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# Psychological and Social Impacts of Tuberculosis-Related Stigma on Patients - A Comprehensive Review

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### Abstract

Stigma, defined as the devaluation, discrediting, and discrimination directed toward individuals with certain attributes, such as Tuberculosis (TB), continues to be a significant barrier to effective TB control [32]. TB-related stigma deeply impacts patients' mental health, social relationships, and treatment adherence. This narrative review explores the psychological and social effects of TB stigma, focusing on depression, anxiety, suicidal ideation, social isolation, and job loss. A systematic search of the literature was conducted across PubMed, Scopus, and Google Scholar for peer-reviewed articles published between January 2020 and June 2025. The evidence consistently indicates that stigma contributes to emotional distress, internalized shame, and low self-worth, factors closely linked to depression, anxiety, and suicidal thoughts [33]. Socially, stigma results in exclusion, discrimination, and job insecurity, with many patients facing workplace dismissal or withdrawing from social interactions to avoid judgment. These effects are especially severe for women, who often experience compounded stigma related to both their disease and gender [2].

The review emphasizes the urgent need for stigma-reduction strategies, the integration of psychosocial care into TB services, and policies that protect the dignity and rights of affected individuals. Addressing all forms of stigma is crucial for improving patient outcomes and promoting equitable TB control.

## Introduction

Tuberculosis (TB) continues to pose a dual burden of disease and social stigma worldwide. According to the World Health Organisation [26] over 10 million people contract TB annually, with approximately 1.5 million deaths, making it one of the leading causes of infectious disease mortality. However, the burden of TB extends beyond its medical complications. A growing body of research has revealed the pervasive psychological and social consequences of TB-related stigma across different cultural, economic, and geographic contexts.

Psychologically, stigma often triggers intense emotional distress among patients. In Kenya, Mbuthia et al., [17] reported that TB stigma led to depression, feelings of worthlessness, and social withdrawal. Similarly, Pradhan et al., [29] in India found that internalized stigma was strongly associated with suicidal ideation among TB patients, highlighting the profound mental health impact. In the Netherlands, [34] found that fear of social rejection and discrimination discouraged Eritrean migrants from seeking treatment for latent TB, suggesting that stigma can act as a barrier to early diagnosis and care.

Stigma can manifest in multiple forms, anticipated, enacted, and internalized, and is often exacerbated by socio-cultural beliefs, poverty, and its association with HIV. For instance, in South Africa, [18] observed that community-level stigma discouraged people from visiting healthcare facilities for fear of being seen and judged by others. In Pakistan, Akbar et al., [1] found that TB stigma led to job loss, economic hardship, and deterioration of family relationships, especially among male breadwinners. Moreover, both Alselwi, [3] and Oladele et al., [23] highlight how stigma is often rooted in misinformation and moral judgments, further perpetuating marginalization.

Gender also plays a critical role in shaping stigma experiences. In Uganda, Stanton et al., [35] documented how women with TB were more likely to face blame, social exclusion, and marital disruption than men. In rural Tanzania, [7] found that women delayed seeking medical care due to fear of community gossip, compounded by their economic dependence on male partners. These findings underscore the gendered nature of TB stigma, often leaving women disproportionately affected.

In light of these multidimensional impacts, this review aims to:

1. Summarize the psychological repercussions of TB-related stigma, including depression and internalized shame;

2. Examine the social consequences such as isolation, unemployment, and family conflict;

3. Explore how gender and geographical context influence the manifestation and effects of stigma;

4. Identify research gaps and recommend practical, evidence-based strategies for stigma reduction.

By synthesizing current evidence across diverse settings and study designs, this review hopes to inform culturally sensitive interventions and support policies aimed at minimizing stigma-related barriers to TB care and well-being.

## Methodology

### Overview

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure methodological rigor and transparency in the identification, screening, selection, and reporting of studies [27].

