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TB Stigma in Nigeria: A Health Stigma and Discrimination Framework Analysis

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Abstract

Background: Nigeria is a country with a high burden of TB with low treatment coverage and high TB mortality. TB stigma is a major barrier to accessing TB care and a challenge to an effective response. This study adopted the health stigma and discrimination framework of Stangl and colleagues to explore the drivers and facilitators of TB stigma, TB stigma marking, manifestations of TB stigma, and outcomes.

Methods: The study analysed qualitative open-ended responses on TB stigma experience provided by a total of 2,061 survey respondents comprising 1,404 persons with TB, 337 caregivers of PWTB, 125 community representatives, and 195 healthcare providers. Survey respondents were drawn from 18 states, three from each of the geopolitical zones of Nigeria. The qualitative data were coded deductively using domains in the Stangl et al. framework.

Result: We found TB stigma to be widespread in Nigeria, driven largely by fear of infection and death. TB stigma intersects with gender discrimination, and HIV stigma and stigma are associated with deviation from sexual norms. TB stigma manifestations include internalized stigma, secondary stigma and perceived stigma, with common experiences such as avoidance behavior, shaming, blaming and insulting PWTB.

Conclusion: TB stigma is widespread in Nigeria and is driven largely by fear of infection and death. TB stigma has both health- related (delayed diagnosis, poor treatment adherence and treatment completion) and non-health-related impacts (social exclusion, mental health and poverty), and TB stigma should be given priority in National TB programmes in Nigeria and globally if the incidence and prevalence of TB must be reduced. TB stigma intersects with gender discrimination, and HIV stigma, and stigma associated with deviation from sexual norms. It manifests in different forms, including internalized stigma, secondary stigma and perceived stigma, often finding expression in avoidance behavior, shaming, blaming and insulting PWTB. The study concludes that improving Nigeria's TB response requires improving community-level TB knowledge as well as improving TB knowledge among non-TB healthcare providers who often stigmatize TB care providers in facilities.

Keywords: TB stigma; TB diagnosis; TB treatment; TB treatment adherence; Nigeria; Framework analysis; poverty; social exclusion; mental health

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Introduction

With an incidence of 219 tuberculosis (TB) cases per 100,000 persons and an estimated TB burden of 467,000 persons, Nigeria remains a high burden country of interest [1]. Despite its high burden status, treatment coverage remains low [2]. TB cases spiked between 2020 and 2021 due to COVID-19 disruptions to TB services [2,3]. Recent estimates show that one person dies every four minutes as a result of TB in Nigeria [2] and this situation may be worse because there is evidence of TB underreporting in Nigeria [4]. Stemming the spread of TB requires preventing new infections and treating infected persons since there is strong evidence that effective TB treatment makes patients non-infectious [5,6]. However, stigma is a barrier to effective treatment [7] and general TB control programs [8,9]. Nigeria's target is to reduce TB incidence by 50% and TB mortality by 75% by 2025 [10].

Stigma is defined here as a negative identity marking that promotes multidimensional discrimination against the bearer. Stigma devalues the bearer and promotes negative stereotypes [11]. Achieving an effective TB control programme requires addressing the problem of TB stigma, among other things.

TB stigma is prevalent in many parts of the world. TB patients experience stigma from TB-noninfected community members [12-18] and even from close associates such as family/household caregivers and friends [19-21]. Fear of contagion fuels TB stigma [22-24] as does its association with HIV [25,26] and with death [12]. However, other factors have been implicated. Many people associate TB with physical weakness and deviant behaviours such as smoking and excessively high sexual libido, and TB is also believed to be common among migrants [27]. For this reason, discrimination against weak people, social deviants and migrants may be transferred to TB patients. TB is believed to be caused by promiscuity [28] and stigmatizing TB patients may be a negative sanction and a way to reinforce social norms. In some settings, TB is considered a curse, probably the result of wrongdoing [29] and the curse justifies the stereotypes and blame that the patient suffers. The TB standard of care may also reinforce stigma. Directly observed treatment (DOT), for instance, may infringe on people's autonomy and freedom of movement [30].

