
6.	What is your educational level?	1. None | 2. Primary (1-6) 3. Senior secondary (7-8) 4. Secondary & preparatory (9-12) 5. Diploma and above (tertiary)
7.	What is the main source of your livelihood or income?	1. No employment | 2. Informal sector 3. Student | 4. Employed in public sector 5. - Self employed 6. If house wife, mark here and mention source of income _____

PART TWO: GENERAL QUESTIONS ABOUT YOUR TB

This section is about your TB diagnosis and related issues. Choose the answer and tell me.

No.	Questions related to your TB diagnosis	Responses: mark please
1.	When were you diagnosed with TB after onset of symptoms?	1. Within three weeks (or less) after the onset of symptoms
		2. Three to eight weeks after the onset of symptoms
		3. Nine weeks or more after the onset of symptoms
2.	After diagnosis, when did you start TB treatment?	1. Within two days
		2. Within seven days
		3. Only after eight days or more. Specify how many days, if you can remember
3.	What was/were the reason (s) for your visit to the health centre when TB was diagnosed? You may choose more than one answer.	1.Specifically for TB diagnosis
		2. Medication collection
		3. To seek health information
		4. To follow up on sputum examination
		5. Other: specify
4.	If the participant was previously diagnosed as TB positive, and if he/she was on treatment and defaulted, determine the reason for defaulting from them.	1. Not applicable
		2. Respondent is defaulter. Reason:

PART THREE: QUESTIONS ABOUT TB SERVICE DELIVERY IN THE HEALTH CENTRE

The next part of the survey is about the TB care services that you received during your visits to this health centre. The questions in this part of the survey are about this health centre only. Do not include any other health centre that you visited in your answer.

A. AVAILABILITY OF TB SERVICES AND HEALTHCARE PROFESSIONALS

I will read a statement and then I would like you to answer never; sometimes; most of the time or always depending on how you experienced the service.

No.	Statements	Answers			
		Never	**Sometimes**	**Most of the time**	**Always**
1.	The waiting time (s) before being served by healthcare providers inthis health centre is/are acceptable.				
2.	You are attended to by the same healthcareproviders in this health centre.				
3.	The service hours of this health centre to get TB treatment are **convenient** for you.				
4.	The health centre offers sputum examination services.				
5.	Drugs are available when you require them.				
6.	Language barriers make it difficult to obtain TB services in this health centre.				
7.	You have to go to another health unit for TB services or treatment.				
8.	This health centreis easy to reach (distance convenient).				

9.	TB services at this health centre are available during your working hours.				
10.	The specific healthcare providers you come to see in this health centre are available.				

B. COMMUNICATION AND INFORMATION FOR TB SERVICES

Please answer yes or no to the eight questions below, which have to do with communication and information about the TB disease and treatment.

No.	Questions	Answers	
		Yes	No
1.	Did the healthcare providers in this health centre tell you when you will not be spreading TB to others?		
2.	Did the healthcare providers in this health centre tell you that TB can be cured?		
3.	Did the healthcare providers in this health centre inform you about the importance of observed treatment?		
4.	Did the healthcare providers in this health centre inform you about the side effects of TB drugs?		
5.	Did the healthcare providers in this health centre tell you about the need for sputum tests at given intervals during your treatment schedule?		
6.	Did the healthcare providers in this health centre tell you for how long you will be on the TB treatment?		
7.	During your visits to this health centre, do health care providers tell you how to store drugs obtained for your treatment?		
8.	Do the health care providers in this health centre tell you when next to come back for TB services?		

C. PATIENT–PROVIDER INTERACTION AND COUNSELLING IN TB SERVICES

I will read statements to you on the interaction between TB patients and health care providers. Answer never, sometimes, most of the time or always, accordingly.

No.	Questions	Answers			
		Never	**Sometimes**	**Most of the time**	**Always**
1.	The healthcare providers treat you with respect during your visits to this health centre.				
2.	The healthcare provider listens carefully to you during your visits to this health centre.				
3.	The healthcare providers explain things in a way you can understand during your visits to this health centre.				
4.	You have enough time to discuss your problems with the healthcare provider during your visits to this health centre.				
5.	Healthcare providers discuss how to deal with your problems with you.				
6.	You experience discrimination because you have TB during your visits to this health centre.				
7.	Your privacy is respected during examination				

	at this health centre.				
8.	You are informed how TB can affect your everyday life by the healthcare providers.				

D. TB-HIV RELATIONSHIP

The following questions are onthe link between TB and HIV.Please answer yes or no.

No.	Questions		Answers	
			Yes	No
1.	Did healthcare providers in thishealth centre inform you about the link between TB and HIV? (If the answer is no, go to 4).			
2.	Were you informed by the healthcare providers in this health centre on how to prevent HIV infection?			
3.	Were you informed where to get HIVtreatment, in case you need it?			
4.	After being diagnosed with TB, were you advised to take an HIV test?			
5.	In case you tested HIV positive, were you supported in taking TB and HIV treatment at the same time?	Not applicable: Patient is negative		

E. INFRASTRUCTURE FOR TB SERVICES

We will now talk about the infrastructure of the TB health centre you are visiting (the building and its surroundings). Please answer yes or no.

No.	Questions	Answers	
		Yes	No
1.	Is this health centre clean?		
2.	Is there safe drinking water in this health centre?		
3.	Are the toilets in this health centre usable?		
4.	Are there enough comfortable places to sit when you have to wait in this health centre?		
5.	Are people who come in with a cough given priority by the health care providers?		
6.	Are TB patient waiting rooms and corridors well ventilated?		

F. PROFESSIONALS' COMPETENCE ONTB PROCEDURES AND TESTS

Next let us talk about professionals'competence on TB procedures and tests. Please answer yes or no.

No.	Questions	Answers	
		Yes	No
1.	Were you physically examined during your first visit to this health centre?		
2.	Was your sputum examined when you were diagnosed with TB?		
3.	Did you get the test results in less than two days when you gave your first sputum for TBtest?		
4.	Were your close contacts examined by the TB health centre?		
5.	Is there a treatment observer (observed swallowing) checking on your daily intake of TB drugs?		

G. AFFORDABILITY AND SUPPORT FOR TB SERVICES

Next, I would like to ask you about four aspects of the costs of TB services.Answer the questions: never, sometimes, most of the time or always, depending on how you experience the services.

No.	Questions	Answers			
		Never	**Sometimes**	**Most of the time**	**Always**
1.	How often do you have to pay for your regular TB services e.g. sputum tests, TB-drugs, X-rays?				
2.	How often do you have to pay a tip in order to getTB services?				
3.	How often do costs like transportprevent you from coming to the healthcentre?				
4.	How often do you receive transport and/or other cost support from the healthcentre?				

H. STIGMATO TB PATIENT

Let us talk about stigma related toTB treatment at this health centre. I would like you to answer the statements by saying never; sometimes; most of the time or always depending on how you experienced the service.

No.	Questions	Answers			
		Never	**Sometimes**	**Most of the time**	**Always**
1.	When you receive TB services, the healthcare provider talks to you the same way as when you receive services other than TB?				
2.	The healthcare provider serves you in a friendly manner?				
3.	The healthcare provider welcomes you into the healthcentre when you visit for TB services?				
4.	The healthcare provider turns his/her face away when speaking to you?				
5.	You are treated with dignity when you visit the healthcentre?				

I. LEVEL OF SATISFACTION

How satisfied are you with the treatment and care services you have received at this health centre so far? On a satisfaction rating of 1 to 5, 1 indicating“I am not very satisfied” and 5 indicating“I am very satisfied”, how satisfied are you?

	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
	1	2	3	4	5

J. Lastly, please tell me what you consider as the three most important things that should be done to improve TB services

ANNEXURE E2: PATIENT INFORMED CONSENT FORMS AND FACE-TO-FACE INTERVIEW QUESTIONNAIRE (AMHARIC)

በምርምርፕሮጀክትውስጥበፊትለፊትቃለመጠይቅበመሳተፍየምርምርጥናትአካልእንዲሆኑመጠየቂያናስምምነት መቀበያ

1.አጠቃላይመግቢያ

ጤናይስጥልኝስሜ _____እባላለሁ።

በደቡብአፍሪካዩንቨርስቲየዶክትሬትዲግሪአጥኚየሆነውአባስሀሰንየሱፍ**"በአዲስአበባከተማአስተዳደርየሚገኙየመንግስት ጤናጣቢያዎችየቲቢበሽታህክምናአገልግሎትጥራትማሻሻያእስትራቴጂ"**ለማዘጋጀትበሚያደረገውጥናትላይበሳይንሳዊ መንገድመረጃበመሰብሰብላይነኝ።

በዚህየዳሰሰጥናትውስጥእንዲሳተፉእየጋበዝኮትበዚህጤናጣቢያእያገኙትስላለውየቲቢበሽታህክምናአገልግሎትጥራትበእርስዎእ ይታእንዲገልጹልኝጥያቄዎችልጠይቅዎትእፈልጋለሁኝ።

1.1.የጥናቱዓላማ

በአዲስአበባከተማአስተዳደርበሚገኙየመንግስትጤናጣቢያዎችየቲቢበሽታህክምናአገልግሎትጥራትማሻሻያእስትራቴጂማዘጋጀ ትነው።

1.2.በዚህጥናትውስጥከእርስዎምንይጠበቃል?

በዚህጥናትውስጥለመሳተፍፈቃደኛከሆኑየፊትለፊትቃለ-መጠይቅእንዲሳተፉይጠየቃሉ።

ጥያቄዎቹንስጠይቅዎትእውነተኛመልስእንዲሰጡእጠይቅዎታለሁ።ጥያቄዎችንለመመለስምበግምትከ30 እስከ 45 ደቂቃዎችንይወስድቦታል።በምላሽዎአማካኝነትእርስዎንማንነትመለየትአይቻልም።

መልሶችዎስምአልባሆነውተመዝግበውሳይታወቁይቀመጣሉ።

1.3.በዚህጥናትበመሳተፍዎምንችግርናምቹያልሆነሁኔታይኖራል?

በዚህጥናትውስጥበመሳተፍዎምንምዓይነትጉዳትወይምአደጋአይኖርም።የተወሰነጊዜዎትንብቻይወስዳል።

1.4.በጥናቱመሳተፍለተሳታፊዎችእና/ወይምለማህበረሰቡየሚያስገኘውጥቅምአለ ?

በዚህጥናትውስጥበመሳተፍዎበቀጥታየሚያገኙትቀጥተኛጥቅምወይምክፍያአይኖርም።

ሆኖምግንየዚህጥናትውጤትበአዲስአበባየመንግስትጤናጣቢያዎችየሚሰጠውንየቲቢህክምናአገልግሎቶችንጥራትለማሻሻልከ ፍተኛአስተዋፅያደርጋል።

1.5.የምርምርስነ-ምግባርናሚስጥራዊነት

ይህጥናትበደቡብአፍሪካዩንቨርሲቲ (UNISA) የምርምርሥነ-ምግባርግምገማቦርድየፀደቀሲሆንአጥኚውምጥናቱንለማካሄድከአዲስአበባከተማአስተዳደርጤናቢሮየተቋማትምርምርሥነ-ምግባርግምገማኮሚቴፈቃድአግኝቷል።

ዋናአጥኚውአባስሀሰንየሱፍበማንኛውምጊዜምስጢራዊነትንየማረጋገጥሃላፊነትአለበት።
ከእርስዎናከሌሎችየተገኘውመረጃለአምስትዓመታትበተቆለፈካቢኔትውስጥየሚከማችሲሆንከአምስትዓመትበኋላይወገዳል።
ከአምስትዓመትበኋላየመረጃውኤሌክትሮኒክቅጂብቻበይለፍቃልጥበቃይቀመጣል።
የጥናቱውጤትናየውሳኔሃሳቦችበተለያዩጆርናሎች፤
መጽሄቶችናበሌሎችመሰልአጋጣሚዎችከሱፐርቫይዘሮችጋርበሚኖርውይይትአገልግሎቱንለሚያቀርቡናተጠቃሚአካላትእንዲያ
ውቁትይደረጋል።

1.6.ተሳትፎውበፈቃደኝነትነውን?

በዚህጥናትውስጥመሳተፍወይምአለመሳተፍመምረጥይችላሉ።የጥናቱአካልባለመሆንዎምንምአይነትአድሎአይኖርም።

1.7.ጥናቱንማቋረጥእችላለሁኝ?

በዚህጥናትውስጥለመሳተፍፈቃደኛከሆኑጥያቄዎችበሚመልሱበትጊዜበማንኛውምሰዓትቃለ-
ምልልሱንአቋርጠውየመውጣትናስምምነትዎንያለምንምጥቃትየማቋረጥሙሉመብትአለዎት።
እንዲሁምማንኛውምግልፅያልሆነጥያቄካለዎትበማንኛውምጊዜበቀጥታየጥናቱዋናአጥኚአባስሀሰንንበሚከተሉትአድራሻዎች
ማለትምበሞባይልስልክቁጥር +251910342855 ወይምበኢሜልአድራሻ፡abashassen55@gmail.comመጠየቅይችላሉ።

1.8.የጥናትተሳታፊየስምምነትመቀበያ

ከዚህበላይበተጠቀሰውመረጃግልፅከሆኑናለመሳተፍፈቃደኛከሆኑእባክዎከዚህበታችባለውየስምምነትቅጽላይይፈርሙ።

እኔ _____ከግርጌየፈረምኩትስለጥናቱናየጥናቱዓላማበደንብተገልጾልኛል።
እኔየሰጠኋቸውመረጃዎችለዚህጥናትብቻእንደሚውሉናበሚስጥርእንደሚያዙእንዲሁምስሜንናየማንነትመገለጫዎቼእንደማ
ይገለጹተረድቻለሁ።
እኔየማልፈልጋቸውጉዳዮችላይያለመወያየትናያለምንምክንያትአቋርጬመውጣትእንደምችልተገልጾልኛል።
በጥናቱለመሳተፍስምምነትየገባሁትበቃለ-
ምልልስወቅትየምሰጣቸውመረጃዎችየጥናቱአላማለማሳካትበእጅጉይረዳሉበሚልእምነትነው።

የተሳታፊውፊርማ _____ቀን_____

የምሥክርፊርማ _____ቀን_____

2.ለምርምርጥናትረዳቶችየመረጃአሰባሰብመመሪያዎች

1.ማንኛውንምመረጃከመሰብሰብዎበፊትከዩንቨርሲቲውየተሰጠውየጥናቱየስነ-ምግባርማረጋገጫናየትብብርደብዳቤለጤናጣቢያውሀላፊ /ወኪልመቅረብአለበት።

2. ቃለ-መጠይቁከመካሄዱበፊትለተሳታፊዎችስለጥናቱናየጥናቱአላማበደንብግንዛቤእንዲኖራቸውበማድረግበጥናቱለመሳተፍወይምላለመሳተፍመወሰንእንዲችሉመደረግአለበት።እባክዎንይህከተከናወነበኋላብቻከተሳታፊውመረጃያግኙ።

3. ለሁሉምጥያቄዎችመልስሰጭውምንለማለትእንደፈለገበትክክልመመዝገብአለበት።

ተ.ቁ	የሶሺዮ-ዴሞግራፊባህሪዎች	መልሱንያክብቡ/ ይጻፉ			
1.	ፆታ	1. ወንድ	2. ሴት		
2.	እድሜዎትስንትአመትነው ?	እድሜበዓመት_____			
3.	የየትኛውብሔረሰብአባልነዎት?	1. ኦሮሞ	2. አማራ	3.ትግሬ	4. አፋር
		6. ሌላ _____			
4.	የየትኛውሀይማኖትተከታይነዎት?	1. ሙስሊም	2. ኦርቶዶክስ	3.ፕሮቴስታንት	4. ካቶሊክ
		5. ሌላይጥቀሱ_____			
5.	የትዳርሁኔታዎትእንዴትነው ?	1. ያገባ/ች/	2.ያላገባ/ች/	3. የተፋታ/ች/	4.ባል/ሚስትየሞተባት/በት
		5. ሌላካለ-ይጥቀሱ_____			
6.	ያለዎትከፍተኛየትምህርትደረጃእስከስንትነው ?	1. ያልተማረ/ች/	2.የመጀመሪያደረጃ (1-6)	3. መለስተኛሁለተኛ (7-8)	
		4. ሁለተኛደረጃናመሰናዶ (9-12)		5. ዲፕሎማናበላይ	
7.	የመተዳደሪያገቢምንጭዎምንድንነው?	1. ስራየሌለው	2.መደበኛያልሆነዘርፍ	3. ተማሪ	4.የመንግስትሰራተኛ
		5. የግሉስራያለው			

		6.የቤትእመቤትከሆኑእዚህምልክትያድርጉናየገቢምንጭንይጥቀሱ _____

4.
ሁሉምአጫጭርጥያቄዎችመልሶቻቸውከተሰጡትምርጫዎችተመርጦይከበብወይምበሰንጠረዡውስጥከምርጫውፊትለፊት ቲክ (✓)ይደረግ፤ሌላአማራጭመልስከሆነእባክዎንለተሳታፊው “ሌላ” ምንማለትእንደሆነይፃፉ (“ሌላ” መገለጽአለበት) ።

5. ለክፍትጥያቄዎችየተሳታፊውመልስበመልስመስጫውቅጽላይበተሰጠውክፍትቦታላይመፃፍአለበት።

6. ተሳታፊውአጠቃላይአስተያየትካለውበመጠይቁቅጽመጨረሻላይበተሰጠውክፍትቦታመፃፍአለበት።

እኔ_____ የምርምርጥናቱረዳትበቃለ-መጠየቁወቅትየጥናቱተሳታፊለእኔየሚያካፍሉኝንሁሉንምመረጃበጥብቅምስጢርእጠብቃለሁ።

የምርምርረዳትፊርማ _____ቀን_____

የምሥክርፊርማ _____ቀን_____

2.የታካሚፊትለፊትቃለ-መጠይቅመጠይቆች

ክፍልአንድ፡የማህበራዊናኢኮኖሚያዊሁኔታዎች

በሚቀጥለውክፍልስለእርስዎየማህበራዊናኢኮኖሚያዊመረጃዎችእጠይቆታለሁ፤መልሱንእንዲነግሩኝፈልጋለሁ።

ክፍልሁለት፡ስለቲቢህመምዎንአጠቃላይሁኔታዎች

ይህክፍልአጠቃላይስለእርስዎየቲቢምርመራናተዛማጅጉዳዮችበተመለከተሲሆንመልሱንይምረጡናይንገሩኝ::