### Search strategy database selection

A comprehensive literature search was conducted using three major electronic databases: PubMed, Scopus, and Web of Science, selected for their extensive coverage of peer-reviewed publications in medicine, public health, and the social sciences. To capture relevant grey literature, supplementary searches were carried out via Google Scholar and institutional repositories, including those of the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), and various national tuberculosis control program portals. This approach ensured the inclusion of both empirical research and policy-oriented reports addressing tuberculosis-related stigma.

### Search terms

The following search terms and their variations were used in combination with Boolean operators (AND, OR) to retrieve relevant studies: "tuberculosis-related stigma," "TB stigma" OR "TB discrimination," "stigmatization of TB patients," "tuberculosis stigma social effect," and "tuberculosis stigma psychological effect." This strategy was developed to identify literature addressing the psychological (e.g., depression, anxiety, suicidal ideation) and social (e.g., isolation, job loss) consequences of TB stigma.

### Search period

The literature search covered studies published between January 2015 and June 2025. The final search was conducted on June 10, 2025.

### Eligibility criteria

Studies were eligible for inclusion if they explored tuberculosis-related stigma with a specific focus on its psychological or social impacts, were original research studies employing qualitative, quantitative, or mixed-methods designs, and were published in English with full-text availability.

### Exclusion criteria

Studies were excluded if they focused solely on the clinical, epidemiological, or biomedical aspects of TB without addressing stigma; if they were reviews, editorials, opinion pieces, or non- peer-reviewed commentaries; or if they were not available in English or lacked accessible full text.

### Study selection process

All identified records were exported into Mendeley Reference Manager to facilitate citation organization and the removal of duplicates. The initial database search yielded 2,188 articles. After removing duplicates, 210 unique records remained.

One reviewer, Gideon Yiadom independently screened the titles and abstracts of all identified articles based on predefined inclusion criteria. This screening process resulted in 140 potentially eligible studies. A full-text review was then conducted independently by the same reviewer to assess eligibility. Any disagreements during the screening or full-text review were resolved through discussion or consultation with second reviewer, Dr. Lydia Asante.

Finally, 25 studies met all inclusion criteria and were included in the final synthesis. Data extraction and thematic synthesis were conducted collaboratively by the review team to ensure accuracy and consistency.

### Data extraction

A standardized data extraction sheet was developed using Microsoft Excel to ensure consistency in capturing relevant information across studies. Extracted data included the author(s), year of publication, and study setting; the study design and methodology; population characteristics; key findings related to tuberculosis-associated psychological impacts such as depression, anxiety, and suicidal ideation; social consequences including isolation and job loss; as well as stigma- related outcomes and any proposed intervention strategies.

### Quality assessment

The methodological quality of the included studies was appraised using tools appropriate to each study design. Quantitative studies were assessed using the Newcastle-Ottawa Scale (NOS), which evaluates selection, comparability, and outcome measures [37]. Qualitative studies were appraised with the Critical Appraisal Skills Programme (CASP) checklist, focusing on

credibility, relevance, and methodological rigor [5] For mixed-methods studies, the Mixed Methods Appraisal Tool (MMAT) was employed [11].

**Preferred reporting items for systematic Reviews and Meta Analyses (PRISMA) Flow diagram for scoping review**
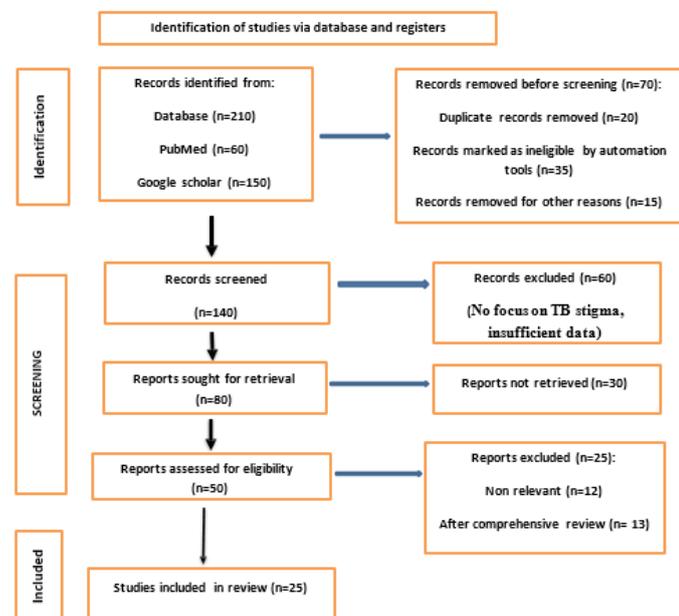


