

# Factors Associated with Access to Tuberculosis Care Among Tuberculosis Patients in Mandera East Sub-County, Kenya

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## Abstract

**Background:** Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*. In 2021, 10.6 million individuals got infected with TB globally and TB incidence in Kenya was 251 cases per 100,000 population. Between 2019–2021, Mandera County had 1223 cases of which 68 (6%) were lost to follow up (LTFU) and 55 died giving case fatality rate of 4.5%. The LTFU and mortality could be attributed to lack of access to TB care that may also result in drug resistant TB. Access to TB care is the timely use of all the healthcare services provided at the TB clinic for patients to achieve the desired outcome which is to complete treatment.

**Objectives:** To determine patient related and health-facility-related factors associated with access to TB care among TB patients in Mandera East sub-County.

**Method:** A cross-sectional study was used. The target population were individuals aged 18 years and above who were diagnosed with tuberculosis in Mandera County. Using a sampling frame of 1223 from TIBU system, a total of 394 TB patients were selected using simple random sampling. Structured questionnaires were used to collect data from the selected patients on health facility and patient related variables. Descriptive analysis was done by calculating frequencies and proportions for categorical variables. Inferential analysis was conducted using prevalence odds ratio (POR).

**Results:** Most respondents were male at 64.5% (231/358), urban residents were 83.2% (298/358). Those who had means of transport to the facility were 83.2% (298/358) while those with fare were 20.9% (75/358). Those who did not experience adverse drug reactions (ADR) were 79.9% (286/358). Majority, 70.4% (252/358) had a TB clinic in their town of residence, while 77.7% (278/358) were able to access the TB clinic because they lived within 5 kilometers radius to a clinic. Those who experienced lack of privacy at the health facility were 16.5% (59/358). Females had higher odds of access to TB care in comparison to males (POR=3.5, P=0.004). Respondents from urban setup had higher odds of accessing TB care in comparison to the ones from rural residence (POR=82.0, P<0.001). Respondents with formal occupation had 0.6 times odds of accessing TB care in comparison to the ones with informal occupation (POR=0.6, P=0.242). The odds of accessing TB care was higher in those who had means of transport in comparison to the ones who did not have (POR=82.0, P<0.001). Those who had privacy at the health facility had higher odds of accessing TB care (POR=66.4, P<0.001) in comparison to the ones who did not.

**Conclusion:** Being female, urban residence, transport to the facility, lack of privacy and availability of TB clinic were more likely to access TB care. Formal occupation was not significantly related to access to TB care in Mandera East sub-County.

**Recommendations:** Targeted interventions towards addressing males, privacy at the facility, and means of transport to the clinic to improve access to TB care and services in Mandera East sub-County.

**Keywords:** Tuberculosis, Incidence, Mortality, Access

## 1. Introduction

Tuberculosis (TB) infectious disease caused by *Mycobacterium tuberculosis* [1]. The bacteria usually infects the lungs, but can also infect other organs like the kidney, spine, and brain [2]. According to World Health Organization (WHO), 1.5 million people died of TB infection in 2020[3]. Globally it is the second leading cause of mortality after Covid-19. TB is curable and the treatment is six months anti-TB medication regimen.

In 2021 TB incidence in Kenya was 251 cases per 100,000 population [4]. Considering significant state and partner investments in TB prevention and treatment over the last 20 years, the illness still ranks as the fourth greatest cause of mortality. According to The national tuberculosis, leprosy and lung diseases program (NTLD-P) online database-treatment information from basic unit (TIBU) an electronic surveillance system that is used at NTLD-P for data collection and reporting, only 76436 cases were diagnosed and treated translating to 192 cases per 100,000 population for the same year[5]. This pool of unreported TB cases continues to fuel the spread of the disease, as one undiagnosed and untreated person can infect 10 to 15 others [6].

Mandera County is located at the north eastern border of Kenya and it is bordered by Somalia to the east and Ethiopia to the North. According to annual report by NTLD-P, 609 cases were notified in 2021 [7]. The Same year Mandera east sub-county reported 359 cases, showing that more than half of the total cases notified came from Mandera east sub-county.

