PATIENT DELAY AND ASSOCIATED FACTORS AMONG PATIENTS DIAGNOSED WITH TB IN KAJIADO COUNTY

BY

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A THESIS SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH, COLLEGE OF HEALTH SCIENCES, MOI UNIVERSITY, IN FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE MASTER OF SCIENCE IN FIELD EPIDEMIOLOGY AND LABORATORY TRAINING

DECLARATION

DECLARATION BY THE CANDIDATE

I the undersigned, declare that this thesis is my original work and to the best of my knowledge has not been presented to any other university/institution. No part of this Thesis should be reproduced without my permission and/or Moi University.

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ACKNOWLEDGEMENT

I would like to express my deepest appreciation to **Professor Paul Ayuo and Dr. Waqo Boru**, whose insights, and intellectual rigour have shaped this research from its earliest stages. Their ability to ask the right questions at the right time continually pushed me to think more deeply and work more thoughtfully.

I am equally grateful to **faculty members (both from Moi University and FELTP)** for their constructive feedback and technical guidance, which strengthened both the direction and clarity of this study. I would also like to acknowledge the support of The **National TB Program and the County Government of Kajiado**, whose resources and academic environment made this work possible.

Finally, I would like to extend my heartfelt thanks to my family for their unwavering support and belief in me. Their encouragement has been the quiet foundation on which this work was built.

DEDICATION

This thesis is dedicated to my beloved family for their unconditional love, support, and belief in my potential, which continues to inspire me every day.

ABSTRACT

Background: TB is among the leading causes of death from a single infectious agent worldwide. Globally, TB cases increased to 10.6 million in 2022, from 10.0 million in 2020. Africa had 2.5 million TB infections in 2016, making it the continent with the highest new cases globally. There was a 16.7 percent rise in DSTB cases in 2021. Kajiado was among nine counties that had reported high rise in case notification in 2022.

Objective: Determine patient delay and associated factors among patients diagnosed with TB in Kajiado County.

Methods: A cross-sectional research was carried out at five hospitals within Kajiado County from May to August 2021 on 354 TB patients who were 15 years of age or older. Data was collected using a pre-tested, semi-structured questionnaire that was entered into an Excel database. We cleaned the data in MS Excel and ran the analyses in Epi Info. Data were summarised for discrete variables using basic proportions and percentages, and for continuous variables using mean and standard deviations. We used the median time as our cut-off for patient delay calculations. A patient is considered to have delayed if they seek medical attention at a health facility 28 days (median time) or more after the onset of tuberculosis symptoms. Patients' delay was determined using logistic regression. Adjusted odds ratios were calculated with a 95% confidence interval, and we considered factors statistically significant in multivariate when p-values were less than or equal to 0.05.

Results: A total of 354 (100%) patients with Tuberculosis participated in the study. The median time of the patient delay was 28 (+20) days. 46.3% of the study participants delayed to seek diagnosis. Lack of knowledge and lack of accessibility were the factors significantly associated with patient delay.

Conclusion: The findings suggest that delay in seeking Tuberculosis diagnosis remains a challenge as a significant proportion of patients delayed in seeking diagnosis. Lack of knowledge and lack of accessibility to diagnostic sites were significantly associated with Tuberculosis patient delay. These factors for delay can be the subject of future interventions to reduce delay in diagnosis among patients with tuberculosis.

Recommendations: The findings highlight the importance of relevant stakeholders to emphasize health education through community sensitization to ensure everyone is reached. The County Department of Health should strengthen referral and linkages between the community and health facilities. Enhance access through mobile outreach services. Further interventions that will improve knowledge and accessibility to TB care.

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ABBREVIATIONS

AIDS	Acquired immunodeficiency Syndrome
CDC	Centers for Disease Control and Prevention
DOT	Directly Observed Treatment
DSTB	Drug-susceptible tuberculosis
EPTB	Extrapulmonary Tuberculosis
FELTP	Field Epidemiology and Laboratory Training Program
HCW	Health Care Workers
HIV	Human Immunodeficiency Virus
ID	Identification Document
IREC	Institutional Research and Ethics Committee
MDR TB	Multi Drug-Resistant Tuberculosis
MTRH	Moi Teaching and Referral Hospital
NACOSTI	National Commission for Science, Technology and Innovation
NTP	National Tuberculosis Control Program
OTC	Over-the-Counter
PCR	Polymerase Chain Reaction
PI	Principal Investigator
PTB	Pulmonary TB
RRTB	Rifampicin-resistant Tuberculosis
STD	Sexually Transmitted Diseases
TB	Tuberculosis
UHC	Universal Health Coverage
WHO	World Health Organisation

OPERATIONAL DEFINITIONS

Patient delay: This is the time interval, measured in days between the beginning of symptoms to the first presentation to a formal health care provider.

A patient was considered to have delayed if they sought medical attention at a health facility at a period equal to or longer than the median time (28 days), after the onset of tuberculosis symptoms.

Diagnostic delay: This is the time interval between when a patient first feels the symptoms of tuberculosis and when the diagnosis is officially made. Health system and patient delays are part of this.

End TB strategy: This plan has been endorsed by UN member states to decrease tuberculosis mortality by 95% and to reduce new cases by 90% from 2015 to 2035.

Extrapulmonary tuberculosis patient: Is a patient with tuberculosis infection in organs other than the lungs, as shown by either a biopsy with histological evidence of infection or significant clinical evidence of active EPTB, or by one culture-positive material from an extrapulmonary location.

Formal-health care providers: Traditional medical facilities, including governmental and private clinics, hospitals, and health centres

Healthcare system delay: The time it takes for a patient to be diagnosed with TB, starting from the first visit to a healthcare facility all the way to treatment initiation.

If the time after initial reporting to a formal health care provider to initiation of treatment is more than the median value, it is considered as 'delayed'.

In our study, the classical TB symptoms were: Cough, Night sweat, Weight loss, Chest pain and Blood-stained sputum.

Kenya Vision 2030: This is Kenya's development initiative, launched in 2008, with an anticipated completion by 2030, including universal healthcare.

Multiple healthcare visits: Multiple visits to a healthcare establishment, whether public or private, prior to a tuberculosis diagnostic confirmation.

New TB patient: An individual who has not had any kind of tuberculosis therapy or who has taken anti-TB medications for fewer than 30 days.

Non-formal health providers: Local injectors, pharmacy stores, and conventional medical practitioners all fall into this group of businesses.

Pulmonary Tuberculosis patient: A person who develops tuberculosis that exclusively affect the lungs.

Self-medication: It refers to any practice in which tuberculosis (TB) patients consume drugs that they have either self-prescribed or made at home.

TB Knowledge: Participants were asked to fill out variables that measured their expertise. Questions ranging from "microbe, bacteria, germ" as the cause of tuberculosis to "TB is curable," "TB is contagious," "TB is hereditary," "TB is contagious," "TB symptoms," "TB length of treatment" (yes, 6 months = yes, otherwise no), and "TB treatment modalities" (free = yes, otherwise no) were used to evaluate the variable. We regarded patients informed if their scores were above the specified average (50%) and unknowledgeable if their scores were below average.

The onset of tuberculosis symptom: This is when tuberculosis (TB) symptoms first appeared, including coughing up blood and other systemic symptoms including weakness, fever, and lack of appetite or chest discomfort.

Total delay: The total amount of time it takes for a patient and healthcare services to go from the onset of tuberculosis symptoms to the initiation of treatment.

CHAPTER ONE: INTRODUCTION

1.1 Background

Mycobacterium tuberculosis is the bacterium that causes tuberculosis (TB), a disease that often affects the lungs. Tuberculosis (TB) may be transmitted via the air when infected individuals cough, sneeze, or spit. A person may become sick from breathing in only a small number of germs. Coughing up blood, chest discomfort, fatigue, night sweats, chills, fever, lack of appetite, and weight loss are all signs of active TB in the lungs. These symptoms, combined with discomfort at the site of infection, may be experienced by those with tuberculosis that has spread beyond the lungs. It is possible to both prevent and cure tuberculosis.

TB mostly affects adults in their most productive years. However, all age groups are at risk. Over 80% of cases and deaths are in low and middle-income countries. For months before a person gets active tuberculosis illness, the symptoms could be moderate. In addition to spreading the infection to other people, this may cause people to put off getting medical help. Over the course of a year, a person with active tuberculosis may infect 10-15 others contacts. Nearly all HIV-positive TB patients and 45 percent of HIV-negative TB patients will die without therapy. The year 2024 (Tuberculosis, STD)

Globally, tuberculosis is still a big concern. It ranks second among infectious killers, after only COVID-19, and ninth overall (after HIV/AIDS). Following a declining trend that had persisted for many years before to 2020, the global number of tuberculosis cases increased to 10.6 million in 2022, with 5.8 million men, 3.5 million women, and 1.3 million children being affected. This was an increase from 10.3 million in 2021 and 10.0 million in 2020. Similarly, between 2020 and 2021 and 2021 and 2022, the predicted tuberculosis incidence rate (new cases per 100,000 people per year) rose by 1.9%. The tuberculosis incidence rate fell back to 2019 levels in 2022 after rising for two years in a row worldwide (in 2021 and 2022). Worldwide, tuberculosis incidence fell 8.7 percent between 2015 and 2022, falling far short of the 50 percent target set by the World Health Organization's End TB Strategy for 2025. The year 2024 (Tuberculosis, STD)

Additionally, there was a 3% rise in the burden of drug-resistant TB from 2020 to 2021, with 455,000 new cases of rifampicin-resistant tuberculosis recorded that year. Only 161,746 patients with multidrug-resistant (MDR) or rifampicin-resistant tuberculosis (TB) were treated in 2021, 20,000 less than in 2019. As stated by Bagcchi (2023)

Between one hundred and seventy persons per 100,000 are afflicted with tuberculosis in Africa. Africa was home to 2.5 million tuberculosis (TB) infections in 2016, making it the continent with the highest number of new cases globally. In addition, between 30 and 50 percent of newly diagnosed tuberculosis patients in Africa also have HIV. Another fact is that tuberculosis accounts for at least 40% of all AIDS related deaths in the area (WHO, 2021).

In 2016, the illness claimed the lives of almost 417,000 individuals in Africa, out of 1.7 million worldwide. Deaths from tuberculosis (TB) account for more than a quarter of all TB fatalities, with the African and Southeast Asian regions accounting for about eighty-two percent of all TB fatalities among HIV-negative persons in 2016. As a matter of public health and health security, multidrug-resistant tuberculosis (MDRTB) persists. Among African countries, 451,551 new cases developed resistance to rifampicin, the first-line antibiotic with the best efficacy, according to the World

Health Organisation. The year 2024 (Tuberculosis, STD) Notifications in the African Region rose dramatically throughout the pandemic, which raises the intriguing possibility that interruptions caused by COVID had no effect on tuberculosis case detection.

Kenya has a high burden of TB and HIV-associated TB. According to Enos et al. (2018) and the Ministry of Health (2019), TB remains the fifth largest cause of death in this country, which is one of 30 nations classified by the WHO as having a high burden of tuberculosis. There were 558 new cases of tuberculosis (TB) per 100,000 adults in Kenya, with 20 deaths caused by TB overall per 100,000 people. This data comes from the Kenya TB Prevalence Survey of 2016.

Despite Kenya's removal from the list of nations with a high burden of drug-resistant tuberculosis (DRTB), this disease still poses a danger to the progress made in tuberculosis control and must be addressed with utmost urgency. There was a 16.7 percent rise from the 77,854 drug-susceptible tuberculosis (DSTB) cases recorded in 2021 to the 90,560 cases reported in Kenya in 2022. According to the Annual Report for 2022, nine counties, including Kajiado, saw a 28% or higher rise in case notification in 2022.

In low-income countries where TB is prevalent, especially in areas where HIV infection is predominant, controlling tuberculosis (TB) of which PTB is the most common form remains a significant public health concern. Treatment for tuberculosis (TB) takes longer than expected because patients put off getting a diagnosis, which in turn causes delays in healthcare facilities and referrals.

A successful TB control program requires early illness detection and timely treatment commencement. By increasing the likelihood of patients transferring the infection and hastening the establishment and transmission of multidrug-resistant (MDR) TB, the burden of tuberculosis is further increased when treatment is delayed. The majority of the transmissions happen between when a cough first appears and when therapy is started. On average, a patient with untreated smear-positive pulmonary tuberculosis may infect over ten people each year and over twenty people before they die. Another factor in tuberculosis infection transmission is smear negative pulmonary TB.

There is an increase in both the prognosis and the chance of mortality associated with TB when treatment is delayed. Delays in treatment have an impact on the health and economics of a nation as a whole, as well as on individuals. A key obstacle to successful tuberculosis (TB) care is delays in diagnosing the illness.

Too many individuals with tuberculosis go undiagnosed for far too long, increasing their chances of spreading the illness, experiencing unfavourable health outcomes, and financial and emotional suffering for themselves and their families. In order to manage tuberculosis and lessen its effects, early identification and treatment are crucial.

1.2 Problem Statement

Delays in the diagnosis and treatment of TB patients are a major obstacle to TB control, and early detection and timely treatment of TB patients are crucial for effective TB control, as highlighted in the WHO’s End TB strategy. The patient delay time was defined as the time interval from the date of first symptom onset to the date of first consultation. This definition is consistent with established metrics used in TB research, allowing for valid comparisons with previous studies.

Delays in accessing healthcare worsen disease outcomes, increasing Tuberculosis (TB) transmission rates and mortality. Prolonged delays may contribute to drug-resistant TB strains in some cases.

Early diagnosis and prompt effective therapy form the key elements of the tuberculosis control program. Delay in diagnosis results in increased infectivity in the community, and it is estimated that an untreated smear-positive patient can infect, on average, 10 contacts annually and over 20 during the natural history of the disease until death. Delay in tuberculosis diagnosis may also lead to a more advanced disease state at presentation, which contributes to late sequelae and overall mortality. Smear-positive cases are more likely to infect other individuals. (Abdu et al., 2020)

There is an increase in community infection due to a delay in tuberculosis diagnosis. Delays in tuberculosis diagnoses and the variables that contribute to them may range substantially across demographics, socioeconomic status, culture, and geography.

Previous studies have demonstrated factors associated with patient delay in patients seeking TB care among different communities in Kenya, however; There are no published studies on Kajiado County, Kenya in regard to patient delay in seeking TB care.

1.3 Justification

There is a higher chance of community-wide transmission of tuberculosis (TB), poor health results, emotional and financial suffering for the patient and their family, and even death if the illness is not treated promptly after diagnosis. Quicker identification and treatment of tuberculosis may hasten efforts to manage the disease and lessen its effects.

For months before a person gets active tuberculosis illness, the symptoms could be moderate. In addition to spreading the infection to other people, this may cause people to put off getting medical help. Over the course of a year, a person with active tuberculosis may infect 10-15 others people. Nearly all HIV-positive TB patients and 45 percent of HIV-negative TB patients will die without therapy. The year 2024 (Tuberculosis, STD)

The health-seeking behaviours of tuberculosis patients in Kenya have been previously described. But there is limited information on tuberculosis patients delay in the Kajiado County.

The findings can be used by the County government and other stakeholders in addressing public health awareness and improving health-seeking behaviour, and assist further to improve healthcare access and addressing other factors that affect healthcare access.

1.4 Research Question

How long does it take for new TB patients to visit a formal health provider in Kajiado County from the onset of symptoms and what were the patients' associated factors for delay?

1.5 Objective

1.5.1 Main Objective

To determine patient delay in seeking care and associated factors among patients diagnosed with TB in Kajiado County.

1.5.2 Specific Objectives

i. To determine time taken from onset of symptoms to first presentation to a professional health provider among patients diagnosed with TB in Kajiado County.

ii. To identify factors associated with patient delay in the diagnosis of TB in Kajiado County.

CHAPTER TWO: LITERATURE REVIEW

2.1. Background

There is a lot of public health interest in the time it takes to get from the first notice of symptoms to starting treatment. Patient demographics, socioeconomic position, healthcare practitioner competence, facility accessibility, and equipment availability are all factors that have been linked to TB treatment and diagnostic delays.

In order to effectively reduce tuberculosis (TB) on a worldwide scale, nations like Ethiopia, who have a high burden of the disease, must make significant adjustments to their TB preventive and treatment policies. However, effectively identifying infectious tuberculosis patients early and managing them promptly are the bedrocks of worldwide tuberculosis control initiatives. That is why it is important to seek medical attention as soon as possible for a diagnosis and treatment if a cough persists for two weeks or longer. Consequently, TB is more likely to spread in the community and progress to a more severe stage when greater symptoms and mortality are possible outcomes of postponing diagnosis and treatment (Arja et al., 2021).

Around 25% of the global population is thought to have caught tuberculosis, according to a prior research and the World Health Organisation Global TB Report, 2023. In 2022, there were 63,801 cases of multidrug-resistant tuberculosis (MDR/RRTB) in India, out of an estimated 410,000 cases globally. Globally, tuberculosis (TB) continues to be a problem for public health workers, even though treatment options have been available for some time. The challenge of maintaining TB treatment compliance may be tackled by constantly exploring options and making decisions based on evidence (Zaidi et al., 2024).

An objective of the Sustainable Development Goals is to put an end to tuberculosis outbreaks by the year 2030. Nevertheless, this noble objective is jeopardised by the significant delay in tuberculosis diagnoses. Additionally, there may have been many setbacks in TB control due to the COVID-19 epidemic.

A recent report from the World Health Organisation estimates that there have been 10 million new cases of tuberculosis (TB). Out of this number, only 6.4 million have been reported to national authorities and the WHO. It is believed that the majority of missing persons with TB are undergoing treatment at either public or private healthcare facilities. Between the event and the notified instances, there is a 3.6 million gap. Each year, about 1.5 million people lose their lives. Successful control can only be achieved if cases are identified early and treatment regimens are adhered to. Not everyone with an active illness gets a diagnosis, and even fewer people who start treatment don't finish it in many countries. (World Health Organization, 2018). Among the 30 countries having a disproportionately high TB burden, Kenya is included by the World Health Organisation (WHO). Despite considerable efforts in TB treatment and prevention over the last 20 years, the disease is still the fourth leading cause of death. As a result, the nation must prioritise the identification and effective treatment of all tuberculosis patients. Nearly three-quarters of tuberculosis cases were detected in the nation in 2015, with a rate of 233 per 100,000 people (95% CI 188-266). Over the last sixty years, there has been a clear shift in the causes of tuberculosis. The results of recent tuberculosis surveys cannot be applied nationwide since they were carried out in regions with a high concentration of HIV and had a narrow geographic scope. However, it seemed that tuberculosis cases in Kenya were being underreported based on their findings (Enos et al., 2018a).

Even among populations with the same local contexts and disease category, there is variation in tuberculosis (TB) diagnosis, treatment time, and variables that contribute to this delay among communities, kinds of health institutions visited, and geographic locations. Because of this, investigations targeting particular populations are needed to determine the causes of tuberculosis diagnosis and treatment delays (Arja et al., 2021).