**Figure 1:** Flow chart for the entire data selection process for the scoping review.

## Results

**Study selection:** Our initial database search found 2,188 articles. After applying specific MeSH terms and keywords, the number was narrowed down to 210 papers. From these, 150 articles from Google Scholar and 60 from PubMed were selected. After reviewing titles and abstracts and removing duplicates, 140 studies were identified as potentially relevant. A full-text review resulted in the inclusion of 80 articles, although 30 could not be retrieved. Following further evaluation, 25 studies were excluded due to irrelevant outcomes, lack of focus on TB-related stigma, or not meeting the inclusion criteria. In the end, 25 articles were included in this review.
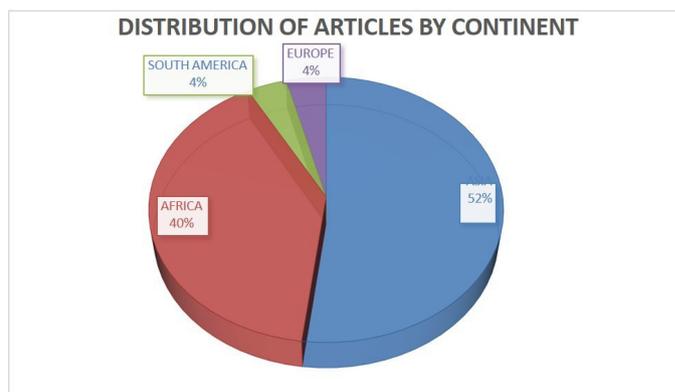


