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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 [1]. 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 [2]. 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 [3]. 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 Organization (2023), 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., [4] reported that TB stigma led to depression, feelings of worthlessness, and social withdrawal. Similarly, Pradhan et al., [5] in India found that internalized stigma was strongly associated with suicidal ideation among TB patients, highlighting the profound mental health impact. In the Netherlands, [6] 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 Ethiopia, [7] 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., [8] found that TB stigma led to job loss, economic hardship, and deterioration of family relationships, especially among male breadwinners. Moreover, both Alselwi, [9] and Oladele et al., [10] 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., [11] documented how women with TB were more likely to face blame, social exclusion, and marital disruption than men. In rural Tanzania, [12,13] 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

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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 [14].

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 [15]. Qualitative studies were appraised with the Critical Appraisal Skills Programme (CASP) checklist, focusing on credibility, relevance, and methodological rigor [16]. For mixed-methods studies, the Mixed Methods Appraisal Tool (MMAT) was employed [17] (Figure 1).

Results

Study

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

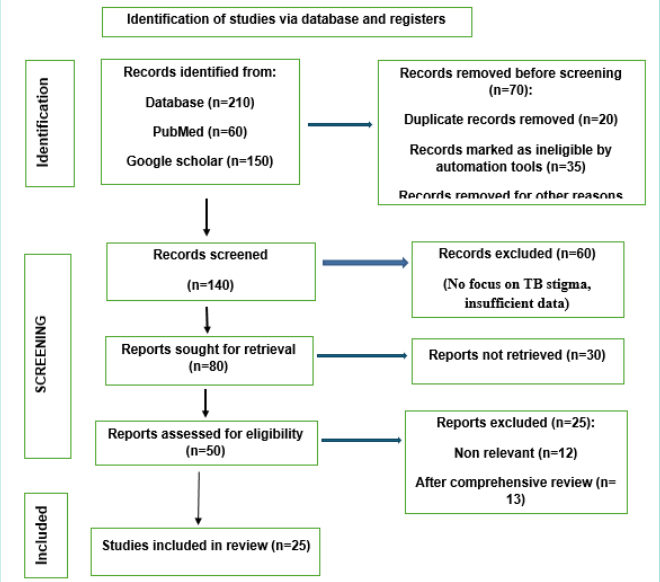

Figure 1: Flow chart for the entire data selection process for the scoping review.

Table 1: Overview of Selected Studies Addressing TB-Related Stigma and Its Impacts [27-37].

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)	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
	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)	
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)	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.
	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)	
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)	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.
	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)	

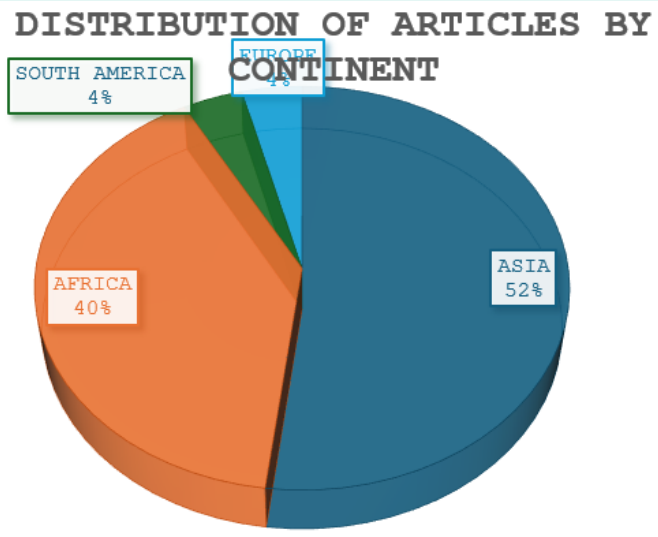

Figure 2: Countries for studies included in the review. Source: Researchers' compilation (2025).

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 (Table 1, Figure 2)).

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 [18]. In Malaysia, 68% of patients reported moderate-to-severe depression, directly associated with experiences of stigma [19]. 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. [5] 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 [20]. 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 [21]. 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 [23]. Among adolescents, prolonged isolation disrupted education and vocational growth, leading to emotional distress and worries about future employment prospects [21]. In Vietnam, stigma, often seen as a moral failing, caused job loss and school dropout, especially affecting women and young adults [1]. 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%) [10]. Similarly, rural TB patients in India reported more intense feelings of shame and social exclusion [24]. 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 [7]. In Vietnam, young women faced intensified stigma in school and workplace settings, often framed around moral judgment and resulting in reduced opportunities [1]. 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. [5] used internalized and perceived stigma scales, while Paul Kapyolo et al. [25] examined the extent and aspects of stigma with structured questionnaires in Tanzania. Moreover, relatively few studies concentrated on particularly vulnerable groups such as adolescents [21], individuals with mental health conditions [20], 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 [26].

