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Social determinants of tuberculosis in Addis Ababa, Ethiopia: a qualitative study

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Tuberculosis (TB) is a complex health problem that requires an integrated approach that considers economic, environmental, and social factors to reduce the global burden of TB. To develop a comprehensive strategy for TB eradication, addressing the social determinants of TB is crucial. This study aimed to explore the experiences of healthcare workers and patients regarding the social determinants of health in the context of TB in Addis Ababa, Ethiopia. Purposive sampling was employed to select 20 healthcare workers and 24 individuals with TB. Key informant interviews were conducted with healthcare workers managing TB patients and individuals with TB who presented at selected health centers. A semi-structured interview guide was used to collect the data. The guide included questions to capture participants' experiences of economic barriers, TB-related stigma, family and community support, food access, and housing conditions. Data were analyzed thematically and direct quotes were included. Forty-four participants were included, including 20 healthcare workers (16 men and four women) and twenty-four TB patients (nine men and 15 women). Key themes emerged, including economic barriers, with participants stating that financial constraints delayed TB care-seeking; stigma associated with TB, leading to fear of disclosure and social isolation; social support, with family and community networks playing a central role in facilitating care; food insecurity, with participants reporting the profound impact of food insecurity on TB vulnerability; exposure to smoke, with participants citing exposure to cigarette smoke as a potential risk factor for developing TB; and housing conditions, with participants stating that overcrowded living environments facilitate TB transmission. Economic barriers, TB-related stigma, a lack of social support, food insecurity, and exposure to cigarette smoke are key social determinants of TB. These findings underscore the need to address social determinants of TB through targeted interventions, such as stigma reduction campaigns, financial assistance, and community support programs, to reduce the TB burden in Addis Ababa.

Keywords Social determinants, Tuberculosis, Food insecurity, Qualitative study

Tuberculosis (TB) continues to be the second leading cause of death from a single infectious agent in 2022, following coronavirus disease 2019 (COVID-19), and the number of individuals diagnosed with TB and treated increased significantly in 2022, after a decline of two years due to the COVID-19 pandemic[1]. In 2022, approximately 10.1 million people developed TB, of whom 1.2 million were individuals living with HIV. Additionally, approximately 1.4 million people die of TB, including 0.2 million individuals with HIV[1].

The etiological agent of TB is *Mycobacterium tuberculosis*, which is transmitted via respiratory droplets released by infected individuals. When inhaled by susceptible individuals, these droplets can lead to the development of TB. The bacteria responsible for TB can affect any part of the body but primarily target the lungs[1].

Notable advancements in biomedical interventions have reduced TB morbidity and mortality rates. These advancements include improvements in nutrition, diagnostic approaches, antibiotic treatment, and the availability of the Bacillus Calmette–Gillin (BCG) vaccine[2]. However, TB is strongly associated with social determinants of health[2]. Social determinants of health (SDH) state that societal factors, whether directly or indirectly, influence human health beyond individual characteristics[3]. The World Health Organization (WHO) defines SDH as "the conditions in which people are born, grow, live, work, and age"[3]. A study by the Canadian Medical Association revealed that addressing the social determinants of health is crucial for promoting equitable health outcomes for patients, families, and communities[4].

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TB has been linked to multiple factors, including poverty, undernutrition, HIV infection, smoking, and diabetes[1]. A study from Afghanistan revealed that food insecurity and poor nutrition contribute to the incidence of TB[5]. A study conducted in Ethiopia revealed that a lack of social support (42.7%) and perceived stigma of TB (45.1%) were psychosocial factors associated with TB[6]. Psychosocial conditions, including social stigma, were identified in 63.3% of TB patients in Nepal[7] and 47.6% in Turkey[8]. In addition, TB is often associated with smoking[9]. A study conducted in South Africa revealed that 38.3% of patients were exposed to cigarette smoke[10].

Studies have shown that various social determinants of health strongly influence the risk of contracting TB, care-seeking behavior, and the overall burden of the disease within the population. These determinants are critical for understanding disparities in TB incidence and outcomes across different groups and regions. However, few studies have examined the social determinants of TB using qualitative approaches to gain insights into the impacts of these social determinants. This qualitative study was conducted to gain a comprehensive understanding of the social determinants of TB to assist health workers, program planners, and policymakers in designing interventions and/or programs to control TB.

Materials and methods

Study design

A phenomenological approach was used to explore healthcare workers' and TB patients' experiences with the social determinants of TB and their impact on the risk of contracting TB, the ability to access timely TB diagnosis and treatment, and the overall burden of TB. Key informant interviews were conducted with healthcare workers who managed TB and TB patients. The Consolidated Criteria for Reporting Qualitative Research[11] were applied to ensure the rigor of the study (S1).