**Figure 2:** Countries for studies included in the review Source: Researchers' compilation (2025).

**Table 1:** Overview of Selected Studies Addressing TB-Related Stigma and Its Impacts.

| Review objective | Evidence base contributing | Key insights |
|---|---|---|
| Psychological impact (depression, anxiety, suicidal ideation) | 6 Qualitative: (Akbar et al., 2024; Nasir et al., 2024; Oliva Rapoport et al., 2022; Opoku & Addo, 2023; Redwood et al., 2022; Spruijt et al., 2020) 3 Quantitative: (K. Liu et al., 2021; Rayhan et al., 2025; Zakaria, 2022) 2 Cohort: (Febi et al., 2021; Pradhan et al., 2022) 1 Case-Control: (Tsegay et al., 2020) | Qualitative narratives and longitudinal cohorts consistently demonstrate high rates of depression, anxiety, and psychosocial distress due to both enacted and internalized stigma. Oliva Rapoport et al., (2022; and Redwood et al., (2022) describe profound psychological effects of prolonged isolation. Zakaria, (2022) Liu et al., (2019), and Rayhan et al., (2025) confirm high prevalence of depressive and anxiety symptoms in cross-sectional surveys. Tsegay et al., (2020) report significantly higher suicidal ideation in patients facing stigma compared to controls |
| Social consequences (isolation, job loss, discrimination) | 6 Qualitative: (Akbar et al., 2024; Foster et al., 2024; Nasir et al., 2024; Oliva Rapoport et al., 2022; Opoku & Addo, 2023; Redwood et al., 2022) 2 Mixed-Methods: (Medina-Marino et al., 2025; Spruijt et al., 2020) 11 Cross- sectional/cohort: (Kallepalli et al., 2023; Kamble et al., 2020; Mohammedhussein et al., 2020; Paul Kapyolo et al., 2023) (Kilale et al., 2022) (Meghji et al., 2021) (Anjuga Elavarasi et al., 2024; Momanyi et al., 2024) (Chen et al., 2021; K. Liu et al., 2021; Oladele et al., 2020) | Stigma often drives social withdrawal, strained family relationships, and disrupted life trajectories. Qualitative studies (Akbar et al., 2024; Nasir et al., 2024; Redwood et al., 2022) show isolation rooted in community fear and misinformation. Economic studies (Kilale et al., 2022; Meghji et al., 2021) reveal that TB-affected households face income loss (15–20%) and catastrophic health-related costs. Cross- sectional surveys (Deogratius Muhandiki et al., 2023; Kallepalli et al., 2023; Kamble et al., 2020) document discrimination rates ranging from 44% to over 70%, contributing to educational and occupational exclusion. (Medina-Marino et al., 2025) emphasize gendered disparities in social exclusion. |
| Methodological landscape & gaps | Entire corpus: 6 qualitative (Akbar et al., 2024; Nasir et al., 2024; Oliva Rapoport et al., 2022; Opoku & Addo, 2023; Redwood et al., 2022; Spruijt et al., 2020) 4 quantitative (Chen et al., 2021; K. Liu et al., 2021; Rayhan et al., 2025; Zakaria, 2022) 4 mixed-methods (Foster et al., 2024; Medina- Marino et al., 2025; Pradhan et al., 2022; Spruijt et al., 2020) 8 cross-sectional (Anjuga Elavarasi et al., 2024; Kallepalli et al., 2023; Kamble et al., 2020; Mohammedhussein et al., 2020; Momanyi et al., 2024; Oladele et al., 2020; Paul Kapyolo et al., 2023; Rayhan et al., 2025) 5 cohort (Febi et al., 2021; Kilale et al., 2022; Meghji et al., 2021; Pradhan et al., 2022; Purnomo As'hab et al., 2022) 3 case-control (Chen et al., 2021; Pradhan et al., 2022; Tsegay et al., 2020) | The review spans diverse methodologies across 15 countries, covering urban and rural settings. While this diversity enriches insight, key limitations persist. Intervention studies (e.g., (Purnomo As'hab et al., 2022) remain rare, and few papers validate stigma measurement tools (notably (Foster et al., 2024). Mixed-methods and gender-disaggregated data (Medina-Marino et al., 2025) remain underutilized. Future research should prioritize longitudinal evaluation, cross- cultural validation, and policy-linked outcomes. |

## Discussions

This review synthesized evidence from 30 studies to examine the psychological, social, and economic consequences of Tuberculosis (TB)-related stigma. The findings demonstrate that stigma is not merely a social by-product of disease but a powerful determinant of health outcomes, influencing mental well-being, social participation, economic resilience, and treatment adherence. Stigma operates across multiple levels, individual, interpersonal, and structural, and its manifestations vary by gender, age, and geographic setting. This complexity underscores the need for a nuanced, multidimensional response that integrates stigma mitigation into TB control efforts, especially in high-burden and resource-limited contexts.

### Psychological impact of TB-related stigma: Depression, anxiety, and suicidal ideation

TB-related stigma has consistently been linked to negative mental health outcomes, including higher rates of depression, anxiety, and suicidal thoughts. In Kenya, 44.6% of TB patients screened positive for depression, 32.1% for anxiety, and 14% reported suicidal ideation [21]. In Malaysia, 68% of patients reported moderate-to-severe depression, directly associated with experiences of stigma [38]. A global review by Lara- Espinosa and Hernández-Pando (2021) found depression prevalence ranging from 30% to 80%, and anxiety affecting up to 50% of TB patients across different settings. In Nepal, Pradhan et al. [29] showed that internalized stigma significantly mediated the relationship between drug sensitivity status and depressive symptoms, contributing to poor treatment adherence. Suicidal thoughts emerged as a particularly serious consequence of stigma-related psychological burden. In Ethiopia, a case-control study revealed that 38% of TB patients with mental health conditions experienced suicidal thoughts, a rate much higher than among matched controls [36]. These findings underscore the significant psychological distress experienced by TB patients because of stigma, especially where access to mental health care is limited or unavailable. Addressing these mental health issues is essential for improving treatment outcomes and overall quality of life.