ቁ	**ስለቲቢተዛማጅጉዳዮች**ጠቅላላጥያቄዎች	መልሱንያክብቡ/ይጻፉ
1.	የቲቢበሽታምልክቱንማየትከጀመሩበኋላመቸነበርምርመራያደረጉት?	1.የሕመምምልክቶችከታዩበኋላበሶስት (3) ሳምንታትውስጥወይምከዚያበታች
		2.ምልክቱመታየትከጀመረከሶስት (3) እስከስምንት (8) ሳምንት
		3.ምልክቱመታየትከጀመረበዘጠኝ (9) ሳምንትወይምበኋላ
2.	ከምርመራበኋላመችነበርየቲቢህክምናየጀመሩት?	1. በሁለት (2) ቀናትውስጥ
		2. በአንድ (1) ሳምንትውስጥ
		. ከስምንት (8) ቀናትበኋላናከዚያበላይ (ካስታወሱስንትቀንእንደሆነይጥቀሱ)
3.	ቲቢተመርምረውበተገኘብዎትጊዜወደጤናጣቢያውለመሄድዎምክንያትምንነበር? /ከአንድበላይምላሽሊኖርይችላል/	1. ለቲቢምርመራ
		2. መድሃኒትለማግኘት
		3. የጤናመረጃለማግኘት
		4. ለአክታምርመራክትትል
		5. ሌላካለይጥቀሱ_____
4.	ከዚህቀደምየቲቢበሽታታካሚሆነውክትትልእያደረጉህክምናውንአቋርጠውያወቃሉ? ካቋረጡምክንያቱምንእንደነበርባለውክፍትቦታይጻፉ	ተፈፃሚአይሆንም (Non-applicaple)
		2.መልስሰጪውህክምናያቋረጠከሆነምክንያት_____

ክፍልሶስት፡የጤናጣቢያውየቲቢአገልግሎትአሰጣጥየሚመለከቱጥያቄዎች

የጥናቱቀጣይክፍልበቲቢህክምናአገልግሎትጥራትላይያተኮረሆኖእርስዎክትትልሲያደርጉከተመለከቱትአንጻርየሌሎችጤናጣቢያ ዎችንአገልግሎትአሰጣጥሳያካትቱየዚህንጤናጣቢያብቻእንዲመልሱእጠይቅዎታለሁ።

3.**1.በጤናጣቢያየቲቢበሽታህክምናአገልግሎትናየጤናባለሙያዎችአቅርቦት (availability of TB services)**

በዚህክፍልዘጠኝየተሟላየቲቢህክምናአገልግሎትመስጠትንየሚመለከቱመግለጫዎችንአነብሎታለሁ።
ከታችየቀረቡትመግለጫዎች፡በጭራሽ፤አንዳንድጊዜ;
አብዛኛውንጊዜወይምሁልጊዜየሚሉትንአማራጮችበመምረጥእንዲመልሱእፈልጋለሁ

ተ.ቁ	መጠይቆች	መልሶች			
		በጭራሽ	አንዳንዴጊዜ	አብዛኛውጊዜ	ሁልጊዜ
	በጤናባለሙያአገልግሎቱንከማግኘትዎበፊትበጤናጣቢያውየቆይታጊዜተቀባይነትአለው .				
1.	በዚህጤናጣቢያበተመሳሳይየጤናባለሙያክትትልይደረግሎታል				
2.	የአገልግሎትመስጫሰዓትየቲቢህክምናዎትንለማግኘትምቹነው				
3.	ጤናጣቢያውአክታዎትምርመራአገልግሎትይሰጣል።				
4.	በዚህጤናጣቢያእርስዎየፈለጉትንመድሃኒትያገኛሉ.				
5.	በቋንቋያለመግባባትምክንያትየቲቢህክምናአገልግሎትለማግኘትተቸግረዋል				
6.	ወደሌላጤናተቋምለቲቢህክምናወይምአገልግሎትለማግኘትሄደዋል				
7.	ይህጤናጤናጣቢያለመድረስርቀቱቀላልነው				
8.	በዚህጤናጣቢያየቲቢህክምናበስራሰዓትያገኛሉ				
9.	እንዲያክምዎትየሚጠብቁትንተገቢውአገልግሎትሰጪባለሙያያገኛሉ				

3.2. የቲቢአገልግሎትመረጃናኮሙኒኬሽን

እባክዎንቀጥሎስለቲቢሕክምናመረጃእናተግባቦትየተመለከቱጥያቄዎችመልስዎንአዎወይምአይደለምበማለትይመልሱ።

ተ ቁ	ጥያቄዎች	መልሶች	
		አዎ	አይደለ ም
1.	የጤናባለሙያዎችየቲቢበሽታወደለሌሎችመቼማስተላለፍእንደሚያቆሙተነግሮዎታል ?		
2.	የጤናባለሙያዎችየቲቢበሽታሊድንየሚችልበሽታእንደሆነተነግሮዎታል ?		
3.	የጤናባለሙያዎችበቀጥታእየታየየሚሰጥየቲቢህክምና (DOTs) መድሀኒትመውሰድያለውጠቀሜታተነግሮዎታል ?		
4.	የጤናባለሙያዎችየቲቢበሽታህክምናመድሃኒትስለሚያመጣውየጎንዮሽጉዳትተነግሮዎታል?		
5.	የጤናባለሙያዎችበህክምናላይእያሉበተወሰኑጊዜያትየአክታምርመራማድረግአስፈላጊነቱተነግሮዎታል?		
6.	የጤናባለሙያዎችየቲቢበሽታህክምናየሚወስደውንጊዜምንያህልእንደሆነተነግሮዎታል?		
7.	የጤናባለሙያዎችለህክምናያገኙትንመድሀኒትእንዴትማስቀመጥእንዳለብዎትተነግሮዎታል ?		
8.	የጤናባለሙያዎችመቼለቲቢህክምናአገልግሎትተመልሰውእንደሚመጡተነግሮዎታል ?		

3.3.የታካሚዎችናየጤናባለሙያግንኙነትናየምክርአገልግሎት

በመቀጠልበቲቢህመምተኞችናበጤናባለሙያዎችመካከልስላለውግንኙነትናየምክርአገልግሎትየተመለከቱመግለጫዎችንሳነብልዎትየ ጤናባለሙያዎችከእርሰዎጋርያላቸውንግንኙነትናምክርአገልግሎትታሳቢበማድረግመልሶችዎንበጭራሽ፤አንዳንድጊዜ; አብዛኛውንጊዜወይምሁልጊዜየሚሉትንአማራጮችበመምረጥእንዲመልሱእፈልጋለሁ።

ተ ቁ	ጥያቄዎች	መልሶች			
		በጭራሽ	አንዳን ዴጊዜ	አብዛኛ ው ጊዜ	ሁል ጊዜ
1.	የጤናባለሙያውበክብርያስተናግዱዎታል.				
2.	የጤናባለሙያውእርስዎየሚሉትንበጥሞናያደምጡዎታል.				
3.	የጤናባለሙያውነገሮችእርስዎበሚገባዎትመልኩይገልጹልዎታል.				
4.	ከጤናባለሙያውጋርችግርዎትንለመወያየትበቂጊዜአለዎት.				
5.	የጤናባለሙያውየእርሶንችግሮችእንዴትመፍታትእንደሚቻልያወያዮታል .				
6.	በዚህጤናጣቢያሲታከሙየቲቢበሽታህመምተኛበመሆንዎመገለልደርሶብዎታ ል				
7.	በዚህጤናጣቢያሲታከሙበምርመራወቅትሚስጥሮችዎንይጠብቅሎታል				
8.	የቲቢበሽታእንዴትየእለትተእለትህይወትዎላይተጽኖእንደሚያሳድርተነግሮዎታ ል				

3.4. <u>የቲቢናኤችአይቪግንኙነት</u>

እባክዎንለሚከተሉትየቲቢበሽታናየኤችአይቪቫይረስግንኙነትየሚመለከቱጥያቄዎችመልስዎንአዎወይምአይደለምበማለትይመልሱ

ተቁ	ጥያቄዎች		መልሶች	
			አዎን	አይደለም
1.	የጤናባለሙያዎችበቲቢእናበኤችአይቪመካከልስላለውግንኙነትነግረውዎታል ? (መልሱአይደለምከሆነ፣ወደተራቁጥር 4 ይሂዱ) ።			
2.	የጤናባለሙያዎችየኤችአይቪቫይረስኢንፌክሽንንእንዴትመከላከልእንደሚቻልነግረውዎታል ?			
3.	የኤችአይቪሕክምናምናልባትቢያስፈልግዎትየትእንደሚያገኙተነግሮዎታል?			
4.	የቲቢምርመራከተመረመሩበኋላየኤች.አይ.ቪምርመራእንዲያደርጉተመክረዋል?			
5.	የኤች.አይ.ቪ / ኤድስቫይረስበደምአውስጥቢኖርናበተመሳሳይጊዜየቲቢእናየኤች. አይ.ቪሕክምናንበመውሰድረገድድጋፍይደረግሎታል ?	ሕመምተኛውከኤች.አይ .ቪነጻከሆነይለፉት.		

3.5. የቲቢአገልግሎትመሰረተ- ልማት

አሁንየምንነጋገረውእየታከሙበትስለሚጎበኙትጤናጣቢያየቲቢመሰረተልማትወይምበሌላአገላለፅህንፃውእናአካባቢውነው። እባክዎንመልስዎንአዎወይምአይደለምበማለትይመልሱ

ተቁ	ጥያቄዎች	መልሶች	
		አዎን	አይደለም
1.	ይህየጤናጣቢያንፁህነውን?		
2.	በዚህየጤናጣቢያደህንነቱየተጠበቀየመጠጥውሃአለ?		
3.	በዚህየጤናጣቢያውስጥያሉትመጸዳጃቤቶችጥቅምላይይውላሉ?		
4.	በዚህየጤናጣቢያውስጥመጠበቅሲኖርብዎትለመቀመጥበቂምቹቦታዎችአሉን?		
5.	ከሳልጋርየሚመጡትሰዎችበጤናባለሙያዎችቅድሚያይሰጣቸዋልን?		
6.	የቲቢሕመምተኞችማቆያክፍሎችናኮሪደሮችበደንብአየርመንቀሳቀሻ (ventilation) አላቸው?		

3.6.በቲቢምርመራሂደትየባለሙያዎችችሎታ

ቀጥሎበቲቢአገልግሎትሂደትናምርመራ (TB Procedures and Tests) ላይየባለሙያዎችችሎታአስመልክቶእንነጋገር። እባክዎንመልስዎንአዎወይምአይደለምበማለትይመልሱ።

ተቁ	ጥያቄዎች	መልሶች	
		አዎ	አይደለም
1.	ለመጀመሪያጊዜወደእዚህጤናጣቢያበመጡበትወቅትየሰዉነትክፍሎችምርመራተደርጎልዎትነበር ?		
2.	ይህየጤናጣቢያየአክታዎትንምርመራአገልግሎትይሰጣል?		
3.	ለቲቢምርመራየመጀመሪያየአክታዎንለምርመራሲሰጡከ2 ቀናትበማይበልጥጊዜውስጥየምርመራውጤቶችንአግኝተዋል?		
4.	ከእርስዎጋርየቅርብንክኪ (close contacts)ያላቸውሰዎችበጤናጣቢያውየቲቢበሽታምርመራተደረጎላቸዋል ?		
5.	ዕለታዊየቲቢመድኃኒቶችዎንመውሰድዎንየሚከታተልየህክምናታዛቢ (treatment observer) አለ?		

3.7.የቲቢአገልግሎትየመክፈልአቅምናድጋፍ

በመቀጠልስለቲቢአገልግሎቶችወጪዎችናድጋፎችአራትጥያቄዎችንእጠይቆታለሁ።ከታችየቀረቡትጥያቄዎችበጭራሽ፤ አንዳንድጊዜ; አብዛኛውንጊዜወይምሁልጊዜየሚሉትንአማራጮችበመምረጥእንዲመልሱእፈልጋለሁ።

ተቀ	ጥያቄዎች	መልሶች			
		በጭራሽ	አንዳንድጊዜ	አብዛኛውጊዜ	ሁልጊዜ
1.	ለመደበኛየቲቢአገልግሎትዎምንያህልጊዜይከፍላሉ (ለምሳሌ፣ የአክታምርመራዎች፣የቲቢመድሃኒቶች፣ኤክስሬይ፣ወዘተ)?				
2.	የቲቢአገልግሎቶችንለማግኘትምንያህልጊዜጉርሻ (tip) መክፈልአለብዎት?				
3.	መጓጓዣንየመሳሰሉወጪዎችወደጤናጣቢያእንዳይመጡምንያህልጊዜይከላከላሉ?				
4.	ምንያህልጊዜከጤናጣቢያውየትራንስፖርትእና / ወይምየሌላወጪድጋፍያገኛሉ?				

3.8. <u>የቲቢታካሚዎችንማግለል</u>

በዚህየጤናጣቢያውስጥከቲቢሕክምናጋርበተያያዘማግለልሁኔታዎችንእንድንነጋገርእፈልጋለሁ።መገለጫዎቹንበጭራሽ፤ አንዳንድጊዜ; አብዛኛውንጊዜወይምሁልጊዜአገልግሎቱላይካለወዎትልምድበመነሳትእንዲመልሱእፈልጋለሁ።

ተ ቁ	መጠይቆች	መልሶች			
		በጭራሽ	አንዳንዴጊዜ	አብዛኛው ጊዜ	ሁልጊዜ
1.	የጤናባለሙያውከቲቢውጭሌሎችየህክምናአገልግሎቶችንበሚያገኙበት ጊዜእንደሚያናግርዎትበተመሳሳይመንገድያናግርዎታል.				
2.	የጤናባለሙያውወዳጃዊ (ጓደኛዊ) በሆነመንገድያገለግሎታል.				
3.	እዚህጤናጣቢያለቲቢህክምናአገልግሎቶችበሚመጡበትጊዜየጤናባለሙ ያውበመምጣትዎበደስታይቀበልዎታል.				
4.	የጤናባለሞያውከእርስዎጋርበምትነጋገሩበትጊዜፊቱን/ፊቷንወደሌላቦታ ዞራለች/ያዞራል።				
5.	እዚህጤናጣቢያለህክምናአገልግሎትበሚመጡበትጊዜበክብርይስተናግዳ ሉ።				

3.9.የተገልጋዮችእርካታደረጃ

በዚህየጤናጣቢያውስጥእስካሁንባገኙትየሕክምናአገልግሎትምንያህልረክተዋል ? ከ 1 እስከ 5 ባለውአጠቃላይየእርካታደረጃውስጥ 1 ማለትበጣምአልረካሁምሲሆን 5 ማለትደግሞበጣምረክቻለሁነው።

	በጣምአል ረካሁም	አረካሁም	አልረካሁምወይምአልተከፋሁም	ረክቻለሁ	በጣምረክቻለሁ	
	1	2	3	4	5	

3.10. በመጨረሻም፣እባክዎንየቲቢአገልግሎቶችንለማሻሻልመደረግስላለባቸውበጣምአስፈላጊሶስትነገሮችይንገሩኝ።

ANNEXURE F: HEALTHCARE PROVIDERS INFORMED CONSENT FORMS AND IN-DEPTH INTERVIEW GUIDE (ENGLISH)

Invitation to participate in a research study.

Greetings. My name is Abas Hassen Yesuf, a doctoral student at the University of South Africa (UNISA). I am the principal investigator and collecting data for the study "Strategy to improve the quality of tuberculosis care services in public health centres of Addis Ababa, Ethiopia". I would like to invite you to take part in this study.

PURPOSE OF THE STUDY

The purpose of this study is to develop strategies to optimise the quality of TB care services in Addis Ababa'spublic health centres in Ethiopia.

PROCEDURES

If you volunteer to participate in this study, you will be asked to participate in an individual interview, which will take approximately 25-45 minutes. You will remain anonymous.

POTENTIAL RISKS AND DISCOMFORTS

This study has been approved by the UNISA Health Studies' ethical review committee and has permission from the Addis Ababa City Administration Health Bureau. There is no harm or risk envisioned in this study.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR SOCIETY

There will be no direct benefit or payment that you willreceive from taking part in this study. However, the results of this study can contribute to the improvement of the quality of TB care services in public health centres in Addis Ababa, Ethiopia. The result of the study will be communicated through academic journals and in this Doctoral thesis.

CONFIDENTIALITY

I, the principal investigator, am responsible for ensuring confidentiality at all times. The data will be stored in a locked cabinet and will be destroyed after five years. Only electronic copies of the data will be kept with password protection.

PARTICIPATION AND WITHDRAWAL

You are free to choose to be included in this study or not. If you volunteer to be in this

study, you may withdraw at any time during the interview.

RIGHTS OF RESEARCH PARTICIPANTS

You have full right to withdraw your consent at any time and discontinue participation without consequences. If you have any questions or concerns, please feel free to contact me on e-mail: abashassen55@gmail.com, tel: +251910342855.If the information provided clear and you agree to participate, please sign the consent form below.

STUDY PARTICIPANT CONSENT FORM

I, _____, the undersigned was oriented about the objective of the study. I have been assuredthat all my information will be kept confidential and used solely for this study. In addition, I have been well informed that my name will not be disclosed. I have the right not to discuss issues that I do not want. If I wishto withdraw from the discussion, I will be under no obligation to continue or give reasons for doing so. My agreement to participate in this study is with the assumption that the information that I provide during the discussion will contributetowards achieving the aim of the study.Since I am well informed about the the study, I assure with my signature that I am willing to fully participate in the study.

Signature of the participant _____ Date: _____

Name of witness: _____Signature: _____Date:_____

ANNEXURE F1: IN-DEPTH INTERVIEW GUIDE FOR HEALTHCARE PROVIDERS

Once again, thank you participating in the study.

1. Tell me your current profession, role, number of years/month served in TB clinic.
2. Tell me about the TB diagnostic and treatment services provided in this health centre.
3. Tell me about the availability of basic resources such as staff, SOPs and clinical guidelines, policies, supplies (drugs, gloves, masks) and their utilisation for TB management.
4. How do you feel about the programmed supportive supervisory visits you get from a higher or upper-level office and what did the supervisors do during the last visit?
5. How do you establish rapport and build trust with your patients?
6. How do you feel about working with TB patients at this health centre?
7. What do you ask the patient to tell or explain to you as part of the initial patient diagnostic assessment to determine their understanding of TB?
8. What do you do to prevent transmission of TB among health care workers and patients if you are with presumed or confirmed TB patients and/or working in the TB clinic?
9. Tell me about the type of information or topicsyou discuss with drug susceptible/drug resistant TB patients during diagnosis and treatment visits.
10. What do you regard as the three most important things that could be done to improve the quality of TB care and satisfaction of TB patients in this health centre?
11. Is there anything elseyou would like to add?