Health-related stigmas have been documented for a wide range of health conditions, such as obesity [31,32] HIV, [33-36] mental illness [37-40] leprosy [41] and diabetes [42] Generally, stigma is a stressor [32] that negatively impacts health [43]. Moreover, healthcare access is limited by delays in seeking care and poor adherence to treatment [7,44]. In Nigeria, TB knowledge and attitudes are poor [45] and TB-related stigma is high among different subpopulations [25,46]. TB stigma manifests in avoidance behavior and verbal abuse [35,47] and the documented drivers in Nigeria are poor TB knowledge (prevalence of myths around spiritual causation), fear of contagion and death [48] and fear of isolation from the general public [49].

In Nigeria, healthcare providers working in TB sections also fear being infected due to the poor state of Directly Observed Treatment Centers, which typically lack ultraviolet germicidal irradiation (UVGI); additionally, these providers are stigmatized by fellow healthcare workers as potential sources of TB infection [50]. TB stigma intersects with gender discrimination in Nigeria, with women being on the receiving end [51] and with location (rural vs urban) [52], and poorer outcomes in rural areas. Stigma has directed the socioeconomic consequences, especially for women [8,23] and its continuation will rob the world of whatever gains may have been made in ensuring healthy lives and promoting the wellbeing of all. Studying stigma thus allows room for intervention and monitoring [53].

Explaining TB stigma

Erving Goffman's expose remains a landmark in explaining stigma. According to Goffman, stigma refers to bodily signs that may be 'cut or burnt into the body' …'to expose something unusual and bad about' the bearer's moral status' [54]. Modern usage, however, refers more to the disgrace or shame associated with a thing, including a health status, which makes the thing dangerous. Stigma causes people to perceive the bearer as not whole or usual but as tainted and discounted. The undesirable attributes that lead to stigma are those not in agreement with people's stereotypes of ideal types of persons. It is further described as an undesired differentness that represents the relationship between an attribute and a stereotype [54]. Goffman identified three types - abominations of the body (physical deformities), blemishes of individual character, and tribal stigma (race, nationality, religion). People perceive bodily defects as retribution for something bad the bearer of the stigma or their parents did. Health-related stigma fits partially into the first category, partly because health status may not be permanent. It is also possible for abominations of the body to intersect with blemishes of individual character. That is, deformities may be a result of character flaws and deviation from what is considered normal and acceptable behaviour.

Stangl and colleagues offered a framework that speaks directly to health-related stigma—the health stigma and discrimination framework [53]. They identified different domains of health-related stigma, which include drivers and facilitators of stigma, stigma marking, manifestations of health-related stigma, and outcomes. Drivers of stigma typically include fear of infection or fear that infected persons will be unproductive if employed. Facilitators include social/cultural norms, health policy, the legal environment, and the presence or absence of safety standards and PPE at healthcare facilities, factors that reinforce stigma. Stigma marking refers

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to the signs by which persons to whom the stigma is applied are identified and separated from others. Stigma manifestations are broadly divided into experiences and practices. Stigma experiences are different forms of discrimination: internalized or self-stigma, perceived stigma, anticipated stigma and secondary stigma. Stigma practices include stereotypes, stigmatizing behaviour, and discriminating attitudes [53]. When stigma is internalized or perceived, concealment may be the natural reaction. Holzemer et al. had previously identified several types of stigmas, including perceived, internalized and associated stigmas [35]. Perceived stigma refers to stereotypes, prejudices and discrimination [38]. Stigmatizing behavior may include blame, insult, avoidance and accusation [35] and may be implicit or explicit [55]. Stigma victims are judged, rejected and discriminated against.

According to Stangl et al. [54] stereotypes and prejudice are both drivers and manifestations of stigma—they fuel and are reinforced by stigma. Stigma outcomes include those for the affected population and may include poor access to justice, limited healthcare services due to attempts at concealment and presenting late for diagnosis, poor uptake of testing, poor retention in care or compliance with treatment, or, on the flipside, resilience, that is, the power to challenge stigma. For institutions, the outcomes could include broken laws and policies and, on the positive side, the enactment of new laws and social protection and inclusion policies.