### Social consequences: Isolation and job loss

TB-related stigma consistently leads to severe social and economic consequences across different settings. In Peru, adolescents diagnosed with TB reported significant emotional distress caused by long-term isolation, often worsened by separation from family and rejection by peers [24]. Similar social exclusion experiences were noted in Indonesia, where patients described facing public ridicule, shame, and even spiritual withdrawal because of their illness [22]. Economic impacts were also widely reported. Cohort data from Malawi showed a 15–20% decrease in income and extended periods of unemployment following TB treatment [19]. Among adolescents, prolonged isolation disrupted education and vocational growth, leading to emotional distress and worries about future employment prospects [24]. In Vietnam, stigma, often seen as a moral failing, caused job loss and school dropout, especially affecting women and young adults [32]. Overall, these findings highlight how TB-related stigma interacts with broader issues of social exclusion and economic vulnerability, increasing the disease's burden far beyond its medical symptoms.

### Gender and setting influences on TB-related stigma

The expression and impact of TB-related stigma varied significantly by gender and geographical setting. Rural contexts were consistently associated with higher stigma levels compared to urban areas, often due to lower TB awareness and entrenched cultural misconceptions. For instance, a study in Nigeria found stigma prevalence to be markedly higher in rural communities (72%) than in urban ones (55%) [23]. Similarly, rural TB patients in India reported more intense feelings of shame and social exclusion [12].

Gender dynamics further shaped the experience of stigma. In South Africa, women were disproportionately affected by social exclusion, including family rejection and peer isolation, while men more frequently reported job loss, economic instability, and identity loss linked to their perceived role as providers [18]. In Vietnam, young women faced intensified stigma in school and workplace settings, often framed around moral judgment and resulting in reduced opportunities [32]. These findings indicate that both gender roles and sociocultural contexts play a critical role in how TB stigma is experienced and internalized, reinforcing the need for context-sensitive and gender-responsive stigma mitigation strategies.

### Methodological insight

While the included studies cover various regions and methodologies, including qualitative, cross- sectional, and mixed-methods approaches, there is still a lack of strong intervention-focused research. Few studies have used or tested validated tools to measure TB stigma. For example, Pradhan et al. [29] used internalized and perceived stigma scales, while Paul Kapyolo et al. [28] examined the extent and aspects of stigma with structured questionnaires in Tanzania.

Moreover, relatively few studies concentrated on particularly vulnerable groups such as adolescents [24], individuals with mental health conditions [36], or people with drug-resistant TB. Additionally, only a small number of studies used longitudinal or policy evaluation designs, highlighting an urgent need for well-designed intervention and implementation research to fully address TB-related stigma comprehensively [31].

## Conclusion

This review demonstrates that Tuberculosis (TB) -related stigma is a pervasive, multilevel barrier to individual well-being and effective disease control. Psychologically, stigma fuels negative self-perceptions, depression, anxiety, and reduced self-efficacy, which in turn erode treatment

adherence and worsen clinical outcomes. Socially, it drives exclusion, discrimination, and loss of livelihood or educational opportunities, compounding the distress of those affected. At the population level, stigma undermines TB-control efforts by delaying diagnosis and treatment, weakening support networks, and fostering environments in which patients conceal their illness. These dynamics sustain transmission and blunt the impact of public-health interventions.

Mitigating TB-related stigma, therefore, requires an integrated strategy spanning individual, community, and policy domains. Targeted health-education campaigns, stigma-reduction initiatives within healthcare settings, robust social-support mechanisms, and legislative measures that safeguard the rights of TB patients are all essential components.

Embedding mental-health services in TB programs and engaging community leaders to challenge misconceptions can further dismantle the fear and misinformation that sustain

stigma. Only through a comprehensive, sustained, and context-sensitive response can we reduce the psychological and social impact of TB-related stigma and enhance the effectiveness of global TB-prevention and control efforts.