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.

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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.

References

1. Redwood, L., Fox, G.J., Nguyen, T.A., Bernarys, S., Mason, P., Vu, V.A., Nguyen, V.N., & Mitchell, E.M. H. Good citizens, perfect patients, and family reputation: Stigma and prolonged isolation in people with drug-resistant tuberculosis in Vietnam. PLOS Global Public Health. 2022; 2.
2. Soemarko, D.S., Halim, F.A., Kekalih, A., Yunus, F., Werdhani, R.A., Sugiharto, A., et al. Developing a tool to measure tuberculosis-related stigma in workplaces in Indonesia: An internal validation study. SSM - Population Health. 2023; 21.
3. Akhtar, N., Batool, I., & Zohaib Khan, M. Perceived Stigma, Social Support and Quality of Life in Patients of Tuberculosis. Pakistan Journal of Health Sciences. 2023; 89–93.
4. Mbuthia, G.W., Nyamogoba, H.D.N., Chiang, S.S., & McGarvey, S.T. Burden of stigma among tuberculosis patients in a pastoralist community in Kenya: A mixed methods study. PLoS ONE. 2020; 15.
5. Pradhan, A., Koirala, P., Bhandari, S.S., Dutta, S., García-Grau, P., Sampath, H., & Sharma, I. Internalized and Perceived Stigma and Depression in Pulmonary Tuberculosis: Do They Explain the Relationship Between Drug Sensitivity Status and Adherence? Frontiers in Psychiatry. 2022; 13.
6. Spruijt, I., Haile, D.T., van den Hof, S., Fiekert, K., Jansen, N., Jerene, D., et al. Knowledge, attitudes, beliefs, and stigma related to latent tuberculosis infection: a qualitative study among Eritreans in the Netherlands. BMC Public Health. 2020; 20.
7. Medina-Marino, A., de Vos, L., & Daniels, J. Social isolation, social exclusion, and access to mental and tangible resources: mapping the gendered impact of tuberculosis-related stigma among men and women living with tuberculosis in Eastern Cape Province, South Africa. BMC Global and Public Health. 2025; 3.
8. Akbar, H., Kamaruddin, S.A., & Adam, A. Stigmatization and social discrimination of pulmonary tuberculosis patients in Kotamobagu City, North Sulawesi: A qualitative study. Svāsthya: Trends in General Medicine and Public Health. 2024; 2: e79.
9. Alselwi, K.A. Understanding tuberculosis-related stigma: Impacts on patients, contacts, and society – A mixed study. Indian Journal of Medical Sciences. 2023; 76: 67–71.
10. Oladele, D.A., Balogun, M.R., Odeyemi, K., & Salako, B.L. A Comparative Study of Knowledge, Attitude, and Determinants of Tuberculosis-Associated Stigma in Rural and Urban Communities of Lagos State, Nigeria. Tuberculosis Research and Treatment. 2020; 1–14.
11. Stanton, A.M., Boyd, R.L., O'Cleirigh, C., Olivier, S., Dolotina, B., Gunda, R., et al. HIV, multimorbidity, and health-related quality of life in rural KwaZulu-Natal, South Africa: A population-based study. PLoS ONE. 2024; 19: 1–21.
12. Deogratias Muhandiki, W., Eliaimringi Matemba, L., Gabriel Mabega, N., Michael Kisonga, R., Heriel Matechi, E., Omary Kigumi, H., et al. Tuberculosis-Related Stigma Among Healthcare Workers in Tanzania: Level, Experience and Manifestations. American Journal of Health Research. 2023; 11: 23–30.
13. Deogratius Muhandiki, W., Gabriel Mabega, N., Eliaimringi Matemba, L., Phares Mwing'a, G., Leonard Kaswaga, O., Omary Kigumi, H., et al. Level, Experiences and Manifestations of Community TB-Related Stigma in Tanzania. European Journal of Preventive Medicine. 2023.
14. Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021; 372: n71.
15. Wells, G.A., Shea, B., O'Connell, D., Peterson, J., Welch, V., Losos, M., & Tugwell, P. The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. 2014.
16. (CASP), C.A.S.P. CASP Qualitative Checklist. 2018.
17. Hong, Q.N., Pluye, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., et al. Mixed Methods Appraisal Tool (MMAT), version 2018. Canadian Intellectual Property Office. 2018.
18. Momanyi, R.K., Kwobah, E.K., Owiti, P., Nyamogoba, H., & Atwoli, L. Psychiatric morbidity among patients on treatment for tuberculosis at a tertiary referral hospital in Western Kenya. PLoS ONE. 2024; 19.
19. Zakaria, R. Stigma and Depression among Tuberculosis Patients in Kedah, Malaysia. 2022; 21.