When applied to TB, the framework helps us understand the drivers and facilitators of TB, TB marking, manifestations of TB stigma and outcomes. Further shedding light on TB stigma facilitators is the observation that the fear associated with stigma is a response to a threat, which may be physical, as in the case of fear of being infected or harmed, or symbolic, as there is a strong dislike for persons perceived not to conform with mainstream cultural values [53]. Societies stigmatize out of the perceived need to enforce social norms [42]. Community members may stigmatize TB patients out of fear that they are carriers of an infection that causes death and, by implication, death itself. Due to stigma, people with TB conceal their health status from family and coworkers [56] and so may benefit from timely diagnosis and treatment.

Methods

Study design

In this study, we analysed qualitative data from a larger study with a mixed-method design that included surveys for four categories of participants—people living with TB (PWTB), family members/caregivers of the PWTB, representatives of communities where the identified PWTB lived, and healthcare providers in TB facilities. The interviewer-administered questionnaires included open-ended questions designed to allow the different categories of participants to share their stigma experiences. The qualitative responses were audio-recorded and written down.

We extracted qualitative responses from respondents who answered open-ended questions on TB experience (1,404 PWTB; 337 family members/caregivers of PWTB; 125 representatives of communities where identified PWTB live; and 195 healthcare providers) for analysis.

Study location

The study was conducted in 18 states in Nigeria, three from each geopolitical zone, namely, Kogi, Nasarawa, and Plateau (North Central); Adamawa, Bauchi, and Gombe (North East); Kano, Katsina, and Sokoto (North West); Abia, Anambra, and Imo (South East); Delta, Rivers and Cross River (South South); and Lagos, Osun, and Oyo (South West). The states were selected based on TB prevalence statistics, availability of data at the local government level, and security reports on suitability for field visits. The study was conducted in three to four local government areas in each state.

Inclusion criteria

Persons with TB were included in the survey if they met the following inclusion criteria: were confirmed to be TB positive by a health facility or community-based organization providing care to TB patients or had recently (not more than 6 months before study) completed TB treatment, were 16 years of age or older, resided within selected communities for the study, and were willing to participate. The inclusion criteria for family members/ caregivers were being 18 years or older, caring/supporting PWTB for a minimum of 3 months prior to study, and having no mental incapacitation. The inclusion criteria for community representatives were being aged 18 and above, knowing a PWTB who has been on treatment or has recently completed TB treatment, and having lived in the community long enough to be knowledgeable about the issues within the community, while the inclusion criteria for healthcare workers were being a health provider at a known TB facility for a minimum of 6 months and involvement with some aspect of TB clinical services within the facility. For all categories of participants, selection was purposive.

Administration of research instruments

We used semi-structured questionnaires for the different categories of participants. However, only the open- ended questions on stigma experiences were used for the present study.

Data analysis

We adopted a deductive coding method with the following nodes: drivers and facilitators of TB stigma, TB stigma marking, manifestations of TB stigma, and TB stigma outcomes. The coding was performed with NVivo 12.

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Ethics approval

The study was guided by the core principles of beneficence, respect for persons and justice. The research team committed to maintaining the highest standards of honesty, fairness and equity in interpersonal and professional relationships during the research. Informed consent form containing sufficient information about the project was read to the respondents to ensure that they understood what their participation involved, and only those who agreed to sign the consent form were interviewed. To preserve the identity of the participants, no identifying information was collected during the study. The data collectors ensured that interviews were conducted away from and outside the hearing distance of third parties. The study protocol and tools used were approved by the National Health Research Ethics Committee of Nigeria.

Results

Drivers and facilitators

Fear is a major driver of TB stigma across the states studied. Community members, including significant others of PWTB, fear that they may be infected with TB, as the quotes below suggest:

I witnessed a scenario where a husband stayed away from his wife (TB Patient) and finally divorced her because of the fear that he may be infected with TB (male community member, 58 years, Bauchi).

My friend had TB some years back, whenever he came to where we lived, we usually stayed away from him because we were afraid of having TB (male community member, 58 years; Bauchi).

This view is corroborated by PWTB. One person explained:

People don't like to be with TB patients and don't like to be associated with them for fear of being infected (male PWTB, 62 years, Lagos).