### Author declarations

#### Acknowledgements

#### Conflicts of interest

The authors declare no conflicts of interest related to the content, authorship, or publication of this article.

#### Author contributions

Gideon Adarkwah Yiadom conceptualized the study, conducted the literature review, and drafted the manuscript.

Dr. Lydia Sarponma Asante supervised the study, provided critical revisions, and helped refine the final manuscript. Both authors have read and approved the final version of the manuscript.

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**Sup Table 1:** Full Data Extraction

| Author/Year | Country | Study Design | Setting | Characteristics | Mental Health Impact | Social Impact | Findings / Results |
|---|---|---|---|---|---|---|---|
| Addo et al., [25] | Ghana | Qualitative | Community/ Health facilities | TB patients undergoing treatment | Stress, fear, emotional distress | Stigma, isolation, disclosure difficulties | TB significantly disrupts patients' lives; qualitative themes included stigma, emotional burden, and lack of support. |
| Adejumo et al. 2024 | Nigeria | Cross-sectional | Lagos DR-TB treatment programme (patients ≥8 weeks on therapy) | 203 adults with drug-resistant TB; 72.9 % anxious, 63.1 % depressed | Anxiety 72.9 %, depression 63.1 %, loneliness 56.2 %; stigma positively correlated with all three outcomes | Experienced stigma common; higher stigma where social support is weak; social support moderates | High social support buffered the impact of stigma on anxiety, depression, loneliness; boosting support networks is vital |
| Akbar et al., [1] | Indonesia | Qualitative | Kotamobagu health system | Pulmonary TB patients | Depression, emotional trauma | Social discrimination, exclusion | Stigma and discrimination were universally reported by all interviewed patients; qualitative depth over numeric data. |
| Akhtar et al., [2] | Pakistan | Quantitative | Clinical setting | TB patients | Depression linked to stigma | Low social support | 65% of TB patients experienced stigma; stigma was inversely correlated (r = -0.45) with quality of life. |
| Chen et al., [6] | China | Cross-sectional | Healthcare facilities | TB patients | Psychological distress, low QOL | Low social support worsens stigma | Psychological distress in 53.2% of patients; stigma negatively correlated with QOL (r = -0.49); support improves outcomes. |
| Elavarasi et al., [4] | India | quantitative | Urban and rural settings | TB patients in India | High depression prevalence | Rural stigma more intense | 51% reported moderate-to-severe depression; stigma was higher in rural (61%) vs urban (38%) settings. |
| Febi et al., [9] | India | Prospective cohort | TB treatment facilities | TB patients during treatment | High psychological stress | Not deeply explored | 72% experienced moderate stress; quality of life scores significantly lower (mean difference = 15 points). |
| Foster et al. [10] | South Africa | mixed-methods | Peri-urban Khayelitsha clinic & rural | 117 participants (93 people with TB, 24 | Depression and low psychological well-being frequently reported; stigma | 96 % experienced anticipated, internal or | stigma and discrimination were universally reported by all interviewed patients; qualitative depth over numeric data. |
| Kallepalli et al., [12] | India | Cross-sectional | Clinical | TB patients | Stigma linked to anxiety, low self- worth | High community stigma | 58% experienced moderate-to- severe stigma; related to age, education |
| Kamble et al. [13] | India | Cross-sectional | Six DOTS centres, South-East Delhi | 270 TB patients; mean age 31.5 yr; | (Not specifically measured) | 45.5 % perceived stigma from family/friends; | Persistent family and workplace stigma threatens adherence; peer/family motivation and workplace support identified as |
| Kilale et al., [14] | Tanzania | Cross-sectional | Households of TB- affected patients | 777 TB-affected households (nationwide | Not assessed | Not directly assessed | TB caused high out-of-pocket costs, income loss, and borrowing/selling assets, especially among the poorest |
| Liu et al. [15] | China | Cross-sectional analytical study | Beijing Chest Hospital & Jingzhou ID | 167 pulmonary-TB patients (MDR & no | Anxiety and depressive symptoms prevalent; MDR-TB linked to higher | TB-related stigma scale and social-support | Mental-health burden substantial; interventions that raise self-esteem and societal respect for TB patients recommended |
| Medina- Marino et al., [18] | South Africa | Qualitative | Eastern Cape | Men and women with TB | Anxiety, isolation, self-esteem issues | Social exclusion worse for women | Women more isolated; men more affected economically |
| Meghji et al., [19] | Malawi | Cohort study | Urban low- income | Former TB patients | Not primary focus | Reduced social mobility | TB linked to long-term unemployment and income reduction |
| Mohammedhussein et al. [20] | Ethiopia | Cross-sectional | 39 public facilities, Jimma Zone (south-west) | 410 pulmonary-TB patients; median age 28; | 55.9 % screened positive for depression; depression increased odds of stigma | 57.1 % had perceived stigma; higher with poor social support, HIV | Multi-level interventions (mental-health care, social-support strengthening) needed; HIV & depression are major stigma amplifiers |
| Momanyi et al., [21] | Kenya | Cross-sectional | Referral hospital | TB patients on treatment | 44.6% depression, 32.1% anxiety, 14% suicidal thoughts | Stigma, reduced social support | High psychiatric morbidity among TB patients under care |
| Oladele et al., [23] | Nigeria | Cross- sectional Comparative Study | Rural and urban communities in Lagos State | 788 respondents (rural: 382, urban: 406); general | Not directly measured | Higher stigma observed in rural areas, linked to poor knowledge and | Significant difference in stigma scores: rural (mean = 6.22) vs. urban (mean = 4.88), p < 0.05. Attitude and education level strongly influenced stigma levels. |
| Oliva Rapoport et al., 2022 | Peru | Qualitative | Clinical/household | Adolescents with TB | Emotional exhaustion, depression | Family separation, peer exclusion | Isolation increased emotional distress, disrupted normal social development |