Study setting

This study was conducted at 20 health centers, two from each of Addis Ababa's 10 sub-cities. The interviews were conducted in a private room within health centers to ensure the confidentiality of the participants.

Study participants

A purposive sampling method was used to select healthcare workers involved in TB care and TB patients, ensuring adequate representation of key characteristics relevant to the study, including demographic diversity (such as age and sex) and treatment phases[12]. Patients with pulmonary tuberculosis who were at least 18 years old and had received treatment for at least 2 weeks were included in the study. Patients with multidrug-resistant tuberculosis (MDRTB) or severe health issues were excluded from the study. The study included 44 participants who met the inclusion criteria.

Data collection

Semi-structured interviews were conducted with healthcare workers and TB patients to explore their experiences and perspectives on the social determinants of tuberculosis. An interview guide was developed based on a literature review. The guide included questions to capture participants' experiences with economic barriers to care seeking, TB-related stigma, social support, housing conditions, personal behavior, and food access. The guide was sent to three experts to receive inputs for improvement and revised based on their suggestions. In addition, the instrument was presented to six people who were similar to the participants but did not participate in the main study, and the guide was refined based on the pre-test results. Data were collected from February 2022 to August 2022.

Before the interviews, the researcher explained the contents and purposes of the interviews to the participants in detail. The participants were welcomed to the study and encouraged to share their experiences openly. The principal investigator conducted interviews in the Amharic and English languages. Prompt questions were used to elicit additional information during the interviews. Audio recordings were made during the interviews, and field notes were taken to capture key observations and contexts. Data collection continued until data saturation was achieved. At the end of the interview, each participant provided their sociodemographic data. Both the audio interviews and the recorded notes were transcribed into English.

Data were collected from two sources, patients and healthcare workers, to enrich the findings and provide a more comprehensive understanding of the social determinants of TB. Data quality was enhanced by asking the participants whether the investigator accurately described and interpreted what they said.

Data analysis

An inductive methodology was applied. Thematic analysis consisted of six phases: familiarizing oneself with the data, developing initial codes, extracting themes, refining themes, naming themes, and reporting[13]. Thematic analysis helps to identify key themes and provides a structured presentation of the findings. The data were presented in textual form, and verbatim quotes from the participants were used to amplify the interviewees' voices.

Ethical considerations

Ethical approval was obtained from the Institutional Review Board of the College of Health Sciences of Addis Ababa University and the Ethics Committee of the Addis Ababa Public Health Research and Emergency Management Directorate. The Addis Ababa Health Bureau wrote a letter of support to the Subcity Administration Health Office. The Subcity Administration Health Office wrote a letter of support to the health centers. A letter of cooperation was submitted to the selected health center. The participants were informed in detail about the purpose of the study. Voluntary participants were included in the study after providing written informed consent before data collection. This study was conducted in accordance with the principles of the Declaration of Helsinki.

Results

Background information of the participants

Forty-four participants, including 20 healthcare workers (16 men and four women) and twenty-four TB patients (nine men and 15 women), were included in this qualitative study. A qualitative synthesis was conducted to identify the key themes. Thematic analysis revealed several themes from key informant interviews: economic barriers, TB-related stigma, social support networks, exposure to cigarette smoke, food access and availability, and housing conditions.

Food insecurity

The findings showed that food insecurity among TB patients has increased significantly during the pandemic. This is due to factors such as limited access to school meals, disruptions in the food supply chain, rising food costs, and increased risk of unemployment or job loss.

"Food access was reduced in the market related to the COVID-19 pandemic." (TB patient, P1).

"My children used to get free meals at school, but now that schools are closed, we cannot access school lunches anymore. We struggle to feed them properly." (P2).

"The food supply chain is now fragile." (P3).

"Food prices have increased, and it is harder to find fresh products in the market. We are eating less and less nutritious food because I cannot afford enough." (P4).

"Food prices have gone up, and I am worried about losing my job during the pandemic, making it even harder to eat. " (P5).

"Since the pandemic, I have lost my job, and it is hard to afford enough food for my family. We often skip meals, and I feel weaker and more susceptible to illness." (P6).

Exposure to cigarette smoke

The participants noted the possible link between exposure to cigarette smoke and susceptibility to TB. The results suggest that exposure to smoking may be associated with the development of TB.

"When I was working as a maid. Both the husband and wife were cigarette smokers. I was exposed to cigarette smoke, which could be a risk factor for this disease. There are no smokers in my family." (P7).

"I used to smoke a lot before I got sick, and lately I have realized that it makes me more susceptible to tuberculosis. " (P8).