ANNEXURE F2: Healthcare providers informed consent forms and in-depth interview guide (Amharic)

በምርምርጥናትውስጥበጥልቅቃለ-ምልልስውይይትተሳትፎመጠየቂያ

ጤናይስጥልኝስሜአባስሀሰንየሱፍእባላለሁ።በደቡብአፍሪካዩንቨርስቲየዶክትሬትዲግሪትምህርትተማሪነኝ። በአዲስአበባከተማአስተዳደርየሚገኙየመንግስትጤናጣቢያዎችየቲቢበሽታህክምናአገልግሎትጥራትማሻሻያ

እስትራቴጂለማዘጋጀትየሚያደረገውጥናትዋናአጥኚስሆንበሳይንሳዊመንገድመረጃበመሰብሰብላይነኝ፡፡ ዛሬበዚህጥናትላይእንዲሳተፉእጋብዝዎታለሁ።

<u>የጥናቱዓላማ</u>

በአዲስአበባከተማአስተዳደርበሚገኙየመንግስትጤናጣቢያዎችየቲቢበሽታህክምናአገልግሎትጥራትማሻሻያ ልእስትራቴጂማዘጋጀትነው፡፡

<u>የትናቱሂደቶች</u> (PROCEDURES)

በዚህጥናትውስጥለመሳተፍፈቃደኛከሆኑበግምትከ 25 እስከ 48 ደቂቃላልበለጠጊዜበሚወስድየግልቃለ-መጠይቅለመሳተፍይጠየቃሉ፡፡በዚህጥናትሂደትናከጥናቱበኋላምማንነትዎሳይታወቅይቆያሉ።

የሚጠበቁስጋቶችናአለመመቸቶች

ይህጥናትበደቡበአፍሪካዩንቨርሲቲየጤናጥናትሥነ-ምግባርግምገማከሚቴበተሳታፊዎችላይምንምአይነትችግርእንደማያደርስየተረጋገጠጥናትሲሆንበአዲስአበ ባጤናቢሮየጥናትከሚቴምፈቃድአግኝቷል፡፡

በጥናቱመሳተፍለተሳታፊዎችናለማህበረሱየሚኖረውጠቀሜታ

በዚህጥናትውስጥበመሳተፍዎበቀጥታየሚያገኙትጥቅማጥቅምወይምክፍያአይኖርም፡፡ ሆኖምግንየዚህጥናትውጤትበአዲስአበባከተማአስተዳደርየሚገኙየመንግስትጤናጣቢያዎችየሚሰጠውንየ ቲቢበሽታህክምናአገልግሎትጥራትለማሻሻልአስተዋጽኦያደርጋል፡፡
የጥናቱውጤትምበትምህርትመጽሔቶችታሞናበዚህየዶክትሬትመመረቂያአማካኝነትለሚመለከታቸውአ ካላትናለተቃሚዎችየሚሰራጭይሆናል፡፡

የጥናቱምስጢራዊነት

እኔዋናየዚህጥናትአጥኚሁልጊዜምስጢራዊነትየማረጋገጥኃላፊነቴንእወጣለሁ፡፡
መረጃውለአምስትዓመታትበተቆለፈቁምሣጥንውስጥየሚከማችሲሆንከአምስትዓመትበኋላይወገዳል፡፡
የመረጃውኤሌክትሮኒክቅጂዎችበይለፍቃልጥበቃብቻይቀመጣሉ።

በጥናቱስለመሳተፍናአቋርጦስለመውጣት

በዚህጥናትውስጥየመካተትወይምያለመካተትየመምረጥነፃነትዎትየተጠበቀነው፤

በዚህጥናትለመሳተፍፈቃደኛካልሆኑበማንኛውምጊዜአቋርጠውመውጣትይችላሉ፡፡

የጥናቱተሳታፊዎችመብቶች

ስምምነትዎንበማንኛውምጊዜየማቋረጥናያለምንምችግርተሳትፎዎንየማቆምሙሉመብትአለዎት፡፡

ማንኛውምግልጽያልሆኑጥያቄዎችወይምስጋቶችካሉዎትእባክዎንእኔንበአካል፤በስልክቁጥር (+251910342855) ወይምበኢሜልአድራሻ (abashassen55@gmail.com)ለማግኘትነፃነትይሰማዎት።
በተሰጡትመረጃዎችግልፅከሆኑእናለመሳተፍከተስማሙእባክዎንበሚቀጥለውየስምምነትቅጽላይይፈርሙ፡
፡

<u>የጥናቱተሳታፊዎችየስምምነትመሙያቅጽ</u>

እኔ_____ከታችየፈረምኩትየዚህጥናትአላማበትክክልግንዛቤተፈጥሮልኛል።
በተጨማሪምከእኔየሚገኘውመረጃለዚህጥናትብቻየሚውልመሆኑንናየሰጠኋቸውምመረጃዎችሚስጥራዊ ነታቸውንእንደሚጠበቅተረጋግጦልኛል።እንዲሁምስሜእንደማይገለጽተገልጾልኛል።
መስጠትየማልፈልጋቸውመረጃዎችለመስጠትእንደማለገደድእንዲሁምበፈለጉትጊዜያለምንምምክንያትውይይቱአቋርጬየመውጣትመብትአለኝ።
በዚህጥናትለመሳተፍፈቃደኛየሆንኩበትዋናምክንያትእኔበውይይትጊዜየምሰጠውመረጃየጥናቱአላማለማሳካትየሚኖረውከፍተኛፋይዳከግምትውስጥበማስገባትነው።
ስለጥናቱአስፈላጊውንመረጃያገኘሁበመሆኑበጥናቱለመሳተፍሙሉፈቃደኛመሆኔንበፊርማዬአረጋግጣለው፡
፡

የጥናቱተሳታፊፊርማ_____ቀን_____

የምስክርስም_____ፊርማ _____ቀን_____

የጥልቅቃለ- ምልልስውይይትመንደርደሪያ

በጥናቱለመሳተፍፈቃደኛበመሆንዎበድጋሚአመሰግናለሁ።

1. የአሁኑሙያዎት፣የስራድርሻዎት፤በቲቢህክምናክፍልለምንያህልአመት /ወር/ እንዳገለገሉይንገሩኝ._____
2. በዚህጤናጣቢያበአሁኑጊዜስለሚሰጡየቲቢምርመራናህክምናአገልግሎቶችይንገሩኝ .
_____
3. የቲቢበሽታንለማከምየሚረዱስለመሰረታዊመሟላትያለባቸውግብዓቶችማለትምበቂየሆነየጤናባለሙያ፣መደበኛየአሰራርሂደቶችናየክሊኒካልህክምናመመሪያዎች፤የፖሊሲማንዋሎችእናየህክምናግብዓቶች (መድሀኒት፣ጓንት፣የአፍመሸፈኛመሀረብ) መኖራቸውናለቲቢህክምናአገልግሎትእየዋሉመሆኑንይንገሩኝ፡
፡_____.
4. ከበላይአካላትበቲቢፕሮግራምዙሪያስላገኙትየድጋፍዊክትትልጉብኝትናሱፐርቫይዘሮቹበባለፈውጉብኝት ጊዜስላደረጉትነገርምንይሰማዎታል? _____
5. ከቲቢታካሚዎችዎትጋርመልካምግንኙነትየሚመሰርቱናእምነትየሚያሳድጉትእንዴትነው?
_____
6. በዚህጤናጣቢያከቲቢሕመምተኞችጋርአብሮበመስራትዎምንይሰማዎታል?

7. ለመጀመሪያጊዜየቲቢህመምተኞችለምርመራሲመጡእንደየመጀመሪያየምርመራአካልስለበሽታውያላ ቸውንግንዛቤማወቅእንዲችሉምንምንእንዲነገርዎትወይምእንዲያብራሩሉዎትይጠይቋቸዋል ?_____
8. ከቲቢበሽታተጠርጣሪዎችወይምየተረጋገጠየቲቢበሽታካለባቸውታማሚዎችጋርሲሆኑወይምበቲቢህክ ምናክፍልሲሰሩበሽታውከህመምተኛቸወደጤናባለሙያዎችእንዳይተላለፍለመከላከልምንያደርጋሉ? _____
9. መድሃኒትየተላመደየቲቢበሽታተጠርጣዎችወይምመድሃኒትየተላመደየቲቢበሽታህመምተኞችለምርመ ራናለህክምናአገልግሎትፍለጋሲመጡስለምንዓይነትመረጃዎችናርዕሰጉዳዮችውይይትእንደምታደርጉይ ንገሩኝ._____
10. በዚህጤናጣቢያየቲቢበሽታህክምናአገልግሎትጥራትንናየታካሚዎችእርካታንለማሻሻልሊደረጉየሚችሉ የሚሏቸውንሁለትበጣምአስፈላጊነገሮችምንድንናቸው ?
11. እርስዎበተጨማሪማከልየሚፈልጉትነገርአለ?_____

ለተሳትፎዎትበድጋሚአመሰግናለሁ !

ANNEXURE F3: Panel of experts informed consent form and strategy validation checklist

Invitation to participate in the validation of strategy

Greeting, my name is Abas Hassen Yesuf a doctoral public health student at University of South Africa. I am the principal investigator and developing strategies for the optimisation of the Quality of Tuberculosis Care Services in Public Health centers of Addis Ababa, Ethiopia. Today I would like to invite you to take part in this study.

The implementation of study has been conducted in two phases. The first phase had two parts with the objective of describing and exploring the quality of TB care services in the eyes of TB patients and exploring TB care providers' experience on TB care services delivery through quantitative structured face-to-face patient interview and qualitatively with in-depth interview respectively. The purpose of the second phase of the study is the development and validation of strategies to optimise the quality of TB care services in public health centers of Addis Ababa, Ethiopia. There are six themes, which comprise 11 interim strategies. Two rounds of Delphi method will be employed to validate the preliminary strategies.

You are selected purposely due to having enriched experience on providing TB care services, improving the quality of health care services and/or TB programme implementation support, monitoring and evaluation. If you volunteer to participate in validation of the preliminary strategies, you will be asked to participate in evaluation of the strategies based on the validation criteria, which will take approximately 25-30 minutes.

This study ethically has been approved by university of South Africa Health Studies ethical review committee and has permission from Addis Ababa city Administration Health Bureau. You will stay anonymously. There will be no harm or risk envisioned and direct benefit in this study. However, the results of this study can contribute to improve the quality of TB care services in Public Health Centers in Addis Ababa Ethiopia. The result of the study will be communicated through academic journals and in this Doctoral thesis.

I, principal investigator is responsible for ensuring confidentiality at all times. The data will be stored in a locked cabinet for five years and will be destroyed after five years. Only electronic copies of the data will be kept with password protection. You are free to choose to be included in this study or not. If you volunteer to be in this study, you may withdraw at any time during the interview.

You have full right to withdraw your consent at any time and discontinue participation on the evaluation of the strategy without any consequence. If you have any questions or concerns those are not clear, please feel free to contact me. (E-mail: abashassen55@gmail.com Tel: +251910342855). If you are clear with the information provided and agree to participate please sign on next consent form.

STUDY PARTICIPANT CONSENT FORM

I, _____ the undersigned was oriented about the objective of the study. I have been informed that all my information will be kept confidential and used solely for this study. In addition, I have been well informed that my name will not be disclosed. I have the right not to evaluate the strategy that I do not want to evaluate. If I want to withdraw from the validation I will not be obliged to continue or give reasons for doing so. Since I found all the necessary information about strategy validation in the study, I assured with my signature that I am willing to fully participate in strategy validation the study.

Signature of the Participant _____ Date: _____

Validation of strategies for improvement of the quality of tuberculosis care services in public health centres of Addis Ababa, Ethiopia

1. General information of evaluators

1. Profession and academic level: _____

2. Occupation: _____

3. Work experience (years): _____

2. Evaluation of the strategies

There are three major parts in this strategy validation process. The first part presents evaluation criteria and description as presented in Table F-1. The second part presents themes, strategies, validation criteria and scores as presented in the Table F-2 and the third part presents the strategies and key interventions (see Table F-3).

Part One: Evaluation criteria and description

This part presents the nine evaluation criteria and their description to validate the interim strategies designed to improve the quality of TB care services.

Annexure Table F-1: Evaluation criteria and description

Criteria Number	Validation Criteria	Description and operational meanings of the criteria
Criteria 1	Clarity	The strategy is easy and simple to understand
Criteria 2	Specificity	The focus of the strategy is TB care services quality
Criteria 3	Reliability	The strategy is consistent and can be used on other health centers
Criteria 4	Effectiveness	The strategy can improve the quality of TB care services in the health centers
Criteria 5	Validity	The strategy is developed based on evidence and can be justified
Criteria 6	Relevance	The strategy is appropriate to improve the quality of TB care services
Criteria 7	Applicability	The scope and users of the strategy are clearly defined
Criteria 8	Acceptability	The strategy will be practical and acceptable by TB programs and stakeholders
Criteria 9	Achievability	The strategy can be implemented on the improvement of TB care services quality improvement

Part Two: Themes, strategies, validation criteria and scores

In this part there are six themes and eleven strategies under these themes and each strategy will be evaluated based on validation criteria with 5 Likert scale scores.

- Use Likert scale score: 5 = Very high, 4=High, 3=Medium,2= Low and 1= Very low
- If there is any additional suggestion or feedback for the strategies under each theme, please write it on the blank space provided at the end of Table 2.

Annexure Table F-2: Checklist for validation of prioritised interim strategies (S) for improvement of the quality of TB care services under each theme (T)

T & S no	Themes (T) and strategies (S)	Validation criteria and score								
		Clarity (1-5)	Specificity (1-5)	Reliability 1-5)	Effectiveness (1-5)	Validity (1-5)	Relevance (1-5)	Applicability (1-5)	Acceptability (1-5)	Achievability (1-5)
Theme 1	TB care services availability									
S 1.1	Improve availability and accessibility of quality comprehensive TB diagnostic and treatment services									
S1.2	Ensure continuity of services through strengthening catchment areas TB care services, referral linkage and feedback system									
Theme2	Resource availability									
S2.1	Improve availability and efficient utilization of TB medications, reagents ,medical equipments and supplies									

S2.2	Improve TB physical infrastructure, basic amenities and TB infection prevention and control (TB-IPC) measures or precautions implementation to enhance TB IPC practices									
Theme 3	Communication and education in TB services									
S3.1	Improve Patient Centeredness of TB Counselling and Treatment Services									
S3.2	Enhance awareness, advocacy and public communication on TB through mass media and other communication platforms for prevention of transmission, early health seeking and treatment adherence									
Theme 4	Competencies and related issues									

S4.1	Improve providers' competence through continuous capacity building, motivation and standardization of services									
Theme 5	Issues regarding relationships between patients and professionals									
S5.1	Enhance patient-provider respect and trust in TB care services									
S5.2	Foster a culture of continuous TB care services quality improvement system									
Theme 6	Support needs of patients, healthcare professionals and community									
S6.1	Activate partnership, resource mobilization and collaboration among key stakeholders									
S6.2	Strengthening regular supportive supervision, mentorship and feedback system.									

Additional suggestions or feedback for the strategy under each theme.

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Part Three: Key interventions

There are a total of 79 key interventions proposed to implement the strategies designed and I would appreciate it if you could review each key interim intervention and make your comments, if any, in the remark column in Table F-3 below.

Annexure Table F-3: Evaluators' comments on interim interventions

Strategy	**Interim interventions**	**Evaluators' comments**
Strategy 1: Improve availability and efficient utilisation of TB medication, reagents, supplies and medical equipment	• Ensure continuous availability and sustainability of TB drugs, reagents and supplies through proper quantification, forecasting and stock management. • Ensure sustainable availability of TB-IPC supplies and PPE in all HCs • Introduce timely preventive and curative maintenance system for diagnostic medical equipment.	
Strategy 2: Improve TB physical infrastructure, basic amenities and TB-IPC measures or precautions implementation to enhance TB-IPC practices	• Enhance advocacy, communication and awareness-creation on TB-IPC measures for healthcare providers, patients, and care givers. • Ensure availability of trained HCWs in IPC and TB-IPC guidelines. • Implement TB screening at all service outlets, such as OPD, IPD, IMCI, and chronic care unit. • Ensure TB clinics are well ventilated during patient diagnosis and treatment. • Ensure availability of appropriate designated TB patients waiting area, and a separate coughing and sputum production space. • Improve the cleanness, comfort and safety of TB patient waiting areas and clinics. • Improve the availability of clean and safe water for the TB patients. • Strengthen regular healthcare providers TB screening • Strengthen the implementation of the four TB-IPC measures (managerial,	

	administrative, environmental and personal protective control measures) at all levels of health facilities.	
Strategy 3: Improve availability and accessibility of comprehensive quality TB diagnostic and treatment services	• Enhance patient-initiated pathways of TB screening in all service outlets and client pathway analysis for identifying missing cases. • Enhance the availability and sustainability of high-quality TB diagnosis services (acid-fast bacilli microscopy and Xpert MTB/RIF Assay tests and other modern diagnostic modalities) for early diagnosis of TB and drug resistance at all HCs or nearby catchment diagnosis centres. • Enhance the provision of TPT for all eligible HIV patients in need. • Ensure consistency in the implementation DOT services at all HCs. • Ensure patient-centredness of DOT TB care services rather than providing TB drugs. • Revise and introduce flexible TB medication provision times at TB clinics based on patients' preferences rather than fixed time for all TB patients. • Introduce and implement the TB care cascade approach to identify gaps and develop interventions for monitoring and improving the quality of TB care services. • Improve community TB screening and DOT services quality and accessibility by empowering HEWs and family health teams to take responsibility for their actions.	
Strategy 4: Ensure continuity of services	• Standardise intra-facility referral and service linkage.	

through strengthening of catchment areas' TB care services quality, referral linkage and feedback system	• Develop and standardise TB patients transfer-in and transfer-out protocol to ensure continuity of TB care services. • Develop and standardise drug-resistant TB patient referral, feedback and communication protocol between TFCs and TICs. • Strengthen clinical mentorship and logistic support for TFCs from TICs. • Develop a digitalised TB diagnosis test result delivery system from catchment laboratories to HCs. • Strengthen regular catchment TB care services performance evaluation meetings and learning platforms.	
Strategy 5: Enhance awareness, advocacy and public communication on TB through mass media and other communication platforms for prevention of transmission, early health seeking and treatment adherence	• Public health communication and education through mass media to the community, patients and providers. • Enhance community awareness about TB disease to reduce community, healthcare setting, work-place and school stigma related to TB. • Enhance the role of local mass media on raising awareness about TB and TB care and prevention service utilisation. • Improve community TB screening, case detection, and linkage through the strengthening of community TB care using family health teams. • Ensure the availability of adequate patient education and job aids for TB care providers. • Establish regular media for a on the role of the media in raising awareness, advocating, and mobilising all key stakeholders on TB programmes. • Provide adequate information and adherence support for better treatment	

	outcomes. • Ensure the availability of TB information, education and communication materials.	
Strategy 6: Improve patient-centredness of TB counselling and treatment services	• Promote patient privacy and confidentiality and develop communication protocols that foster positive patient-provider communication systems. • Enhance health-seeking behaviour and adherence to treatment through the implementation of PPA behavioural approaches. • Enhance effective TB patients' group education and life experience learning platforms. • Conduct regular patient-satisfaction surveys and take corrective action on the findings. • Integrate different models of treatment adherence monitoring and support systems (facility, home and workplace, technology (video), text messages and phone call DOT services) based on the patient's condition. • Develop TB patients' motivation and incentive schemes or packages to enhance adherence to treatment. • Design and adopt a nutritional assessment, malnutrition identification, and counselling and treatment approach.	
Strategy 7: Improve providers' competence through continuous capacity-building, motivation and	• Ensure the availability of TB care providers based on programme standards. • Strengthen CPD programmes for orienting and training healthcare	

standardisation of services	providers on clinical management of TB and TB programme implementation and monitoring and evaluation. • Strengthen integrated TB/HIV programme management by training all TB care providers and service linkage. • Ensure the availability of TB clinical and programmatic management guidelines, SOPs and protocols at all service outlets and TB clinics. • Improve adherence to the national TB clinical management guidelines through continuous clinical mentorship. • Optimise and encourage healthcare providers and programme managers on documentation, analysis and utilisation of their own data for decision making and improving the quality of TB care services alongside with clinical management of TB. • Benchmark best practices and develop incentive packages for TB care providers. • Strengthen performance-based recognition and reward best-performing providers and HCs. • Standardise and upgrade clinical TB diagnostic and treatment services with current diagnostic and imaging technologies. • Strengthen continuous support and feedback system from the managers. • Conduct regular TB care provider satisfaction surveys and resolve issues to reduce turnover.	
Strategy 8: Enhance patient-provider	• Ensure the availability and efficient utilisation of trained TB care providers.	

respect and trust in TB care services	• Prepare and capacitate experienced TB care providers before rotating them from department to department. • Standardise and implement the patient charter in all HCs. • Develop a tool to measure the level of trust, compassion and respect in TB care services and integrate with the performance evaluation system. • Ensure timeliness of TB care services through reducing long waiting time to consultation and implementing a same-day appointment system. • Improve TAT of diagnostic and imaging services. • Develop and implement a tele- (mobile/SMS) or digital TB patient consultation system for non-clinic hours and days.	
Strategy 9: Foster a culture of continuous TB care services quality improvement system	• Prioritise TB quality improvement focus areas based on the national health sector transformation plan, national TB strategic plan, national quality strategy and health sector transformation in quality. • Develop and introduce TB care services quality improvement manual and training packages. • Establish a system of TB clinical audit and link to quality improvement. • Develop and implement mentorship and coaching packages and tools. • Integrate TB care service quality improvement with existing QI team. • Provide financial support for quality improvement projects. • Incorporate graduated TB care service quality improvement projects into the quality submit programmes topics at all level. • Strengthen benchmarking and best experience-sharing learning platforms.	

