Journal of Public Health and Pharmacy
2775-4952 (Online - Elektronik)
Research Articles Open Access

Mental Health Shadows: Accompanying Medication Compliance Towards Healing Tuberculosis Patients

Indra Fajarwati Ibnu[1]*, Shanti Riskiyani[2], Rizky Chaeraty Syam[3]
[1]Faculty of Public Health, Universitas Hasanuddin, Sulawesi Selatan, Indonesia
[2]Faculty of Public Health, Universitas Hasanuddin, Sulawesi Selatan, Indonesia
[3]Faculty of Public Health, Universitas Hasanuddin, Sulawesi Selatan, Indonesia

***Corresponding Author**: E-mail: indra.fajarwati@unhas.ac.id

ARTICLE INFO

Manuscript Received: 19 Nov, 2024
Revised: 15 Feb, 2025
Accepted: 05 Mar, 2025
Date of publication: 05 Dec, 2025
Volume: 6
Issue: 1
DOI: 10.56338/jphp.v6i1.6414

KEYWORDS

Tuberculosis;
Mental Health;
Treatment Adherence;
Comorbidity;
Phenomenology

ABSTRACT

Introduction: Mental health disturbances may adversely affect treatment adherence and outcomes among pulmonary tuberculosis (TB) patients, but there is a lack of consensus on the relationship. Despite TB being one of the top ten causes of death worldwide, particularly in low and middle-income countries, the comorbidity between TB and mental health disorders has been relatively neglected. Evidence shows that TB and mental health have a bidirectional relationship, so we aimed to elucidate the challenges linked with integrating mental health into TB care with an emphasis on novel suggestions for improving treatment success.

Methods: This qualitative study utilized a phenomenological design and was implemented in hospitals and community health centers in Makassar City for six months. We enrolled 10 patients of coexisting pulmonary TB and mental health disturbances. We collected data through participant observations and in-depth semi-structured interviews. Ethics approval was obtained from the Health Research Ethics Commission, Faculty of Public Health Hasanuddin University No.583/UN4. 14. 1/TP. 01.02/2024 and written informed consent was obtained from participants.

Result: Mental health disturbances related to poor TB treatment adherence. Both depression and anxiety patients cited disengagement from treatment because of apathy, lack of motivation, and social isolation due to stigma. Inadequately treated mental health symptoms also aggravated physical TB symptom's severity causing further increased non-adherence. Themes of stigma, limited mental health support and positive effects of social networks were identified through statistical analyses. To our surprise, those with the most solid family support fared better despite serious mental illnesses.

Conclusion: Collectively, our findings underscore the importance of mental health disturbances on treatment adherence in TB. The findings from this research highlight the critical importance of incorporating mental health screening and psychosocial support into TB programmes. Studies to come should assess the effectiveness of such interventions, paving the way for integrated care of TB patients.

Publisher: Pusat Pengembangan Teknologi Informasi dan Jurnal Universitas Muhammadiyah Palu

INTRODUCTION

Tuberculosis (TB) continues to be a leading global health challenge, with profound implications for low- and middle-income countries. This disease, caused by *Mycobacterium tuberculosis*, primarily affects the lungs and demands prolonged treatment, typically lasting six months or more, posing significant challenges for patient adherence (1). According to the World Health Organization (WHO), an estimated 10.6 million new TB cases occurred in 2021, leading to 1.6 million deaths. These figures underscore the urgent need for comprehensive strategies to tackle TB, particularly in resource-limited settings (2).

A critical yet underexplored aspect of TB management is the bidirectional relationship between TB and mental health disorders. Mental health disturbances, including depression and anxiety, are prevalent among TB patients, often stemming from the stigma, isolation, and financial stress associated with the disease. These psychological challenges exacerbate treatment adherence difficulties, ultimately increasing the likelihood of treatment failure, drug resistance, and mortality (3). Despite its global relevance, the integration of mental health services into TB care has been insufficient, especially in low-resource settings where healthcare systems are already overburdened.