TB-related stigma

The participants reported that the stigma of the disease within communities was more pronounced during the advent of COVID-19. Several participants expressed concerns that being on anti-TB treatment was still associated with stigmatized behavior in communities and that patients were afraid of being victimized or isolated from the communities. The participants reported experiencing heightened levels of stigma associated with TB during the COVID-19 pandemic.

"The spread of coronavirus in Ethiopia has led to increased levels of stigma among patients with TB, as people are highly concerned about the stigma associated with TB." (Healthcare worker, HCW1).

"Individuals with TB symptoms often do not visit health facilities for further examination because of fear of being diagnosed with COVID-19." (HCW2).

"During the COVID-19 pandemic, individuals with coughs have been reluctant to visit health facilities, often denying their symptoms during evaluations because of the fear of being stigmatized as having COVID-19. Patients have experienced increased stigma from the community during the COVID-19 pandemic, which has exacerbated the stigma associated with TB. As a result, the late presentation of TB patients for diagnosis negatively impacts treatment outcomes." (HCW3).

The analysis revealed that patients avoided visiting Directly Observed Treatment Short-Course Centers and other healthcare facilities despite exhibiting symptoms suggestive of TB. This reluctance stemmed from dual fears: fear of being diagnosed with either TB or COVID-19 and fear of facing community backlash. This avoidance behavior exacerbates the challenges associated with the early detection and management of TB.

"Patients did not want to visit DOTS centers… because of the fear of stigma associated with both TB and COVID-19 infection." (HCW4).

"This fear results in patients presenting too late, leading to delayed access to TB services. Consequently, patients become reluctant to visit health facilities, which can further delay their presentation for TB services." (HCW5).

Economic barriers

The participants described how financial difficulties prevented them from accessing TB services or continuing treatment, such as the inability to pay for transportation, health services, and food. The economic hardships created barriers to TB treatment, including delayed care seeking and concerns about increased TB transmission.

"I went to an organization that provides free health services and was tested for the disease. This organization was chosen because it offers free services. I cannot go to other health facilities because I cannot afford the cost of the tests. After I was tested and diagnosed with the disease, I was referred to this health center for further treatment and follow-up." (P9).

"I could not afford transportation costs to the clinic, so I delayed seeking care." (P10).

"Even though TB treatment is free, I still struggle to afford food and other basic needs while I am sick and unable to work." (P11).

Housing conditions

The participants reported that their living conditions posed challenges to TB treatment during the COVID-19 era, as some patients refused to disclose complete information about their contacts for further testing due to privacy concerns, potentially contributing to the spread of the disease within the community.

"The treatment of TB is significantly affected by the housing situation. Many patients with pulmonary tuberculosis refuse to provide details of their contacts, making tracing their contacts difficult. Healthcare workers do not consistently follow up their TB contacts, and this lack of follow-up can contribute to the spread of the disease in communities." (HCW6).

"In this catchment area of the health center, housing conditions are often overcrowded, as many people work as day laborers and live in small houses for shared rent. They also work in densely populated areas, which puts them at a higher risk of TB infection." (HCW7).

Social support

The participants emphasized the importance of social support from family, friends, and healthcare workers for TB treatment. Some participants reported that they had received much support from their families, friends, and healthcare workers, which made it easier for them to continue treatment. In contrast, other participants reported insufficient social support from family, friends, and communities.

The participants who reported receiving extensive support from their families, friends, and communities, including emotional support such as encouragement, helped patients cope with the stigma and isolation often associated with TB, and instrumental support, including financial assistance and housing, eased the economic hardships of starting and continuing treatment.

"My family encouraged me to test and support me during my treatment." (P11).

"I disclosed my illness. My family knew about my TB status. I had no job and no money. I talked to my family and friends about my illness to get more support. I currently live with my brother, who is always supportive. They have shown me their support by allowing me to live with them. You know, I am getting better and doing well." (P12).

Healthcare workers reported that their support for TB patients increased during the COVID-19 pandemic.

"Healthcare workers are supporting patients during treatment, especially during the COVID-19 pandemic. Yes, we are strongly supporting them; we are seeing better outcomes." (HCW8).

Discussion

This qualitative study aimed to investigate health workers' and patients' experiences with the social determinants of TB in Addis Ababa, Ethiopia. The social determinants of health had a significant effect on susceptibility to TB, utilization of care, transmission, and development of active disease in Addis Ababa. The key findings included the following: economic barriers delayed care uptake and exacerbated TB transmission; TB-related stigma created fear and isolation and discouraged people from seeking care; social support networks played a critical role in facilitating care uptake; food insecurity and exposure to cigarette smoke increased susceptibility to and development of TB; and overcrowding conditions contributed to TB transmission.