	• Perform continuous/regular monitoring and evaluation of key TB programme treatment outcome indicators to improve TB care services quality. • Introduce a TB quality journal and print booklets annually.	
Strategy 10: Activate partnerships, resource mobilisation and collaboration among key stakeholders	• Strength community ownership and engagement on community TB care and prevention. • Develop and introduce economic and nutritional support programmes and schemes for TB patients in need. • Mobilise adequate financial and other resources locally and internationally for the implementation of TB programmes at all levels. • Strengthen regular partnership and collaboration for with key partners and stakeholders on TB programme implementation and service quality improvement. • Establish a health insurance scheme and support TB programme implementation to reduce medical catastrophic costs. • Strengthen and enhance private sector engagement on TB care services and programme implementation.	
Strategy 11: Strengthen regular supportive supervision, mentorship and feedback system	• Standardise the supportive supervision packages and tools to emphasise on patient-centredness of TB care services. • Strengthen regular supportive supervision and feedback system in DOT-implementing HCs.	

	• Enhance mentorship on the implementation of the TB programme. • Strengthen regular performance review meetings and learning platforms on case finding and detection, treatment adherence and treatment outcomes of the programme. • Revitalise and strengthen performance-based recognition and reward programmes.	

Thank you very much for your commitment and taking your time to validate the strategies.

Annexure G: Cross-tabulation of socio-demographic variableswith quality dimensions of TB services

This part of the study used cross-tabulation of each value to describe the relationship between the socio-demographic and TB service quality dimension variables. The cross-tabulations are presented as follows.

ANNEXURE G1: Cross-tabulation of socio-demographic variables with availability of TB services and healthcare professionals

Cross-tabulation was used to analyse the relationship between socio-demographic characteristics and TB services and healthcare professionals' availability. Data for this subsection are presented in Annexure Table G-1.

Annexure Table G-1: Cross-tabulation of socio-demographic with TB services and healthcare professionals' availability variables

Characteristics (n=441)	Categories	Availability of TB services and healthcare professionals	
		Good	Poor
Gender	Female	133 (68.8%)	66 (32.2%)
	Male	167 (69%)	75 (31%)
Age	18-24	75 (63.6%)	43 (36.4%)
	25-34	121 (71.2%)	49 (28.8%)
	35-44	49 (63.6%)	28 (36.4%)
	45-54	26 (78.8%)	7 (21.2%)
	55 and above	29 (67.4%)	14 (32.6%)
Ethnicity	Oromo	68 (68%)	32 (32%)
	Amhara	116 (67.4%)	56 (32.8%)
	Tigrie	11 (47.8%)	12 (52.2%)
	Gurage	58 (71.6%)	23 (28.4%)
	Other	47 (72.3%)	18 (27.7%)
Religion	Islam	72 (68.6%)	33 (31.4%)
	Orthodox Christianity	202 (66.9%)	100 (33.1%)
	Others	26 (76.5%)	8 (23.5%)
Marital status	Not married	140 (68.6%)	64 (31.4%)
	Married	133 (66.2%)	68 (33.8%)
	Divorced and Widowed	27 (75)	9 (25%)
Educational level	Illiterate	35 (64.8%)	19 (35.2%)
	Primary (1-6)	62 (71.3%)	25 (28.7%)

	Senior secondary (7-8)	67 (72%)	26 (28%)
	Secondary and preparatory (9-12)	83 (64.8%)	45 (35.2%)
	Diploma and above (tertiary)	53 (67.1%)	26 (32.9%)
Main source of the respondent's livelihood or income	Not employed	72 (65.5%)	38 (34.5%)
	Employed in the informal sector	65 (76.5%)	20 (23.5%)
	Student	11 (45.8%)	13 (54.2%)
	Employed in public sector	28 (71.8%)	11 (28.2%)
	Self employed	83 (67.4%)	45 (32.6%)
	Other	31 (68.9%)	14 (68%)

Among the respondents who perceived TB services and healthcare professionals' availability as good were 133 (68.8%) females and 167 (69%) males, while 66 (32.2%) female and 75 (31%) male perceived availability of TB services and healthcare professionals as poor.

The availability of TB services and healthcare professionals was good for 75 (63.6%) and poor for 43 (36.4%) of the respondents in the 18-24 years age group. Of the respondents in the 25-34 years age group, 121 (71.2%) respondents perceived the availability of TB services and healthcare professionals as good while the rest, 49 (28.8%), of the respondents perceived it as poor.

Considering the ethnic groups of the different respondents, 68 (68%) Oromo, 116 (67.4%) Amhara and 58 (71.6%) Gurage perceived the availability of TB services and healthcare professionals as good whereas the remaining 32 (32%) Oromo, 56 (32%) Amhara and 23 (28.4%) Gurage perceived the availability of TB services and healthcare professionals as poor.

Most, 72 (68.6%), Muslims, 202 (66.9%) Orthodox Christians and 26 (76.5%) followers of other religions perceived TB services and healthcare professionals' availability as good while the rest of the respondents in this category, that is, 33 (31.4%) Muslims, 100 (33.1%) Orthodox Christians and 8 (23.5%) followers of other religions, considered it as poor.

According to marital status, most, 140 (68.6%), respondents who are not married, 133 (66.2%) married and 27 (75%) divorced and widowed perceived the availability of TB services and healthcare professionals as good, while the remaining not married 64 (31.4%), married 68 (33.8%) and divorced and widowed 9 (25%) perceived it as poor.

ANNEXURE G2: Cross-tabulation of socio-demographic variables with communication and information in TB services

Cross-tabulation was used to analyse the relationship between socio-demographic variables and communication and information in TB services. Data for this subsection are presented in Annexure Table G-2.

Annexure Table G-2: Cross-tabulation of socio-demographic variables with communication and information in TB services

Characteristics (n=441)	Categories	Communication and information in TB services	
		Good	Poor
Gender	Male	107 (47%)	92 (43%)
	Female	138 (53.8%)	104 (46.2%)
Age	18-24	73 (61.9%)	45 (38.1%)
	25-34	95 (55.9%)	75 (44.1%)
	35-44	36 (46.8%)	41 (53.2%)
	45-54	18 (54.5%)	15 (45.5%)
	55 and above	23 (53.5%)	20 (46.5%)
Ethnicity	Oromo	58 (58%)	42 (42%)
	Amhara	87 (50.6%)	85 (49.4%)
	Tigrie	13 (56.5%)	10 (43.3%)
	Gurage	45 (55.6%)	36 (44.4%)
	Other	42 (64.6%)	23 (35.4%)
Religion	Muslim	60 (57.1%)	45 (42.9%)
	Orthodox	165 (54.6%)	137 (45.4%)
	Others	20 (58.8%)	14 (41.2%)
Marital status	Unmarried	118 (57.8%)	86 (42.2%)
	Married	111 (55.2%)	90 (44.8%)
	Divorced	11 (52.4%)	10 (47.6%)
	Widowed	5 (33.3%)	10 (67.7%)
Educational level	Illiterate	29 (53.1%)	25 (46.3%)
	Primary (1-6)	47 (54%)	40 (46%)
	Senior secondary (7-8)	51 (54.8%)	42 (45.2%)

	Secondary and preparatory (9-12)	69 (53.9%)	59 (46.1%)
	Diploma and above (tertiary)	49 (62%)	30 (38%)
Main source of the patient's livelihood or income	No employment	54 (49.1%)	56 (50.9%)
	Informal sector	52 (61.2%)	33 (38.8%)
	Student	14 (58.3%)	10 (41.7%)
	Employed in public sector	16 (41%)	23 (59%)
	Self employed	82 (59.4%)	56 (40.6%)
	Other	27 (60%)	18 (40%)

A majority 138 (53.8%) female and 107 (47%) male respondents perceived communication and information in public health centres as good, while the remaining 104 (46.2%) female and 92 (43%) male respondents had poor communication and information.

Of the respondents who perceived TB services communication and information as good, 73 (61.9%) were in the 18-24 years age group, 95 (55.9%) were in the 25-34 years age group, 36 (46.8%) were in the 35-44 years age group, 18 (54.5%) were in the 45-54 years age group, 23 (53.5%) were in the 55 years and above age group while the rest perceived TB services communication and information as poor.

Of the total respondents in the study, 58 (58%) Oromo, 87 (50.6%) Amhara, 11 (47.8%) Tigrie, 45 (55.6%) Gurage and 42 (64.6%) other ethnic groups perceived as good communication and information in the process of TB services provision in the public health centres. However, 42 (42%) Oromo, 85 (49.4%) Amhara, ten (43.3%) Tigrie, 36 (44.4%) Gurage and 23 (35.4%) other ethnic groups perceived poor communication and information

Of the total respondents who participated in the study, 60 (57.1%) Muslims, 165 (54.6%) Orthodox Christians and 20 (58.8%) followers of other religions had good communication and information and the rest 45 (42.9%) Muslims, 137 (45.4%) Orthodox Christians and 14 (41.2%) followers of other religions described the communication and information in TB service in the public health centres as poor.

According to the different marital statuses, 118 (57.8%) of the unmarried, 111 (55.2%) married and 11 (52.4%) divorced and 5 (33.3%) widowed had good communication and information. However, the rest, that is, 86 (42.2%) unmarried, 90 (44.8%) married and ten (47.6%) divorced and ten (67.7%) widowed perceived poor communication and information in TB services.

Of the total respondents (n=441) with different levels of education, 29 (53.1%) illiterate, 47 (54%) primary, 51 (54.8%) senior secondary, 69 (53.9%) secondary and preparatory, and 49 (62%) diploma and above had good communication and information in TB services. However, the remaining 25 (46.3%) illiterate, 40 (46%) primary, 42 (45.2%) senior secondary, 59 (46.1%) secondary and preparatory, and 30 (38%) diploma and above perceived it as poor.

Among the respondents with different sources of income and livelihood, that is, 54 (49.1%) of them not employed, 52 (61.2%) employed in the informal sector, 14 (58.3%) students, 16 (41%) employed in the public sector, 82 (59.4%) self-employed and 27 (60%) of the respondents with other sources of income perceived good communication and

information in TB service. The remaining respondents, that is, 56 (50.9%) unemployed, 33 (38.8%) employed in the informal sector, ten (41.7%) students, 23 (59%) employed in the public sector, 56 (40.6%) self-employed and 18 (40%) having other sources of income had poor communication and information in TB services.

ANNEXURE G3: Cross-tabulation of socio-demographic variables with patient-provider interaction and counselling in TB services

Cross-tabulation was used to analyse the relationship between socio-demographic variables and patient-provider interaction and counselling in TB services. Data for this subsection are presented in Annexure Table G-3.

Annexure Table G-3: Cross-tabulation of socio-demographic variables with patient-provider interaction and counselling in TB services

Characteristics (n=441)	Categories	Patient-provider interaction and counselling in TB services	
		Good	Poor
Gender	Female	140 (59.9%)	102 (41.1%)
	Male	110 (55.3%)	89 (44.7%)
Age	18-24	75 (63.6%)	43 (36.4%)
	25-34	92 (54.1%)	78 (45.9%)
	35-44	38 (49.4%)	39 (50.6%)
	45-54	21 (63.6%)	12 (36.4%)
	55 and above	24 (55.8%)	19 (44.2%)
Ethnicity	Oromo	60 (60%)	40 (40%)
	Amhara	97 (56.4%)	75 (43.6%)
	Tigrie	12 (52.2%)	11 (47.8%)
	Gurage	48 (59.3%)	33 (40.7%)
	Other	33 (50.8%)	32 (49.2%)
Religion	Muslim	64 (61%)	41 (39%)
	Orthodox Christian	167 (55.3%)	135 (44.7%)
	Others	19 (55.9%)	15 (44.1%)
Marital status	Not married	119 (58.3%)	85 (41.7%)
	Married	111 (55.2%)	90 (44.8%)
	Divorced and widowed	20 (61.9%)	16 (38.1%)
Educational level	Illiterate	34 (63%)	20 (37%)
	Primary (1-6)	41 (47.1%)	46 (52.9%)
	Senior secondary (7-8)	61 (65.6%)	32 (34.4%)

	Secondary and preparatory (9-12)	62 (48.4%)	66 (51.6%)
	Diploma and above (tertiary)	52 (65.8%)	27 (34.2%)
Main source of the respondents' livelihood or income	Not employed	57 (51.9%)	53 (48.1%)
	Employed in the informal sector	61 (71.8%)	24 (28.2%)
	Student	13 (55.3%)	11 (45.7%)
	Employed in the public sector	20 (55.1%)	19 (44.9%)
	Self-employed	76 (55.1%)	62 (44.9%)
	Other	23 (55.1%)	22 (48.9%)

According to the findings of this study, 140 (59.9%) female and 110 (55.3%) male respondents perceived patient-provider interaction and counselling services as good, where as 102 (41.1%) female and 89 (44.7%) male respondents perceived them as poor.

The study findings revealed that the patient-provider interaction and counselling services were good for 75 (63.6%) of the respondents in the 18-24 years age group, 92 (54.1%) in the 25-34 years age group, 38 (49.4%) in the 35-44 years age group, 21 (63.6%) respondents with age group of 45-54 years, 24 (55.8%) in the 55 years and above age group. On the other hand, 43 (36.4%) of the respondents in the 18-24 years age group, 78 (45.9%) in the 25-34 years age group, 39 (50.6%) in the 35-44 years age group, 12 (36.4%) in the 45-54 years age group and 19 (44.2%) in the 55 years and above age group perceived the patient-provider interaction and counselling services as poor.

Of the 441 respondents, 60 (60%) belonging to the Oromo ethnic group, 97 (56.4%) Amhara, 12 (52.2%) Tigrie, 48 (59.3%) Gurage and 33 (50.8%) other ethnic groups perceived patient-provider interaction and counselling in TB services as good. Meanwhile, 40 (40%) respondents belonging to the Oromo ethnic group, 75 (43.8%) Amhara, 11 (47.8%) Tigrie, 33 (40.7%) Gurage and 32 (49.2%) other ethnic groups respondents.

Among the 441 respondents, 64 (61%) of them Muslims, 167 (55.3%) Orthodox Christians and 19 (55.9%) followers of other religions perceived patient-provider interaction and counselling services as good. On the other hand, 41 (39%) Muslims, 135 (44.7%) Orthodox Christians and 15 (44.1%) followers of other religions perceived patient-provider interaction and counselling services as poor.

After cross-tabulation, this study found that 119 (58.3%) respondents who were not married, 111 (55.2%) married and 20 (61.9%) divorced and widowed perceived patient-provider interaction and counselling services as good. However, the rest of the respondents of which 85 (41.7%) were not married, 90 (44.8%) married and 16 (38.1%) divorced and widowed perceived patient-provider interaction and counselling services as poor.

Of the 441 respondents, 34 (63%) who were illiterate, 41 (47.1%) went up to primary school level, 61 (65.6%) senior secondary, 62 (48.4%) secondary and preparatory, and 52 (65.8%) diploma and above perceived patient-provider interaction and counselling services as good. However, the rest, among them 20 (37%) who were illiterate, 41 (47.1%)who went up to primary school, 32 (34.4%) senior secondary, 66 (51.6%) secondary and preparatory, and 27 (34.2%) diploma and indicated that patient-provider interaction and counselling services were poor.

Among 441 of respondents in the study, 57 (51.9%) unemployed, 61 (71.8%) employed in the informal sector, 13 (55.3%) students, 20 (55.1%) employed in the public sector, 76 (55.1%) self-employed and 23 (55.1%) having other sources of income and livelihood experienced good patient-provider interaction and counselling services. The remaining 53 (48.1%) unemployed, 24 (28.2%) employed in the informal sector, 11 (45.7%) students, 19 (44.9%) employed in the public sector, 62 (44.9%) self-employed and 23 (48.9%) having other sources of income indicated that patient-provider interaction and counselling in TB services were poor.

ANNEXURE G4: Cross-tabulation of socio-demographic variables with infrastructure for TB services

Cross-tabulation was used in this section to determine the relationship between socio-demographic variables and infrastructure for TB services. Data for this subsection are presented in Annexure Table G-4.