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| Paul Kapyolo et al., [28] | Tanzania | Mixed methods | TB clinics | People with TB | Depression, anxiety | Verbal abuse, gossip, discrimination | Over 60% experienced moderate- to-high stigma; linked to poor adherence |
| Pradhan et al., [29] | Nepal | Quantitativ e | TB treatment sites | Drug- sensitive and drug- resistant TB | Depression mediated stigma-adherence link | Internalized stigma | Depression mediates relationship between stigma and poor treatment adherence |
| Purnomo As'hab et al., [30] | Indonesia | cross sectional | MDR-TB treatment facility | MDR-TB patients | Significant improvement in stress, depression | Stigma awareness increased post- inter-vention | ACT improved mental health and treatment adherence significantly |
| Rayhan et al. [31] | India | Cross-sectional | clinic/comm unity | Pulmonary TB patients | depression, anxiety, psychological well- being | Stigma levels, support needs | High stigma, poor well-being, unmet sup-port needs |
| Oliva Rapo-port et al., [24] | Peru | Qualitative | Clinical/hou sehold | Adolescents with TB | Emotional exhaustion, depression | Family separation, peer exclusion | Isolation increased emotional distress, disrupted normal social development |
| Redwood et al., [32] | Vietnam | Qualitative | Community & hospital | DR-TB patients | Psychological distress, anger, hopelessness | Family shame, com-munity exclusion | Isolation framed as moral failure; deeply impacts family status and employment |
| Spruijt et al., [34] | Nether-land s | Qualitative | Immigrant communitie s | Eritrean immigrants with LTBI | Fear, misinformation- induced anxiety | Cultural beliefs fostered stigma | TB beliefs discouraged testing and social disclosure; stigma limited opportunities |
| Tsegay et al., [36] | Ethiopia | Case- control | Psychiatry clinics | Mental disorder patients | 38% suicidal ideation in TB co-morbid patients | Isolation, rejection | Suicide linked to perceived burden and untreated depression |
| Zakaria, [38] | Malaysia | Quantitativ e | TB clinics | TB patients | 68% had moderate- to-severe depression | High stigma among women | Depression positively correlated with stigma and reduced QOL |