The emotional toll of TB is profound. Patients often experience stigma and discrimination, which are associated with social isolation and psychological distress. Stigma not only affects patients' mental health but also acts as a barrier to seeking timely medical care and maintaining adherence to treatment protocols (4). TB has historically, and controversially, been shamed as a "disease of the poor," related with social determinants like poverty, malnutrition and overcrowding. They not only escalate vulnerability to TB but also intersect with the risk factors for mental health illnesses. Which exacerbated burden calls for a holistic approach that addresses both the pathological and psychological sides of the disease (5). In addition, the WHO has called for integrated healthcare approaches highlighting mental health as part of overall health care that adapts to the double burden presented by Co-Morbidity in relation to TB and Mental Health (5) can align with global health priorities such as SDG 3 on ensuring healthy lives and promoting well-being for all (6).

Current literature demonstrates the significant impact of mental health disorders on TB treatment outcomes. For example, depression and anxiety have been shown to reduce adherence rates by up to 30%, significantly increasing the risk of treatment failure and the development of multidrug-resistant TB (MDR-TB) (7). However, gaps remain in understanding the mechanisms through which mental health influences adherence and how interventions can effectively address this issue. The absence of mental health integration into TB programs represents a critical gap in care. Furthermore, healthcare providers often lack training in recognizing and addressing the mental health needs of TB patients, perpetuating this oversight (8).

In Indonesia, TB remains a major public health issue, with the country ranking among the top contributors to global TB cases (9). The high prevalence of mental health disorders among TB patients in Indonesia exacerbates these challenges, as mental health services are often inaccessible or stigmatized. Research into the lived experiences of TB patients with comorbid mental health conditions in Indonesia is limited, highlighting the need for localized studies that address the unique cultural and systemic barriers faced by these patients. This study aims to analyze the impact of mental health disturbances on TB treatment adherence and outcomes in Makassar City, Indonesia. By employing a qualitative phenomenological approach, this research seeks to explore patients' lived experiences, uncover barriers to adherence, and identify opportunities for integrating mental health services into TB care. The findings aim to contribute to global health efforts by providing insights into improving TB treatment outcomes through comprehensive, patient-centered approaches.

METHOD

Study Design

This study employed a qualitative design with a phenomenological approach, which is ideal for exploring lived experiences and gaining in-depth insights into the subjective perspectives of individuals (10). Phenomenology focuses on understanding how individuals perceive and make sense of their experiences, making it a suitable method to explore the impact of mental health disturbances on TB treatment adherence (11).

Study Population

The study population consisted of pulmonary TB patients experiencing mental health disturbances, such as depression or anxiety, in Makassar City, Indonesia. Inclusion criteria were established to ensure that participants had direct experience with both TB and mental health issues, aligning with the research focus. Purposive sampling was used to recruit participants, a common method in qualitative research to select individuals who can provide rich, relevant, and diverse information (12).

Study Setting

The research was conducted in hospitals and community health centers (*Puskesmas*) in Makassar City, reflecting diverse urban and semi-urban contexts. These settings are critical points for TB diagnosis and treatment and were selected to capture the variability in patient experiences. The Indonesian healthcare system's limited integration of mental health services into TB care provided an additional layer of context for the study.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Commission, Faculty of Public Health, Hasanuddin University No. 583/UN4.14.1/TP.01.02/2024, ensuring adherence to ethical research principles, including respect for autonomy, beneficence, and confidentiality. Participants provided written informed consent after being informed of the study's purpose, risks, and benefits. All collected data were anonymized and securely stored, consistent with guidelines for ethical research involving human participants (13).

Data Collection

Data were collected from to March-September in 2024 using in-depth, semi-structured interviews, complemented by observational field notes. Semi-structured interviews allowed for flexibility, enabling participants to share their experiences while ensuring that key topics were covered (12). The interview guide was developed based on prior research, emphasizing treatment adherence, stigma, and mental health challenges. Observational data provided additional context to support the interpretation of interview findings (10).

Variables and Instruments

The study explored the following variables:

Treatment adherence: Evaluated through self-reported behaviors and frequency of missed treatments.

Mental health disturbances: Symptoms of depression and anxiety identified through participant narratives.

Stigma: Instances of social isolation, discrimination, or self-stigmatization related to TB or mental health.

Support systems: Availability and impact of familial, community, or healthcare support.

Validated tools, such as interview frameworks for assessing stigma and adherence, were adapted from previous studies to ensure reliability and consistency (11).