Much work remains to be done in the fight against tuberculosis (TB), despite international initiatives to do so. Serious consequences, higher death rates, and community-wide disease spread may arise from diagnostic delays, making this a critical concern. Delays in diagnosis continue to be a significant public health issue in sub-Saharan Africa, which includes Kenya. As a matter of fact, tuberculosis (TB) is the fourth worst killer in Kenya right now, which has a major financial impact and a severe effect on people's daily life. Despite Kenya's well-structured national tuberculosis control programme (NTP) that offers free and easy access to services in public health facilities, the most recent TB prevalence survey (2015/16) indicated that the country fails to detect nearly half of the TB cases and that most people suspected of having the disease do not seek medical attention when they experience symptoms. Patients with tuberculosis and HIV are more vulnerable to the increased transmission, mortality, and morbidity caused by these instances (Limo & Onyango, 2022).

One of the most pressing issues in TB management is patient delay, which can result in serious complications, increased mortality rates and transmission of the disease within a community. In sub Saharan Africa, including Kenya, TB patient delay remains a major public health concern. In fact, TB is currently among the leading cause of death in Kenya, presenting a significant economic burden and negatively impacting the lives of its population.

2.2 Sociodemographic characteristics

The percentage of female patients who delayed seeking treatment for tuberculosis was much greater in a research that examined the magnitude and variables related with treatment-seeking delay among new pulmonary tuberculosis patients in public health facilities in Habro district, eastern Ethiopia. Factors such as women's restricted decision-making ability, heavy workloads, low levels of education, familial subordination, unemployment, and household obligations may all contribute to female delays (Getiye et al., 2024).

Factors linked to patient delay have been identified in various studies. Inadequate money, lack of education, sex (which varies across research), ignorance about what causes PTB, first encounter with drug sellers or private practitioners, prior tuberculosis, unemployment, city life, and big family size are some of these factors (Getnet et al., 2019).

Researchers in Western Ethiopia looked at pulmonary tuberculosis patients at public health facilities in the Metekel zone, Benishangul Gumuz region, and found that those under the age of 35 were less likely to have long treatment delays compared to those aged 36–54 and those older than 54. This result agrees with research from Tanzania, Ethiopia, Nigeria, and Portugal. This can be associated with the fact that elderly people often rely on others, which might make it more challenging for them to go to the doctor when it's convenient for them. Patients in this age bracket are generally self-sufficient and industrious, but they also tend to have bigger families than patients younger than 35. This, along with other family-related concerns, could make it difficult for them to go to the doctor when they're sick (Animut et al., 2024).

Eltayeb et al. (2020) found that patients' ages were a major risk factor for postponing tuberculosis (TB) diagnosis and treatment. This finding is in line with what Loutet et al. (2018) found: that patients' cumulative treatment delays were longer as their ages increased. Delays in tuberculosis diagnosis due to age varied from around 15% for those less than 14 years old to 38.4% for those older than 65 years old. The previous publication was by Loutet et al. (2018). Another research found that elderly people in South East England had healthcare delay patterns of 12 minutes or more, compared to lesser delays in children. (Roberts et al., 2020)

When comparing male and female participants, the delay was greater in the female group. One possible explanation is that women's health is often disregarded in society, leading them to rely on self-medication from places like drugstores. Most of the participants in this research were part of nuclear families, meaning that the women couldn't have gotten to a hospital faster since their husbands were still at work (Kamaraj et al., 2021).

There was no statistically significant correlation between patient delay and age or sex in a research examining causes of delayed TB treatment initiation in the Oromia Special Zone of the Amhara Region. As a result of women's reduced decision-making ability and domestic job overload, this could be the case (Abdu et al., 2020).

A research carried out in Southern Mozambique found that tuberculosis symptoms were stigmatised and thought to be caused by violating social or sexual norms and conventions. Sexual relations with somebody considered unclean or the failure to undertake a ritual of cleansing after a family member's death are two such examples.

The idea that sex may spread tuberculosis was promoted. As a result, people began to speak about themselves and their opinions from a third-person perspective. The loss of a spouse or the subsequent abortion made women seem unclean in society's eyes. Because of this way of looking at tuberculosis symptoms, women are unfairly accused of being sick (Give et al., 2024).

Because they do not have the authority to decide when or where to seek medical attention, women still face barriers to treatment, even when they exhibit signs of tuberculosis. In most families, the heads of household or the spouses make these kinds of choices. Their decision-making skills in obtaining healthcare is further impacted by their financial dependency on males for transportation and related expenditures (Give et al., 2024).

Two major and independent risk variables for tuberculosis diagnostic delay were being employed and being less than 50 years old, according to a research conducted in Gambia, West Africa. These likely represent the socioeconomic reality of people fighting illness in The Gambia's low-income context, where obtaining health treatment takes a back seat to the need to survive economically. Patients in their latter years are likely to be retired and/or entirely reliant on family members for medical attention. There was no correlation between gender, marital status, level of education, or time it took to diagnose tuberculosis. There was an association between feminine gender and tuberculosis diagnosis delay in previous research.

Owolabi et al., (2020) found no correlation between social variables like gender and the time it took to find the first service. However, research shows that men are more likely to delay seeking health care than women are for a variety of reasons, including a general lack of concern for their health and the fact that they often have more work to do than women do. They also have a stronger correlation with drug and alcohol abuse (Dantas, Enders, Oliveira, Vieira, Queiroz, & Arcêncio, 2018)

In Nepal, unacceptable patient delay was connected with living in rural regions, a DOTs centre that was more than 5 km distant from their house, and patients who were jobless. A study in Colombia found that patients were more likely to experience delays in treatment if they lacked health insurance, had an unknown HIV status, and lived in an area with community health workers employed by the National Transplant Program (NTP). A similar study in Iran found that patients were more likely to experience delays in treatment if they were female, smoked, and took immunosuppressive drugs (Abdu et al., 2020).

In Jimma zone, being illiterate and divorced are connected with tuberculosis (TB) patient delay. In a related research conducted in Wollega, it was shown that patients residing in urban areas were 46% more likely to seek medical attention, and that female patients were more likely to be delayed in seeking medical attention compared to male patients (Abdu et al., 2020).

Married individuals had a disproportionately high rate of postponing therapy. Compared to married individuals, those who were single had more time to attend health services. This can be because married people have more obligations and so don't have the time to get therapy right away. As a result, the breadwinner in the family is likely to put off going to the doctor for a little longer so as not to have to cut into their income (Wondawek & Ali, 2019).

In the same research, a disproportionately high number of women reported delaying therapy. The cultural and social differences between the two nations could be to blame. Their research found that women were more likely to put off getting therapy because they had less agency, were more likely to be involved in household chores, had lower levels of education, and were more likely to be unemployed. In addition, women's cultural and socioeconomic status may impact societal decisions that impact their health requirements in some way (Wondawek & Ali, 2019).

The primary factors contributing to the delay were patients' ages, where they lived, the distance from healthcare services, the patients' knowledge that tuberculosis is curable, and their fear of HIV testing. The lengthier delays experienced by women were more likely to be attributed to factors such as greater social stigma, lower community focus or attention, economical challenges, and family duties that women bear, as opposed to males. Where there is an insufficiently decentralised health system and gender norms favour males in obtaining health care, this might get complicated. So, to deal with these differences in service delivery, gender-sensitive tuberculosis services need to be found and developed. Because of more tuberculosis (TB) knowledge, easier access to treatments, higher educational attainment, and better socioeconomic position, patients in urban settings had lower chances of shorter delay compared to those in rural regions. Nevertheless, tuberculosis patients may face even more severe urban poverty in urban slums (Datiko et al., 2020a).

A research conducted in northern Iran examined the factors linked to delayed tuberculosis diagnoses. The results showed that gender, TB type, residence region, diabetes, addiction, and nationality did not reveal any significant relationship with delayed diagnoses. In addition, compared to non-inmates, prisoners had shorter diagnostic delays, and old age was a risk factor for this. We found no statistically significant difference between the sexes in the number of patients experiencing delays; nevertheless, there were somewhat more male patients than female patients (Moosazadeh et al., 2021).

Patients with a higher level of education (secondary school or above) were found to have a lower likelihood of experiencing patient delay, according to a research that examined the variables linked to patient delay among tuberculosis patients at border hospitals, Chiang Rai region, Thailand. In addition, the research did not find a statistically significant association between patient delay and other demographic characteristics including marital status, work position, or financial condition (Sikkhajan & Sirichokchatchawan, 2019).

In Gambia, West Africa, a research on the delay in diagnosing pulmonary tuberculosis found that being employed and being under 50 years old were substantial risk factors for TB diagnostic delay on their own. In the low-income context of The Gambia, where people prioritise economic survival above obtaining health treatment, these represent the socio-economic reality of persons facing poor-health. Some of the elderly patients may be completely reliant on family members for their care, while others may be retired (Owolabi et al., 2020).

Among the participants in a community-based cross-sectional research that aimed to find out how long it took people in the Sidama Region of Ethiopia to seek medical attention after experiencing symptoms that may indicate TB, a disproportionate number of women reported delays. This is comparable to the results of the Tanzanian research, which found that women are less informed about the condition and men in the area have more decision-making authority (Jima et al., 2023).

Research on TB patients in the Suez Canal Area found that being married significantly increased the likelihood that a patient would experience a delay in diagnosis and treatment. In addition, patients who were divorced or separated had delays, while patients who were single or widowed had the shortest delays. Possible causes include procrastination in obtaining medical assistance as a result of overwhelming familial and financial obligations. Social, psychological, and economical difficulties may manifest in patients who are separated or divorced. Patients were also far more likely to have delays in treatment whether they self medicated, used conventional medicine, or sought out pharmacy guidance first (Elsaid et al., 2019).

Despite the lack of correlation between social variables like gender and the time it took to find the first service, research shows that men are a factor in health care and are more likely to experience this delay than women. This is likely due to their overall lack of concern for health care, which includes factors like workload, which prevents them from seeking help. According to (Dantas, Enders, Oliveira, Vieira, Queiroz, & Arcêncio, 2018), they are also more likely to be alcoholics and drug users.

The size of health care seeking delay and related variables for TB suggestive symptoms in Sidama Region, Ethiopia, was investigated in a community-based cross-sectional research. Married individuals were found to be more delayed than single participants. The fact that most married individuals put their health on the back burner as they labour to provide for their families might be to blame. According to Cameron's research, the primary carer for a family is more likely to put off getting medical treatment than other family members (Jima et al., 2023).

2.3 Patient Clinical Characteristics

At the first stages of the illness, tuberculosis often does not show any symptoms at all, making it easy to confuse with other common febrile diseases. A patient may go weeks or months without experiencing symptoms severe enough to warrant medical attention or a diagnosis of active tuberculosis since the illness progresses in its early stages, which are often not debilitating and permit continuation of daily activities. Those in close proximity to the sufferer at this period run the danger of contracting the infection.

Health system delay was less common among patients with chest pain compared to those without the condition, according to the results of an institution-based cross-sectional study on the topic among tuberculosis patients in public health facilities in the Gamo Zone, Southern Ethiopia. Chinese research backs up the aforementioned conclusion by showing that non-specific cough symptoms were a risk factor for longer delays, but that these delays might be reduced when other pulmonary symptoms, such as chest discomfort, were considered simultaneously (Arja et al., 022)

Treatment delays for tuberculosis were more common among patients who had previously taken antibiotics for another condition, according to a study of pulmonary tuberculosis patients at public health facilities in Dale District and Yirgalem Town administration, Sidama Region, South Ethiopia. The results from the Afar and Amhara regions agreed with this one. One possible explanation is that tuberculosis (TB) symptoms are not well known among TB patients. Antibiotic therapy often alleviates tuberculosis (TB) respiratory symptoms at first. This might cause patients to believe that their sickness has resolved, which could cause them to postpone getting a TB diagnosis and treatment (Rima et al., 2024).

One research among TB patients in Jimma Zone, Southwest Ethiopia, found that having oedema or a wound in the neck area was strongly related with a lengthy overall delay, along with other associated variables. One of the most prevalent extrapulmonary TB symptoms that might delay diagnosis is cervical TB lymphadenitis, which is worth noting. The most frequent symptom is a persistent, painless swelling in the neck area; no other symptoms are noticeable. This kind of tuberculosis necessitates a high level of suspicion and the use of many diagnostic procedures for diagnosis (Ereso et al., 2023).

Patients who tested negative for HIV were found to be more prone to experiencing patient delay, according to a research that examined the variables linked to patient delay among TB patients at border hospitals in Chiang Rai region, Thailand. Similarly, HIV-positive individuals in Ghana were less likely to put off getting tuberculosis treatment, according to the research. The patient's country was another factor that contributed to their wait time, in addition to their HIV status. Patients who were not Thai were more prone to encountering patient delays. (Sikkhajan & Sirichokchatchawan, 2019).

People with HIV, health care workers, and others in high-risk environments for Mycobacterium tuberculosis transmission are among the populations most at risk of contracting tuberculosis and developing a severe case of the disease. In 2017, there were almost 920,000 incident TB cases among persons living with HIV. Tragically, out of this cohort, around 300,000 lost their lives to tuberculosis (TB) (World Health Organization, 2019).

A study on factors associated with delay in treatment initiation for pulmonary tuberculosis in South East of England has shown that mental health issues, especially depression, can cause people to put off seeking medical treatment for pulmonary tuberculosis.

The research found that mental health barriers doubled the presentation delay on full case analysis when it came to factors associated with pulmonary tuberculosis treatment delays. Nevertheless, when they removed the 1% of patients with the longest delays from the sensitivity analysis, they found no association between mental health obstacles and presentation delay. This suggests that the cases with the greatest delays may have inflated the estimates for mental health barriers (Roberts et al., 2020).

When opposed to instances of extra-pulmonary TB, where symptoms are often unclear or moderate, cases of pulmonary tuberculosis are more likely to be reported early to the healthcare practitioner since their symptoms are persistent. Half of the people in this research sought medical attention within two weeks of experiencing symptoms; this number was much higher for pulmonary cases (almost 60% of pulmonary patients sought medical attention within two weeks of symptoms). One possible explanation for the delayed presentation in quest for health care services is that extra-pulmonary patients either do not recognise the symptoms as TB or do not take them seriously (Kamaraj et al., 2021).

In terms of clinical characteristics, it is recognised that tuberculosis (TB) symptoms, including a cough, might seem to patients as similar to other illnesses and not too worrisome, as long as there are no complications or physical impairments. Therefore, it is believed that patients' inactivity or receiving wrong instructions about what to do in response to the situation is justified by their lack of understanding regarding symptoms and signals. The delay in illness diagnosis may be worsened by these disorders, which may also impede the quest for healthcare ((Dantas, Enders, Oliveira, Vieira, Queiroz, & Arcêncio, 2018).

Only 34% of migrant patients and 55% of local patients had HIV serology data available. The overall patient prevalence of HIV was found to be 3% in this research.

The local populace had a higher prevalence of HIV positive. According to the World Health Organisation, 6.7% of tuberculosis patients are also HIV positive. The 2018 Turkish official statistics showed that among tuberculosis patients, 0.6% tested positive for HIV and 71.1% had their serology tested. One possible explanation for the discrepancies between our results and epidemiological data is the very low rate of HIV serology testing. Although it was lower than a comparable research in Zimbabwe, which found a frequency of up to 7.3%, the study's HIV-positivity prevalence was higher than a Chinese study's (0.1%). Distinct national HIV prevalence rates are probably to blame for these discrepancies (Ersözlü et al., 2025). Research into causes of diagnostic delays in northern Iran's tuberculosis patients revealed that 30.61 percent of those individuals had pulmonary tuberculosis of advanced bacteriologic grade (3+). Although Storla et al. found that diagnostic delay is linked to negative sputum smears, other research has shown the opposite to be true for tuberculosis (TB) smear positive. Our findings regarding smear positive were similar to those of Nasehi's research, which found: 3.4% had insufficient, 36.0% had one plus, 23.2 percent had two plus, and 37.4 percent had three plus ones (Moosazadeh et al., 2021).

Half or more of the participants who took part in this survey didn't think much of their symptoms at first, and even more people thought that only those with very bad coughs should visit a doctor. That illness severity is the primary indicator of the need for medical attention and that individual vulnerability has been skewed are both implied by this. Delays in diagnosis and treatment are caused when patients wait until their cough becomes acute before seeking medical attention (Mbuthia et al., 2018b). Research on patients with tuberculosis who visited the Isiolo level four hospital found that lower poverty and the lack of co-morbidities were protective factors against delayed TB diagnosis. Since the health care services at public health centres were either subsidised or free of charge, the patients who sought treatment there were likely from lower income levels. The ability to detect tuberculosis (TB) promptly is particularly strong at higher-level public health institutions. It seems that medical care mediates the relationship between income and delayed tuberculosis diagnosis. Those who can afford it tend to get better medical treatment than those who can't. In order to diagnose tuberculosis early, one must consider one's financial level. Those with lower incomes were predicted to have longer delays in tuberculosis diagnosis and treatment compared to those with higher incomes (Kunjok et al., 2021).

Patients with active pulmonary TB in Portugal had much longer healthcare and overall delays in diagnosis for female patients compared to male patients, according to research. Nonetheless, the correlation between sex and delayed tuberculosis diagnosis and treatment did not reach statistical significance in this investigation. Possible explanations for these disparities include cultural norms around gender roles and health-seeking habits (J. A. Santos et al., 2021).

One of the characteristics that was linked to delay according to a study on patient delay diagnosis in a conflict-affected area of Mogadishu, Somalia, was a lack of familiarity with tuberculosis symptoms, according to a research. The research found that Somalis often had a poor level of health literacy. In its early stages, TB manifests with vague symptoms that are readily mistaken for those of other diseases, as previously mentioned. Patients may not have realised they have tuberculosis until the illness has progressed for months. However, individuals are less likely to seek medical attention for tuberculosis (TB) if they are not aware of the usual signs of the disease. Consequently, there was solid evidence linking a lack of TB awareness to a lengthy patient delay. Early tuberculosis symptoms were often not incapacitating and may coexist with daily activities until they become severe enough to cause alarm, which might have made patients with a limited knowledge of the disease feel better (Sheikh et al., 2021).

An intriguing study looked at the factors associated with tuberculosis patient delays at border hospitals in Thailand's Chiang Rai district. Patients who did not test positive for HIV were more likely to experience patient delay, according to the research. Theoretically, this may be because individuals in northern Thailand, where tuberculosis and HIV are common, put off getting treatment for their illnesses out of fear of being diagnosed. The patient's country was another factor that contributed to their wait time, in addition to their HIV status. Patients who were not Thai were more prone to encountering patient delays (Sikkhajan & Sirichokchatchawan, 2019).

Even though tuberculosis (TB) is caused by bacteria and can be cured with proper treatment, a study in South Africa's Limpopo Province found that 76% of participants still strongly believed in their culture and religion. Consequently, they continued to seek help from traditional healers and faith healers after receiving a TB diagnosis, attributing their disease to a curse or punishment rather than a bacterium. The high treatment defaulter rate of 7.4% and the TB treatment cure rate of 79.9% in Limpopo Province make this very clear. The goal rate is 95% (Matakanye et al., 2021).