A major reason why people fear TB infection is that TB infection is associated with death, so people stigmatize PWTB (male PWTB, 57 years, Adamawa). Another PWTB explained that the fear of isolation is a major reason why community members are afraid of being infected. People fear that if they are infected, they will be isolated, and they will also lose their friends (male PWTB, 57 years, Adamawa). The fear that they would be discriminated against if infected thus makes them discriminate against PWTB. Healthcare providers providing services to PWTB are also stigmatized by their colleagues and other close associates out of fear of being infected (female healthcare provider 47 years, Lagos; male healthcare provider, 26 years, Cross River).

We found evidence that some structural factors facilitate TB stigma. Religious institutions reinforce TB stigma, with several participants making reference to PWTB being rejected at places of worship or confined to rear seats (female PWTB, 48 years, Imo). In some cases, PWTB lose their leadership positions in places of worship (Male PWTB, 74 years; Anambra), or they are denied full participation in religious observances such as the holy communion (Female PWTB, 46 years; Anambra). The quotes below support this finding:

'*… even in the mosque people don't pray close to him, he felt dejected and alone (*male community member, 35 years, Gombe).

The mosque Imam specifically summoned and asked me not to come to mosque to pray again, that I should be observing my prayers at home (male PWTB, 51 years, Oyo).

The stigma I am telling you I faced is that when I got infected, they won't open the door for me to enter the mosque to listen to our Islamic teachers (male PWTB, 40 years, Nasarawa).

'*TB patients are avoided in the mosque; they have to stay at the back of the congregation* (male community member, 51 years, Sokoto).

Similar experiences were recorded for Christians. Several community members made reference to PWTB sent out of churches (male community member, 54 years; Imo; female family member, 38 years; Rivers). Another major institution that reinforces TB stigma is schools. One PWTB said she was sent out of school because of TB (female PWTB, 22 years, Imo). Additionally, health facilities reinforce TB stigma. TB treatment centres and PWTB are treated like places and people to be feared and avoided. One healthcare provider explained:

'*In our health centre, the TB office was placed behind the facility so that their contact with us [other healthcare providers in the facility] and our patients will be minimal'* (female healthcare provider, 51 years, Oyo State).

In one facility, the PHC coordinator '*complained that the TB unit should be outside the clinic so that the patients and staff do not infect people coming to access healthcare*' (female healthcare provider, 36 years, Cross River).

Cultural beliefs relating to health are also major facilitators of TB stigma. The study documented cultural practices that shame PWTB. An example is found below.

Here, in the village, we have a tradition: whenever anyone is sick, especially a communicable disease, it will be announced [to the entire community] that the person has TB; therefore, people will be distancing themselves from him/her. They don't eat with you; separate plates and cups are provided for the patient. Sometimes, a health worker reveals your TB status [to the community], and people begin to stigmatize you (male PWTB, 31 years, Sokoto).

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Health beliefs of close associates of PWTB also facilitate TB stigma. In some communities, TB is believed to have spiritual causation (female PWTB, 39 years; Anambra), which affects what treatment options community members consider suitable and the likelihood of stigma. Another facilitator of TB stigma is the low level of awareness of the National Policy on TB (male family member, 28 years, rivers).

Stigma marking

The most common TB stigma marking in this study was coughing. Coughing repeatedly is commonly used as a marker of PWTB. The excerpts below refer to this major marking.

'*I was coughing too much and that made my friends and some of my customers run away in fear*' (male PWTB, 35 years, Imo)

Another respondent said:

'*… most of my friends ran away from me because I was coughing terribly*' (female PWTB, 26 years, Kogi). Another stigma marking, though less common than coughing, is mouth odor, as one respondent suggested:

'*I followed a friend to a public function, and as I was talking, I did not know that they were perceiving the odor from my mouth because of my TB status*' (male PWTB, 32 years, Rivers).

Intersecting stigmas

The study provided evidence in support of intersecting stigmas. People were marked for TB stigma if they were HIV positive, suffered significant weight loss, or had other intersecting features, such as being considered sexually immoral. According to some PWTB studies, people with HIV are suspected to be TB positive, and vice versa (female community member, 22, Abia; male PWTB, 60 years old; Bauchi). The implication is that PWTB may suffer HIV stigma because, as one respondent argued, a patient with TB 'was suspected to have HIV so he was isolated' (female community member, 22 years, Abia).