Annexure Table G-4: Cross tabulation of socio-demographic variables with infrastructure for TB services

Characteristics (n=441)	Categories	Infrastructure for TB services	
		Good	Poor
Gender	Female	152 (59.3%)	90 (40.7%)
	Male	111 (55.8%)	88 (44.2%)
Age	18-24	70 (59.3%)	64 (40.7%)
	25-34	106 (62.4%)	78 (37.6%)
	35-44	43 (55.8%)	34 (44.2%)
	45-54	18 (54.5%)	15 (45.5%)
	55 and above	26 (60.5%)	17 (39.5%)
Ethnicity	Oromo	66 (66%)	34 (34%)
	Amhara	104 (60.5%)	68 (39.5%)
	Tigrie	14 (60.9%)	9 (39.1%)
	Gurage	46 (56.8%)	35 (54.2%)
	Other	33 (50.8%)	32 (49.2%)
Religion	Muslim	66 (62.9%)	39 (37.1%)
	Orthodox	179 (59.3%)	123 (40.7%)
	Others	18 (52.9%)	16 (47.1%)
Marital status	Not married	124 (60.8%)	80 (39.2%)
	Married	117 (58.2%)	84 (41.8%)
	Divorced and widowed	22 (66.7%)	14 (33.3%)
Educational level	Illiterate	36 (66.7%)	18 (33.3%)
	Primary (1-6)	47 (54.1%)	40 (46%)

	Senior secondary (7-8)	58 (62.4%)	35 (37.6%)
	Secondary and preparatory (9-12)	82 (64.1%)	46 (35.9%)
	Diploma and above (tertiary)	40 (50.6%)	39 (49.4%)
Main source of livelihood or income	No employment	59 (53.6%)	51 (46.4%)
	Informal sector	57 (67.1%)	28 (32.9%)
	Student	13 (55.3%)	11 (45.7%)
	Employed in public sector	23 (59%)	16 (41%)
	Self employed	80 (58%)	58 (42%)
	Others	31 (68.9%)	14 (31.1%)

Among the total 441 respondents participated in the study, 152 (59.3%) females and 111 (55.8%) males perceived good infrastructure for TB services and the rest 90 (40.7%) female, and 88 (44.2%) male respondents perceived poor infrastructure for TB services.

Of the total respondents (n=441), 70 (59.3%) in the 18-24 years age group, 70 (59.3%) in the 25-34 years age group, 43 (55.8%) in the 35-44 years age group, 18 (54.8%) in the 45-54 years age group and 26 (60.5%) in the 55 years and above age group perceived infrastructure for TB services as good. However, 64 (40.7%) in the 18-24 years age group, 78 (37.6%)in the 25-34 years age group, 34 (44.2%) in the 35-44 years age group, 15 (45.5%) in the 45-54 years age group and 17 (39.5%) age group of 55 years and above perceived poor.

The infrastructure for TB services was good for 66 (66%) respondents of the Oromo ethnic group, 104 (60.5%) Amhara, 14 (60.9%) Tigrie, 46 (56.8%) Gurage and 33 (50.8%) respondents of other ethnic groups, whereas it was poor for the rest of 34 (34%) Oromo, 68 (39.5%) Amhara, 9 (39.1%) Tigrie, 35 (54.2%) Gurage, and 32 (49.2%) other ethnic group respondents.

Sixty-six (62.9%) Muslims, 179 (59.3%) Orthodox Christians, and 18 (52.9%) followers of other religions considered infrastructure for TB services as good, whereas 39 (37.1%) Muslims, 123 (40.7%) Orthodox Christians, and 16 (47.1%) followers of other religions considered infrastructure for TB services as poor.

According to the findings, 124 (60.8%) respondents who were not married, 117 (58.2%) married, and 22 (66.7%) divorced and widowed reported good infrastructure for TB services, while the remaining 80 (39.2%) not married, 84 (41.8%) married and 14 (33.3%) divorced and widowed respondents perceived poor infrastructure for TB services.

Of the total 441 respondents of different educational backgrounds, 36 (66.7%) illiterate, 47 (54.1%) primary school level, 58 (62.4%) senior secondary level, 82 (64.1%) secondary and preparatory, and 40 (50.6%) diploma and above perceived infrastructure for TB service as good. On the other hand, 18 (33.3%) illiterate, 40 (46%) primary school level, 35 (37.9%) senior secondary school level, 46 (35.9%) secondary and preparatory, and 39 (49.4%) diploma and above perceived infrastructure for TB services as poor.

The study findings show that from the total 441 respondents with different income sources and livelihoods, 59 (53.6%) unemployed, 57 (67.1%) employed in the informal sector, 13 (55.3%) students, 23 (59%) employed in the public sector, 80 (58%) self-employed and 31 (68.9%) having other sources of income perceived infrastructure for TB services as good. However, the rest 51 (46.4%) the non-employed, 28 (32.9%) informal sector, 11 (45.7%) student, 16 (41%) employed in public sector, 58 (42%) self-employed and 14

(31.1%) having other sources of income perceived infrastructure for TB services as poor.

ANNEXURE G5: Cross-tabulation of socio-demographic variables with professionals' competence about TB procedures and tests

Cross-tabulation was used in this section to determine the relationship between socio-demographic variables and professionals' competence about TB procedures and tests. Data for this subsection are presented in Annexure Table G-5.

Annexure Table G-5: Cross tabulation of socio-demographic variables with professionals' competence about TB procedures and tests

Characteristics (n=441)	Categories	Professionals' competence about TB procedures and tests	
		Good	Poor
Gender	Female	123 (61.8%)	76 (38.2%)
	Male	158 (65.3%)	84 (34.7%)
Age	18-24	72 (61%)	46 (39%)
	25-34	111 (65.3%)	59 (34.7%)
	35-44	47 (61%)	30 (39%)
	45-54	22 (67.7%)	11 (33.3%)
	55 and above	29 (67.4%)	14 (32.6%)
Ethnicity	Oromo	65 (65%)	35 (40%)
	Amhara	106 (61.6%)	66 (38.4%)
	Tigrie	19 (82.6%)	4 (17.4%)
	Gurage	50 (61.7%)	31 (38.3%)
	Other	41 (63.1%)	24 (36.9%)
Religion	Muslim	61 (58.1%)	44 (41.9%)
	Orthodox	199 (65.9%)	103 (34.1%)
	Others	21 (61.8%)	13 (38.2%)
Marital status	Not married	134 (65.7%)	70 (34.3%)
	Married	125 (62.2%)	76 (37.8%)
	Divorced and widowed	22 (66.7%)	14 (33.3%)
Educational level	Illiterate	35 (64.8%)	19 (35.2%)
	Primary (1-6)	54 (62.1%)	33 (37.9%)
	Senior secondary (7-8)	60 (64.5%)	33 (33.5%)
	Secondary and preparatory (9-12)	83 (64.8%)	45 (35.2%)

	Diploma and above (tertiary)	49 (62%)	30 (38%)
Main source of livelihood or income	No employment	73 (64.4%)	37 (33.6%)
	Informal sector	55 (64.7%)	30 (35.3%)
	Student	17 (70.8%)	7 (29.2%)
	Employed in public sector	22 (56.4%)	17 (43.6%)
	Self employed	91 (65.9%)	47 (34.1%)
	Other	23 (55.1%)	22 (48.9%)

Of the total 441 study respondents, 123 (61.8%) females and 158 (65.3%) males perceived professionals' competence in TB procedures and tests as good, whereas the remaining 76 (38.2%) females and 84 (34.7%) males perceived them as poor.

Considering the respondents' ages, 72 (61%) in the 18-24 years age group, 111 (65.3%) in the 25-34 years age group, 47 (61%) in the 35-44 years age group, 22 (67.7%) in the 45-54 years age group, and 29 (67.4%) in the 55 years and above age group perceived professionals' competence in TB procedures and tests as good. However, the rest of the respondents, 46 (39%) in the 18-24 years age group, 59 (34.7%) in the 25-34 years age group, 30 (39%) in the 35-44 years age group, 11 (33.3%) in the 45-54 years age group, 14 (32.6%) in the 55 years and above age group perceived professionals' competence in TB procedures and tests as poor.

The study findings also show that from the total of 441 respondents who participated in the study, 65 (65%) Oromo, 106 (61.6%) Amhara, 19 (82.6%) Tigrie, 50 (61.7%) Gurage and 41 (63.1%) other ethnic groups perceived professionals' competence in TB procedures and tests as good. However, the rest of the respondents, that is, 35 (40%) Oromo, 66 (38.4%) Amhara, 4 (17.4%) Tigrie, 31 (38.3%) Gurage and 24 (36.9%) other ethnic groups perceived professionals' competence in TB procedures and tests as poor.

Among the total 411 respondents involved in the study, 61 (58.1%) Muslims, 199 (65.9%) Orthodox Christians and 21 (61.8%) followers of other religions perceived professionals' competence in TB procedures and tests as good. However, the remaining 44 (41.9%) Muslims, 103 (34.1%) Orthodox Christians and 13 (38.2%) followers of other religions perceived professionals' competence in TB procedures and tests as poor.

The study found that from the total 441 respondents, 134 (65.7%) who were not married, 125 (62.2%) married and 22 (66.7%) divorced and widowed perceived the professionals' competence in TB procedures and tests as good. However, the rest of the respondents, that is, 70 (34.3%) not married, 76 (37.8%) married and 14 (33.3%) divorced and widowed perceived the professionals' competence in TB procedures and tests as poor.

The cross-tabulation of professionals' competence in TB procedures and tests and highest level of education attained by the 441 total respondents show that, 35 (64.8%) illiterate, 54 (62.1%) primary school, 60 (64.5%) senior secondary, 83 (64.8%) secondary and preparatory, and 49 (62%) diploma and above perceived professionals' competence in TB procedures and tests as good. However, the rest of them, that is, 19 (35.2%) illiterate, 33 (37.9%) primary school, 33 (33.5%) senior secondary, 45 (35.2%) secondary and preparatory and 30 (38%) diploma and above perceived professionals' competence in TB procedures and tests as poor.

In addition, of all the 441 respondents involved in the study with different income sources and livelihoods, 73 (64.4%) the unemployed, 55 (64.7%) employed in the informal sector, 17 (70.8%) students, 22 (56.4%) employed in the public sector, 91 (65.9%) self-employed and 23 (55.1%) having other sources of income perceived professionals' competence in TB procedures and tests as good. However, the rest of them, that is, 37 (33.6%) the non-employed, 30 (35.3%) informal sector, 7 (29.2%) student, 17 (43.6%) employed in public sector, 47 (34.1%) self-employed and 22 (48.9%) having other sources of income perceived professionals' competence in TB procedures and tests as poor.

ANNEXURE G6: Cross-tabulation of socio-demographic variables with affordability and support for TB services

Cross-tabulation was used in this section to determine the relationship between socio-demographic variables and affordability and support for TB services. Data for this subsection is presented in Annexure Table G-6.

Annexure Table G-6: Cross-tabulation of socio-demographic variables with affordability and support for TB services

Characteristics (n=441)	Categories	Affordability and support for TB services	
		Good	Poor
Gender	Male	232 (95.9%)	10 (4.1%)
	Female	191 (96%)	8 (4%)
Age	18-24	117 (99.2%)	1 (0.8%)
	25-34	164 (96.5%)	6 (3.5%)
	35-44	71 (92.2%)	6 (7.8%)
	45-54	32 (97%)	1 (3%)
	55 and above	39 (90.7%)	4 (9.3%)
Ethnicity	Oromo	95 (95%)	5 (5%)
	Amhara	162 (94.2%)	10 (5.8%)
	Tigrie	22 (95.7%)	1 (4.3%)
	Gurage	80 (98.8%)	1 (1.2%)
	Other	64 (95.8%)	1 (4.2%)
Religion	Muslims	103 (98.1%)	2 (1.9%)
	Orthodox Christians	288 (95.4%)	14 (4.6%)
	Others	32 (94.1%)	2 (5.9%)
Marital status	Not married	194 (95.1%)	10 (4.9%)
	Married	199 (99%)	2 (1%)
	Divorced and widowed	30 (83.3%)	6 (12.7%)
Educational level	Illiterate	49 (90.7%)	5 (9.3%)
	Primary (1-6)	83 (95.4%)	4 (4.6%)
	Senior secondary (7-8)	91 (97.8%)	2 (2.2%)
	Secondary and preparatory (9-12)	122 (95.3%)	6 (4.7%)
	Diploma and above (tertiary)	78 (98.7%)	1 (1.3%)
Main source of the respondent's livelihood or income	No employment	104 (94.5%)	6 (5.5%)
	Informal sector	84 (98.8%)	1 (1.2%)
	Student	23 (95.8%)	1 (4.2%)
	Employed in public sector	38 (97.4%)	1 (2.6%)
	Self employed	132 (95.7%)	6 (4.3%)
	Other	42 (93.3%)	3 (6.7%)

The cross-tabulation analysis shows that from the total 441 respondents in the study, 191 (96%) females and 232 (95.9%) males perceived affordability and support for TB services as good. However, the rest of the respondents, that is, 8 (4%) females and ten (4.1%) male respondents perceived poor affordability and support for TB services.

Affordability and support for TB services were perceived as good by 117 (99.2%) of the

respondents in the 18-24 years age group, 164 (96.5%) in the 25-34 years age group, 71 (92.2%) in the 35-44 years age group, 32 (97%) respondents in the 45-54 years age group, 39 (90.7%) in the 55 years and above age group whereas the rest of the respondents perceived affordability and support for TB services as poor.

Among the total 441 study respondents, 95 (95%) who belonged to the Oromo ethnic group, 162 (94.2%) Amhara, 22 (95.7%) Tigrie, 80 (98.8%) Gurage and 64 (95.8%) who belonged to other ethnic groups perceived affordability and support for TB services as good. However, the remaining respondents perceived affordability and support for TB services as poor.

Meanwhile, 103 (98%) Muslims, 288 (95.4%) Orthodox Christians and 32 (94%) followers of other religions perceived affordability and support for TB services as good whereas the remaining respondents perceived affordability and support for TB services as poor.

One hundred and ninety-four (95.1%) respondents who were not married, 199 (99%) married and 30 (83.3%) divorced and widowed perceived affordability and support for TB services as good, whereas the rest of the respondents perceived affordability and support for TB services as poor.

On the other hand, 49 (90.7%) of the respondents who were illiterate, 83 (95.4%) who had primary school education, 91 (97.8%) senior secondary school, 122 (95.3%) secondary and preparatory, and 78 (98.7%) diploma and above perceived affordability and support for TB services as good, whereas the rest of the respondents perceived affordability and support for TB services as poor.

Also 104 (94.5%) of the unemployed respondents, 84 (98.8%) employed in the informal sector, 23 (95.8%) students, 38 (97.4%) employed in the public sector, 132 (95%) self-employed and 42 (93.3%) who had other sources of income perceived affordability and support for TB services as good, while the rest of the respondents perceived them as poor.

ANNEXURE G7: Cross-tabulation of socio-demographic variables with stigma to TB patients

Cross-tabulation was used in this section to determine the relationship between socio-demographic variables and stigma to TB patients. Data for this subsection are presented in Annexure Table G-7.

Annexure Table G-7: Cross-tabulation of socio-demographic variables with stigma to respondents

Characteristics (n=441)	Categories	Stigma to TB patients	
		Good (not stigmatised)	Poor (stigmatised)
Gender	Male	144 (59.5%)	98 (40.5)
	Female	111 (55.8%)	88 (44.2%)
Age	18-24	69 (58.5%)	49 (41.5%)
	25-34	96 (56.5%)	74 (43.5%)
	35-44	37 (48.1%)	40 (51.9%)
	45-54	25 (75.8%)	8 (24.2%)
	55 and above	28 (65.1%)	15 (34.9%)
Ethnicity	Oromo	52 (52%)	48 (48%)
	Amhara	100 (58.1%)	72 (41.9%)
	Tigrie	13 (56.5%)	10 (43.5%)
	Gurage	53 (65.4%)	28 (34.6%)
	Other	37 (56.9%)	28 (43.1%)
Religion	Muslim	56 (62.9%)	39 (37.1%)
	Orthodox	166 (55%)	136 (45%)
	Others	23 (67.6%)	11 (32.4%)
Marital status	Not married	115 (57.2%)	86 (42.8%)
	Married	115 (56.4%)	89 (46.6%)
	Divorced and Widowed	25 (66.7%)	11 (33.3%)
Educational level	Illiterate	27 (50%)	27 (50%)
	Primary (1-6)	51 (58.6%)	36 (41.4%)
	Senior secondary (7-8)	54 (58.1%)	39 (41.9%)
	Secondary and preparatory (9-12)	78 (60.9%)	50 (39.1%)
	Diploma and above (tertiary)	45 (57%)	34 (46%)
source of livelihood or income	Not employed	65 (59.1%)	45 (40.9%)
	Employed in informal sector	59 (69.4%)	26 (30.6%)
	Student	10 (41.7%)	14 (58.3%)
	Employed in public sector	18 (46.2%)	21 (53.8%)
	Self-employed	78 (56.5%)	60 (43.5%)
	Other	25 (55.6%)	22 (44.4%)

Regarding the relationship between gender and stigma to the respondents, 111 (55.8%) of the female respondents and 144 (59%) males had not experienced stigma related to TB whereas the rest of the respondents, 88 (44.2%) females and 98 (40.5%) males had experienced stigma related to TB services in the public health centres.

Of all the respondents in this study (n=441), 69 (58.5%) in the 18-24 years age group, 96 (56.5%) in the 25-34 years age group, 37 (48.1%) in the 35-44 years age group, 25 (75.8%) in the 45-54 years age group, 28 (65.1%) in the 55 years and above age group had not perceived stigma related to TB. However, the remaining 49 (41.5%) of the respondents in the 18-24 years age group, 74 (43.5%) in the 25-34 years age group, 40 (51.9%) in the 35-44 years age group, 8 (24.2%) in the 45-54 years age group, 15 (34.9%) in the 55 years and above age group had perceived stigma related to TB.

Meanwhile, 52 (52%) of the respondents from the Oromo ethnic group, 100 (58.1%) Amhara, 13 (56.5%) Tigrie, 53 (65.4%) Gurage and 37 (95.8%) other ethnic groups had not perceived stigma with TB service. However, the remaining 48 (48%) of the respondents from the Oromo ethnic group, 72 (41.9%) Amhara, ten (43.5%) Tigrie, 28 (34.6%) Gurage and 28 (43.1%) other ethnic groups had perceived stigma related to TB.

In addition, 56 (62.9%) Muslims, 166 (55%) Orthodox Christians and 32 (94%) followers of other religions had not perceived stigma related to TB. The remaining respondents in this category, 39 (37.1%) Muslims, 136 (45%) Orthodox Christians and 11 (32.4%) followers of other religions had perceived stigma related to TB.

According to marital status, 115 (57.2%) respondents who were not married, 115 (56.4%) married and 25 (66.7%) divorced and widowed had not perceived stigma related to TB. However, the remaining 86 (42.8%) respondents who were not married, 89 (46.6%) married and 11 (33.3%) divorced and widowed had perceived stigma related to TB.

Related to education, 27 (50%) of the respondents who were illiterate, and 51 (58.6%) who studied up to primary school, 54 (58.1%) senior secondary school, 78 (60.9%) secondary and preparatory as well as 45 (57%) diploma and above had not perceived stigma related to TB. However, 27 (50%) of the illiterate, and 36 (41.4%) of those who studied up to primary school, 39 (41.9%) senior secondary, 50 (39.1%) secondary and preparatory, as well as 34 (43%) diploma and above had perceived stigma related to TB.

Of the total 441 study respondents, 65 (59.1%) of the unemployed, 59 (69.4%) employed in the informal sector, ten (41.7%) students, 18 (46.2%) employed in the public sector, 78 (56.5%) self-employed and 25 (55.6%) who had other income and livelihood sources had

not perceived stigma related to TB. However, 45 (40.9%) of the unemployed, 26 (30.6%) employed in the informal sector, 14 (58.3%) students, 21 (53.8%) employed in public sector, 60 (43.5%) self-employed and 22 (44.4%) who had other income and livelihood sources had perceived stigma related to TB.