Patients with tuberculosis in the Jimma Zone of Southwest Ethiopia were found to have a higher likelihood of unfavourable treatment outcomes when sociodemographic factors like sex, economic factors like household income, behavioural factors like alcohol use, and social factors like community stigma were considered. According to the research, treatment outcomes were less favourable for women than males. The results are consistent with those of earlier research in Ethiopia and other African nations, such as Nigeria. Women may have limited access to family financial resources, which might explain these results, suggesting that economic status influences treatment outcome. A lack of control over the allocation of resources (such as funds for transportation or diagnostic medical procedures) or the prioritisation of activities (such as the time-consuming daily treatment of DOTS) may arise from this disparity (Ereso et al., 2024).

A disproportionate number of delays were seen in the female participants of this research. Comparable to the results of the Tanzanian research, this one also found... This may be because women in the study region are less informed about the condition and men in the area have more decision-making authority. Those who were married also had longer delays than those who were single, according to the results. The fact that most married individuals put their health on the back burner as they labour to provide for their families might be to blame. According to Cameron's research, the primary carer for a family is more likely to put off getting medical treatment than other family members (Jima et al., 2023).

2.4 Socio-economic factors

Increased infectivity in the community due to delayed diagnosis makes transmission to other residents easier. Multiple studies have linked tuberculosis (TB) rates to factors including low-incidence migration, population density, and rurality, which are all seen as indicators of healthcare accessibility (Soares et al., 2022).

They provided vital information about the issue by conducting an in-depth examination of the socioeconomic factors, which are powerful predictors of patients' health seeking behaviour and the primary driver of patient delay. Research of this kind has shown that people living with TB face unique social challenges. Food and tuberculosis (TB) diagnostic expenses were already high for participants during the COVID-19 lockdown, and the added expense of getting to the health centre really made things worse. A small number of interviewees pointed to the need to ask friends and family for financial assistance in order to cover the hefty expense of tuberculosis diagnostic tests as an explanation for why some cases went undiagnosed for longer than expected (Bbuye et al., 2024).

Studying treatment delay and associated factors, researchers in Western Ethiopia discovered that patients with pulmonary tuberculosis who visited public health facilities in the Metekel zone, Benishangul Gumuz region, were more likely to postpone seeking treatment if their family size was five members or larger. Timely visits to healthcare facilities for diseases may be hindered when families are bigger due to additional duties and budgetary restrictions (Animut et al., 2024).

Between 2016 and 2019, fourteen nations surveyed the financial impact of tuberculosis on patients and their families in healthcare facilities. Among them, seven had a disproportionately high TB burden. For tuberculosis in general, best estimates placed the proportion of catastrophic expenditures at 27% to 83%, while for drug resistant TB, the range was 67% to 100%. Financing, service delivery, and social protection strategies that aim to lower these costs are informed by survey data. (World Health Organization, 2019).

Patients in the private sector who sought treatment for tuberculosis in an eastern Indian state cited a number of factors as the primary reasons for doing so, including the following: being female, living in an urban area, believing that private doctors provide faster and better service, and the distance between their homes and public facilities. Similar characteristics that influence care seeking in private facilities were also found in studies carried out in different regions of India (Samal, 2024).

Time to tuberculosis notification is impacted by transportation and treatment expenses as well. It is common for patients who are suspected with tuberculosis to put off seeking treatment until they have saved up enough money to pay for certain therapies, such as laboratory tests. People in cities may be less likely to seek prompt medical attention for tuberculosis (TB) due to higher living expenditures. People living in or around cities often have access to a plethora of public and private healthcare services, which might lead to unnecessary medical visits for those suspected with tuberculosis. Because some institutions do not have the capability to diagnose tuberculosis (TB), and patients may need to visit many facilities before they are referred, navigating this complexity may create delays in the time to tuberculosis notification (Chilala et al., 2024).

Delays in tuberculosis diagnosis were connected with self-employed and employed persons, according to a research. The most plausible explanation is that people who work for themselves or for someone else do not want to waste time that may be better spent making money by going to the doctor (Kunjok et al., 2021).

The study's overarching goal was to shed light on the cultural and socioeconomic aspects that influence the adoption and utilisation of tuberculosis diagnostic and treatment tools in East Africa. Barriers to access and utilisation of these tools include a high illiteracy rate, inadequate health care facilities, and a lack of well-equipped specialised healthcare providers. According to the first section of this research, which analyses the health system hurdles, the most cost-effective way to ensure that all available high-tech diagnostic tools are used to their fullest potential is via the centralised implementation model (Msoka et al., 2021).

Patients living in remote areas or who were pastoralists were more likely to go over a month without medical treatment for pulmonary TB, according to a research that looked at the factors that cause patients to delay diagnosis among Somali pastoralists in Ethiopia. The explanation for this might be linked to the difficulty or absence of access to primary diagnostic care in rural areas. Sixty percent of rural and pastoral patients had to travel more than an hour, and others had to travel an entire day, to reach any kind of healthcare centre (Getnet et al., 2019).

Patients with pulmonary tuberculosis in Hubei, China, who had to travel longer distances to reach a township hospital for diagnosis and treatment were more likely to encounter delays in these processes, according to a study that examined the effect of health care service accessibility on health care utilisation. It should be noted, too, that delays in seeking treatment had no correlation with the time it took to reach a township hospital. Patients suffering from tuberculosis (TB) are need to go to township hospitals or specially designated TB facilities for diagnosis and treatment since rural clinics lack the necessary equipment. Consequently, there was no statistically significant relationship between the time it took to go to a township hospital and the time it took to get treatment, although there was a strong correlation between the two. Conversely, patients from low-income backgrounds were more likely to put off seeking medical attention, which mirrored the impact of cost on whether or not they could really afford the treatment they needed (Yang et al., 2020). Patients in Mekelle were more likely to experience treatment delays if they met the following criteria: lived in rural areas, were illiterate, had never been treated for tuberculosis before, had used holy water as a treatment, had seen a private practitioner, or had purchased medication from a vendor (Abdu et al., 2020).

Respondents with a high school diploma or less were 45 percent less likely to be tardy than those with a bachelor's degree or above. This disparity may be attributable to the fact that individuals with a basic education level are more likely to seek medical attention at healthcare facilities promptly due to the availability of community health insurance (Abdu et al., 2020).

Among the variables linked to treatment delays for tuberculosis, patients living more than 5 kilometres from the closest health institution were more likely to wait longer for treatment than those living less than 5 kilometres. Tuberculosis (TB) testing and treatment services may be difficult to reach for patients in remote areas. Compared to patients from nearby places, they incur higher travelling expenses. Designing measures to access such tuberculosis cases and providing help for patients residing in faraway places to visit health facilities are therefore recommended. (Rima et al., 2024).

Health infrastructure, increased awareness, and health seeking all contribute to shorter wait times for treatment in high-income nations. Nevertheless, there were shared features, according to the evaluation. This highlights the need to examine case finding methodologies and develop pro-poor initiatives according to their specific circumstances. Delays persist for disadvantaged and minority groups in wealthy nations. Poor service decentralisation and poverty exacerbate resource constraints in contexts, making patient journeys more complicated. Early diagnosis might be made easier with the decentralisation of services that have sufficient technical and diagnostic competence. A patient may be hesitant to obtain a diagnosis and begin treatment due to factors such as stigma, distance, and associated costs. Ethiopia has a high cost of seeking treatment, despite the fact that decreasing patient and family expenditures of seeking care is a fundamental component of the End TB Strategy.

Therefore, effective interventions to promote health seeking in resource-constrained contexts might include patient insurance arrangements, waiver services, and the prospect of reimbursing expenses connected to seeking tuberculosis treatment. (Essa et al., 2020a).

Costs associated with health services, including transportation, were seen by most respondents, particularly in rural areas, as a major socioeconomic obstacle to tuberculosis (TB) diagnostic and treatment services. For instance, one tuberculosis patient said that in order to go the hospital, one must consider the expense of transportation and lodging. Visiting the city and returning home on the same day is not possible (Msoka et al., 2021).

The socio-economic indicators in a Peruvian amazonian research on delayed TB testseeking behaviour showed that tuberculosis patients were very poor. This fits with the well-known geographical and temporal relationship between poverty and tuberculosis. According to research, one of the main causes of patient delay is not having health insurance. Some research has shown that patients are more likely to experience delays in treatment due to a lack of health insurance, while other studies have failed to find any such correlation. The discrepancy could be attributable, at least in part, to variations in health insurance policies and patient eligibility that exist among nations. Under UHC, all citizens and permanent residents of Japan, even those born outside of the country, are required to participate in the country's health insurance programs (Yoshikawa et al., 2020).

Health system-related delays were shown to be correlated with religious affiliation, with Christians having greater chances of delay and Muslims having reduced odds when compared with traditional worshippers. The strong reliance on faith healing among Christians and herbal medicines among traditional worshippers may explain this. The participants in that survey generally believed that sickness may have three possible causes: God, Allah, or witchcraft. They also believed that although illnesses caused by God or Allah could be cured in hospitals, those caused by witchcraft could only be treated by traditional healers. The significance of religious and cultural beliefs in shaping health-seeking behaviour is highlighted by these results. Additionally, they suggest that community health-related habits may be changed via the influence of religious and cultural leaders (Olarewaju et al., 2023).

Perseverance is also influenced by other factors. People who have a longer way to get to the health centre and pay for the consultation are more likely to default, according to an Ethiopian research. Researchers in Thailand found that patients are more likely to fail on their treatments if they are unable to afford the financial burdens of treatment adherence, such as the cost of transportation to and from clinics. Patients in Zambia often fail to follow treatment plans because they are too poor to afford necessary medical care, such as transportation to and from the hospital, as well as the cost of consultations and other services.

Primary health services are notoriously difficult to get an appointment with within a day, which is why tuberculosis patients often take longer than necessary to find a healthcare provider. Further impeding the search for these services as a doorway to health care are the facilities' daytime hours, delayed appointment scheduling, and examination scheduling. (Dantas, Enders, Oliveira, Vieira, Queiroz, & Arcêncio, 2018).

The cross-border region is one of the most TB-endemic places because people living there are often on the move, which makes it easy for treatment to be missed or inadequate, allowing tuberculosis infections to remain (Sikkhajan & Sirichokchatchawan, 2019).

Perceived stigma was shown to be an independent predictor of unfavourable treatment outcomes among TB patients in the Jimma Zone, Southwest Ethiopia, according to the determinants of treatment outcomes. According to the research, a significant obstacle to early identification and complete treatment completion was tuberculosis stigma. People may be less forthcoming about their tuberculosis status if they are worried about losing their job or feeling alone. So, tuberculosis stigma usually leads to people not taking their medication as prescribed, which in turn leads to a bad prognosis. Perceived stigma was more prevalent among tuberculosis patients than among their relatives or the wider public, according to previous research from Ethiopia. Housing discrimination and social isolation are two potential outcomes of tuberculosis (TB) due to the disease's notoriously negative reputation. Our research location is situated in the Oromia region, which had the highest score of tuberculosis stigma in Ethiopia. Therefore, in order to determine which tuberculosis (TB) patients are most at risk for a negative treatment result, it is crucial to gauge how they feel about their sickness (Ereso et al., 2024).

Among the variables linked to treatment delays for tuberculosis, patients living more than 5 kilometres from the closest health institution were more likely to wait longer for treatment than those living less than 5 kilometres. Tuberculosis (TB) testing and treatment services may be difficult to reach for patients in remote areas. Compared to patients from nearby places, they incur higher travelling expenses. Designing measures to access such tuberculosis cases and providing help for patients residing in faraway places to visit health facilities are therefore recommended. Detecting tuberculosis cases in the population might be one approach (Rima et al., 2024).

Despite the financial burden, community members' inability to easily reach health facilities for tuberculosis (TB) diagnosis and treatment compliance was a major barrier. The distance from here to our hospital is quite a bit, being in the interior. It becomes much more difficult to drive after heavy rains like these, since the roads are not very accessible, as one carer put it. The caretaker is at 6 TZ. There is a lack of medications to treat tuberculosis (TB), particularly multi-drug resistant tuberculosis (MDR-TB), and the general consensus among respondents is that their health care facilities are not prepared to handle tuberculosis (TB) patients (Msoka et al., 2021).

Problems in getting to health centres and hospitals are a result of Nepal's topography. Previous research has shown that patients are less likely to attend health clinics when the distance is greater and the road or trail conditions are bad. Patients have additional challenges since they may not have access to public transit or the means to pay for it (Marahatta et al., 2020).

People with low monthly earnings exhibited a disproportionately large delay in seeking health care, according to a community-based research in Sidama Region, Ethiopia, which examined the size of health care seeking delay and related variables for TB suggestive symptoms. Participants with low monthly incomes may not have enough time to attend health facilities owing to their involvement in various activities for an extended period of time, which might explain the results. This research found that patients often wait until their illness worsens before seeking medical attention. (Jima et al., 2023).

A cross-sectional study on qualitative assessment of the impact of socioeconomic and cultural barriers on uptake and utilisation of tuberculosis diagnostic and treatment tools in East Africa, among the socio-economic factors cited as a cause of non-adherence to tuberculosis treatment was food insecurity. This recurring feature emerged as a major socioeconomic hurdle to maintaining drug adherence throughout the dataset. Not having enough to eat caused some patients to miss doses or even stop taking their medicine altogether. Take this case of a tuberculosis patient who said, "...there are few times when I skipped my dose if I did not have enough food to eat. If you take those drugs on an empty stomach, they make you feel very bad for like two or three hours." Another patient who stopped taking the medication due to hunger did the same (Msoka et al., 2021).

A study conducted in the Habro district of eastern Ethiopia examined the factors and magnitude of treatment-seeking delays among new pulmonary tuberculosis patients at public health facilities. The results showed that patients with longer walking distances to the facility were 14.18% more likely to delay treatment seeking compared to those with shorter distances. The scattered population and challenging terrain make it even more difficult to reach a medical facility (Getiye et al., 2024).

The primary obstacle to tuberculosis (TB) treatment during the COVID-19 lockdown, according to a research on patient-level obstacles to accessing TB care services in Uganda, was the interruption of transportation to the TB treatment facility. A number of factors contributed to this, including escalating transit costs, a lack of suitable transportation options, security concerns, and the fear of retaliation or incarceration (Bbuye et al., 2024).

In studies conducted in Tanzania and Ethiopia, individuals residing more than 10 kilometres from healthcare facilities had a lengthier duration before tuberculosis (TB) was diagnosed, in comparison to those residing within a 10 kilometres radius. In Nepal, Nigeria, Odisha, and southern India, further research has linked patient delays to increased walking distances to healthcare facilities (E. Santos et al., 2018).

According to a study conducted in the Oromia Special Zone, Amhara Region, researchers discovered that patients were more likely to seek medical attention for tuberculosis treatment if they lived a significant distance from a health centre. There is a 23-fold increase in the likelihood of higher wait times for patients whose homes are more than 10 kilometres from hospitals compared to those whose homes are within 10 kilometres. It took longer for patients to obtain their first consultation following a new pulmonary tuberculosis diagnosis if they lived more away from a

DOTS site, according to this study, which is in line with earlier studies in central Nepal. This may be the result of widely distributed populations and limited access to healthcare. (Abdu et al., 2020).

2.5 Socio-cultural factors

Results from a study on adults' care-seeking behaviours and their sociocultural understanding of tuberculosis in Mozambique's Zambezia province indicate that, when people are sick or distressed, they often turn to traditional healers for advice on where to find the problem, how to get rid of it, and how to prevent it from happening again (Give et al., 2024).

2.5.1 Knowledge and behavioural characteristic

The effectiveness of TB control initiatives increasingly depends on healthcare providers understanding their patients' health cultures. Research on the topic is needed to fill gaps in our understanding of how tuberculosis patients seek treatment and general health care, since the amount of time it takes to find a primary care physician is a strong predictor of health (Dantas, Enders, Oliveira, Vieira, Queiroz, Arcêncio, et al., 2018). at this research, patients with newly diagnosed TB at primary health institutions in South Africa had a high mean knowledge score when it came to tuberculosis and delayed health care seeking. Most of the patients were well-informed on tuberculosis symptoms and how it is transmitted. There was a strong correlation between educational attainment, prompt action in response to symptoms, and high levels of general TB awareness. The majority of patients, however, were unaware that tuberculosis therapy requires six months. Having been diagnosed with tuberculosis of the lungs, this persisted (Makgopa & Madiba, 2021).

Almost half of the patients in this research waited at least one month before seeking treatment for their symptoms, and only 50% had excellent knowledge of tuberculosis, according to a study on patient paths and delays to diagnosis and treatment of TB in an urban context in Indonesia. There has to be an intervention to raise public awareness and understanding of tuberculosis (TB), because our findings are consistent with those of previous research showing that a lower education level is associated with a longer delay (Lestari et al., 2020).

Patients' health-seeking behaviour, adherence to a recommended treatment regimen, and treatment result might be impacted by a lack of awareness of tuberculosis (TB) and a knowledge barrier. This highlights the necessity for coordinated efforts to educate the public about tuberculosis (TB) and its treatment, as well as the merits of rethinking how they seek TB care. While 77.4% of participants said that tuberculosis might transform into HIV, and HIV infects tuberculosis patients, the truth is that participants in this survey lied about various aspects of tuberculosis and HIV, respectively. This idea may be explained by considering that tuberculosis is the leading cause of death for those who have both HIV and TB, and that South Africa has a high HIV prevalence. It is possible that some tuberculosis (TB) patients conceal their symptoms for fear of becoming HIV positive; this causes them to put off seeing a doctor and getting a diagnosis. (Datiko et al., 2020b).

Patients in other African nations wait for their symptoms to go away on their own because they don't think their tuberculosis is that bad or because they don't suspect they have the illness. Most people who are suspected of having tuberculosis seek medical attention because their condition is becoming worse. The delay in identification and treatment begins when a cough is left untreated until it becomes severe (Makgopa & Madiba, 2021).

Users' efforts to attain agility in treatment are reflected in the tendency for symptomatic patients to seek more urgent care at emergency services. Since the concept that primary care services provide minimal resolubility persists, it is crucial to note that the urgent search for hospital units may also be explained by the cultural pattern that concerns health. This pattern is connected to patients' views towards health services. Therefore, individuals seek tertiary care even if they have never been to a primary care physician before. (Dantas, Enders, Oliveira, Vieira, Queiroz, Arcêncio, et al., 2018).

Half of the families had strong knowledge, whereas half had inadequate knowledge, according to this survey. There are a lot of variables that might explain the family's degree of knowledge, such as the members' ages, levels of education, information, socioeconomic position, experiences, and environments. First, there is the body of information on tuberculosis (TB) and its origins. The majority of families had a solid understanding of what causes tuberculosis in children, according to this research. Families might take precautions against contracting the illness if they had more information about this. When individuals are aware of the harmful effects that will occur to their bodies if they do not get treatment right away, they are more likely to go straight to the healthcare institution to obtain treatment, which is why treatment knowledge influences healthcare-seeking behaviour (Saputra et al., 2020).