TB stigma also intersects with STI stigma. A study participant explained:

'*I was suspected to be suffering from a sexually transmitted infection because I was losing weight*' (male PWTB, 36 years, Oyo).

Manifestations

Stigma experiences and practices Internalized stigma

The study showed that PWTB internalize popular stereotypes and beliefs about their status and begin to isolate themselves from the community, as this quote suggests:

'*When I went to the mosque, people stayed away from me, and I too stayed away from them in order not to spread TB virus*' (Male PWTB, 65, Bauchi).

Another respondent said:

'*I do try to distance myself from others ever since I was diagnosed with TB*' (male PWTB, 25 years, Osun).

Secondary stigma

The study documented secondary TB stigma against healthcare providers working in TB units, typically from other healthcare workers; close associates of healthcare providers providing services to PWTB; and the larger community. Healthcare workers experiencing secondary TB stigma said:

'*Here at the hospital, my colleagues don't shake hands with me … at home, I had issue with my wife, she refused to come close to me when I started treating TB patients. In the community, people distance themselves from me, refuse to shake hands with me and so on*" (male healthcare provider, 34 years, Sokoto).

'*… my colleagues and I do experience stigmatization from fellow health workers who are not treating TB patients*' (Female healthcare provider, 49 years old, Lagos).

'*My colleagues are running away from me for fear of being infected* (female healthcare provider 47 years, Lagos).

'*My other colleagues keep running away from me for fear of being infected…. In my community, the locals know I work as a TB health worker, so they tend to isolate themselves from me due to fear of contacting it*' (male healthcare provider, 26 years, Cross River).

Participants also mentioned secondary TB stigma targeted at the families of PWTB. One caregiver shared her experience of '*discrimination against TB patients and their family members within the immediate community, marketplace and hospital*' (female family member, 56 years, Kogi).

A respondent corroborated these findings in the following words: '*My brother who has TB and I are experiencing stigma*' (male family member, 38 years old, Bauchi). Another respondent, a caregiver/relative of a PWTB, explained that community members have been avoiding him, would not eat with him again, and no longer associate with him (male family member, 30 years, Gombe).

Perceived stigma

Some PWTBs perceived TB stigma and acted in conformity with TB stigma in their community. One of them said: '*When I was diagnosed with TB, I decided to not tell anybody about it outside my family, and I also stayed away from people. I lived in my room for the treatment period, and my son used to collect drugs on my behalf because I heard that some of the TB patients are experiencing stigma from the community, which hinders them from living their normal*

lives and accessing health care services (female PWTB, 60 years, Bauchi).

Stigma practices

Common TB stigma practices include avoidance. People avoid TB patients for fear of infection. Several study participants described their experience of avoidance behavior, as shown in the quotes below:

I felt bad when my son was diagnosed with TB because people started avoiding him (female family member, 60 years, Lagos).

'*Neighbors do not allow their own children to play with my children because of fear of contracting TB*' (female family member, 26 years, Cross River).

A respondent explained that avoidance behavior also involves avoiding things touched by PWTB. She shared her experience in these words:

'*… she started avoiding me to the extent of not touching anything I used in the house, and finally, she left the house for me*' (female PWTB, 22 years, Imo).

One respondent said:

'*I felt unloved because my parents are both dead and my uncle's wife is the one that feeds me so, sometimes when I want to sit among them; they will all run away. Even my food, they keep it in a distant place for me to go and pick it*' (female PWTB, 30 years, Gombe).

PWTB also experience shame and insult. Community members shame them in a number of ways. One PWTB said: '*I feel disgraced because whenever we meet, I feel ashamed of the way he covers his nose*' (male PWTB, 40 years, Bauchi).

Another respondent said:

Alot of people insult me, anytime I am come [around] they will be running away from me or they will say "see your TB patient there", that I should go and see [attend to] them…. They call me Mr TB' (Female healthcare provider, 32 years, Nasarawa).