ANNEXURE G8: Cross-tabulation of socio-demographic variables with level of satisfaction

Cross-tabulation was used in this section to determine the relationship between socio-demographic variables and level of satisfaction. Data for this sub-section are presented in Annexure Table G-8.

Annexure Table G-8: Cross tabulation of socio-demographic variables with level of satisfaction

Characteristics (n=441)	Categories	Levels of satisfaction	
		Satisfied	Dissatisfied
Gender	Female	125 (62.8%)	74 (37.2%)
	Male	169 (69.8%)	73 (30.2%)
Age	18-24	87 (73.7%)	31 (23.3%)
	25-34	105 (61.8%)	65 (38.2%)
	35-44	52 (67.5%)	25 (32.5%)
	45-54	19 (57.6%)	14 (42.4%)
	55 and above	31 (72.1%)	12 (27.9%)
Ethnicity	Oromo	68 (68%)	32 (32%)
	Amhara	115 (66.9%)	57 (33.1%)
	Tigrie	19 (82.6%)	4 (17.4%)
	Gurage	57 (70.4%)	24 (29.6%)
	Other	35 (53.8%)	30 (40.2%)
Religion	Muslim	68 (64.8%)	37 (35.2%)
	Orthodox	198 (65.6%)	104 (34.4%)
	Others	28 (82.4%)	6 (17.6%)
Marital status	Married	136 (66.7%)	68 (33.3%)
	Not married	139 (69.2%)	62 (30.8%)
	Divorced and Widowed	19 (52.8%)	17 (47.2%)
Educational level	Illiterate	38 (70.4%)	16 (29.6%)
	Primary (1-6)	57 (65.5%)	30 (34.5%)
	Senior secondary (7-8)	62 (66.7%)	31 (33.3%)

	Secondary and preparatory (9-12)	83 (64.8%)	45 (35.2%)
	Diploma and above (tertiary)	54 (68.4%)	25 (31.6%)
Main source of livelihood or income	No employment	79 (71.8%)	31 (28.2%)
	Informal sector	57 (67.1%)	28 (32.9%)
	Student	15 (62.5%)	9 (27.5%)
	Employed in public sector	27 (69.2%)	12 (30.8%)
	Self employed	89 (64.5%)	49 (35.5%)
	Other	27 (60%)	18 (40%)

The findings show that 125 (62.8%) female and 169 (69.8%) male respondents were satisfied with the service they receive and the rest, that is, 74 (37.2%) females and 73 (30.2%) males were dissatisfied.

Among those satisfied with the service they received were 87 (73.7%) respondents aged between 18 and 24 years, 105 (61.8%) aged 25-34 years, 52 (67.5%) aged 35-44 years, 19 (57.6%) aged 45-54 years and 31 (72.1%) aged 55 years and above, while the rest were dissatisfied.

Of the total 441 study respondents, 68 (68%) belonging to the Oromo ethnic group, 115 (66.9%) Amhara, 19 (82.6%) Tigrie, 57 (70.4%) Gurage and 35 (53.8%) other ethnic groups were satisfied with the service they received and the rest of them in this category were dissatisfied.

Sixty-eight (64.8%) Muslims, 198 (65.6%) Orthodox Christians, 28 (82.4%) followers of other religions from the total 441 respondents were satisfied with the service they received while the rest of them were dissatisfied.

Of the total 441 respondents who participated in the study, 38 (70.4%) of them illiterate, while 57 (65.5%) primary school level, 62 (66.7%) senior secondary school, 83 (64.8%) secondary and preparatory school and 54 (68.4%) diploma and above educational level respondents were satisfied with the service they receive. However, the remaining respondents were dissatisfied with the service they received.

In addition, from the total 441 respondents, 79 (71.8%) unemployed, 57 (67.1%) employed in the informal sector, 15 (62.5%) students, 27 (69.2%) employed in public sector, 89 (64.5%) self-employed and 27 (60%) having other source of the livelihood or income were satisfied with the service they received. The rest, however, were dissatisfied.

ANNEXURE H: Logistic regression analysis of socio-demographic variables with quality dimensions of TB services

The primary goal of this binary logistic regression analysis was to determine the measure of associations and relationships between the categorical socio-demographic and the categorical dichotomy TB services quality dimension variables, as well as the strength of the associations between the variables.

ANNEXURE H1: Logistic regression analysis of socio-demographic variables with availability of TB services and healthcare professionals

This part used logistic regression analysis to estimate the measure of associations and relationships between categorical socio-demographic variables and categorical dichotomous TB services and healthcare professionals' availability. Data for this subsection are presented in Annexure Table H-1.

Annexure Table H-1: Logistic regression analysis of socio-demographic variables with availability of TB services and healthcare professionals

Characteristics (n=441)	Categories	Availability of TB services and healthcare professionals		COR 95%CI	P-value	AOR 95%CI	P-value
		Good	Poor				
Gender	Female	133 (68.8%)	66 (32.2%)	1		1	
	Male	167 (69%)	75 (31%)	1.11 (0.74 1.65)	0.63	0.966 (.62, 1.51)	.51
Age	18-24	75 (63.6%)	43 (36.4%)	1		1	.23
	25-34	121 (71.2%)	49 (28.8%)	0.71 (0.48,1.17)	0.18	1.45 (0.73, 2.67)	.37
	35-44	49 (63.6%)	28 (36.4%)	1.0 (0.55, 1.8)	0.99	0.65 (0.26, 1.66)	.75
	45-54	26 (78.8%)	7 (21.2%)	0.47 (0.19,1.8)	0.11	1.14 (0.49, 2.6)	.44
	55 & above	29 (67.4%)	14 (32.6%)	0.84 (0.4, 1.8)	0.65	1.25 (0.71, 2.2)	.22
Ethnicity	Oromo	68 (68%)	32 (32%)	1		1	.99
	Amhara	116 (67.4%)	56 (32.8%)	0.47 (0.31,0.72)	0.00	1.0 (0.58, 1.75)	.08
	Tigrie	11 (47.8%)	12 (52.2%)	0.48 (0.35, 0.66)	0.00	2.3 (0.89, 6.1)	.48
	Gurage	58 (71.6%)	23 (28.4%)	1.1 (0.48, 2.47)	0.84	0.78 (0.38, 1.6)	.30
	Other	47 (72.3%)	18 (27.7%)	0.4 (0.25, 0.64)	0.00	0.67 (0.316, 1.4)	.46
Religion	Muslim	72 (68.6%)	33 (31.4%)	1		1	
	Orthodox	202 (66.9%)	100 (33.1%)	0.46 (0.3, 0.69)	0.00	0.912 (0.52,1.59)	.22
	Others	26 (76.5%)	8 (23.5%)	0.49 (0.39, 0.63)	0.00	0.550 (0.21,1.43)	.44
Marital status	Not married	140 (68.6%)	64 (31.4%)	1		1	
	Married	133 (66.2%)	68 (33.8%)	0.46 (0.54, 0.61)	0.00	0.99 (0.62,1.61)	.21
	Others	15 (71.4%)	6 (28.6%)	0.91 (0.49, 1.74)	0.00	0.58 (0.25, 1.36)	.80
Educational level	Illiterate	35 (64.8%)	19 (35.2%)	1	0.06	1	
	Primary	62 (71.3%)	25 (28.7%)	0.54 (0.31, 0.95)		0.80 (0.36,1.79)	.40

	Senior secondary	67 (72%)	26 (28%)	0.40 (0.25, 0.64)	0.03	0.70 (0.31,2,.58)	.96
	Secondary and preparatory	83 (64.8%)	45 (35.2%)	0.40 (0.25, 0.61)	0.00	0.98 (0.46, 2.1)	.52
	Diploma and above	53 (67.1%)	26 (32.9%)	0.54 (0.38, 0.78)	0.00	0.76 (0.33, 1.75)	.25
Main source of livelihood or income	No employment	72 (65.5%)	38 (34.5%)	1		1	.12
	Informal sector	65 (76.5%)	20 (23.5%)	0.53 (0.36, 0.78)	0.00	0.59 (0.30, 1.1)	.12
	Student	11 (45.8%)	13 (54.2%)	0.31 (0.17, 0.51)	0.00	2.24 (0.82, 6.1)	.79
	Employed in public sector	28 (71.8%)	11 (28.2%)	0.31 (0.19, 0.51)	0.68	0.84 (0.36, 1.99)	.93
	Self employed	83 (67.4%)	45 (32.6%)	1.18 (0.53, 2.60)	0.01	0.97 (0.55, 1.71)	.70
	Other	31 (68.9%)	14 (68%)	0.39 (0.19, 0.68)	0.00	0.38 (0.38,1.93)	.47

The logistic regression analysis showed that male respondents were 3.4% less likely to seek TB services (AOR=0.966; 95% CI (.62, 1.51)) than female TB respondents.

On the other hand, respondents aged 25-34 years were 45% more likely to seek TB services (AOR=1.45, 95% CI (0.73, 2.67) than respondents aged 18-24 years.

Respondents belonging to the Tigrie ethnic group were 100% more likely to seek TB services and healthcare professionals (AOR= 2.3, 95% CI (0.89, 6.1) than respondents belonging to the Oromo ethnic group.

Orthodox Christians were less likely to seek TB services and healthcare professionals (AOR=0.912, 95% CI (0.52, 1.59) than Muslim respondents.

The self-employed respondents were 20% more likely to seek TB services and healthcare professionals (AOR=0.97, 95% CI (0.55, 1.71) compared to respondents who depended on others for income and livelihood and unemployed.

Literate respondents were less likely to seek TB services and healthcare professionals (AOR=0.76, 95% CI (0.33, 1.75) than illiterate respondents.

ANNEXURE H2: Logistic regression analysis of socio-demographic variables with communication and information for TB services

Logistic regression analysis was done in this section to determine the measure of associations and relationships among the categorical socio-demographic variables and communication and information for TB services, which is also a categorical dichotomy variable. Data for this subsection are presented in Annexure Table H-2.

Annexure Table H-2: Logistic regression analysis of socio-demographic variables with communication and information in TB services

Characteristics (n=441)	Categories	Communication and information in TB services		COR 95% CI	P value	AOR 95% CI	P value
		Good	Poor				
Gender	Male	107 (47%)	92 (43%)	1		1	
	Female	138 (53.8%)	104 (46.2%)	0.860 (0.65, 1.14)	0.288	0.87 (0.57,1.33)	.52
Age	18-24	73 (61.9%)	45 (38.1%)	1		1	
	25-34	95 (55.9%)	75 (44.1%)	0.789 (58, 1.07)	0.126	1.4 (0.8, 2.55)	.20
	35-44	36 (46.8%)	41 (53.2%)	1.139 (0.73, 1.78)	0.569	1.0 (0.46, 2.29)	.04
	45-54	18 (54.5%)	15 (45.5%)	0.83 (0.40, 1.65)	0.602	1.1 (0.50, 2.38)	.40
	55 and above	23 (53.5%)	20 (46.5%)	0.870 (0.48, 1.58)	0.648	0.70 (0.41, 1.2)	.31
Ethnicity	Oromo	58 (58%)	42 (42%)	1		1	
	Amhara	87 (50.6%)	85 (49.4%)	0.72 (0.49, 1.08)	0.111		.43
	Tigrie	13 (56.5%)	10 (43.3%)	0.98 (0.73, 1.32)	0.879	1.2 (0.47, 3.12)	.06
	Gurage	45 (55.6%)	36 (44.4%)	0.77 (0.34, 1.75)	0.533	1.2 (0.65, 2.4)	.38
	Other	42 (64.6%)	23 (35.4%)	0.88 (0.52, 1.26)	0.318	0.76 (0.38, 1.5)	.16
Religion	Muslim	60 (57.1%)	45 (42.9%)	1		1	
	Orthodox	165 (54.6%)	137 (45.4%)	0.750 (0.51, 1.10)	0.145	0.83 (0.49,1.4)	.58
	Others	20 (58.8%)	14 (41.2%)	0.830 (0.66, 1.04)	0.108	0.78 (0.33,1.85)	.88
Marital status	Not married	118 (57.8%)	86 (42.2%)	1		1	
	Married	111 (55.2%)	90 (44.8%)	0.811 (0.61, 1.07)	0.439	1.19 (0.76, 1.9)	.40
	Others	16 (52.4%)	20 (47.6%)	0.909 (0.39, 2.14)	0.827	1.48 (0.65, 2.9)	.72
Educational level	Illiterate	29 (53.1%)	25 (46.3%)	1		1	
	Primary (1-6)	47 (54%)	40 (46%)	0.851 (0.56, 1.3)	0.453	1.22 (0.57,2.58)	.36

	Senior secondary	51 (54.8%)	42 (45.2%)	0.824 (0.55, 1.24)	0.351	1.22 (0.55,2.49)	.11
	Secondary and preparatory	69 (53.9%)	59 (46.1%)	0.86 (0.60, 1.21)	0.377	1.17 (0.56,2.41)	.12
	Diploma and above	49 (62%)	30 (38%)	0.61 (0.39, 0.96)	0.034	0.69 (0.31,1.53)	.10
Main source of livelihood or income	No employment	54 (49.1%)	56 (50.9%)	1		1	
	Informal sector	52 (61.2%)	33 (38.8%)	1.037 (0.71, 1.51)	0.849	0.598 (0.33,1.1)	.147
	Student	14 (58.3%)	10 (41.7%)	0.635 (0.41, 0.98)	0.041	0.87 (0.57,0.33)	.889
	Employed in public sector	16 (41%)	23 (59%)	0.714 (0.32, 1.61)	0.416	0.697 (0.21,1.3)	.490
	Self employed	82 (59.4%)	56 (40.6%)	1.44 (0.76, 2.72)	0.265	1.4 (0.81, 2.55)	.032
	Other	27 (60%)	18 (40%)	0.68 (0.47, 0.96)	0.280	1.0 (0.46, 2.29)	.703

The findings show that female respondents (AOR=0.87, 95% CI (0.57, 1.33) and Orthodox Christians (AOR=0.83, 95% CI (0.49, 1.4)) were less likely to have communication and information on TB services than male respondents and Muslims, respectively.

On the other hand, respondents aged 25-34 years (AOR=1.4, 95% CI (0.8, 2.55)), Amhara ethnic group (AOR=1.4, 95% CI (0.85,2.4)), not married (AOR=1.19, 95% CI (0.76, 1.9)), senior secondary school-level education (AOR =1.22, 95% CI (0.55, 2.49)) and self-employed (AOR=1.4, 95% CI ((0.81, 2.55)), were 40%, 40%, 19%, 22% and 40% more likely to have good communication and information on TB services than respondents aged 18-24 years, of the Oromo ethnic group, not married, illiterate and unemployed, respectively.

ANNEXURE H3: Logistic regression analysis of socio-demographic variables with patient-provider interaction and counselling service

Logistic regression analysis was done in this section to determine the measure of associations and relationships among the categorical socio-demographic variables and

patient-provider interaction and counselling service, which is a categorical dichotomy variable. Data for this subsection are presented in Annexure Table H-3.

Annexure Table H-3: Logistic regression analysis of socio-demographic variables with patient-provider interaction and counselling service

Characteristics (n=441)	Categories	Patient-provider interaction and counselling services		AOR 95% CI	P value	AOR 95% CI	PValue
		Good	Poor				
Gender	Male	140 (59.9%)	102 (42.1%)	1		1	
	Female	110 (55.3%)	89 (44.7%)	0.81 (0.47,1.07)	0.14	1.01 (0.66,1.56)	.15
Age	18-24	75 (63.6%)	43 (36.4%)	1		1	
	25-34	92 (54.1%)	78 (45.9%)	0.85 (0.63,1.15)	0.28	1.72 (0.99, 3.0)	.03
	35-44	38 (49.4%)	39 (50.6%)	1.03 (0.66, 1.6)	0.91	2.20 (1.11, 4.4)	.72
	45-54	21 (63.6%)	12 (36.4%)	0.57 (0.28,1.16)	0.12	1.19 (0.48,2.95)	.11
	55 and above	24 (55.8%)	19 (44.2%)	0.79 (0.43,1.45)	0.45	2.1 (0,84, 5.03)	.66
Ethnicity	Oromo	60 (60%)	40 (40%)	1		1	
	Amhara	97 (56.4%)	75 (43.6%)	0.67 (0.45,0.99)	0.05	0.59 (0.29, 1.19)	.42
	Tigrie	12 (52.2%)	11 (47.8%)	0.77 (0.57,1.05)	0.09	0.76 (0.39, 1.47)	.79
	Gurage	48 (59.3%)	33 (40.7%)	0.92 (0.40,2.08)	0.84	0.87 (0.31, 2.46)	.46
	Other	33 (50.8%)	32 (49.2%)	0.69 (0.44,1.07)	0.1	0.77 (0.38, 1.56)	.67
Religion	Muslim	64 (61%)	41 (39%)	1		1	
	Orthodox Christian	167 (55.3%)	135 (44.7%)	0.64 (0.43,0.95)	0.03	0.81 (0.34, 1.92)	.95
	Others	19 (55.9%)	15 (44.1%)	0.81 (0.64,1.01)	0.07	1.03 (0.47, 2.24)	.38
Marital status	Not married	119 (58.3%)	85 (41.7%)	1		1	.
	Married	111 (55.2%)	90 (44.8%)	0.59 (0.64,1.01)	0.02	1.1 (0.496, 2.29)	.36
	Others	20 (61.9%)	16 (38.1%)	1.65 (1.28, 1.68)	0.14	1.46 (0.65, 3.28)	.002
Educational level	Illiterate	34 (63%)	20 (37%)	1		1	
	Primary (1-6)	41 (47.1%)	46 (52.9%)	0.59 (0.64,1.01)	0.06	1.15 (0.50, 2.64)	.002
	Senior secondary	61 (65.6%)	32 (34.4%)	1.12 (0.64, 1.01)	0.59	3.1 (1.51, 6.25)	.499
	Secondary and preparatory	62 (48.4%)	66 (51.6%)	0.53 (0.64,1.01)	0.00	1.26 (0.64, 2.5)	.005

	Diploma and above	52 (65.8%)	27 (34.2%)	1.1 (0.75, 1.51)	0.72	2.46, (1.31,4.61)	.038
Main source of livelihood or income	Unemployed	57 (51.9%)	53 (48.1%)	1		1	
	Informal sector	61 (71.8%)	24 (28.2%)	0.93 (0.64, 1.35)	0.70	1.03 (047, 2.23)	.026
	Student	13 (55.3%)	11 (45.7%)	0.39 (0.25,0.63)	0.00	0.39 (0.17,0.892)	.52
	Employed in public sector	20 (55.1%)	19 (44.9%)	0.85 (0.38,1.89)	0.68	1.46 (0.46, 4.68)	.87
	Self employed	76 (55.1%)	62 (44.9%)	0.59 (0.39, 0.88)	0.87	1.08 (0.42, 2.81)	.72
	Other	23 (55.1%)	22 (48.9%)	0.69 (0.56,1.87)	0.23	0.87 (0.40, 1.87)	.95

The findings show that female respondents have almost the same good patient-provider interaction and counselling service (AOR=1.01, 95% CI (0.66, 1.56)) as the male respondents. On the other hand, respondents aged 35-44 years (AOR=2.20, 95% CI (1.11,4.4)), married (AOR=1.1, 95% C I (0.496, 2.29)), attained senior secondary school-level education (AOR=3.1, 95% CI (1.51, 6.25)) and employed in the public sector (AOR=1.46, 95% CI (0.46, 4.68)) were twice, 11%, 10%, three times, and 46% more likely to have good patient-provider interaction and counselling services compared to respondents aged 18-24 years, not married, illiterate and unemployed, respectively. In addition, respondents belonging to the Amhara ethnic group (AOR=0.59, 95% CI (0.29, 1.19)) were 40% less likely to have good patient-provider interaction and counselling service compared to respondents belonging to the Oromo ethnic group.