Community members in Ethiopia's Sidama Region exhibited a lack of understanding of the characteristics that put people at risk for tuberculosis, according to a research that looked at the length of time people waited before seeking medical attention for signs of the illness. Those who were well-versed on tuberculosis were less likely to put off seeking medical attention when they saw symptoms, perhaps because they were aware of the transmission routes and potential outcomes of the illness. (Jima et al., 2023)

An important factor associated with delays in seeking treatment for pulmonary tuberculosis was found to be knowledge about the disease, according to a study on this topic that was conducted among patients attending public health facilities in the Metekel zone, Benishangul Gumuz region, Western Ethiopia. There was a 1.64-fold difference in the likelihood that patients with strong understanding of PTB would seek therapy vs those with low information. The results were consistent with previous research in Mozambique, Nigeria, and other regions of Ethiopia. This shows that patients who didn't know much about the symptoms and progression of the disease delayed getting medical help because they hoped their symptoms would go away on their own or because they tried alternative therapies from people outside of the medical system, like traditional or religious healers, or because they used over the counter medications to treat themselves. (Animut et al., 2024).

A research conducted in Osogbo, Nigeria, found that over 50% of participants exhibited little understanding of the causes, transmission, and prevention of pulmonary tuberculosis (PTB). It was concerning that these individuals lacked a solid comprehension of the condition for which they were receiving treatment, even if the amount of knowledge was not linked to diagnostic delay. It is possible that this is a result of healthcare personnel' lack of competence in health education and counselling. (Olarewaju et al., 2023)

People who have TB often go to the doctor because they have a persistent cough and a high temperature. Weight loss, haemoptysis, and chest discomfort are among the less common symptoms.

Diagnostic delay was greater in women compared to males, according to a research on socioeconomic and behavioural characteristics related with TB in Lima, Peru. According to the study, women's tuberculosis care was often seen as secondary to men's, and prior qualitative research had described specific barriers to women obtaining health treatment. Women in Lima and other resource-constrained nations also had higher diagnostic delays compared to males, according to previous quantitative study (Bonadonna et al., 2018).

It is crucial to have sufficient knowledge about tuberculosis so that you can seek medical help promptly if you experience any symptoms, according to an institution based cross-sectional study on patient delay and related factors among tuberculosis patients in Gamo zone public health facilities, Southern Ethiopia. The study found that an individual's level of TB knowledge was significantly correlated with patient delay. Patients with a better understanding of tuberculosis (TB) and its treatment options are less inclined to postpone seeking medical assistance, as shown by the study. According to studies, people may be reluctant to seek out proper medical attention for tuberculosis (TB) because they are unaware about the disease and its treatment options. Several studies have shown that people put off getting therapy because they don't comprehend. (Arja et al., 2021).

Research on tuberculosis in Kenya has shown that many communities stigmatise TB sufferers. This is due to the fact that tuberculosis (TB) has long been linked to the Human Immunodeficiency Virus (HIV). As a result, newly diagnosed TB patients may be reluctant to seek treatment at health facilities for fear of being stigmatised, which might prolong the treatment process. When a sick person denies they have a medical condition, they may avoid getting treatment because they refuse to accept the reality of their illness. One possible cause of TB treatment delays in Kwale County is that most TB patients still think they are not sick with the disease, even when test results come back positive. Alternative treatments, also called "miti shamba," are another strategy for putting off contemporary tuberculosis therapy, which may prolong the time it takes to begin treatment. The delay in starting tuberculosis treatment is exacerbated when individuals believe in witchcraft as a cure for their condition rather than taking the prescribed medicine.

Because of the widespread belief that tuberculosis (TB) runs in families, people in the community may regard the illness as something that happens every year and not recognise the need to get treatment right once, which may lead to further delays. Many people in Kenya and the surrounding area seek medical attention based on their faith in miraculous healings. People often look to their religious leaders for "church miracles" to cure them of their illnesses. Patients with newly diagnosed tuberculosis (TB) are less likely to seek treatment immediately because they believe in such miraculous cure. (Juma et al., 2022).

2.5.2 Interest in health-related services

Suboptimal patient health-seeking behaviour and inadequate healthcare systems' efforts to achieving early diagnosis and quick treatment of every case of PTB are public health concerns that have been extensively documented in the vast literature on delay measures in diagnosis and treatment of PTB. The fight against TB has suffered a significant setback. (Bello et al., 2019).

The results of a grounded theory research on the variables that cause TB diagnostic delays and the health-seeking paths of patients in West Pokot County, Kenya, revealed that these pathways were varied. Participants adapted their own care plans and often switched providers since there was no standard protocol for tuberculosis treatment. When patients' problems persisted after visits to primary care physicians, herbalists, traditional healers, and self-medication, health-seeking trajectories revealed that they eventually sought treatment in a hospital. Although patients did suffer tuberculosis symptoms, they failed to associate them with the disease, leading them to self-medicate by buying drugs from pharmacy stores. Patients sought medical attention only when their symptoms became life-threatening. Drugstores and pharmacies are often people's first points of contact with healthcare, which is supported by other research. (Mbuthia et al., 2018a).

A research conducted in Ethiopia's Somali pastoralist context examined the factors that cause patients to wait too long for a pulmonary tuberculosis diagnosis. The study found that among these factors, the use of traditional or religious healers as first centres of treatment for 13.8% of patients significantly increased the waiting time. Individuals sought out informal healers and drug sellers as their first line of defence due to lengthy waiting times, distance, negative experiences, and a lack of faith in the quality of healthcare systems. Patients who have little understanding of tuberculosis (TB) or who associate TB with bad luck or a curse are more likely to seek out and trust traditional or religious healers, according to similar research. Patients and communities in need will continue to seek out traditional and religious healers as a result. Thus, including traditional/religious healers into tuberculosis (TB) services may aid in the early detection of suspected cases, the rapid referral to TB care facilities, the avoidance of improper treatment, and the correction of community misunderstandings and lack of information. (Getnet et al., 2019)

Because of the widespread belief that tuberculosis (TB) runs in families, people in the community may regard the illness as something that happens every year and not recognise the need to get treatment right once, which may lead to further delays. A lot of people in Kenya and the surrounding area believe in religious miracles, which affects how often they seek medical attention. People often look to their religious leaders for "church miracles" to cure them of their illnesses. Patients with newly diagnosed tuberculosis (TB) are less likely to seek treatment immediately because they believe in such miraculous cure. Finally, it has been noted that self-medication is a major issue, particularly in countries with few resources, since it has a detrimental impact on people's health-seeking habits. Obtaining OTC medications without a physician's prescription is a common practice in Kenya and the surrounding area. Since many tuberculosis (TB) positive people have been utilising OTC medications to manage their symptoms, this explains why many of them would go untreated. Since they are unaware they have tuberculosis, this might cause treatment to be postponed. Past research has shown that in some underdeveloped countries, delays in tuberculosis treatment are due in part to social and cultural factors. According to research out of Montenegro, people who aren't very fond of tuberculosis (TB) may be putting off starting treatment because they refuse to accept a positive diagnosis. A separate research out of Southern Ethiopia found that people delaying tuberculosis treatment due to seeking non-formal therapy was the most common reason. One of the main reasons tuberculosis (TB) patients are delayed in receiving treatment is because they are stigmatised, according to a research done in Addis Abeba. Patients with tuberculosis (TB) are more likely to put off seeking and maintaining treatment in nations with a low prevalence of the disease, and this is exacerbated when they are stigmatised for being TB patients. Delays and non-adherence to tuberculosis treatment were listed as repercussions of stigma in a Zambian research that looked at the topic. Researchers in Ethiopia found that in pastoralist groups, stigma and beliefs about witchcraft were major factors influencing people's health-seeking behaviours, which may explain why tuberculosis treatment is delayed. Additionally, religious beliefs are associated with a lower likelihood of receiving a tuberculosis diagnosis and, thus, a longer wait time for treatment. Delays in tuberculosis treatment have been linked to self-medication in Zimbabwe. (Arja et al., 2021).

Most patients in a grounded theory study on health-seeking pathways and causes of tuberculosis diagnosis delays in West Pokot County, Kenya began treatment at primary care clinics or private practices without TB diagnostic capabilities. More than 40% of tuberculosis patients began treatment in low-level hospitals without TB diagnostic capabilities, according to recent patient-pathway studies in five nations. These results are consistent with these findings. A tuberculosis diagnosis is not feasible in Kenya as the majority of clinics are run by community health nurses who do not provide laboratory services. Also, private practitioners, especially in rural regions, don't have the proper training or diagnostic tools to handle tuberculosis patients. However, they keep treating these patients without sending them to the right hospital because they're just too motivated to make a profit (Mbuthia et al., 2018a). The causes of pulmonary TB patients' delays in treatment were investigated in a study carried out in the Metekel zone, Benishangul Gumuz area, Western Ethiopia. Nearly twice as many patients with a history of seeing informal care providers as those without such a history delayed treatment from official care providers. Results from similar investigations in Mozambique, Zimbabwe, and Ethiopia corroborate these findings. Prior to visiting official healthcare facilities, 2/3 of patients in our research sought treatment from informal practitioners. This suggests that tuberculosis patients are more likely to seek out unofficial therapies, which might worsen their condition and raise the likelihood of community transmission (Animut et al., 2024).

Among tuberculosis patients in Mombasa, Kenya, 43% admitted to seeking over-the counter therapy from a pharmacy or chemist when their symptoms first appeared, according to a research on diagnostic delay and variables linked with delay. This demonstrates that getting treatment from a hospital that can diagnose tuberculosis was not the top priority for most of the respondents. This jibes with the results of previous comparable research that indicated many despondent people sought care from informal health providers, which led to a longer delay in tuberculosis diagnosis when contrasted with those whose initial visit was with a professional practitioner. Results showed that health-seeking behaviour significantly impacted the response time of the health system to tuberculosis diagnoses. Even though 43.7% of people went to a pharmacy or chemist first when they felt sick, only 18% went to a hospital or clinic that could diagnose tuberculosis; however, 43.7% of people got their diagnosis within three days of visiting a hospital or clinic that could diagnose tuberculosis. The diagnostic delay (health system delay) differed across public and private healthcare facilities for patients who sought treatment there. The public sector had a somewhat better response time (1.8 days) compared to the private sector (2.0 days), suggesting that public healthcare facilities were more efficient overall. The public health system took 1.5 days to begin treating patients after diagnosis, but private hospitals took 1.6 days. (Limo & Onyango, 2022).

Research in Africa has shown that many people still hold the superstitious notion that tuberculosis (TB) is a result of divine punishment for sins committed in the past, and as a result, they seek treatment from spiritual or traditional healers rather than medical professionals. Also, research out of Asia has shown that the idea that tuberculosis runs in families is false (Teo et al., 2021).

About 75.3% of respondents had sought assistance from faith healers even after receiving a TB diagnosis at the health care institution, according to a research on Knowledge, Beliefs, and Perceptions of TB and Its Treatment amongst TB Patients in the Limpopo Province of South Africa. A mere 3.3% admitted to seeking advice from traditional healers before seeking medical attention, while 2% admitted to continuing to do so even after receiving a diagnosis. Be cautious with the evidence since most respondents could be reluctant to tell an outsider who isn't familiar with their culture personal details about their experiences with traditional healers or cultural customs (Matakanye et al., 2021).

Regarding the socio-cultural variables that contribute to tuberculosis (TB) patients in Kwale County, Kenya, delaying the start of anti-TB treatment, self-medication is a major issue that has a detrimental impact on health-seeking behaviours in countries with limited resources. Obtaining OTC medications without a physician's prescription is a common practice in Kenya and the surrounding area. Because they have been treating tuberculosis symptoms with over-the-counter medications, many tuberculosis (TB) positive individuals will go untreated. Because of this, people may not seek treatment for tuberculosis (TB) for a longer period of time than necessary (Juma et al., 2022).

Reportedly, self-medication is a major concern that influences health-seeking behaviours adversely in resource-poor nations; this is one of the socio-cultural factors linked to patient delay among tuberculosis patients in Kwale County, Kenya. Obtaining OTC medications without a physician's prescription is a common practice in Kenya and the surrounding area. Because they have been treating tuberculosis symptoms with over-the-counter medications, many tuberculosis (TB) positive individuals will go untreated. Since they are unaware that they have tuberculosis, therapy may be postponed (Juma et al., 2022).

Only 50% of patients in an urban context in Indonesia had excellent information of tuberculosis, and almost half of those patients waited at least one month before seeking care for their symptoms, according to a research on patient route and delays to diagnosis and treatment of tuberculosis. Our results are in line with previous research showing that a lack of education is associated with a longer delay in treatment for tuberculosis (TB), further supporting the necessity for public education campaigns (Lestari et al., 2020).

In a different survey that included people from all throughout Bangladesh, 43.8% of patients went to private practitioners before going to public health facilities; however, in a rural context, this percentage was much lower. (Ehsanul Huq et al., 2018) found that 27.3% of Indonesians and 48.7% of Indians used private facilities.

In order to better understand which patients, go unnoticed by national control programs and how other medical professionals prolong infection in the community, it is helpful to analyse the health-seeking behaviour of patients enrolled in these programs.

2.5.3 Cultural and religious beliefs and practices

Traditional healers and herbalists, influenced by cultural misconceptions about tuberculosis (TB) and its origins, provided an alternative to scientific treatment. There seems to be a significant delay in tuberculosis (TB) diagnosis due to cultural and traditional traditions, including beliefs in witchcraft as a cause of sickness. The emergence of multidrug-resistant strains of tuberculosis (TB), greater community transmission of the disease, and postponed treatment are all outcomes that may be prevented via dispelling these misconceptions and raising awareness (Mbuthia et al., 2018a).

Researchers in Ghana found that people in both urban and rural areas felt that spiritual and societal causes were to blame for tuberculosis (TB). This discovery has important implications for efforts to abolish tuberculosis worldwide. Similarities between tuberculosis symptoms and those of other local illnesses said to have spiritual causes were also noted. People turned to folk and traditional healers for help because of the spiritual and social causes (Tabong et al., 2021).

According to research on the reasons that delay tuberculosis diagnoses in West Pokot County, Kenya, people often turn to traditional healers and herbalists instead of modern treatment because of cultural misconceptions about the disease's origins. This is in line with what Nyasulu et al. found, which is that cultural and traditional practices, together with beliefs in witchcraft as a cause of sickness, are significant factors that delay tuberculosis (TB) diagnosis. The emergence of multidrug-resistant strains of tuberculosis (TB), greater community transmission of the disease, and postponed treatment are all outcomes that may be prevented via dispelling these misconceptions and raising awareness. (Mbuthia et al., 2018a).

The notions regarding tuberculosis transmission via kissing, sharing utensils, utilising public restrooms, and exposure to airborne saliva underscore the necessity of precise information dissemination to mitigate stigma, informed by perceptions, beliefs, and misconceptions related to tuberculosis among pulmonary patients experiencing delayed healthcare access in a high-burden TB region in Nigeria. A role for cultural behaviours in tuberculosis transmission has been highlighted in our results, which are in line with research in Indonesia. Beliefs on genetic transmission and the need of isolation held by participants reveal hidden anxieties and misunderstandings (Adeoye et al., 2024).

People in the community may put off getting treatment for tuberculosis (TB) because they assume the illness runs in families and see it as something that happens every so often. Many communities in Kenya and the surrounding area have shifted their health-seeking habits due to their belief in religious miracles. Many individuals put their faith in "church miracles" produced by clergy members in the hopes of overcoming serious health problems. The delay in treatment for tuberculosis (TB) is caused by patients' beliefs in such miraculous cure, which explains why they do not seek treatment soon after being diagnosed. (Juma et al., 2022).

There was a correlation between religious affiliation and the number of times TB patients in one eastern Indian state visited the doctor, according to another research on health-seeking behaviour. Everyone believes that members of the same religion share the same set of core beliefs, which may have an effect on patients' propensity to seek medical attention (Samal, 2024).

Based on a research conducted in Osogbo, Nigeria, on characteristics that impact diagnostic delay among pulmonary TB patients, the probabilities of delay were lower for Muslims and greater for Christians compared to traditional worshippers. Possible explanations include the widespread use of herbal remedies among traditional worshippers and the strong faith healing practice among Christians. The participants in that survey generally believed that sickness may have three possible causes: God, Allah, or witchcraft. They also believed that although illnesses caused by God or Allah could be cured in hospitals, those caused by witchcraft could only be treated by traditional healers. The significance of religious and cultural beliefs in shaping healthseeking behaviour is highlighted by these results. Additionally, they suggest that community health-related habits may be changed via the influence of religious and cultural leaders (Olarewaju et al., 2023).

Patients' cultural orientation greatly influences their decision to seek help from traditional healers, even though the vast majority of respondents (92.3%) to a study on tuberculosis (TB) and its treatment in South Africa believed that traditional medicine could not cure the disease. Patients find it more challenging to adhere to their treatment regimens when cultural and traditional beliefs challenge the presence of HIV. When it comes to long-term therapy, cultural factors greatly impact how patients behave. Cultural beliefs are a common reason why patients do not follow treatment plans. Prior to, during, and after tuberculosis treatment, people reported using herbal or natural medicines (Matakanye et al., 2021).

In addition to cultural and gender norms, women were putting off diagnosis for a variety of reasons, including childcare, caring for older relatives, restricted decisionmaking power, and a lack of access to financing, while males were putting it off because they were afraid they would lose their jobs. All things considered, accessibility would be greatly enhanced by outreach case finding, which would include screening and diagnosis at nearby accessible places, available outside of normal facility hours, and a decrease in out-of-pocket expenses. (Turusbekova et al., 2022).

Delays in tuberculosis treatment may be due, in part, to the fact that most patients in Kwale County falsely assume they are not ill, even when test results come back positive. Alternative treatments, also called "miti shamba," are another strategy for putting off contemporary tuberculosis therapy, which may prolong the time it takes to begin treatment. The delay in starting tuberculosis treatment is exacerbated when individuals believe in witchcraft as a cure for their condition rather than taking the prescribed medicine. Because of the widespread belief that tuberculosis (TB) runs in families, people in the community may regard the illness as something that happens every year and not recognise the need to get treatment right once, which may lead to further delays. Many people in Kenya and the surrounding area seek medical attention based on their faith in miraculous healings (Juma et al., 2022).

It has been noted that there is a gender gap in the way people seek medical attention, with males being more reluctant to do so when they are unwell, particularly in the context of HIV and tuberculosis treatment. Men made up the bulk of individuals experiencing symptoms but choosing not to seek treatment (65%) in the confirmed cases survey. This, in addition to the fact that men had 2.5 times the TB burden as females and twice as much as what was reported through routine surveillance, indicates that Kenya has to devise targeted strategies to eliminate barriers to access, shorten diagnosis times, and enhance TB management for men. The study found that two thirds of the prevalent cases were reported by those between the ages of 15 and 44, and the highest prevalence was seen in the 25-34 age group. This indicates that tuberculosis illness in Kenya is characterised by active transmission in the community (Enos et al., 2018b).

Religion has been shown to be a significant component in getting a tuberculosis diagnosis and, therefore, in delaying tuberculosis treatment, according to a research on socio-cultural factors linked to patient delay in starting anti-TB medications among tuberculosis patients in Kwale County, Kenya (Juma et al., 2022).