Patients also explained that community members believe that their TB status is their 'fault' (female PWTB, 55 years, Bauchi).

Stigma Outcomes

Delayed Diagnosis

Delayed diagnosis is a major outcome of TB stigma. As one respondent argued,

Some people have TB, but they don't know that they have it because of stigma; they refuse to go to the hospital for diagnosis, and some are in fear of whether it is HIV. That self-stigma they have and that of the community hinder them from seeking medical care (male PWTB, 60 years, Bauchi).

A respondent said:

Before I started treatment, people always asked me to visit the health facility, but I was always ashamed of myself

(male PWTB, 37 years, Lagos).

Often, TB patients have be compelled by their relatives to present for diagnosis. One said:

I was forced by my brother to go to the hospital for TB diagnosis after I refused to go [for diagnosis] even though I was coughing because I don't want to experience the stigma that TB patients are experiencing (male PWTB, 45 years, Bauchi).

Similarly, a respondent explained her delayed diagnosis:

'*One of my relatives in the village experienced a high level of stigma from her family and community members. She was isolated at home; nobody was going close to her, let alone sharing items [cup, plate, mat and anything] with her. Seeing that stigma in her case made me refuse to go to the hospital before my (eventual but delayed) diagnosis* (female PWTB, 40 years, Bauchi).

Treatment Adherence

PWTB sometimes begin treatment but discontinue treatment and do not complete treatment due to stigma. The sense of shame associated with visiting TB centres for treatment prevents them from continuing treatment. Participants talked about what he had noticed in other patients:

The TB stigma made them (stigmatized patients) not to complete their treatment (male family member, 43 years; Sokoto).

A neighbor within this community stopped treatment because of [TB] stigma (male PWTB, 49 years, Rivers). Another respondent said:

I know of a man in the neighborhood who abandoned treatment and died (male family member, 32 years, Adamawa).

Another respondent referenced a similar case where stigma resulted in cessation of treatment and death:

… because he was stigmatized, he was alone, so he stopped taking his drugs, which led to his death (male PWTB, 39 years, plateau).

Societal Exclusion

Another major outcome of TB stigma is exclusion from social activities. PWTB are prevented from participating fully in schooling, family and community gatherings, and economic activities, as these participants posited:

I stopped going to school due to stigma. My friends kept a

distance from me because I have TB (Male PWTB, 22 years, Sokoto).

They [family members] stopped me from sharing opinions in family meetings (Male PWTB, 69 years, Anambra).

[The] Youth President stopped me from saying my opinion in meetings (Male PWTB, 43 years, Anambra).

A respondent explained that stigma has resulted in her loss of confidence. She said, I no longer felt comfortable in gatherings because people did not like to associate with me (female PWTB, 25 years, Kogi).

Poverty

TB stigma negatively impacts livelihoods. PWTB are compelled to stop their economic activities, whether in the informal or formal sector. Respondents said:

I used to work as a janitor at a shopping mall. I got sacked because of how thin I was and how bad my health was then … (female PWTB, 34 years, Anambra).

I was a driver working with a local company, but once they [the management] realized I had TB, they asked me to stop coming to work until I got better … (male PWTB, 38 years, Gombe).

Another respondent said:

My brother who has TB…, people don't want to sit with him, … and he was sacked at his place of work (female family member, 22 years, Oyo).

'*Some companies sack TB patients. Their families … and the people in the community avoid them*' (female healthcare provider, 49 years, Lagos).

My former colleague was sacked as a result of TB, and her family members also stigmatized her … (female PWTB, 38 years, Imo).

Discussion

This study provides evidence that TB stigma is widespread in Nigeria. Stigma causes low self-esteem and generally poor psychological wellbeing, such as anxiety, clinical depression and stress [8,42,57,58]. This results in nondisclosure of health status and poor treatment compliance [8] and poor health outcomes and overall quality of life of TB patients [59]. Often, It negatively impacts the health of PWTB because they underutilize healthcare services [54,60] and this further leads to poor quality of life [35] as affirmed by the current study. An earlier study in Nigeria found a high level of perceived stigma to be associated with anxiety, clinical depression and stress [58] similar to findings from Ethiopia [61]. Stigma also negatively impacts public health, as it promotes social inequalities and health disparities and leads to negative health outcomes, such as morbidity and mortality [60].