ANNEXURE H4: Logistic regression analysis of socio-demographic variables with TB service infrastructure

The logistic regression analysis was used in this section to assess the degree of association and relationship between categorical socio-demographic variables and infrastructure for TB services, which is also a categorical dichotomous variable. Annexure table H-4 presents data for this subsection.

Annexure Table H-4: Logistic regression analysis of socio-demographic variables with infrastructure for TB services

Characteristics (n=441)	Categories	TB services infrastructure		COR 95 CI%	P value	AOR 95 CI%	P value
		Good	Poor				
Gender	Male	152 (59.3%)	90 (40.7%)	1		1	
	Female	111 (55.8%)	88 (44.2%)	0.65 (0.48,0.86)		1.51 (0.99, 2.32)	.057
Age	18-24	70 (59.3%)	64 (40.7%)	1		1	
	25-34	106 (62.4%)	78 (37.6%)	0.60 (0.44,8.23)	0.00	0.96 (0.55, 1.65)	.876
	35-44	43 (55.8%)	34 (44.2%)	0.79 (0.50, 1.24)	0.31	1.48 (0.76, 2.92)	.252
	45-54	18 (54.5%)	15 (45.5%)	0.83 (0.42, 1.65)	0.60	1.46 (0.597, 3.5)	.414
	55 and above	26 (60.5%)	17 (39.5%)	0.65 (0.36, 1.2)	0.17	1.57 (0.65, 3.79)	.315
Ethnicity	Oromo	66 (66%)	34 (34%)	1		1	
	Amhara	104 (60.5%)	68 (39.5%)	0.52 (0.34, 0.78)	0.00	0.46 (0.23, 0.92)	.029
	Tigrie	14 (60.9%)	9 (39.1%)	0.65 (0.48, 0.89)	0.31	0.59 (0.31, 1.13)	.113
	Gurage	46 (56.8%)	35 (54.2%)	0.64 (0.28,1.49)	0.60	0.52 (0.18, 1.48)	.221
	Other	33 (50.8%)	32 (49.2%)	0.76 (0.49, 1.18)	0.17	0.76 (0.38, 1.52)	.432
Religion	Muslim	66 (62.9%)	39 (37.1%)	1		1	
	Orthodox Christian	179 (59.3%)	123 (40.7)	0.59 (0.40, 0.88)	0.01	0.47 (0.20, 1.12)	.088
	Other	18 (52.9%)	16 (47.1%)	0.69 (0.55, 0.86)	0.00	0.69 (0.32, 1.47)	.331
Marital status	Not married	124 (60.8%)	80 (39.2%)	1		1	
	Married	117 (58.2%)	84 (41.8%)	0.65 (0.49, 0.86)	0.00	1.35 (0,62, 2.94)	.453
	Others	22 (66.7%)	14 (33.3%)	1.22 (0.74, 2.19)	0.02	1.53 (0,67, 3.49)	.310
Educational level	Illiterate	36 (66.7%)	18 (33.3%)	1		1	
	Primary	47 (54.1%)	40 (46%)	0.50 (0.28,0.88)	0.02	0.41 (0.18, 0.92)	.031
	Senior secondary	58 (62.4%)	35 (37.6%)	0.85 (0.56, 1.30)	0.45	0.96 (0.49, 1.89)	.904

	Secondary and preparatory	82 (64.1%)	46 (35.9%)	0.60 (0.40,0.92)	0.02	0.66 (0.34, 1.27)	.212
	Diploma and above	40 (50.6%)	39 (49.4%)	0.56 (0.39,0.81)	0.00	0.55 (0.3, 1.02)	.056
Main source of livelihood or income	Unemployed	59 (53.6%)	51 (46.4%)	1		1	
	Informal sector	57 (67.1%)	28 (32.9%)	0.86 (0.59,1.26)	0.45	2.31 (1.02, 5.21)	.044
	Student	13 (55.3%)	11 (45.7%)	0.49 (0.31,0.77)	0.00	1.25 (0.53, 2.96)	.607
	Public sector	23 (59%)	16 (41%)	0.85 (0.38,1.89)	0.68	1.58 (0.48, 5.17)	.450
	Self-employed	80 (58%)	58 (42%)	0.70 (0.37,1.32)	0.27	1.41 (0.53, 3.77)	.497
	Other	31 (68.9%)	14 (31.1%)	0.73 (0.52,1.02)	0.06	1.75 (0.78, 3.91)	.174

The findings show that female respondents (AOR=1.51,95% CI (0.99,2.32)), aged 55 years and above (AOR=1.57, 95% CI ((0.65, 3.79), married (AOR=1.53, 95% CI (0.67, 3.49)), and employed in the informal sector (AOR=2.31, 95% CI (1.02, 5.21)) were 51%, 57%, 53% and three times more likely to perceive infrastructure for TB services as good compared to male respondents, aged 18-24 years, not married, and unemployed, respectively.

On the other hand, respondents belonging to the Amhara ethnic group (AOR=0.46, 95% CI (0.23, 0.92)), attained primary school-level education (AOR=0.41, 95% CI (0.18, 0.92)), Orthodox Christians (AOR=0.47, 95% CI (0.20, 1.12)), were 44%, 59% and 53% less likely to perceive infrastructure for TB services as good compared to respondents aged 18-24 years, not married, illiterate, and unemployed males, respectively.

ANNEXURE H5: Logistic regression analysis of socio-demographic variables with professionals' competence about TB procedures and tests

This section used logistic regression analysis to determine the measure of associations and relationships between categorical socio-demographic variables and professionals' competence in TB procedures and tests, which is a categorical dichotomy variable. Data for this subsection are presented in Annexure Table H-5.

Annexure Table H-5: Logistic regression analysis of socio-demographic variables with professionals' competence about TB procedures and tests

Characteristics (n=441)	Categories	Professionals' competence about TB procedures and tests		COR 95% CI	P value	AOR 95% CI	Pvalue
		Good	Poor				
		123 (61.8%)	76 (38.2%)				
	Female	158 (65.3%)	84 (34.7%)	0.62 (0.46, 0.82)	0.001	1.04 (0.67,1.60)	.864
Age	18-24	72 (61%)	46 (39%)	1		1	
	25-34	111 (65.3%)	59 (34.7%)	0.53 (0.39, 0.73)	0.000	0.78 (0.45,1.3)	.375
	35-44	47 (61%)	30 (39%)	0.64 (0.40, 1.01)	0.055	0.97 (0.49,1.91)	.924
	45-54	22 (67.7%)	11 (33.3%)	0.50 (0.20, 1.03)	0.061	0.79 (0.32,1.94)	.603
	55 and above	29 (67.4%)	14 (32.6%)	0.48 (0.26, 0.91)	0.025	0.611 (0.25,1.5)	.288
Ethnicity	Oromo	65 (65%)	35 (40%)	1		1	
	Amhara	106 (61.6%)	66 (38.4%)	0.53 (0.36, 0.81)	.003	0.97 (0.48,1.96)	.942
	Tigrie	19 (82.6%)	4 (17.4%)	0.62 (0.46, 0. 85)	.003	1.18 (0.61,2.29)	.618
	Gurage	50 (61.7%)	31 (38.3%)	0.21 (0.07, 0.619)	.005	0.42 (0.12,1.44)	.167
	Other	41 (63.1%)	24 (36.9%)	0.62 (0. 396, 0.97)	.037	1.1 (0.52, 2.15)	.885
Religion	Muslim	61 (58.1%)	44 (41.9%)	1	.	1	
	Orthodox Christian	199 (65.9%)	103 (34.1%)	.721 (0.490, 1.063)	.099	1.28 (0.54,3.02)	.571
	Others	21 (61.8%)	13 (38.2%)	.518 (0.408, 0.657)	.000	0.93 (0.43,2.03)	.857
Marital status	Not married	134 (65.7%)	70 (34.3%)	1		1	
	Married	125	76 (37.8%)	.522 (0.391,	.000	0.79 (0.36,1.72)	.547

		(62.2%)		0.697)			
	Others	14 (66.7%)	7 (33.3%)	1.11 (0.66, 2.1)	.001	1.01 (0.445, 2.3)	.979
Educational level	Illiterate	8 (53.3%)	7 (46.7%)	1		1	
	Primary (1-6)	35 (64.8%)	19 (35.2%)	0.54 (0.31, 0.94)	.032	0.85 (0.37,1.92)	.701
	Senior secondary	54 (62.1%)	33 (37.9%)	0.61 (0.40, 0.94)	.026	0.91 (0.45,1.83)	.790
	Secondary and preparatory	60 (64.5%)	33 (33.5%)	0.55 (0.36, 0.84)	.006	0.85 (0.44,1.66)	.641
	Diploma and above	83 (64.8%)	45 (35.2%)	0.542 (0.38, 0.78)	.001	0.81 (0.44,1.51)	.514
Main source of livelihood or income	Unemployed	49 (62%)	30 (38%)	1		1	
	Informal sector	73 (64.4%)	37 (33.6%)	.51 (0.341, 0.753)	.001	0.46 (0.21,0.99)	.048
	Student	55 (64.7%)	30 (35.3%)	.545 (0.350, 0.851)	.008	0.49 (0.214,1.1)	.083
	Public sector	17 (70.8%)	7 (29.2%)	.412 (0.171, 0.993)	.048	0.29 (0.09,0.95)	.041
	Self-employed	22 (56.4%)	17 (43.6%)	.77 (0.410, 1.455)	.425	0.79 (0.31,2.03)	.629
	Other	91 (65.9%)	47 (34.1%)	.52 (0.36, 0.734)	.000	0.50 (0.23,1.08)	.078

The findings show that respondents who were female (AOR=1.04, 95% CI (0.67,1.60)), married (AOR=1.1, 95% CI (0.496, 2.29)), belonging to the Tigrie ethnic group (AOR=1.18, 95% CI (0.61, 2.29)) and Orthodox Christians (AOR=1.28, 95% CI (0.54, 3.02)) perceived the professionals' competence in TB procedures and tests 4%, 10%, 18%, and 28% more likely good compared to respondents who were male, not married, Oromo and Muslims, respectively.

On the other hand, respondents aged 55 years and above (AOR=0.611, 95% CI (0.25, 1.52)), attained diploma and above (AOR=0.81, 95% CI (0.44, 1.51)), and employed in the public sector (AOR=0.29, 95% CI ((0.09, 0.95)) perceived the professionals' competence in TB procedures and tests 49%, 19% and 61% less likely good compared to the perception of respondents aged 18-24 years, illiterate and unemployed, respectively.

ANNEXURE H6: Logistic regression analysis of socio-demographic variables with stigma to TB patients

Logistic regression analysis was done in this section to determine the measure of associations and relationships among the categorical socio-demographic variables and stigma to TB patients which is a categorical dichotomy variable. Data for this subsection are presented in Annexure table H-6

Annexure Table H-6: Logistic regression analysis of socio-demographic variables with stigma to TB patients

Characteristics (n=441)	Categories	Stigma to TB patients		COR 95% CI	P value	AOR 95% CI	P value
		Good	Poor				
Gender	Male	144 (59.5%)	98 (40.5)	1		1	
	Female	111 (55.8%)	88 (44.2%)	0.79 (0.60, 1.05)	.104	1,13 (0.74,1.73)	.579
Age	18-24	69 (58.5%)	49 (41.5%)	1		1	
	25-34	96 (56.5%)	74 (43.5%)	0.77 (0.57, 1.04)	.092	1.1 (0.61,1.81)	.850
	35-44	37 (48.1%)	40 (51.9%)	1.08 (0.69, 1.69)	.733	1.44 (0.73, 2.9)	.295
	45-54	25 (75.8%)	8 (24.2%)	0.32 (0.14, 0.71)	.005	0.35 (0.13,0.92)	.032
	55 and above	28 (65.1%)	15 (34.9%)	0.54 (0.29, 1.00)	.051	0.50 (0.20,1.25)	.140
Ethnicity	Oromo	52 (52%)	48 (48%)	1		1	
	Amhara	100 (58.1%)	72 (41.9%)	0.92 (0.62, 1.37)	.689	1.33 (0.66,2.65)	.424
	Tigrie	13 (56.5%)	10 (43.5%)	0.72 (0.53, 0.98)	.034	0.95 (0.49,1.83)	.871
	Gurage	53 (65.4%)	28 (34.6%)	0.77 (0.34, 1.75)	.533	0.96 (0.33,2.73)	.931
	Other	37 (56.9%)	28 (43.1%)	0.53 (0.33, 0.83)	.006	0.72 (0.35,1.48)	.369
Religion	Muslim	56 (62.9%)	39 (37.1%)	1	.008	1	
	Orthodox Christian	166 (55%)	136 (45%)	0.59 (0.40, 0.88)	.009	1.7 (0.71, 4.2)	.232
	Others	23 (67.6%)	11 (32.4%)	0.82 (0.65, 1.03)	.085	2.2 (0.98,4.943)	.057
Marital status	Not married	115 (57.2%)	86 (42.8%)	1		1	
	Married	115 (56.4%)	89 (46.6%)	0.77 (0.59, 1.02)	.069	2.03 (0.90,4.58)	.089
	Others	25 (66.7%)	11 (33.3%)	1.25 (0.77, 2.23)	.176	1.97 (0.84,4.62)	.118
Educational level	Illiterate	27 (50%)	27 (50%)	1		1	
	Primary	51 (58.6%)	36 (41.4%)	1.00 (0.59, 1.71)	1.00	2.35 (1.03, 5.4)	.043

	Senior secondary	54 (58.1%)	39 (41.9%)	0.71 (0.66, 1.08)	.110	1.24 (0.62, 2.5)	.543
	Secondary and preparatory	78 (60.9%)	50 (39.1%)	0.72 (0.48, 1.09)	.121	1.1 (0.54,2.05)	.871
	Diploma and above	45 (57%)	34 (46%)	0.64 (0.45, 0.91)	.014	0.93 (0.50, 1.74)	.827
Main source of livelihood or income	Not employed	65 (59.1%)	45 (40,9%)	1		1	
	Informal sector	59 (69.4%)	26 (30.6%)	0.69 (0.47, 1.01)	.058	0.97 (0.44, 2.1)	.931
	Student	10 (41.7%)	14 (58.3%)	0.44 (0.28, 0.70)	.000	0.59 (0.25, 1.34)	.210
	Employed in public sector	18 (46.2%)	21 (53.8%)	1.40 (0.62, 3.15)	.416	1.9 (0.58, 6.03)	.294
	Self employed	78 (56.5%)	60 (43.5%)	1.17 (0.62, 2.19)	.631	1.9 (0.73, 5.1)	.186
	Other	25 (55.6%)	22 (44.4%)	0.77 (0.55, 1.08)	.127	1.23 (0.57, 2.7)	.601

The findings show that respondents who were female (AOR=1.13, 95% CI (0.74, 1.73)), aged 35-44 years (AOR=1.44, 95% CI (0.73, 2.9)), belonging to the Amhara ethnic group (AOR=1.33, 95% CI (0.66, 2.65), Orthodox Christians (AOR=1.7, 95% CI (0.71, 4.2)), married (AOR = 2.03, 95% CI (0.90, 4.579)), attained primary school-level education (AOR=2.35, 95% CI (1.03, 5.4)) and employed in the public sector (AOR=1.9, 95% CI (0.58, 6.03)) suffered stigma related to TB 13%, 44%, 33%, 70%, twice, more than twice and 90% more likely compared to male respondents, aged 18-24 years, Oromo, Muslims, not married, illiterate and unemployed, respectively.

ANNEXURE H7: Logistic regression analysis of socio-demographic variables with level of satisfaction

This section used logistic regression analysis to determine the measure of associations and relationships between categorical socio-demographic variables and level of satisfaction, which is a categorical dichotomy variable. Annexure Table H-7 contains data for this subsection.

Annexure Table H-7: Logistic regression analysis of socio-demographic variables with level of satisfaction

Characteristics (n=441)	Categories	Level of satisfaction		COR 95% CI	P value	AOR 95% CI	P value
		Good	Poor				
Gender	Male	125 (62.8%)	74 (37.2%)	1		1	
	Female	169 (69.8%)	73 (30.2%)	0.73 (0.49, 1.09)	0.12	0.74 (0.47,1.16)	0.184
Age	18-24	87 (73.7%)	31 (23.3%)	1		1	
	25-34	105 (61.8%)	65 (38.2%)	0.58 (0.34, 0.96)	0.035	0.52 (0.29, 0.94)	.031
	35-44	52 (67.5%)	25 (32.5%)	0.74 (0.39 1.39)	0.351	0.75 (0.36, .56)	.440
	45-54	19 (57.6%)	14 (42.4%)	0.48 (0.22, 1.08)	0.076	0.45 (0.18, 1.1)	.08
	55 and above	31 (72.1%)	12 (27.9%)	0.92 (0.42, 2.0)	0.836	0.87 (0.33, 2.3)	.77
Ethnicity	Oromo	68 (68%)	32 (32%)	1		1	
	Amhara	115 (66.9%)	57 (33.1%)	1.8 (0.96, 3.5)	0.068	1.9 (0.96, 3.9)	.06
	Tigrie	19 (82.6%)	4 (17.4%)	1.73 (0.97, 3.9)	0.065	2.1 (1.1, 4.1)	.03
	Gurage	57 (70.4%)	24 (29.6%)	4.1 (1.25, 13.3)	0.02	4.9 (1.4, 17.1)	.01
	Other	35 (53.8%)	30 (40.2%)	2.04 (1.03,4.0)	0.041	2.2 (1.1,4.7)	.03
Religion	Muslim	68 (64.8%)	37 (35.2%)	1		1	
	Orthodox	198 (65.6%)	104 (34.4%)	0.39 (0.15 1.04)	0.059	0.37 (0.13,1.04)	.06
	Others	28 (82.4%)	6 (17.6%)	0.41 (0.16, 1.02)	0.054	0.33 (0.13, 0.87)	.025
Marital status	Married	136 (66.7%)	68 (33.3%)	1		1	
	Not married	139 (69.2%)	62 (30.8%)	1.8 (0.87, 3.66)	0.11	2.2 (1.0, 4.8)	.044
	Others	19 (52.8%)	17 (47.2%)	2.00 (0.98, 4.1)	0.058	2 (0.88, 4.6)	.098
Educational level	Illiterate	38 (70.4%)	16 (29.6%)	1		1	
	Primary	57 (65.5%)	30 (34.5%)	1.1 (0.52 ,2.3)	0.81	1.1 (0.46 ,2.6)	.84
	Senior secondary	62 (66.7%)	31 (33.3%)	0.88 (0.46, 1.68)	0.69	1.1 (0.50, 2.2)	.899
	Secondary and preparatory	83 (64.8%)	45 (35.2%)	0.93 (0.49, 1.8)	0.81	1.04 (0.52, 2.1)	.911

	Diploma and above	54 (68.4%)	25 (31.6%)	0.85 (0.47, 1.6)	0.60	0.84 (0.44, 1.6)	.611
Main source of the respondents livelihood or income	No employment	79 (71.8%)	31 (28.2%)	1		1	
	Informal sector	57 (67.1%)	28 (32.9%)	1.7 (0.82,3.5)	0.153	1.7 (0.75,3.83)	.201
	Student	15 (62.5%)	9 (27.5%)	1.4 (0.64, 2.87)	0.424	1.1 (0.48, 2.6)	.818
	Employed in public sector	27 (69.2%)	12 (30.8%)	1.1 (0.40, 3.1)	0.839	0.99 (0.30, 3.3)	.995
	Self employed	89 (64.5%)	49 (35.5%)	1.5 (0.61, 3.71)	0.380	1.41 (0.51, 3.9)	.510
	Other	27 (60%)	18 (40%)	1.2 (0.61, 2.42)	0.587	1.1 (0.52, 2.5)	.734

The findings show that respondents who were of the Amhara ethnic group (AOR=1.9, 95% CI (0.96, 3.9)), Tigrie (AOR=2.1, 95% CI (1.1, 4.1)), Gurage (AOR=4.9, 95% CI (1.4, 17.1)) and followers of other religions (AOR=2.2, 95% CI (1.1, 4.7)), not married (AOR=2.2, 95% CI (1.0, 4.8)) and marital status of others (AOR=2, 95% CI (0.88, 4.6)), attained primary school-level education (AOR=1.1, 95% CI (0.46, 2.6)), senior secondary school (AOR=1.1, 95% CI (0.50, 2.2), secondary and preparatory school (AOR=1.04, 95% CI (0.52, 2.1)) were more likely satisfied compared with respondents who were Oromo ethnic group, Muslims, married and illiterate, respectively.