2.5.4 Stigma related factors

A cross-sectional research in Dalian, Northeast China, examined the factors that contribute to stigmatisation of tuberculosis and found that it significantly impacts the effectiveness of TB control efforts. In a pioneering study on tuberculosis (TB) patients in Dalian, Northeast China, researchers found that, compared to a study in Central China, the participants in this one had a lower mean score of 9.07 for TB related stigma. Half of the individuals (50.42 percent) reported feeling somewhat or highly stigmatised. Patients with tuberculosis in Dalian, Northeast China, faced a great deal of stigma, according to this finding. Furthermore, 48.42% of patients were hesitant to disclose their disease to friends or co-workers, according to the survey. Similar to numbers reported in other papers, over 50% of patients avoided socialising with others after getting tuberculosis. (Chen et al., 2021).

Cultural beliefs and myths about tuberculosis impact people's views of vulnerability and severity, which in turn causes them to postpone seeking healthcare, according to a study on insights, beliefs, and myths about tuberculosis among pulmonary patients with delayed healthcare access in a high-burden TB state in Nigeria. Timely diagnosis and treatment are hindered by the stigmatisation of tuberculosis and misconceptions about how the disease is spread. It is important to provide factual information in order to decrease stigma, especially with misconceptions and assumptions about tuberculosis transmission via kissing, sharing plates, using public bathrooms, and exposure to airborne saliva. A role for cultural behaviours in tuberculosis transmission has been highlighted in our results, which are in line with research in Indonesia. Beliefs on genetic transmission and the need of isolation held by participants reveal hidden anxieties and misunderstandings (Adeoye et al., 2024).

Some individuals were more likely to conceal their tuberculosis (TB) diagnosis out of fear of social exclusion as a result of the disease's associated stigma. The common belief that tuberculosis (TB) is a sign of being unclean or infectious likely contributed to this stigma. Since Eswatini is one of the top 30 nations in terms of tuberculosis (TB) and HIV/AIDS prevalence, the widespread belief that a person with a TB diagnosis must also be HIV positive likely contributed to the already severe stigma that these patients faced (WHO, 2020) (Nyembezi, 2025).

One of the independent variables that predicted a worse treatment result in our research was perceived stigma. One of the biggest obstacles to early diagnosis and effective treatment completion is tuberculosis stigma. There was a correlation between patients delaying their journey to tuberculosis (TB) centres and seeking treatment in healthcare facilities without or with inadequate TB tests, according to a comprehensive analysis spanning low-, middle-, and high-income nations. This data suggests that people suspected of having tuberculosis navigate a complicated healthcare system to get the diagnosis and treatment they need. People often put off going to the doctor once their symptoms start because of this. Traditional healers made women feel comfortable, whereas hospital staff sometimes mistreated them, according to the women. In addition to the client's desire for psychological comfort, this might be an indication of abuse and poor quality of treatment in public health institutions (Mhalu et al., 2019).

Some individuals were more likely to conceal their tuberculosis (TB) diagnosis out of fear of social exclusion as a result of the disease's associated stigma. The common belief that tuberculosis (TB) is a sign of being unclean or infectious likely contributed to this stigma. Since Eswatini is one of the top 30 nations in terms of tuberculosis (TB) and HIV/AIDS prevalence, the widespread belief that a person with a TB diagnosis must also be HIV positive likely contributed to the already severe stigma that these patients faced (WHO, 2020). (Nyembezi, 2025).

Researchers in Uganda found that among people living in urban slums, those who knew someone who had died from tuberculosis were far more likely to have high levels of stigma against disease themselves. Although tuberculosis (TB) fatalities may occur on their own, some people tend to lump them in with HIV/AIDS deaths, which might explain why there is a correlation between the two. This confirms the results of a related research that indicated the highest and most exact correlation between knowing someone who died of tuberculosis and greater levels of TB stigma. Based on these results, it seems that efforts to lessen the stigma associated with tuberculosis will have a beneficial effect on the use of TB/HIV services. (Ashaba et al., 2021)

2.6 Management of TB

With 1.6 million fatalities in 2017, tuberculosis (TB) continued to be a major concern for public health across the world. By 2035, the world TB objectives hope to have reduced tuberculosis (TB) fatalities by 95%, TB incidence by 90% from 2015 levels, and the catastrophic costs incurred by TB-affected families by 0%. These goals can only be reached by determining the real burden of tuberculosis and then increasing the effort to identify all incident cases. The gold standard for measuring tuberculosis burden in nations without reliable vital registry and health notification systems is tuberculosis prevalence surveys (MacNeil, 2020).

Based on the spatial analysis of tuberculosis (TB) cases in Brazil and Japan, respectively, it was found that the risk of tuberculosis (TB) was positively correlated with the population density per square metre (kernel), suggesting that a one-unit increase per area would substantially increase the risk of TB. In the other regions, there were low-risk zones, although the kernel density estimate did identify six clusters of high-density locations that posed a concern.

It is possible to treat and even cure tuberculosis. Patients with active, drug-susceptible tuberculosis are treated with conventional antimicrobial medications while receiving emotional and practical assistance from a healthcare provider or volunteer. Treatment adherence becomes more challenging in the absence of such assistance. Tuberculosis (TB) detection and treatment saved the lives of about 58 million people from 2000 to 2018 (*Treatment for TB Disease | Treatment | TB | CDC*, 2019).

Human development is profoundly affected by the disease load caused by tuberculosis (TB). Despite efforts to address it, this disease continues to be a leading killer and public health problem.

Based on the conceptual framework of variables contributing to TB diagnostic delays, it is clear that the various treatment routes cause significant delays due to various causes. There were four main groups into which the elements were divided: sociodemographic, clinical, socio-economic, and socio-cultural.

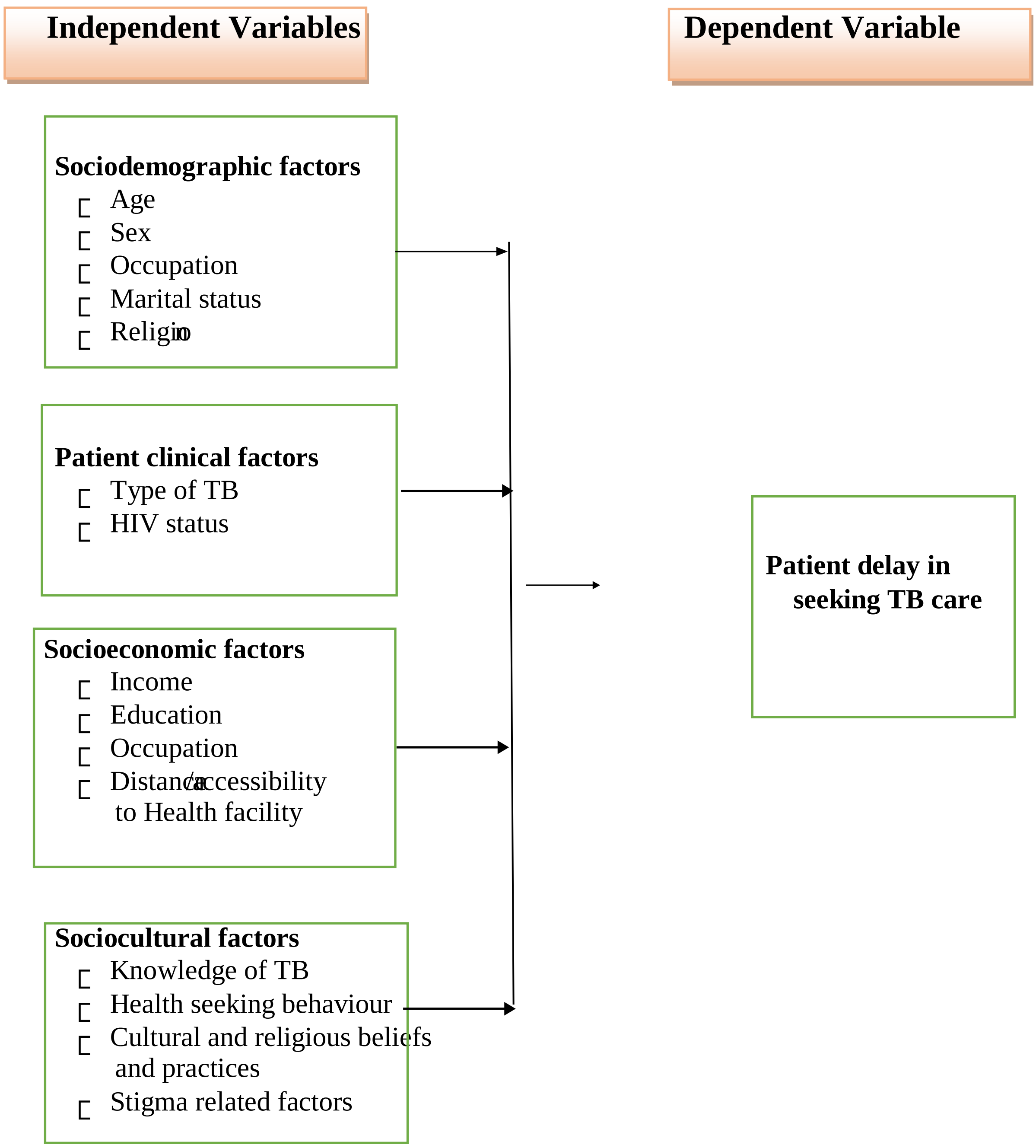

Figure 1: Conceptual framework

Source: The conceptual framework modified and adopted a model of Patient Delay as proposed by Andersen et al., (1995).

CHAPTER THREE: MATERIALS AND METHODS

3.1 Study Area

The research was done in Kajiado County, Kenya. The total area of Kajiado County is 17,944 square kilometres. Kajiado Central, North, South, East, and West are the five sub-counties that comprise the county. In southwestern Kenya is Kajiado County, it shares boundaries with Tanzania to the south, Narok County to the west, Counties; Makueni, Taita Taveta, and Machakos to the east, and Counties Nakuru, Kiambu, and Nairobi to the north.

In addition to diagnostic capabilities and inpatient facilities, therapeutic services are provided by the county referral hospital and sub-county hospitals. Two sub-county hospitals and the county referral hospital provide PCR testing (gene Xpert), whereas all sub-county hospitals and the county referral hospital have sputum smear microscopy accessible for tuberculosis diagnosis.

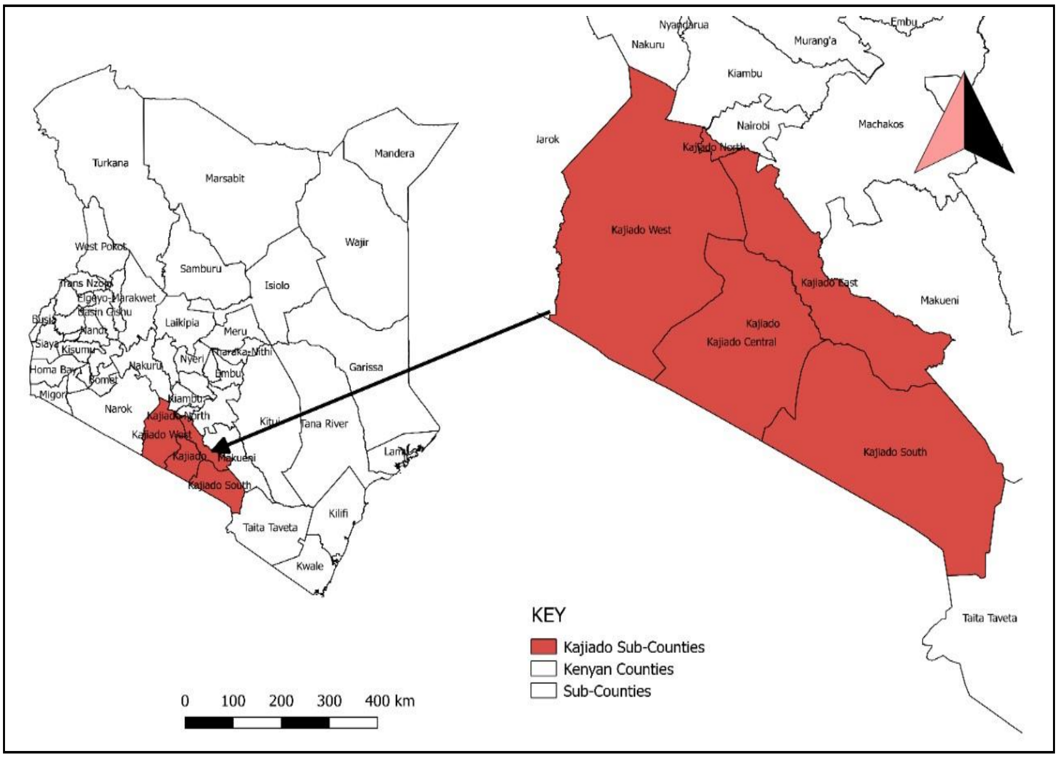

Figure 2: A map showing the location of study area

3.2 Study Population

During the research period (May - August 2021), patients undergoing tuberculosis treatment at the County Referral Hospital and the four Sub-County Hospitals made up the study population.

3.2.1 Inclusion Criteria

TB patients who were $\geq$15 years were recruited for the study.

3.2.2 Exclusion Criteria

Excluded from the study were those who were too ill to participate and those whose treatment duration exceeded four months.

3.3 Study Design

A facility-based cross-sectional research design was used

3.4 Sample Size Determination

The current percentage of tuberculosis patients who experience delays is unclear, since no research has been undertaken to assess the delay in receiving a tuberculosis diagnosis in Kajiado County. Nonetheless, a prior research conducted in Western Kenya revealed that 64% of patients arrived late to the health centre (*Ayuo et al, 2008*). Therefore, the proportion was estimated to be 0.64. To the sample size the Cochran formula (Cochran 1977) was used and the following assumption was made:

$n = (Z)^2pq/ d2$ Where; n = required sample size

Z=1.96 (confidence level at 95%) Value of the standard normal distribution corresponding to a significance level of a (1.96 for a 2-sided test at the 0.05 level).

d = Level of precision at 5% (standard value of 0.05) p = Expected proportion in the population and q = 1-pn= $(1.96)^2 (0.64) (1-0.64)/ (0.05)^2 = 354$

3.5 Sampling Procedure

Purposive sampling technique was used to identify the health facilities in Kajiado County, one facility per sub-county namely; Kajiado County Referral Hospital, Kitengela Sub-county Hospital, Ngong Sub-county hospital, Oloitokitok Sub-county Hospital and Oltepesi Health Centre. These were selected as study sites because they reported high TB caseloads in 2020 and also because of their diagnostic capacity as they are designated as sub-county TB diagnostic referral sites.

Total sample size was proportionately distributed to the five selected health facilities based on their previous three quarters estimated number of registered TB patients to obtain a self weighing sample with all people having the same chance of being enrolled. Participants were consecutively recruited (per site) in each of the five selected health facilities of TB patients within the specified time period (May – August, 2021) until the intended sample size of 354 participants was met.

Table 1: Sample size distribution of TB cases per facility

TB Control Zone	Health Facility	Proportion (%)	Sample Size
Kajiado North	Ngong Sub-County Hospital	21	74
Kajiado East	Kitengela Sub-County Hospital	29	103
Kajiado Central	Kajiado County Referral Hospital	17.2	61
Kajiado South	Oloitokitok Sub-County Hospital	17	60
Kajiado West	Oltepesi Health Centre	15.8	56
County		**100**	**354**

3.6 Data collection procedures

Data was collected through semi-structured questionnaires administered to patients attending the clinic during the study period by the principal investigator (PI) with assistance from research aides, following treatment by the clinician, utilising an exit interview approach that commenced with obtaining informed verbal consent from the participant or guardian. Research assistants were college-educated persons and university students with research abilities, who received orientation from the principal investigator on the study protocol and a comprehensive, step-by-step review of the methods done. Patients with tuberculosis who visited the selected healthcare institution and fulfilled the inclusion criteria were interviewed. Informed agreement was obtained from tuberculosis patients who fulfilled the inclusion criteria prior to the distribution of the research questionnaire. The questionnaire included sociodemographic parameters, clinical data, socio-economic factors, and health-seeking behaviours. A standardised questionnaire administered by an interviewer was used to gather quantitative data. The survey had two sections. Part A consisted of 6 questions aimed at gathering socio-demographic information, whereas Part B focused on investigating TB patient delays among the research participants.

3.7 Data Analysis

Entered into MS Excel, cleaned and analysed using MS Excel and Epi Info version 7.2. Continuous data was used to compute descriptive statistics, whereas categorical data was used to determine proportions.

The questions on previous patient satisfaction survey on health care service was answered using a 5-point likert scale.

The median was used as the cut-off value for patient delay analysis, and variables related with patient delay were identified by unconditional logistic regression analysis. We tested for relationship (between the relevant parameters and patient delay) using bivariate and multivariate analysis.

Along with this, we determined the 95% CI and prevalence odds ratio (pOR). For multivariate analysis, factors were included if their P value was less than or equal to 0.2. A meaningful association between patient delay and multivariate analysis was defined as a P value of 0.05 or below.

3.8 Ethical Consideration

Approval to conduct the research was obtained from Moi University and Moi Teaching and Referral Hospital Institutional Research and Ethics Committee *(IREC)* with approval **FAN:0003716** at the College of Health Sciences. Further clearance was sought from the National Commission for Science, Technology, and Innovation (NACOSTI) who granted a research permit of licence No. **NACOSTI/P/21/8533.**

Authorization to conduct the study was requested from the County Director of Medical Services, Kajiado County with authorization reference number **CGK/MEDICAL SERVICES/01/VOL. 11/6.**

Consent was obtained from the participants before the study. This was to ensure that the participants were able to make an informed decision as to whether they were to participate in the evaluation or not. The consent was obtained by the participant signing the informed consent form (Appendix 1). Assent was sought from minors (those below 18 years) and consent for their participation was obtained from their parents/guardians. Respect for the dignity of research participants was prioritized by ensuring that research participants were not subjected to harm in any way whatsoever. This commitment was assured by signing an informed consent form in an effort to protect research participants. The participant was advised that their participation is optional and that they may withdraw at any time without any alteration in the level of treatment. The confidentiality of study participants was safeguarded. The confidentiality of the study data was adequately maintained by refraining from sharing it with other parties and by excluding participants' IDs from the data analysis.

The data was saved on password-protected computers and used only for research purposes.

CHAPTER FOUR: RESULTS

4.1 Description of socio-demographic characteristics

A total of 354 TB patients (100% participation rate) were enrolled in the 4 months study period to participate in the study. The respondents were then interviewed at the five selected sites (Kajiado County Referral Hospital and the four Sub-County Hospitals) from May through to August 2021.

4.1.1 Socio-demographic characteristics of study participants

Of the 354 study participants, their information was given by self, 331 (93.5%). Participants' age ranged from 16–84 years with a mean age of 28 years (SD of ±13years); 115(32.5%) were aged 16–25 years; 221 (62.4%) were male, 103 (29.1%) were from Kajiado East Sub County, 335 (94.6%) were Christians and 148 (41.8%) had primary.