TB treatment may be further complicated by COVID-19 in Nigeria,[3] and there is a need to renew efforts to address all barriers to an effective TB program in the country.

Previous studies have shown that health stigma co-occurs with other stigmas, such as sexual orientation, tribal, and occupational stigma [53]. We found that TB stigma intersects with HIV stigma since there is co-infection and persons with TB may be perceived to be HIV positive, similar to what previous research suggests [62]. Studies in other parts of the world suggest other forms of intersectionality to which policy and interventions need to be sensitive. For instance, migrants are often overrepresented among the population of people living with TB [7]. TB stigma also intersects with gender [8,24] with women being more likely to be victims of TB stigma than men are. Women are judged and blamed for their TB status because of the association of TB with sexual promiscuity [28] which is considered men's exclusive preservation in some settings. TB stigma is also generally lower for people with high social support [62,63]. One study showed that when people 'understand the relationship' between HIV and TB, the likelihood of TB stigma decreases [62]. In summary, addressing TB stigma requires addressing other forms of stigma, such as HIV stigma, gender discrimination, and other forms of exclusion.

Carefully planned and implemented interventions can reduce stigma [37,42,64]. Improving Nigeria's TB programme requires strengthening interventions that seek to improve public knowledge of TB. As earlier studies have shown, different manifestations of TB stigma (internalized, perceived stigma and community stigma) decrease with greater TB knowledge [45,65]. TB knowledge also increases the likelihood of TB self-disclosure [66]. Therefore, health education programs can reduce TB stigma and improve patients' compliance with treatment, which is in line with findings from previous studies [61,66]. Improved knowledge and attitudes, which can be achieved through community-level TB education, will positively impact detection and treatment and overall TB response [67,68].

Improved TB governance is required to strengthen the public health response to TB in Nigeria [69]. An earlier study stressed the need for codesigning solutions to TB stigma with frontliners such as local government TB supervisors and interventions recruiting and training more community volunteers [67]. Nigeria's TB response needs to be better integrated into general public health services [70] and there is a greater need for more activism from the TB community to address TB stigma [30] and improve response. It may also be important to prioritize the retraining of TB service providers [70] and as this study suggests, other non-TB healthcare providers on secondary stigma, which is perpetrated primarily by this category of people. Finally, there is need for additional evidence in support of effective interventions that reduce TB stigma [71].

Conclusion

TB stigma is widespread in Nigeria and is driven largely by fear of infection and death. TB stigma has both health-related (delayed diagnosis, poor treatment adherence and treatment completion) and non-health-related impacts (social exclusion, mental health and poverty), and TB stigma should be given priority in National TB programmes in Nigeria and globally if the incidence and prevalence of TB must be reduced. TB stigma intersects with gender discrimination, and HIV stigma, and stigma associated with deviation from sexual norms. It manifests in different forms, including internalized stigma, secondary stigma and perceived stigma, often finding expression in avoidance behavior, shaming, blaming and insulting PWTB. The study concludes that improving Nigeria's TB response requires improving community-level TB knowledge as well as improving TB knowledge among non-TB healthcare providers who often stigmatize TB care providers in facilities

Declarations

All manuscripts must contain the following sections under the heading 'Declarations':

Ethics approval and consent to participate

The study was guided by the core principles of beneficence, respect for persons and justice. The research team committed to maintaining the highest standards of honesty, fairness and equity in interpersonal and professional relationships during research. An informed consent form containing sufficient information about the project was read to the respondents to ensure that they understood what their participation involved and only those who agreed to sign the consent form were interviewed. To preserve the identity of the participants, no identifying information were collected during the study. Data collectors ensured that interviews were conducted away from and outside hearing distance of third parties. The study protocol and tools were approved by the National Health Research Ethics Committee of Nigeria.

Consent for publication: Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

GE, RA & OC conceptualized and designed the study. MK & GE conducted data analysis and drafted the manuscript. EU, OC and CA provided technical support in training of interviewers and data collection. GE, RA, EU, OC and CA reviewed the manuscript.

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