Several studies have examined the conditions and factors associated with tuberculosis, including socioeconomic factors, comorbidities, and environmental exposures[5–10]. These studies emphasize how these conditions increase the risk of both acquiring TB and developing active disease. However, the list of SDHs may vary depending on which population group is included in the study.

TB-related stigma was identified as a social determinant of TB that significantly impeded health access. Similarly, a study reported that stigmatization can strongly affect people seeking and accessing TB care[7]. Another study[14] revealed that TB-related stigma is an important social determinant of health that can impact health-seeking practices and illness management. Similarly, a study revealed that TB stigma associated with a lack of social support can lead to non-compliance[15]. This finding contradicts a study reporting that perceived TB-related stigma has no strong effect on patients' delay in seeking care for TB symptoms[16]. This inconsistency may be due to differences in the study populations included in the studies.

TB patients' economic constraints, such as inadequate money for transportation and payment for treatment, profoundly affect their pathways to treatment and care. Financial hardship, such as the inability to afford transportation and food, significantly affects TB treatment and care. Individuals with TB-related symptoms sought help from organizations that provided free services due to their economic hardships. This finding is in line with research findings that reported that economic deprivation was associated with TB, including a barrier to accessing healthcare[15]. The money spent on transportation, copayments for medication, and loss of work due to a medical appointment are costs associated with the use of healthcare services[15]. These economic barriers may cause a delay in contact with the health system where the diagnosis is made[15].

Social support plays a critical role in the TB prevention-care continuum. Inadequate social support significantly impacts TB treatment and care. One study reported that TB patients who lacked social support struggled with treatment and care[17].

Food insecurity significantly increases TB risk and is strongly affected by the occurrence of COVID-19. Food insecurity among TB patients has increased dramatically during the pandemic, due in part to limited access to school meals, the fragility of the food supply chain, rising food costs, and the risk of unemployment or job loss. These factors have been shown to worsen nutritional status, weaken the immune system, and increase susceptibility to TB. A study revealed that household food insecurity is present in TB patients[18].

Exposure to cigarette smoke may be linked to TB. Both food insecurity and exposure to cigarette smoke potentially increase susceptibility to TB infection, underscoring the need for integrated interventions that address nutrition and smoking cessation. Addressing food insecurity through targeted interventions, such as food assistance programs, is essential for reducing TB vulnerability and improving treatment outcomes.

The profound impact of SDH on TB risk, TB transmission, development, and care-seeking emphasizes the need for targeted interventions to address these determinants and reduce the TB burden in Addis Ababa. A more effective TB management strategy could be implemented in the fight against TB through the development and delivery of preventive strategies that consider the social determinants of TB.

The strength of this study is the use of a qualitative approach to explore TB patients' experiences and health workers' perspectives on the social determinants of TB to identify the local circumstances of the study population. A limitation of this study was that it was not possible to obtain audio recordings from all participants. This affected the transcription of the participants' responses, which limited their ability to fully transcribe the data. Carefully prepared field notes were used for the analysis. Additionally, the decision to include both healthcare workers and patients as participants may introduce biases or limitations that should be considered. For example, the different perspectives and experiences of these two groups could pose challenges in interpreting the data or lead to contradictory findings regarding TB management. Reliance on self-reported data from healthcare workers and patients can introduce biases that affect the reliability of our findings.

Conclusions

TB-related stigma, lack of social support, food insecurity, economic hardship, exposure to cigarette smoke, and overcrowding conditions are the social determinants of TB. These findings emphasize the importance of mitigating the social determinants of health in TB treatment. A more nuanced understanding of these factors will strengthen TB treatment strategies and improve patient outcomes.

Data availability

Data is provided within the manuscript.

Received: 22 July 2024; Accepted: 2 May 2025
Published online: 07 May 2025

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Acknowledgements

We would like to thank the patients and health workers who participated in this study. We also thank the data collectors and supervisors for their contributions. Finally, we thank Addis Ababa University for sponsoring this study.

Author contributions

YA conceived the idea and conducted the study; all the authors designed the study methodology, analyzed and interpreted the data, and wrote and approved the manuscript.

Funding

Addis Ababa University provided financial support. The funder did not influence the design of the study; the

data collection, analysis, or interpretation; or the writing of this manuscript.

Declarations

Competing interests
The authors declare no competing interests.

Ethics statement
This research was approved by the Institutional Review Board of the College of Health Sciences of Addis Ababa University and the Ethics Committee of the Addis Ababa Public Health Research and Emergency Management Directorate. This study was conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was obtained from all the participants.

Additional information
Supplementary Information The online version contains supplementary material available at https://doi.org/10.1038/s41598-025-01059-2.

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