Table 2: Participants' socio-demographic factors

Characteristics	Response	Freq, N=354	Percentage (%)
Age Group	16-25	68	19.2
	26-35	**115**	**32.5**
	36-45	76	21.5
	46-55	57	16.1
	56-65	25	7.1
	>65 Years	13	3.7
Sex	Female	133	37.6
	Male	**221**	**62.4**
Residence	Kajiado Central	61	17.2
	Kajiado East	**103**	**29.1**
	Kajiado North	74	20.9
	Kajiado South	60	16.9
	Kajiado West	56	15.8
Religion	**Christian**	**335**	**94.6**
	Islam	19	5.4

4.1.2 Clinical characteristic of the study participants

Patients who had Pulmonary TB were 323 (91.2%), and among 353 (99.7%) tested for HIV, 57 (16.1%) were HIV positive. Majority of patients reported with a combination of symptoms at the onset of illness with coughing, fever and night sweat being the most reported symptoms.

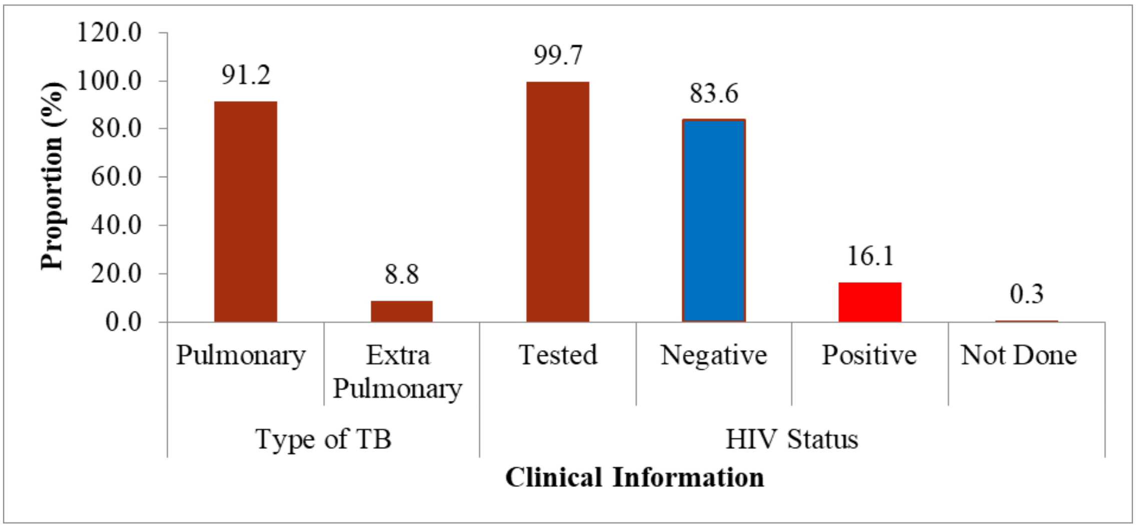

Figure 4.1.2: Patient clinical characteristic

4.1.3: Socio-economic characteristic of participants

Based on the distribution of socio-economic characteristics, less than half 143 (40.4%) of the respondents were unemployed, and majority 24 (45.2%) out of 53 participants who reported the distance they covered to get the diagnosis to have travelled between 31-100km to reach the health facility where they were diagnosed of TB. Interms of time taken to access a health facility, majority 135 (43%) took between two to five hours to reach the health facility. More than half 178 (50.3%) of the participants reported accessibility resulting to convenience of transport as a challenge while seeking care. Lack of time and expense did not affect the quest to seek care among majority of the participants with only 18 (5%) reporting that they lacked time to visit a health facility and only 12 (3.3%) delayed to seek care as a result of being expensive.

Table 3: Socio-economic characteristic of the participants

	Response	Frequency	Percentage
Occupation status	Employed	113	31.9
	Unemployed	**135**	**38.1**
	Self Employed	106	30.0
Distance to Health Facility	**Distance (Km)**	**No. of patients**	**%**
	0-5	5	9.4
	6-10	7	13.2
	11-20	10	18.9
	21-30	7	13.2
	31-50	**12**	**22.6**
	51-100	**12**	**22.6**
Education Level	**None**	**111**	**31.4**
	Postsecondary/ College	**25**	**7.1**
	Primary	**148**	**41.8**
	Secondary	**69**	**19.5**
	University	**1**	**0.3**
Accessibility/ convenience of transport	**Yes**	**178**	**50.3**
	No	176	49.7
Lack of time	Yes	18	5
	No	336	95
Expensive	Yes	12	3.3
	No	342	96.6

4.1.4 Socio-cultural characteristics of the study participants

On regards to knowledge about TB diagnosis, a relatively small proportion of patients 98 (27.75%) had knowledge on TB infection and its diagnosis. However, majority can relate the symptoms they had with TB; 321 (90.7%) reported that cough is a TB symptom, while 270 (76.3%) reported that TB is transmitted through the air.

Table 4: Socio-cultural of participants

Variables	Response	Freq	%
Knowledge of TB	No	270	**76.3**
	Yes	84	23.7
TB associated stigma	No	192	54.2
	Yes	162	45.8
Previous unsatisfactory experience	No	15	4.2
	Yes	339	**95.8**
Not aware of the severity of symptoms	No	250	**70.6**
	Yes	104	29.3

4.2 Patient Delay in seeking Tuberculosis diagnosis

On tuberculosis diagnosis, of 354 TB patients 164 (46.3%) 95% CI (31.3-61.6) had patient delay. The median patient delay was 28 days (IQR 7.28) and a mean of 28 days (± 20).

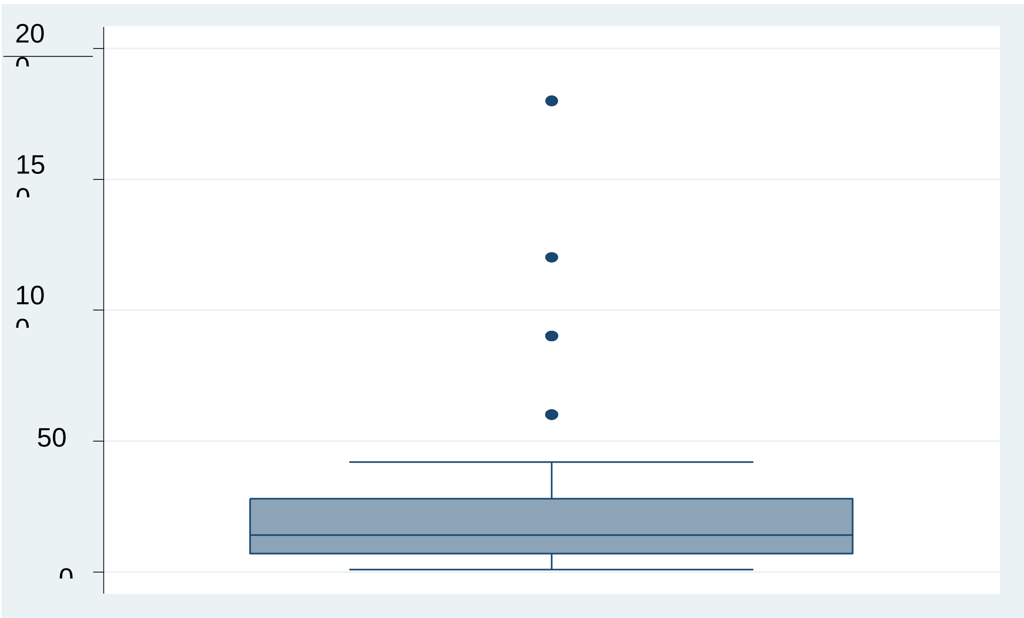

Figure 4.2: Patient Delay in seeking Tuberculosis diagnosis

4.2.1 Characterisation of patients diagnosed with TB

Among the study participants who experienced patient delay, n=164, females were 133 (37.6%) out of which 68 (51.1%) of them experienced delay, of the 111 (31.4%) respondents with no formal education 60 (54%) experienced patient delay, 135 (38.1%) of the respondents were not employed among them 68 (50.4%) had patient delay, among the 31 (8.8%) with EPTB 15 (48.4%) experienced delay. Respondents who were HIV positive were 57 (16.1%) and 29 (50.9%) of them experienced patient delay, in regards to respondent's knowledge on TB, 47 (44.7%) did not know what TB is and out of which 37 (39%) of them had patient delay, 104 (29.4%) of the study participants did not know the cause of TB and 95 (26.8%) of this group experienced patient delay. One hundred and six (29.9%) respondents were not aware of TB severity out of which 49 (46.2%) experienced patient delay, respondents who reported that they feared losing their job if they expose their TB status were 106 (29.9%) and 58 (54.7%) of them experienced patient delay,

Of the 20 (5.6%) who reported that TB treatment is expensive and lacked time to seek medical attention, 12(60%) of them experienced patient delay and 178 (50.3%) of the respondents reported that they lacked access to health facilities out of which 103(58%) of them experienced patient delay.

Table 5: Characterization of TB patients

Variables	Response	Total; N=354	TB Patient delay outcome, N=354	
			No Delay (n=190)	With Delay (n=164)
		Freq (%)	Freq (%)	Freq (%)
Socio-demographic characteristics				
Gender	F	133 (37.6)	65 (48.9%)	**68 (51.1%)**
	M	221 (62.4)	125 (56.6%)	96 (43.4)
Education Level	Formal	243 (68.6)	139 (57.2%)	104 (42.8%)
	None	111 (31.4)	51 (46%)	**60 (54%)**
Employment	Employed	219 (61.9)	123 (56.2%)	96 (43.8%)
	Not Employed	135 (38.1)	67 (49.6%)	**68 (50.4%)**
Clinical Characteristics				
Type of TB	PTB	323 (91.2)	174 (53.9%)	149 (46.1%)
	EPTB	31 (8.8)	16 (51.6%)	**15 (48.4%)**
HIV Status	Negative	298 (84.2)	162 (54.7%)	135 (45.3%)
	Positive	57 (16.1)	28 (49.1%)	**29 (50.9%)**
Socio-economic characteristics				
Fear of losing job	No	248 (70.1)	142 (57.3%)	106 (42.7%)
	Yes	106 (29.9)	48 (45.3%)	**58 (54.7%)**
Expensive	No	334 (94.4)	182 (54.5%)	152 (45.5%)
	Yes	20 (5.6)	8 (40)	**12 (60%)**
Lack of time	No	334 (94.4)	184 (54.8%)	152 (45.2%)
	Yes	20 (5.6)	6 (40%)	**12 (60%)**
Lacked Accessibility	No	176 (49.7)	115 (65%)	61 (35%)
	Yes	178 (50.3)	75 (42%)	**103 (58%)**
Sociocultural factors				
TB Knowledge	Yes	259 (73.2)	132 (50.9%)	127 (49.1%)
	No	95 (26.8)	58 (61%)	**37 (39%)**
Knows cause of TB	No	104 (29.4)	57 (55.3%)	**47 (44.7%)**
	Yes	250 (70.6)	133(53%)	117 (47%)
Not aware of severity of symptoms	No Yes	248 (70.1) 106 (29.9)	133 (54%) 57 (53.8)	115 (46%) **49 (46.2%)**
Stigma	No	192 (54.2)	146 (76%)	46 (24%)
	Yes	162 (45.8)	44 (27.2%)	**118 (72.8%)**
Lack of previous satisfaction	No Yes	339 (95.8) 15 (4.2)	182 (53.7%) 8 (53.3%)	157 (46.3%) **7 (46.7%)**

4.3 Factors associated with patient delay

4.3.1 Bivariate analysis of factors associated with Patient delay

In Bivariate analysis, various risk factors were evaluated for association with patient delay among the study participants and these included; **Socio-demographic characteristics** (Sex, Age, Residence, Level of Education and Marital status), **Socioeconomic characteristics** (Employment status, Lack of time and Accessibility) **Patient clinical characteristics (**Type of TB, HIV Status) and **Sociocultural characteristics** (TB Knowledge, Health seeking behaviour, cultural and religious beliefs and practices and Stigma).

We compared respondents who experienced patient delay and those who did not. Patients who lacked time to seek medical attention had two times the odds of experiencing patient delay when compared to those who had time (pOR= 2.4 (95%CI,0.89-6.6), P Value 0.1. Patients who had no accessibility treatment facilities had six times the odds of patients delay compared to those who had accessibility (pOR 6.0 (95%CI,3.71-9.8), P Value <0.001. Respondents who did not know about the cause TB had nine times the odds of experiencing patient delay compared with those who knew of TB (pOR=8.5(95%CI, 8.5 (5.27-13.7), P Value <0.001. Those who reported that TB patients are stigmatized in the community had also 6 times the odds of experiencing patient delay compared to their counter parts (pOR =5.7 (95%, CI, 3.58-9.06), P Value <0.001 (Table 6)

Table 6: Bivariate Analysis of factors associated with TB patients delay

Factors		TB Patient delay Outcome, N=354		pOR (95% CI)	P Value
Socio-demographic factors		**No characteristics Delay (n=190)**	**With Delay (n=164)**		
Sex	Female	65	68	Ref	
	Male	125	96	0.7 (0.48-1.13)	0.2
Level of Edu	**Formal** Education	139	104	Ref	
	None	51	60	1.6(1.001-2.47)	0.06
Socio-economic characteristics					
Employment Status	**Em**	123 67	96	Ref	
	Not Employed		68	1.3 (0.85-2.0)	0.3
Expensive	**No**	182	160	Ref	
	Yes	8	4	0.6 (0.17-1.92)	0.5
Lack of time	**No**	184	152	Ref	*
	Yes	6	12	2.4 (0.89-6.6)	**0.1**
Lacked accessibility	**No**	75	61	Ref	* **<0.001**
	Yes	115	103	6.0 (3.71-9.8)	
Patient Clinical Factors					
Type of TB	**PTI**	174	149	Ref	
	ETB	16	15	1.2 (0.59-2.59)	0.6
HIV Status	**Pos**	28	29	1.2 (0.7-2.19)	0.5
	Negative	162	135		
Socio-cultural Factors					
TB Knowledge	**Yes**	132	127	Ref	
	No	58	37	0.7 (0.41-1.07)	0.1
Don't Know cause of TB	**No**	133 57	47	Ref	* **<0.001**
	Yes		117	8.5 (5.27-13.7)	
Being Stigmatized	**No**	146 44	46	Ref	* **<0.001**
	Yes		118	5.7 (3.5829.062)	
Discrimination	**No**	128	112	Ref	
	Yes	62	52	1 (0.61-1.49)	0.9
Not knowing the severity of TB	**No**	135 55	115		
	Yes		49	1.0 (0.66-1.65)	0.9

pOR= Prevalence Odds Ratio, CI=Confidence Interval, *= Significant variables in bivariate analysis with P≤0.2

4.3.2 Multivariate analysis for factors associated with patient delay

In multivariate analysis, independent factors associated with patient delay among TB patients in Kajiado County were; Not knowing the cause of TB and Lack of accessibility for treatment. Patients who did not know the cause of TB had four times the odds of experiencing delay when compared to those who knew the cause of TB (knew (aOR= 4.1, 95% CI: 2.13-7.96), P-Value <0.02, TB patients who had no accessibility for treatment had three times the odds of experiencing patient delay compared to those who had accessibility (aOR= 2.9, 95% CI: 1.22-6.4), P-Value <0.04 compared to those who had accessibility and respondents who reported that there is stigma among TB patients in the community had 2 times the odds of experiencing patient delay compared to those who knew (aOR= 2.1, 95% CI: 0.91-5.31), P-Value <0.005.

Table 6: Multivariate Analysis of risk factors associated with TB patients delay

Factors		No Delay (n=190)	With Delay (164)	pOR (95% CI)	P Value	aOR (95% CI)	P Value
		TB Patient delay Outcome, N=354					
Don’t Know cause of TB	No	133	47	Ref	**		
	Yes	57	117	8.5 (5.2713.7)	<0.0001	4.1 (2.137.96)	**0.02**
Lacked accessibility	No	115	61	Ref	**		
	Yes	75	103	6.0 (3.719.8)	<0.0001	2.9(1.226.4)	**0.04**
Lack of time	No	184	152	Ref			
	Yes	6	12	2.4 (0.896.6)	0.1	0.9(0.04-1.09)	0.9

pOR= Prevalence Odds Ratio, CI=Confidence Interval, **= Significant variables in multivariate analysis with P≤0.05

CHAPTER FIVE: DISCUSSION

Tuberculosis (TB) is prevented if individuals have access to healthcare for timely diagnosis and treatment. Examining the reasons linked to patient delay is a crucial first step in determining how to enhance the quality of tuberculosis treatment and management. This research aimed to ascertain the delay in diagnosis-seeking behaviour and the related variables among tuberculosis patients in Kajiado County. The World Health Organization's measures to reduce tuberculosis morbidity and death globally include early case diagnosis and treatment of patients. The study's findings indicated that 46.3% of patients sought treatment at a health institution more than 28 days following the beginning of tuberculosis symptoms.

Our research yielded data consistent with another investigation conducted in Yantai, China (Zhu et al., 2024), and aligns with other investigations reporting a median of 28–30 days in Gambia (Owolabi et al., 2020), In Southern Ethiopia (Arja et al., 2021), in Primary Health Facilities in an Urban District, South Africa (Makgopa & Madiba, 2021) and in Somali Pastoralist Setting of Ethiopia (Getnet et al., 2019). The median of the study was lower than that of a study carried out in Mehrauli area of Delhi, India (had a median of 48.9 days), (Kamaraj et al., 2021). However, tuberculosis patients delay was higher compared with those of other studies in Bangladesh (median, 7 days) (Noman et al., 2024), China (median, 10 days) (Wang et al., 2023), median of 20 days in Gurage and Siltie zones, South Ethiopia (Wako et al., 2021).

Comprehending the causes linked to patient delays is essential for reducing tuberculosis morbidity and death. The primary predisposing variables related with patient delay include a lack of information and a lack of accessibility. Possessing sufficient understanding about TB is essential for seeking timely medical assistance.

Our research indicated that insufficient understanding about the aetiology of tuberculosis was substantially correlated with patient delay. This suggests that the degree of information and comprehension of the condition may account for differences in delays. The outcome was corroborated by the latest national tuberculosis prevalence survey, indicating that less than half of TB patients satisfy the "TB suspect" criterion.

The results may be explained by the observation that patients see these symptoms as transient indicators of a broader illness, noting that the manifestations in tuberculosis patients may seem similar to those of other illnesses and not particularly severe, lacking clinical complications such as cough. Consequently, it is believed that the lack of understanding about symptoms and signals justifies patients' neglect in addressing the issue. These circumstances may exacerbate the delay in diagnosing the illness.

This agreed with finding from other studies like a study among patients in a pastoralist community in Kenya (Mbuthia et al., 2018b) and another in Southern Ethiopia (Arja et al., 2021) that associated poor knowledge on causes of TB with delay in diagnosis of the same.

Although odds ratios were greater for patients with lower knowledge levels, this study's results contrasted those of previous Montenegrin research (Bojovic et al., 2018) that found no significant connections between patients' knowledge levels and patient delay.

Therefore, patients may become inactive or get incorrect instructions on how to deal with the issue due to a lack of understanding of the symptoms of TB. These factors may make it more difficult to get medical help when you need it and can lengthen the time it takes to diagnose TB.