Access to treatment of tuberculosis and services is the timely use of all the healthcare services provided at the TB clinic for patients to achieve the desired outcome which is to remain on treatment throughout the treatment period or complete treatment and get cured [8]. Access to treatment of tuberculosis and services is very important in managing TB as it assures sustainable option for patients to complete treatment, which in turn results in getting cured. Access to treatment of tuberculosis and services could not be measured by one indicator as it involves many sectors including, distance, availability of the TB clinic, availability of healthcare workers, availability of medicines, nutritional supplements and availability of all the services within the TB clinic. In view of these reasons, access could be measured using its outcome. One of the main outcomes of access to treatment of tuberculosis and services is being on care throughout the treatment period, completing treatment and getting cured. Those who continuously adhered to treatment and completed treatment could be termed as those group that has access to treatment of tuberculosis and services and those who lack access to treatment of tuberculosis and services are those who did not complete treatment. According to TIBU surveillance system from 2019 to 2021 Mandera County had 1223 cases. Lost to follow up were 68 out of 1223. The County had ten drug resistant TB (DRTB) patients out of which one was lost to follow up. 55 out of the 1223 died translating to 5% of the patient dying while TB is curable and preventable.

## 2. Methods

A cross-sectional study was conducted to determine the factors affecting access to treatment of tuberculosis and services in Mandera East sub-County. The patients were identified from patient files from January 2019 to December 2021 and traced to the community where interviews were conducted. Simple Random Sampling (SRS) was used with computer generated random numbers to select the unique identifiers of TB patients from the County's TB clinics Using a sample frame of 1223 from TIBU system, which yielded a sample size of 394 respondents. The researcher used case proportion to determine the number of participants who were sampled from each facility in order to create a simple random sample. SRS ensured that all subjects (TB patients) from the County have an equal opportunity to be enrolled in the study. Participants were given a written consent to participate in the study. The confidentiality of participants was maintained throughout the study

## 3. Discussion

The study found that females were more likely to access TB care and complete treatment among TB patients in Mandera county in comparison to males. Females were mostly housewives with more time to attend clinics in comparison to males who fend for the family in terms of search for livelihood. Generally, women tend to follow instructions and keep appointments in comparison to men who are busy with many tasks and responsibilities. Females have more health seeking behaviors in comparison to male as they would like to survive and take care of their families as natural instincts. Females are the ones who take care of children and always strive to protect and be there for their families. The role of females in the family set gives them more time to go and attend to their health issues. Those with high literacy levels were likely to access TB treatment and services among TB patients in Mandera County in comparison to the ones with informal or no education at all. Education plays major role in one understanding their health issues and importance to address those issues. Those who are educated have the opportunity to interact with different sources of information on how to manage TB, which enables them to thrive on how to improve their health status.

Those who took part of the study had means of transport that they could access the facility during clinic appointments and they had more access to TB treatment services in comparison to the ones who did not have means of transport to the facilities. Means of transport is very important to facilitate movement of patients from home to the clinic and back to home. some villages have no means of transport resulting in patients walking a long distance to access health facility or get means to visit the clinic. Those who were not affected by insecurity were more likely to access TB care in comparison to the ones who experienced insecurity. Insecurity cartels the freedom of movement and hinders one from moving from one place to another. Transportation and movement would halt during insecurity episodes as everyone is afraid to get harmed. Perceived community stigma by patients affected them not to access TB care and it was more unlikely for those who experienced community stigma to access TB care among TB patients in Mandera county.

The research found that most of the individuals complied with the instructions given by the healthcare workers and they were more likely to access TB care in comparison to the ones who did not follow. Those who followed instruction would have easy time going through the treatment process as the instruction would act as a guide throughout. Majority of the respondents do not use herbal medicines and they were more likely to access TB care in comparison to the ones who consumed herbal medicines during treatment period.

The study found that most of the respondents were residents who live in an area with TB clinic and they were more likely to access TB care in comparison to the ones who live in areas without TB clinic. Availability of TB clinic increases the chances of the residents accessing TB care because the clinic is within their vicinity and also the community health volunteers and community health assistants could easily access the residents living within 5 kilometres radius. Those who were satisfied with the services provided health facility were more likely to access TB care in Mandera county in comparison to the ones who were not satisfied. Satisfaction with all the services provided creates conducive environment for the patients and makes them comfortable to complete treatment. Respondent who never missed any service at the health facility were more likely to access tuberculosis treatment and services in contrast to those who usually miss crucial services like laboratory services. All round service provision keeps patients in care and allow them to come to the facility. Missing some services discourages patients from visiting or keeping appointments.

#### 4. Conclusion

TB patients residing in Mandera county had Socio-demographic factors that significantly associated with access to TB care were gender, level of education and residence while age, occupation, marital status were not significantly related to access to TB care. Patient related factors associated with access to TB care were means of transport, fare, insecurity, adherence, community stigma and use of herbal medicines, while exposure to media, source of income, meals accommodation and discrimination were not significant. Health facility related factors associated with access to TB care were availability of TB clinic, accessibility, privacy, satisfaction and missing services while nutritional supplementation and availability of healthcare workers were not significant.

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