20. Tsegay, A., Damte, A., & Kiros, A. Determinants of suicidal ideation among patients with mental disorders visiting psychiatry outpatient unit in Mekelle town, psychiatric clinics, Tigray, Northern Ethiopia: A case-control study. Annals of General Psychiatry. 2020; 19.
21. Oliva Rapoport, V.E., Altamirano, E., Senador, L., Wong, M., Beckhorn, C.B., Coit, J., et al. Impact of prolonged isolation on adolescents with drug-susceptible tuberculosis in Lima, Peru: a qualitative study. BMJ Open. 2022; 12.
22. Nasir, A., Hassan, I.I., Ma'ruf, A., Suharno, N.E., Goenharto, S., Purwanto, C.R., & Tyas, A. P. M. Coping efforts made: Psychological burden of people living with tuberculosis due to social stigma in society. A qualitative phenomenology study. PLoS ONE. 2024; 19.
23. Meghji, J., Gregorius, S., Madan, J., Chitimbe, F., Thomson, R., Rylance, J., et al. The long term effect of pulmonary tuberculosis on income and employment in a low income, urban setting. Thorax. 2021; 76: 387–395.
24. Kallepalli, S.S.K., Garapati, S., Bhimarasetty, D., & Pethala, S. Burden of stigma among tuberculosis patients: a cross-sectional study. International Journal Of Community Medicine And Public Health. 2023; 10: 1911–1916.
25. Paul Kapyolo, E., Deogratius Muhandiki, W., Gabriel Mabega, N., Eliaimringi Matemba, L., Phares Mwing'a, G., Michael Mnyagatwa, P., et al. Magnitude and Consequences of TB-Related Stigma Experienced by People with Tuberculosis in Tanzania. European Journal of Preventive Medicine. 2023.
26. Rayhan, R., Siddika Lisa, T., Hasan, K., Morshed, R., Mahmud, R., & Sultana, T. Mental Shadows of TB: Cross-Sectional Analysis of Stigma, Psychological Well-being, and Support Needs in Pulmonary Tuberculosis Patients. 2025; 2: 3078–6789.
27. Anjuga Elavarasi, E., Smitha, M.C., Manasa, K., & Kruthika, B.N. Depression and stigma experience among patients with tuberculosis in urban and rural settings. Indian Journal of Tuberculosis. 2024; 71: S171–S177.
28. Chen, X., Xu, J., Chen, Y., Wu, R., Ji, H., Pan, Y., et al. The relationship among social support, experienced stigma, psychological distress, and quality of life among tuberculosis patients in China. Scientific Reports. 2021; 11.
29. Febi, A.R., Manu, M.K., Mohapatra, A.K., Praharaj, S.K., & Guddattu, V. Psychological stress and health-related quality of life among tuberculosis patients: A prospective cohort study. ERJ Open Research. 2021; 7.
30. Foster, I., Biewer, A., Vanqa, N., Makanda, G., Tisile, P., Hayward, S.E., et al. "This is an illness. No one is supposed to be treated badly": community-based stigma assessments in South Africa to inform tuberculosis stigma intervention design. BMC Global and Public Health. 2024; 2.
31. Kamble, B., Singh, S., Jethani, S., Chellaiyan D,V., & Acharya, B. Social stigma among tuberculosis patients attending DOTS centers in Delhi. Journal of Family Medicine and Primary Care. 2020; 9: 4223.
32. Kilale, A.M., Pantoja, A., Jani, B., Range, N., Ngowi, B.J., Makasi, C., et al. Economic burden of tuberculosis in Tanzania: a national survey of costs faced by tuberculosis-affected households. BMC Public Health. 2022; 22.
33. Liu, K., Zhang, Y., Qu, S., Yang, W., Guo, L., & Zhang, L. Prevalence and Correlates of Anxiety and Depressive Symptoms in Patients With and Without Multi-Drug Resistant Pulmonary Tuberculosis in China. Frontiers in Psychiatry. 2021; 12.
34. Liu, X., Zou, N., Zhu, D., & Wang, D. Influencing factors analysis and modeling of hospital-acquired infection in elderly patients. Journal of Combinatorial Optimization. 2019; 37: 248–270.
35. Mohammedhussein, M., Hajure, M., Shifa, J.E., & Hassen, T.A. Perceived stigma among patient with pulmonary tuberculosis at public health facilities in southwest Ethiopia: A cross-sectional study. PLoS ONE. 2020; 15.
36. Opoku, D., & Addo, M. Internet Usage Among Undergraduate Students in Ghana: An Exploratory Study. International Journal of Research and Innovation in Social Science (IJRISS). 2023; 7: 180–185.
37. Purnomo As'hab, P., Keliat, B.A., & Wardani, I.Y. The effects of acceptance and commitment therapy on psychosocial impact and adherence of multidrug-resistant tuberculosis patients. In Journal of Public Health Research. 2022; 11.