The rest of respondents who were female (AOR=0.74, 95% CI (0.47, 1.16)), aged 25-34 years (AOR=0.52, 95% CI (0.29, 0.94)), 35-44 years (AOR=0.75, 95% CI (0.36, 1.56)), 45-54 years (AOR=0.45, 95% CI (0.18, 1.1)) and 55 years and above (AOR=0.87, 95% CI (0.33, 2.3)), Orthodox Christians (AOR= 0.37, 95% CI (0.13, 1.04)) and followers of other religions (AOR=0.33, 95% CI (0.13, 0.87)), attained diploma and above (AOR= 0.84, 95% CI (0.44, 1.6)) were 26%, 48%, 25%, 55%, 13%, 63%, 67%, 16% less likely satisfied compared to male respondents, aged 18-24 years, Orthodox Christians, and illiterate, respectively.

ANNEXURE I: EVALUATORS' SCORES

The scores provided by each evaluator for each strategy have been appended from Annexure Table I1-I13.

Annexure Table I-1: Scores provided by evaluator 1 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	5	5	5	5	5	5	5	5	45
Strategy 2	4	4	4	4	4	4	4	4	4	36
Strategy 3	5	5	5	5	5	5	5	5	5	45
Strategy 4	4	5	5	5	4	5	5	5	5	43
Strategy 5	5	5	5	5	5	5	4	5	5	44
Strategy 6	5	5	5	5	5	5	4	4	5	43
Strategy 7	4	4	4	4	4	4	4	4	4	32
Strategy 8	5	5	5	5	5	5	5	5	5	45
Strategy 9	5	5	5	5	5	5	4	4	5	43
Strategy 10	5	5	5	5	5	5	5	5	5	45
Strategy 11	4	4	4	4	5	5	5	5	5	41

Annexure Table I-2: Scores provided by evaluator 2 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	5	5	5	4	5	5	5	4	43
Strategy 2	5	4	5	5	5	5	5	5	5	43
Strategy 3	5	5	5	5	5	5	5	5	4	43
Strategy 4	5	5	5	5	5	5	5	5	5	43
Strategy 5	5	4	5	5	5	5	5	5	5	43
Strategy 6	5	5	5	5	5	5	5	5	5	43
Strategy 7	5	5	5	5	5	5	5	5	5	43
Strategy 8	5	4	5	5	5	4	5	5	5	43
Strategy 9	5	5	5	5	5	5	5	5	5	43
Strategy 10	4	5	5	5	4	5	5	5	5	43
Strategy 11	5	5	5	5	5	5	5	5	5	43

Annexure Table I-3: Scores provided by evaluator 3 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	**Specificity**	**Reliability**	**Effectiveness**	**Validity**	**Relevance**	**Applicability**	**Acceptability**	**Achievability**	**Total score out of 45**
Strategy 1	4	5	4	4	4	5	3	5	4	38
Strategy 2	4	4	3	4	4	3	3	4	3	32
Strategy 3	4	5	4	3	4	5	3	4	4	36
Strategy 4	5	5	3	4	5	3	4	4	4	37
Strategy 5	4	4	3	4	4	5	3	4	3	34
Strategy 6	4	3	3	3	3	3	3	3	3	28
Strategy 7	4	4	4	3	4	4	4	4	4	35
Strategy 8	4	4	3	4	4	5	4	3	4	35
Strategy 9	4	4	3	4	4	4	3	4	4	34
Strategy 10	4	4	3	4	3	4	4	4	3	33
Strategy 11	5	4	3	4	4	4	3	5	4	36

Annexure Table I-4: Scores given by evaluator 4 for each strategy

strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	4	4	4	4	5	4	3	4	4	36
Strategy 2	4	4	2	4	4	3	4	2	4	31
Strategy 3	4	3	4	4	4	3	4	3	4	33
Strategy 4	4	4	4	4	4	5	5	4	4	38
Strategy 5	5	4	4	5	4	5	5	4	4	40
Strategy 6	5	5	5	4	4	4	5	4	5	41
Strategy 7	5	5	5	5	4	5	4	4	5	42
Strategy 8	4	4	4	4	4	5	4	5	5	39
Strategy 9	5	5	5	5	5	5	5	3	5	43
Strategy 10	5	5	5	4	4	4	5	5	5	42
Strategy 11	5	5	5	4	4	5	4	5	5	42

Annexure Table I-5: Scores given by evaluator 5 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	5	5	5	5	5	3	5	3	41
Strategy 2	5	5	5	5	5	5	3	5	3	41
Strategy 3	5	5	5	5	5	5	5	5	5	45
Strategy 4	5	5	5	5	5	5	3	5	3	41
Strategy 5	5	5	5	5	5	5	5	5	3	43
Strategy 6	5	5	5	5	5	5	5	5	5	45
Strategy 7	5	5	5	4	5	5	4	5	3	41
Strategy 8	5	5	5	5	5	5	5	5	5	45
Strategy 9	5	5	5	5	5	5	5	5	3	43
Strategy 10	5	5	5	5	5	5	5	5	5	45
Strategy 11	5	5	5	5	5	5	5	5	5	45

Annexure Table I-6: Scores given by evaluator 6 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	**Specificity**	**Reliability**	**Effectiveness**	**Validity**	**Relevance**	**Applicability**	**Acceptability**	**Achievability**	**Total score out of 45**
Strategy 1	4	5	5	5	5	5	5	5	5	44
Strategy 2	4	5	5	5	5	5	5	5	5	44
Strategy 3	5	5	5	5	5	5	5	5	5	45
Strategy 4	5	5	5	5	5	5	5	5	5	45
Strategy 5	5	5	5	5	5	5	5	5	5	45
Strategy 6	5	5	5	5	5	5	5	5	5	45
Strategy 7	5	5	5	5	5	5	5	5	5	45
Strategy 8	5	5	5	5	5	5	5	5	5	45
Strategy 9	5	5	5	5	5	5	5	5	5	45
Strategy 10	5	5	5	5	5	5	5	5	5	45
Strategy 11	5	5	5	5	5	5	5	5	5	45

Annexure Table I-7: Scores given by evaluator 7 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	5		5	5	5	5	5	5	40
Strategy 2	5	5	5	5	5	5	5	5	5	45
Strategy 3	5	5	5	5	5	5	5	5	5	45
Strategy 4	5	5	5	5	5	5	5	5	5	45
Strategy 5	5	5	5	5	5	5	5	5	5	45
Strategy 6	5	5	5	5	5	5	4	5	4	43
Strategy 7	5	5	5	5	5	5	5	5	5	45
Strategy 8	5	5	5	5	5	5	5	5	5	45
Strategy 9	5	5	5	5	5	5	5	5	5	45
Strategy 10	5	5	5	5	5	5	5	5	5	45
Strategy 11	5	5	5	5	5	5	5	5	5	45

Annexure Table I-8: Scores given by evaluator 8 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	5	5	5	5	5	5	5	5	45
Strategy 2	5	5	5	5	5	5	5	5	5	45
Strategy 3	5	5	5	5	5	5	5	5	5	45
Strategy 4	5	5	5	5	5	5	5	5	5	45
Strategy 5	5	5	5	5	5	5	5	5	5	45
Strategy 6	5	5	5	5	5	5	5	5	5	45
Strategy 7	5	5	5	5	5	5	5	5	5	45
Strategy 8	5	5	5	5	5	5	5	5	5	45
Strategy 9	5	5	5	5	5	5	5	5	5	45
Strategy 10	5	5	5	5	5	5	5	5	5	45
Strategy 11	5	5	5	5	5	5	5	5	5	45

Annexure Table I-9: Scores given by evaluator 9 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	3	5	5	4	5	3	4	3	37
Strategy 2	3	3	4	4	3	3	3	3	3	29
Strategy 3	5	3	5	5	4	5	3	4	3	37
Strategy 4	5	3	5	5	4	5	4	4	4	39
Strategy 5	5	3	5	5	4	5	4	4	4	39
Strategy 6	5	3	5	5	4	5	4	3	3	37
Strategy 7	5	3	5	5	4	5	3	4	3	37
Strategy 8	5	3	5	5	4	5	3	4	3	37
Strategy 9	4	3	5	5	4	5	3	4	3	36
Strategy 10	4	3	5	5	4	5	3	4	3	36
Strategy 11	4	3	5	5	4	5	3	4	3	36

Annexure Table I-10: Scores given by evaluator 10 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	4	4	4	4	5	3	3	4	36
Strategy 2	3	4	4	4	5	5	4	4	4	37
Strategy 3	3	4	3	4	4	4	3	5	3	33
Strategy 4	4	4	4	4	5	5	4	3	4	37
Strategy 5	3	3	4	5	5	5	4	4	4	35
Strategy 6	4	4	4	5	5	4	4	5	5	40
Strategy 7	4	4	3	4	3	3	4	4	4	33
Strategy 8	3	3	3	4	3	3	4	4	3	30
Strategy 9	4	4	4	4	3	3	4	4	4	34
Strategy 10	4	5	5	4	3	4	4	4	4	37
Strategy 11	4	4	4	4	4	3	3	4	4	30

Annexure Table I-11: Scores awarded by evaluator 11 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	**Specificity**	**Reliability**	**Effectiveness**	**Validity**	**Relevance**	**Applicability**	**Acceptability**	**Achievability**	**Total score out of 45**
Strategy 1	4	5	5	5	5	5	4	5	5	43
Strategy 2	5	4	5	5	5	5	4	5	4	42
Strategy 3	4	5	5	5	5	5	5	5	4	43
Strategy 4	5	5	5	5	5	5	5	5	5	45
Strategy 5	5	5	5	5	5	5	5	4	4	43
Strategy 6	5	5	5	5	5	5	5	5	5	45
Strategy 7	4	4	5	5	5	5	5	5	4	42
Strategy 8	5	5	5	5	5	5	5	5	5	45
Strategy 9	5	5	5	5	5	5	5	5	5	45
Strategy 10	5	5	4	5	5	5	5	5	5	44
Strategy 11	4	5	4	5	5	5	5	5	4	42

Annexure Table I-12: Scores awarded by evaluator 12 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	5	5	4	4	5	4	5	4	41
Strategy 2	5	5	5	5	5	5	4	5	4	43
Strategy 3	4	5	5	4	4	5	5	5	5	42
Strategy 4	5	5	5	5	5	5	4	5	4	38
Strategy 5	4	5	4	4	5	5	5	4	4	40
Strategy 6	5	4	4	4	4	4	4	4	4	37
Strategy 7	4	4	5	5	4	4	5	5	5	41
Strategy 8	5	5	5	5	5	5	5	5	5	41
Strategy 9	3	3	4	4	5	5	5	5	5	45
Strategy 10	5	5	5	5	5	5	5	5	5	39
Strategy 11	5	5	5	5	5	5	5	5	5	45

Annexure Table I-13: Scores awarded by evaluator 13 for each strategy

Strategy	Validation criteria and score (1-5)									
	Clarity	Specificity	Reliability	Effectiveness	Validity	Relevance	Applicability	Acceptability	Achievability	Total score out of 45
Strategy 1	5	5	5	5	5	5	5	5	5	45
Strategy 2	5	5	5	5	5	5	5	5	5	45
Strategy 3	5	5	5	5	5	5	5	5	5	45
Strategy 4	5	5	5	5	5	5	5	5	5	45
Strategy 5	4	4	4	4	4	4	4	4	4	45
Strategy 6	5	5	5	5	5	5	5	5	5	45
Strategy 7	5	5	5	5	5	5	5	5	5	45
Strategy 8	5	5	5	5	5	5	4	5	5	45
Strategy 9	5	5	5	5	5	5	5	5	5	45
Strategy 10	5	5	5	5	5	5	5	5	5	45
Strategy 11	5	5	5	5	5	5	5	5	5	45

ANNEXURE J: TRANSCRIPTS OF THE IN-DEPTH INTERVIEWS

Note

The researcher not annexed the transcripts of the in-depth interviews from each participant of the qualitative study to maintain the privacy and confidentiality of the information and keep anonymity of the participants as well as the difficulty to annexe many number of pages.

The transcripts are stored in password-protected safe place and could be available incases of needed

Please feel free to contact the researcher with the following contact addresses

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ANNEXURE K: TURNITIN REPORT

Thesis 1 draft

by Abas Hassen Yesuf

Submission date: 24-Jan-2022 10:38PM (UTC+0200)
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File name: 08681_AH_YESUF_Thesis_24_January_2022_for_Turnitin_check_up.docx (4.07M)
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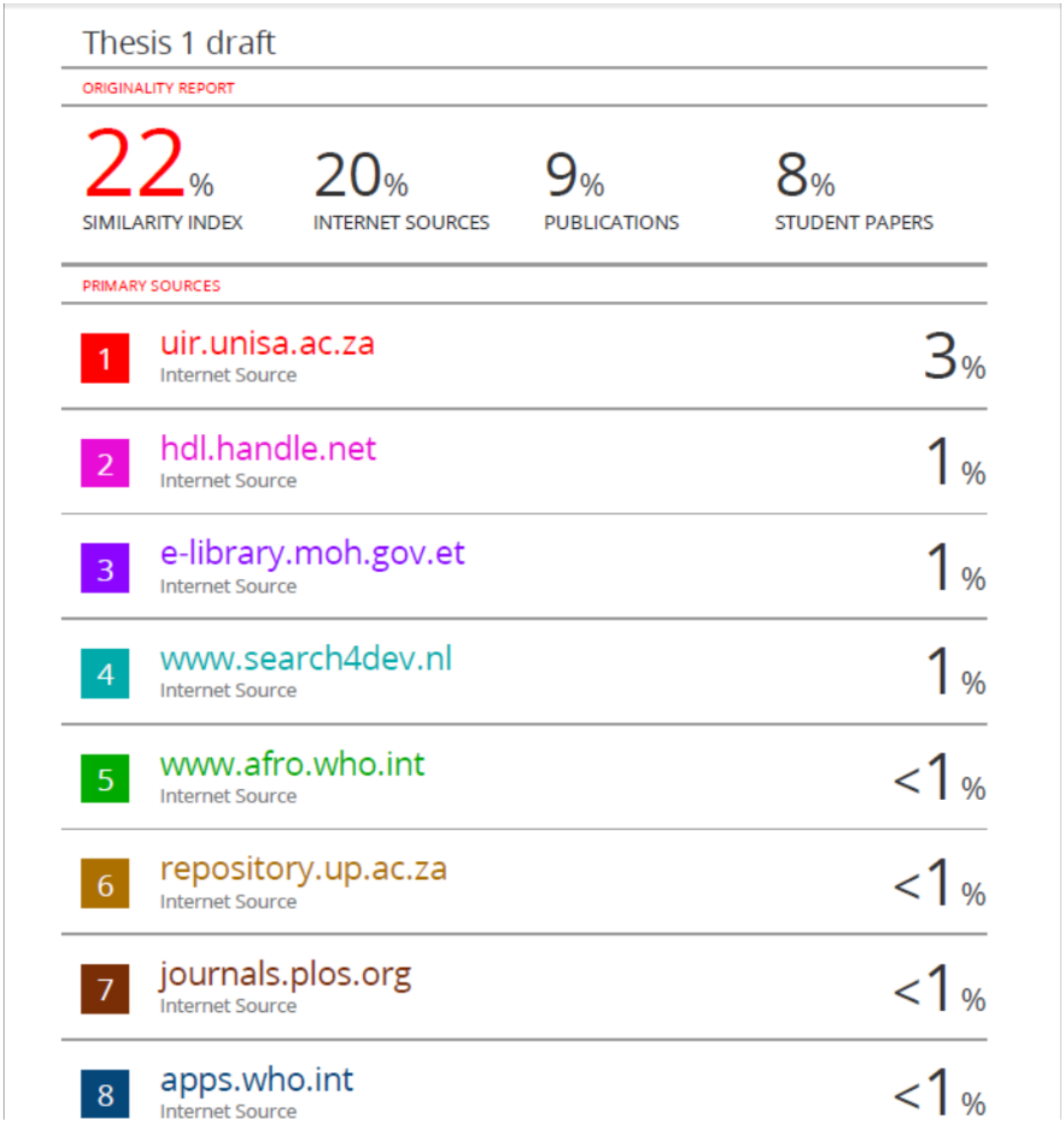
Character count: 546873



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ANNEXURE L: EDITOR'S CERTIFICATE

EDITING CERTIFICATE

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the language and references of a

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Abas Hassen Yesuf
titled

Strategies for optimisation of the quality of tuberculosis care services in public health centres of Addis Ababa, Ethiopia

NB: The author has the right to accept, reject, or change amendments made by the editor before submission.

Signed

Date: 28 January 2022

Ms Nkazana Sarah Mwanandimai, email: nkazana.mwana@gmail.com; Cell: +264 81 325 0360
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