Some people fear being associated with TB because they are afraid of being isolated by the community they live with which result to delay in seeking care. They may wait until their health condition is deteriorated and are are taken to a health care facility and diagnosed with TB. In most occasions, these cases come very late after a long period from onset, and their clinical signs and all other features are suggestive of TB.

Our study also showed significant association of patient delay with accessibility to TB care. In terms of accessibility and the likelihood of early case discovery, transit options and distance had a role. For proper tuberculosis control, it is crucial that all tuberculosis patients have easy access to health facilities, as delayed treatment due to a lack of such facilities is a direct outcome of inadequate access to health care settings. The absence of vehicular roadways and public transport options has exacerbated geographical obstacles caused by tough terrain.

This study's results corroborated those of research done in Ethiopia, where patients were less likely to seek treatment for TB if they had a long distance to go to the nearest health centre. People who live more than 10 kilometres away from hospitals are 23 times more likely to wait longer than those who reside within 10 kilometres to get medical treatment (Abdu et al., 2020).

Patients in a study on TB treatment adherence in high-burden settings in Ghana's Ashanti region reported experiencing tachypnoea while walking from their community to the TB treatment centre because public transportation was inconvenient. They eventually stopped going to the hospital for medical care (Appiah et al., 2023).

Those without a high school, diploma or higher were also 1.6 times more likely to have a delayed tuberculosis diagnosis, according to the research. This would suggest that healthcare requirements are better understood and addressed by persons with higher levels of education compared to those with lower levels of education. Our research also found that not having enough time to seek treatment was a risk factor for tuberculosis (TB) patients, with 2.4 times the likelihood of delay for those who reported not having enough time compared to those who did. Another risk factor was not having a job. Those without jobs were also 1.33 times more likely to experience delays than those with jobs. These may be indicative of the socioeconomic reality of low-income populations' struggles with bad health, as obtaining health treatment is often prioritised above meeting basic needs.

The most common symptoms of tuberculosis were a persistent cough and nocturnal sweats. This was in line with the results of a study conducted in a level four hospital in Isiolo County, Kenya, that examined the timing of tuberculosis diagnoses before confirmation (Kunjok et al., 2021). In that study, the majority of patients (96.1% and 92.2% respectively) exhibited cough and night sweat as their primary clinical signs. Another study in the Oromia special zone, Amhara Region, examined the factors associated with patient delays in starting tuberculosis treatment (Abdu et al., 2020),

Another possible explanation for our results is that patients self-medicate because they think their symptoms are only transient indicators of a larger illness. This leads to worsening and persistence of their symptoms. Furthermore, owing to lack of knowledge, shame, and resources, it may be challenging to send patients experiencing deteriorating symptoms to healthcare services in a timely manner.

Noman et al. (2024) found that fever was the most often reported symptom by patients during their first visit to seek healthcare, in 83 cases (90.22%), which contradicts with our results. The research focused on drug-resistant tuberculosis patients in Bangladesh. Unfortunately, participants did not link these symptoms with tuberculosis (TB), suggesting that local transmission may be increasing, and they also thought that these symptoms would go away with time.

5.1 Limitation

Because this research only included referral centres with a large volume of tuberculosis cases, its findings may not apply to other types of community hospitals. Patients whose tuberculosis diagnoses and treatments were postponed because of lengthy referral processes or missed clinical diagnoses by healthcare providers were not included in this research since its only purpose was to examine patients' delays in seeking care. The study's reliance on patients' reports means it was susceptible to recall bias. As a result, the amount of time that delays might be exaggerated or understated.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Our results demonstrated that a considerable proportion of patients had delayed to seek TB diagnosis. Based on our findings, the median patient delay was 28 days.

About 46.3% of patients had prolonged patients' delay. The findings suggest that patient delay remains a major problem in Kajiado County. Lack of knowledge on the cause of TB and lack of accessibility were significantly associated with Tuberculosis patient delay. These risk factors for delay can be the subject of future interventions to reduce delay in diagnosis among patients with tuberculosis.

6.2 Recommendation

Based on the conclusions found in this study, the following recommendations are made:

I. Relevant stakeholders should;

   a. Emphasize health education through community sensitization to ensure everyone is reached

   b. Strengthen referral and linkages between the community and health facilities

II. The County Department of Health should

   a. Enhance access through mobile outreach services

   b. Further interventions that will improve knowledge and accessibility to TB care

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APPENDICES

Appendix I: Consent form for adult participants

Title: To determine patients delay in seeking TB care and associated factors among patients diagnosed with TB in Kajiado County.

Good morning/Good afternoon! My name is Moses Melita a Master of Public Health in Field Epidemiology and laboratory training program (FELTP) student at Moi University, Eldoret.

Type of research

This is a research on patient delay and associated factors among patients with TB in Kajiado County.

Participant selection

Your selection to participate in this study is voluntary.

Duration

The duration of the interview is approximately 30 to 45 minutes.

Risks and side effects

There are no foreseeable discomforts or dangers to either you or your child in this study.

Benefits

Delay in diagnosis and treatment of TB has negative impacts on an individual, family, community, and state. Every community member has a reason to want to eliminate it by all means. Your participation in this study will, therefore, contribute towards developing effective interventions to address the scourge.

Reimbursements

As a participant do not expect any payments for participating in this study.

Confidentiality and sharing of the results

The information you give will not be discussed or shared with someone else.

Right to refuse or withdraw

Your participating in this study is voluntary. You can choose not to answer all or some of the questions. However, your participation would be highly appreciated since your views are important.

Who to contact

In case of any complaints contact Moses Melita (Principle investigator), Cell phone: 0723239592 or you may also contact the chairman of Moi University and MTRH research and ethical committee chairman.

<u>Part II</u>

Certificate of consent

I have been informed about this study, its purpose, and its objectives with understanding. I hereby agree to participate.

Name and signature of the study participant……………………………………...

Statement by the researcher/person taking the consent

I, the undersigned, have explained to the participant the purpose of this study, objectives, risks, and benefits of participating in his/her understanding.

Name and signature of the researcher of this study ……………………………

Appendix II: Permission Form for Research Involving a Minor

Title: Patients' delay in seeking TB care and associated factors among patients diagnosed with TB in Kajiado county.

Good morning/Good afternoon! My name is Moses Melita a Master of Public Health in Field Epidemiology and laboratory training program (FELTP) student at Moi University, Eldoret.

Your permission is being sought to have your child participate in this study.

Please read the following information carefully before you decide whether or not to give your permission.

Type of research

This is a research on patient delay and associated factors in the initiation of TB treatment among patients with TB in rural areas, Kajiado County.

Participant selection

Your child's participate in this study is voluntary.

Duration

The duration of the interview is approximately 30 to 45 minutes.

Risks and side effects

There are no foreseeable discomforts or dangers to either you or your child in this study.

Benefits

There is no direct benefit for your child in this study. However, delay in diagnosis and treatment of TB has negative impacts on an individual, family, community, and state. Every community member has a reason to want to eliminate it by all means. Your participation in this study will, therefore, contribute towards developing effective interventions to address the scourge.

Reimbursements

As a participant do not expect any payments for participating in this study.

Confidentiality and sharing of the results

The information you give will not be discussed or shared with someone else.

Right to refuse or withdraw

Your participating in this study is voluntary. You can choose not to answer all or some of the questions. However, your participation would be highly appreciated since your views are important.

Who to contact

In case of any complaints contact Moses Melita (Principle investigator), Cell phone: 0723239592 or you may also contact the chairman of Moi University and MTRH research and ethical committee chairman.

<u>Part II</u>

Certificate of consent

Signing the form below will allow your child to participate in the study during school hours without your presence.

If you do not sign and return this form, the researchers will understand that you do not wish to allow your child to participate.

I, the parent or guardian of ________________________________, a minor ______ years of age, permit his/her participation in a research named above and being conducted by Moses Melita Supeyo.

Signature of Parent or Guardian _________________Date_____________________

Please print your name here.

I, _________________________________, agree to participate in the program of research named above and understand that my participation is voluntary.

____

Signature of the minor Date __________________________

Please print your name here.

Signature of Investigator _______________________________ Date_________

Appendix III: Assent Form

Title: Patients delay in seeking TB care and associated factors among patients diagnosed with TB in Kajiado County.

Dear Participant,

My Name is ______________________________ I am a student at Moi University. This questionnaire is prepared to collect data on a facility based cross-sectional study on “Factors associated with delay in initiation of TB treatment among patients diagnosed with TB in rural areas, Kajiado county.” You are hereby been asked to participate in this study. This assent form gives you information about the study, which will be discussed with you. Once you understand the study, and if you agree to be enrolled, you will be asked to talk this over with your parents or guardians before being enrolled to participate to give their permission for you to take part in this study.

But even if you they say “yes” to this study, you can still decide to not take part in the study, and that will be fine. If you do not want to be in this study, then you do not have to participate. This study is voluntary, which means that you decide whether or not to take part in the study. Being in this study is up to you, and no one will be upset in any way if you do not want to participate or even if you change your mind later and want to stop. Signing your name at the bottom means that you agree to be in this study. You and your parents will be given a copy of this form after you have signed it. Please note that your participation in this research is entirely voluntary and no coercion. The main purpose of this research study is to determine factors associated with delay in initiation of TB treatment among patients diagnosed with TB in rural areas, Kajiado county. A total of 354 TB patients on treatment are expected to participate in this study for a period of forty days. Once you have agreed to enroll in the study, you will be asked some questions concerning the study and your decision on to answer them is voluntary. There is no monetary benefit from this study and there is no cost to you for enrolling in the study. With your assent, I also request for your answers concerning this study. However, the findings and knowledge gained from this study may help contribute towards developing effective interventions to address the scourge. Any information you will give regarding this study and records will be treated with utmost confidentiality. You will be identified by a unique participant identification number; an identifying mark will be put on your booklet to avoid being enrolled again during your sub sequent clinic visit and personal information from your records will not be released without your written permission. You will not be personally identified in any publication about this study. Contacts information. For any more information or any clarification, kindly don't hesitate to contact the following:

Principal Investigator: Moses Melita Supeyo, Telephone: +254723239592 E-mail: smelita18@gmail.com. Or

Moi University Institutional Research and Ethics Committee (IREC) Telephone: +254787723677 E-mail: irecmtrh@gmail.com or contact@irec.or.ke.

Assent signing;

I, the undersigned, do hereby assent to participate in this study whose nature, purpose and objectives have been fully explained to me. I was given an opportunity to ask questions, all of which have been answered to my satisfaction and that I have chosen to participate. I am aware that participation is voluntary and that there are no consequences of withdrawing from the study. I have been informed that all data provided will be used for the purposes of the study only.

I declare that the information I will give is correct to the best of my knowledge.

Participant's Unique Id: ______________________

Signature or thumbprint: _________________________Date: _________________

Parent/Guardian: __________________Date: ____________Signature: __________

Name of person obtaining assent: _______________Signature ________

Date: _________

Appendix IV: Questionnaire

Study title;

Patients delay in seeking TB care and associated factors among patients diagnosed with TB in Kajiado County.

Objectives of the study;

i) To determine the time delay from onset of symptoms to first presentation to a professional health provider among patients diagnosed with TB in Kajiado County. ii)To identify factors associated with patient delay among patients diagnosed with TB in of Kajiado County.

Part 1: Patient Identifier

Unique number: ____________ Date: ________________ Time: __________

1. Name/Initials of interviewer: ______________

2. Relationship of informant to the patient

□Self □Father □Mother □Sibling □Uncle

□Aunt □Other (specify) __________________

3. Contacts of the respondent ___________________________________

4. Sex □Male □Female

5. Age (in years): _______________

6. County _________Sub County: ______ Ward: ____ Village: __________

Religion: □Islam □Christian □Hindu □African tradition □Others (Specify) _______

7. Type of TB

□Pulmonary TB □Extra Pulmonary

8. HIV status

□Negative □Positive □Not Done

9. Level of education of patient: □None □Primary □Secondary □Post-secondary/ College

□University

10. Main Occupation of patient: □Employed □Self - employed □None

11. Was the patient referred from another health facility? □Yes □No

12. If Yes which facility ________________________

Part II: Patient Knowledge (TB Knowledge)

15. Do you know what is TB? □Yes □No

16. What in your own opinion cause TB? □Infection □Punishment □Don’t know □others

17. What are symptoms of someone infected with TB? □Cough □Fever □Night sweat

□Weight loss □Don’t know

18. How does a person get TB? (TB transmission). □Through gems in the air

□Sharing utensils □Others □Don’t know

19. Do you know how TB is diagnosed? □Through sputum diagnosis □Through X-ray

□Others □Don’t know

20. Do you know that TB can be cured? □Yes □No

Part III: Attitude toward TB

21. Do you think TB patients should be helped with? □TB medicines for free

□Food support □Transportation support to access health centers □Other

22. Should people with TB disclose their illness to other people? □Yes □No

23. Who do you think is more likely to get TB, men and women? □Men □Women

24. Did you inform your friends/ family that you had TB? □Yes □No

25. Why or why not? ______________________________________

26. Have your relationships with your friends/ family changed since finding out you have

TB?

□Yes □No

27. Are people with TB being discriminated against in the community?

□Yes □No

28. Did this discrimination at the community affect or delay your decision to seek health care? □Yes □No □N/A

Part IV: Access to TB diagnosis

29. How far is your home from this health facility? (distance or time) __________hours or __________Km

30. Is there another health facility closer to your home?

□Yes □No

31. Is the health center easy to get to (accessibility/ convenience of transport)? □Yes □No

32. If yes, did you seek for care from this facility? □Yes □No

33. If no, why?

34. Do you have to pay to see a health provider? □Yes □No

Part V: Health seeking behaviour (Patients with TB)

35. Where did you first seek treatment when you became ill? □Self-treated □Traditional healer □Public clinic/ Hospital/ Health Center □ Private practitioner □ Pharmacist/vendor □Other

36. Why? □Was cheaper □Was closer □More convenient schedule □Better care received

□Better attitude form health workers □Trusted more □Others

37. Did you seek treatment from somewhere else? □Yes □No

38. From whom? □Traditional healer □Public clinic/ Hospital/ Health Center □Private practitioner □Pharmacist/vendor □Others

Part VI: Estimation of delay

39. How long were you sick before you first sought treatment? 1._____Days 2. ____Weeks 3. ____Months

40. What were the first symptoms you had to seek treatment? □Cough □Sputum with blood □ Fever □Weight loss □Tired/weak □Dizzy □Chest pain □Night sweat □Others

41. Did you take any treatment before you were diagnosed with TB? □Yes □No

42. Why did you choose to come to this health facility? □Close □Been Here Before

□Friend/ family recommend □Referred □Know provider □Other

43. How many visits more to be informed on the possibility of TB? ________(Number)

44. With whom did you have repeated visits? □With the same health provider

□Different providers in the same facility □Different providers (healer, private, government, etc.)

45. What type of health facility made the initial TB diagnosis: □Government □Private

□Other?

46. How long did it take since you first seek health attention until you were informed you had TB? □________ Days □ ________Weeks □ ________ Months.

47. What factors may have made you delay seeking treatment for symptoms that led to the diagnosis of TB? □Not aware of the severity of my symptoms □Fear of rejection/ losing my job □Expensive □Lack of time □Difficult access to health center/transportation issues □Not having a previous satisfactory experience with the health system □Others

KIAMBATISHO CHA KWANZA: FOMU YA IDHINI

Kichwa: Kuamua wagonjwa kuchelewa kutafuta utambuzi wa Kifua Kikuu na mambo yanayohusiana na hayo miongoni mwa wagonjwa waliogunduliwa na Kifua Kikuu katika Kaunti ya Kajiado.

Habari za asubuhi/Mchana mwema! Jina langu ni Moses Melita Mwanafunzi wa Shahada ya Uzamili ya Afya ya Umma katika Epidemiology ya Uwandani na programu ya mafunzo ya maabara (FELTP) katika Chuo Kikuu cha Moi, Eldoret.

Aina ya utafiti

Huu ni utafiti kuhusu kuchelewa kwa mgonjwa na mambo yanayohusiana na kuanzishwa kwa matibabu ya Kifua Kikuu miongoni mwa wagonjwa wenye Kifua Kikuu katika maeneo ya vijijini, Kaunti ya Kajiado.

Uchaguzi wa washiriki

Uteuzi wako wa kushiriki katika utafiti huu ni wa hiari.

Muda

Muda wa mahojiano ni takriban dakika 30 hadi 45.

Hatari na madhara

Hakuna usumbufu au hatari zinazoonekana kwako au kwa mtoto wako katika utafiti huu.

Faida

Kuchelewa kwa utambuzi na matibabu ya Kifua Kikuu kuna athari mbaya kwa mtu binafsi, familia, jamii na serikali. Kila mwanajamii ana sababu ya kutaka kuiondoa kwa njia zote. Ushiriki wako katika utafiti huu, kwa hivyo, utachangia katika kukuza afua madhubuti za kushughulikia janga hili.

Malipo
Kama mshiriki hatarajii malipo yoyote ya kushiriki katika utafiti huu.

Siri na kushiriki matokeo

Taarifa utakayotoa haitajadiliwa au kushirikiwa na mtu mwingine.

Haki ya kukataa au kujiondoa

Kushiriki kwako katika utafiti huu ni kwa hiari. Unaweza kuchagua kutojibu maswali yote au baadhi. Hata hivyo, ushiriki wako ungethaminiwa sana kwa kuwa maoni yako ni muhimu.

Nani wa kuwasiliana naye

Katika kesi ya malalamiko yoyote wasiliana na Moses Melita (Mpelelezi Mkuu),

Simu ya rununu: 0723239592 au unaweza pia kuwasiliana na mwenyekiti wa Chuo

Kikuu cha Moi na mwenyekiti wa kamati ya utafiti na maadili ya MTRH.

SEHEMU YA PILI: CHETI CHA IDHINI

Nimefahamishwa kuhusu utafiti huu, madhumuni yake, na malengo yake kwa kuelewa. Nakubali kushiriki.

Jina na saini ya mshiriki wa utafiti……………………………………...

Taarifa ya mtafiti/mtu anayechukua kibali

Mimi, aliyetia saini chini, nimemweleza mshiriki madhumuni ya utafiti huu, malengo, hatari, na manufaa ya kushiriki katika ufahamu wake.

Jina na saini ya mtafiti wa utafiti huu ………………………………………

Kiambatisho II: Fomu ya Ruhusa ya Mzazi au Mlezi kwa Utafiti Unaohusisha Mdogo

Kichwa: Ucheleweshaji wa Patients’ katika kutafuta utambuzi wa Kifua Kikuu na sababu zinazohusiana kati ya wagonjwa waliogunduliwa na Kifua Kikuu katika maeneo ya mashambani, kaunti ya Kajiado.

Habari za asubuhi/Mchana mwema! Jina langu ni Moses Melita Mwanafunzi wa Shahada ya Uzamili ya Afya ya Umma katika Epidemiology ya Uwandani na programu ya mafunzo ya maabara (FELTP) katika Chuo Kikuu cha Moi, Eldoret. Ruhusa yako inatafutwa ili mtoto wako ashiriki katika utafiti huu. Tafadhali soma habari ifuatayo kwa uangalifu kabla ya kuamua ikiwa utatoa ruhusa yako au la.

Aina ya utafiti

Huu ni utafiti kuhusu kuchelewa kwa mgonjwa na mambo yanayohusiana na kuanzishwa kwa matibabu ya Kifua Kikuu miongoni mwa wagonjwa wenye Kifua Kikuu katika maeneo ya vijijini, Kaunti ya Kajiado.

Uchaguzi wa washiriki

Mtoto wako anashiriki katika utafiti huu ni wa hiari.

Muda

Muda wa mahojiano ni takriban dakika 30 hadi 45.

Hatari na madhara

Hakuna usumbufu au hatari zinazoonekana kwako au kwa mtoto wako katika utafiti huu.

Faida

Hakuna faida ya moja kwa moja kwa mtoto wako katika utafiti huu. Hata hivyo, kuchelewa kwa utambuzi na matibabu ya Kifua Kikuu kuna athari mbaya kwa mtu binafsi, familia, jamii na serikali. Kila mwanajamii ana sababu ya kutaka kuiondoa kwa njia zote. Ushiriki wako katika utafiti huu, kwa hivyo, utachangia katika kukuza afua madhubuti za kushughulikia janga hili.

Malipo

Kama mshiriki hatarajii malipo yoyote ya kushiriki katika utafiti huu.

Siri na kushiriki matokeo
Taarifa utakayotoa haitajadiliwa au kushirikiwa na mtu mwingine.

Haki ya kukataa au kujiondoa

Kushiriki kwako katika utafiti huu ni kwa hiari. Unaweza kuchagua kutojibu maswali yote au baadhi. Hata hivyo, ushiriki wako ungethaminiwa sana kwa kuwa maoni yako ni muhimu.

Nani wa kuwasiliana naye

Katika kesi ya malalamiko yoyote wasiliana na Moses Melita (Mpelelezi Mkuu), Simu ya rununu: 0723239592 au unaweza pia kuwasiliana na mwenyekiti wa Chuo Kikuu cha Moi na mwenyekiti wa kamati ya utafiti na maadili ya MTRH.

Sehemu ya II: Cheti cha idhini

Kusaini fomu iliyo hapa chini kutamruhusu mtoto wako kushiriki katika masomo wakati wa saa za shule bila uwepo wako.

Ikiwa hutatia saini na kurudisha fomu hii, watafiti wataelewa kuwa hutaki kumruhusu mtoto wako kushiriki.

Mimi, mzazi au mlezi wa ______________________, mtoto mdogo ________ umri wa miaka, ninaruhusu ushiriki wake katika utafiti uliotajwa hapo juu na unaofanywa na Moses Melita Supeyo.

Sahihi ya Mzazi au Mlezi ______________________Tarehe___________________

Tafadhali chapisha jina lako hapa.

Mimi, ______________________________________, ninakubali kushiriki katika mpango wa utafiti uliotajwa hapo juu na kuelewa kuwa ushiriki wangu ni wa hiari.

___________Sahihi Tareh___________________________

Tafadhali chapisha jina lako hapa.

Sahihi ya Mpelelezi ____

KIAMBATISHO CHA TATU: FOMU YA IDHINI

Kichwa: Wagonjwa huchelewa kutafuta utambuzi wa Kifua Kikuu na mambo yanayohusiana na hayo miongoni mwa wagonjwa waliogunduliwa na Kifua Kikuu katika Kaunti ya Kajiado.

Mpendwa Mshiriki,

Jina langu ni ______________________________ mimi ni mwanafunzi katika Chuo Kikuu cha Moi. Hojaji hii imetayarishwa kukusanya data kuhusu utafiti wa sehemu mbalimbali wa kituo kuhusu "Factors unaohusishwa na kucheleweshwa kwa matibabu ya Kifua Kikuu miongoni mwa wagonjwa waliogunduliwa na Kifua Kikuu katika maeneo ya vijijini, kaunti ya Kajiado." Kwa hivyo umeombwa kushiriki katika utafiti huu. Fomu hii ya idhini inakupa habari kuhusu utafiti, ambayo itajadiliwa nawe. Mara tu unapoelewa utafiti, na ikiwa unakubali kuandikishwa, utaombwa uzungumze hili na wazazi au walezi wako kabla ya kuandikishwa kushiriki ili kukupa ruhusa ya kushiriki katika utafiti huu. Lakini hata kama unasema "ndio" kwa utafiti huu, bado unaweza kuamua kutoshiriki katika utafiti, na hiyo itakuwa sawa. Ikiwa hutaki kuwa katika utafiti huu, basi sio lazima kushiriki. Utafiti huu ni wa hiari, ambayo ina maana kwamba unaamua kushiriki au kutoshiriki katika utafiti. Kuwa katika utafiti huu ni juu yako, na hakuna mtu atakayekasirika kwa njia yoyote ikiwa hutaki kushiriki au hata ikiwa utabadilisha mawazo yako baadaye na unataka kuacha. Kusaini jina lako chini kunamaanisha kuwa unakubali kuwa katika utafiti huu. Wewe na wazazi wako mtapewa nakala ya fomu hii baada ya kuitia saini. Tafadhali kumbuka kuwa ushiriki wako katika utafiti huu ni wa hiari kabisa na hakuna shuruti. Madhumuni makuu ya utafiti huu wa utafiti ni kubaini mambo yanayohusiana na kuchelewa kuanza kwa matibabu ya Kifua Kikuu miongoni mwa wagonjwa waliogunduliwa na Kifua Kikuu katika maeneo ya vijijini, kaunti ya Kajiado. Jumla ya wagonjwa 354 wa Kifua Kikuu wanaotibiwa wanatarajiwa kushiriki katika utafiti huu kwa muda wa siku arobaini. Mara tu unapokubali kujiandikisha katika utafiti, utaulizwa baadhi ya maswali kuhusu utafiti na uamuzi wako wa kuyajibu ni wa hiari. Hakuna manufaa ya kifedha kutokana na utafiti huu na hakuna gharama kwako kujiandikisha katika utafiti. Kwa idhini yako, naomba majibu yako kuhusu utafiti huu. Hata hivyo, matokeo na maarifa yaliyopatikana kutokana na utafiti huu yanaweza kusaidia kuchangia katika kuendeleza afua madhubuti za kushughulikia janga hili. Taarifa yoyote utakayotoa kuhusu utafiti na rekodi hizi itashughulikiwa kwa usiri mkubwa. Utatambuliwa kwa nambari ya kipekee ya kitambulisho cha mshiriki; alama ya kutambua itawekwa kwenye kijitabu chako ili kuepuka kusajiliwa tena wakati wa ziara yako ndogo ya kliniki na maelezo ya kibinafsi kutoka kwa rekodi zako hayatatolewa bila idhini yako ya maandishi. Hutatambuliwa kibinafsi katika chapisho lolote kuhusu utafiti huu. Huwasiliana na habari. Kwa habari yoyote zaidi au ufafanuzi wowote, usisite kuwasiliana na yafuatayo:

Mpelelezi Mkuu: Moses Melita Supeyo, Simu: +254723239592 Barua pepe: smelita18@gmail.com. Au

Simu ya Kamati ya Utafiti na Maadili ya Chuo Kikuu cha Moi (IREC): +254787723677 Barua pepe: irecmtrh@gmail.com au contact@irec.or.ke.

Kusaini kibali;

Mimi, aliyetiwa saini, nakubali kushiriki katika utafiti huu ambao asili, madhumuni na malengo yake yamefafanuliwa kikamilifu kwangu. nilipewa fursa ya kuuliza maswali, ambayo yote yamejibiwa kwa kuridhika kwangu na kwamba nimechagua kushiriki. Ninafahamu kuwa ushiriki ni wa hiari na kwamba hakuna matokeo ya kujiondoa kwenye utafiti. Nimefahamishwa kuwa data zote zitakazotolewa zitatumika kwa madhumuni ya utafiti pekee.

Ninatangaza kwamba habari nitakayotoa ni sahihi kwa ujuzi wangu wote.

Kitambulisho cha Kipekee cha Participant's: ________________________

Sahihi au alama ya kidole gumba: __________Date:

____

Mzazi/Mlezi: ______________________Date: _________Signature: _______________

Jina la mtu anayepata kibali: _________Signature ______Tarehe: _______

KIAMBATISHO CHA NNE: HOJAJI

Kichwa cha masomo

Wagonjwa huchelewa kutafuta utambuzi wa Kifua Kikuu na mambo yanayohusiana na hayo miongoni mwa wagonjwa waliogunduliwa na Kifua Kikuu katika maeneo ya mashambani, Kaunti ya Kajiado.

Malengo ya utafiti;

i) Kuamua kuchelewa kwa muda kutoka mwanzo wa dalili hadi uwasilishaji wa kwanza kwa mtoa huduma za afya kitaaluma miongoni mwa wagonjwa

waliogunduliwa na Kifua Kikuu katika maeneo ya mashambani, Kaunti ya Kajiado.

ii)Kubainisha mambo yanayohusiana na kuchelewa kwa mgonjwa katika utambuzi wa

Kifua Kikuu katika maeneo ya mashambani ya Kaunti ya Kajiado.

Sehemu ya 1: Kitambulisho cha Mgonjwa

1.Nambari ya kipekee: ____________ Tarehe: __________ Wakati: ______________

2.Jina/Waanzilishi wa mhojiwa: ____

3.Uhusiano wa mtoa habari kwa mgonjwa

□Nafsi □Baba □Mama □Ndugu □Mjomba □Shangazi □Wengine (maalum) _______

4.Mawasiliano ya mhojiwa ____

5.Ngono □Mwanaume □Mwanamke

6.Umri (katika miaka): ___________________

7.County __________Sub County: ________ Ward: _____ Village: _____________

8.Dini: □Uislamu □Ukristo □Uhindi □Utamaduni wa Kiafrika □Nyingine (Maalum) _

9 Aina za Kifua Kikuu

□Kifua Kikuu ya Kifua □Kifua Kikuu ya Sehemu zingine

10 hali ya VVU

□Haipo □Chanya □Haijafanywa

11.Kiwango cha elimu ya mgonjwa: □Hamna □Shule ya Msingi □Shule ya Sekondari □Chuo cha Ufundi □Chuo Kikuu

12.Kazi Kuu ya mgonjwa: □Aliyeajiriwa □Kujiajiri □Hamna

13.Je, mgonjwa alirejelewa kutoka kituo kingine cha afya? □Ndio □La

14.Kama ni ndio, kituo gani ___________________________

Sehemu ya II: Maarifa ya Mgonjwa (Maarifa ya Kifua Kikuu)

15.Je! unajua Kifua Kikuu ni nini? □Ndio □La

16.Ni nini kwa maoni yako mwenyewe husababisha Kifua Kikuu? □Ugonjwa □Adhabu □Sijui □Nyingine

17.Je, ni dalili gani za mtu aliyeambukizwa Kifua Kikuu? □Kukohoa □Joto □Kutokwa na jasho usiku □Uzito kupoteza □Sina habari

18.Je, mtu anapataje Kifua Kikuu? (maambukizi ya Kifua Kikuu). □Kupitia vito hewani □Kushiriki vyombo □Nyingine □Sina habari

19.Je! unajua jinsi Kifua Kikuu inavyotambuliwa? □Kupitia utambuzi wa makohozi □Kupitia X-ray □Nyingine □Sina habari

20.Je, unajua Kifua Kikuu inaweza kuponywa? □Ndio □La

Sehemu ya III: Mtazamo kuelekea Kifua Kikuu

21.Je, unafikiri wagonjwa wa Kifua Kikuu wanapaswa kusaidiwa? Dawa za □Kifua Kikuu za usaidizi wa bure wa □Food □Usafirishaji usaidizi wa kufikia vituo vya afya □Zingine

22.Je, watu wenye Kifua Kikuu wanapaswa kufichua ugonjwa wao kwa watu wengine? □Ndio □La

23.Unafikiri ni nani ana uwezekano mkubwa wa kupata Kifua Kikuu, wanaume na wanawake? □Wanaume □Wanawake

24.Je, uliwajulisha marafiki/familia yako kwamba ulikuwa na Kifua Kikuu? □Ndio □La

25.Kwa nini au kwa nini? ____

26.Je, uhusiano wako na marafiki/familia yako umebadilika tangu ujue una Kifua Kikuu?

□Ndio □La

27 Je, watu wenye Kifua Kikuu wanabaguliwa katika jamii? □Ndio □La

28.Je, ubaguzi huu katika jamii uliathiri au kuchelewesha uamuzi wako wa kutafuta huduma za afya? □Ndio □La □Hamna Jibu

Sehemu ya IV: Upatikanaji wa utambuzi wa Kifua Kikuu

29.Je, nyumba yako iko umbali gani kutoka kituo hiki cha afya? (umbali au wakati)

________Masaa au __________Kilomita

30.Je, kuna kituo kingine cha afya karibu na nyumba yako? □Ndio □La

31.Je, kituo cha afya ni rahisi kufika (ufikivu/urahisi wa usafiri)? □Ndio □La

32.Ikiwa ndio, je, ulitafuta huduma kutoka kwa kituo hiki? □Ndio □La

33.Ikiwa hapana, kwa nini?

34.Je, unapaswa kulipa ili kuonana na mtoa huduma za afya? □Ndio □La

Sehemu ya V: Tabia ya kutafuta afya (Wagonjwa wenye Kifua Kikuu)

35.Ulitafuta wapi matibabu mara ya kwanza ulipougua? □Kujitibu □Mponyaji wa Jadi □Kliniki ya Umma/Hospitali/Kituo cha Afya □ Daktari wa Kibinafsi □ Mfamasia/mchuuzi □Nyingine

36.Kwa nini? □Was nafuu □Was karibu □More ratiba rahisi zaidi □Better care ilipokea □Mtazamo mzuri wa wahudumu wa afya □Uaminifu zaidi □Wangine

37.Je, ulitafuta matibabu kutoka mahali pengine? □Ndio □La

38.Kutoka kwa nani? □Mganga wa Jadi □Kliniki ya Umma/Hospitali/Kituo cha Afya □Daktari binafsi □Mfamasia/Mchuuzi □Wengine

Sehemu ya VI: Makadirio ya kuchelewa

39.Ulikuwa mgonjwa kwa muda gani kabla ya kutafuta matibabu kwa mara ya kwanza? 1.____Siku 2. ___Wiki 3. ___Miezi

40.Je, ulikuwa na dalili gani za kwanza kutafuta matibabu? □Kukohoa □Kikohozi yenye damu □ Homa □Kupoteza uzito □Uchovu/dhaifu □Kizunguzungu □Maumivu kwa Kifua □Jasho la usiku □Zingine

41.Je, ulichukua matibabu yoyote kabla ya kugundulika kuwa na Kifua Kikuu? □Ndio □La

42.Kwa nini ulichagua kuja kwenye kituo hiki cha afya? □Ni karibu □Nilihudumiwa hapa hapo mbeleni □Rafiki /familia kupendekeza □Rufaa □Najua mtoaji wa huduma □Nyingine

43.Ni ziara ngapi zaidi za kufahamishwa juu ya uwezekano wa Kifua Kikuu? _____(Nambari)

44.Ulitembelewa na nani mara kwa mara? □Na mtoa huduma sawa wa afya □Watoa huduma tofauti katika kituo kimoja □Watoa huduma tofauti (mganga, binafsi, serikali, n.k.)

45.Ni aina gani ya kituo cha afya kilichofanya utambuzi wa awali wa Kifua Kikuu: □Serikali □Binafsi □Wengine?

46.Ilichukua muda gani tangu utafute huduma ya afya kwa mara ya kwanza hadi ulipofahamishwa kuwa una Kifua Kikuu? □________ Siku□ _______________Wiki □ ________ Mwezi/Miezi.

47.Ni mambo gani ambayo yanaweza kukufanya uchelewe kutafuta matibabu ya dalili zilizosababisha kugunduliwa kwa Kifua Kikuu? □Sijui ukali wa dalili zangu □Hofu ya kukataliwa/kupoteza kazi yangu □Ghali □Ukosefu wa wakati □Ufikiaji mgumu wa kituo cha afya/masuala ya usafiri □Kuwa na uzoefu wa kuridhisha wa awali na mfumo wa afya □Zingine

Appendix V: Plagiarism Awareness Certificate

PLAGIARISM AWARENESS CERTIFICATE

SR837

ISO 9001:2019 Certified Institution

THESIS WRITING COURSE

PLAGIARISM AWARENESS CERTIFICATE

This certificate is awarded to

MOSES MELITA SPH/PGH/FE/13/2018

In recognition for passing the University's plagiarism

Awareness test for Thesis entitled: **PATIENT DELAY IN SEEKINGTB CARE AND ASSOCIATED FACTORS AMONG PATIENTS DIAGNOSED WITH TB IN KAJIADO COUNTY, KENYA** with similarity index of 5% and striving to maintain academic integrity.

Word count:21288

Awarded by

Prof. Anne Syomwene Kisilu

CERM-ESA Project Leader Date: 30/04//2025

Appendix VI: IREC Approval

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471//2/3

MOI UNIVERSITY
COLLEGE OF HEALTH SCIENCES
P.O. BOX 4606
ELDORET
Tel: 33471/2/3

Reference: IREC/2020/133
Approval Number: 0003716

26th November, 2020

Moses Melita,
Moi University,
School of Public Health,
P.O. Box 4606-30100,
ELDORET-KENYA.

Dear Mr. Melita,

FACTORS ASSOCIATED WITH DELAY IN INITIATION OF TB TREATMENT AMONG PATIENTS DIAGNOSED WITH TB IN RURAL AREAS, KAJIADO COUNTY

This is to inform you that ***MU/MTRH-IREC*** has reviewed and approved your above research proposal. Your application approval number is ***FAN: 0003716.*** The approval period is **26th *November, 2020 – 25th November, 2021.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***MU/MTRH-IREC***.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***MU/MTRH-IREC*** within 72 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***MU/MTRH-IREC*** within 72 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***MU/MTRH-IREC.***

Prior to commencing your study; you will be required to obtain a research license from the National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and other relevant clearances. Further, a written approval from the CEO-MTRH is mandatory for studies to be undertaken within the jurisdiction of Moi Teaching & Referral Hospital (MTRH), which includes 22 Counties in the Western half of Kenya.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
26 NOV 2020
APPROVED
P. O. Box 4606-30100 ELDORET

Sincerely,

For

DR. S. NYABERA
DEPUTY-CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc	CEO	-	MTRH	Dean	-	SOP	Dean	-	SOM
	Principal	-	CHS	Dean	-	SON	Dean	-	SOD

Appendix VII:Nacosti License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **210827**

Date of Issue: **22/January/2021**

RESEARCH LICENSE

This is to Certify that Mr.. Moses Melita Supeyo of Moi University, has been licensed to conduct research in Kajiado on the topic: FACTORS ASSOCIATED WITH DELAY IN SEEKING TB DIAGNOSIS AMONG PATIENTS DIAGNOSED WITH TB IN RURAL AREAS, KAJIADO COUNTY for the period ending : 22/January/2022.

License No: **NACOSTI/P/21/8533**

210827

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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