Data Analysis

Thematic analysis was used to identify patterns and themes within the data, following Braun and Clarke's six-phase framework (12). This included familiarization with data, generating initial codes, searching for themes, reviewing themes, defining themes, and producing the final report. NVivo 12 software facilitated systematic coding and organization of data. Triangulation of data sources (interviews and observations) enhanced the credibility of findings (14).

Quality Assurance

The study employed several measures to ensure data quality:

Training of interviewers to minimize interviewer bias.

Conducting member checking to validate interpretations with participants.

Employing peer debriefing sessions to refine themes and ensure consistency in data analysis (15).

Study Duration and Sample Size

The study was conducted over seven months, allowing for data collection across various treatment phases. The sample size of 10 participants was determined based on data saturation, a point at which no new information emerged during analysis, ensuring depth and rigor in the findings (16).

Limitations

The study's qualitative design may limit generalizability to broader populations (17). Potential biases, including social desirability bias in self-reported data and researcher interpretation bias, were mitigated through triangulation and peer review processes (18).

RESULTS

The primary outcome of this study revealed a significant association between mental health disturbances and lower TB treatment adherence among participants. Patients experiencing depression and anxiety frequently reported apathy, lack of motivation, and stigma-induced social isolation, which negatively impacted their engagement with treatment regimens.

This qualitative study utilized a phenomenological approach to explore the lived experiences of pulmonary TB patients with mental health disturbances. It was conducted across hospitals and community health centers (*Puskesmas*) in Makassar City, Indonesia, over a six-month period from March to September 2024. The selected settings provided a range of patient experiences, from urban healthcare facilities to semi-urban environments, highlighting diverse contextual factors influencing treatment adherence.

The study involved 10 participants, including six males and four females, aged 18 to 55 years. Most participants were within the productive age range (20–40 years), with educational backgrounds varying from elementary to higher education levels. The majority were unemployed or engaged in informal work, reflecting the socioeconomic challenges faced by TB patients. At the time of the study, participants had been undergoing TB treatment for an average of four months.

Mental Health and Treatment Adherence

Participants with mental health disturbances struggled to maintain adherence due to feelings of hopelessness and fatigue. Many described a lack of energy and motivation to follow through with daily medication or clinic visits. A participant shared:

"There are days I don't take my medication because I feel like it won't help. The process feels too long and hard."

These findings are consistent with previous research indicating that mental health disorders significantly impair adherence to prolonged treatment schedules (19). Younger participants, particularly those aged 18–30, reported the greatest difficulty in adhering to treatment, citing disruptions to their social and professional lives as significant stressors.

Stigma and Social Isolation

Social stigma emerged as a critical barrier. Patients reported avoiding healthcare services or hiding their condition due to fear of discrimination. Stigma often led to isolation, further exacerbating their mental health challenges. One participant explained:

"I don't tell people I have TB because I'm afraid they will think I'm dangerous or contagious. This makes me feel very alone."

These accounts align with global findings that stigma not only intensifies psychological distress but also diminishes treatment-seeking behaviors (20). Participants with limited family support reported a greater impact of stigma, as they lacked emotional reassurance to counteract negative societal perceptions.

Intensified Physical Symptoms

Untreated mental health symptoms were found to amplify the physical effects of TB, including fatigue, chronic coughing, and weakness. Participants noted that their mental health struggles made these symptoms feel more severe, reducing their ability to stay committed to treatment. A patient remarked:

"I feel like the medication doesn't work because my body still feels weak. It makes me want to stop trying."

This interplay between physical and psychological symptoms highlights the need for integrated care approaches that address both dimensions simultaneously (21). Patients in informal employment reported heightened stress due to the inability to work while managing their symptoms, further compounding their distress (22).

The Role of Social Networks

Despite these challenges, participants with robust social networks showed greater resilience. Family support played a pivotal role in encouraging adherence and providing emotional stability. One participant shared:

"My family makes sure I take my medicine every day. Without them, I might have given up."

This finding underscores the critical importance of involving family and community support in TB treatment programs, as social networks can mitigate the adverse effects of mental health challenges (23). Participants with active support from family members or peers demonstrated higher motivation and fewer missed doses, highlighting the role of psychosocial interventions.

Unexpected Findings

Interestingly, patients who received consistent family support demonstrated higher adherence rates, even when experiencing severe mental health symptoms. This resilience highlights the potential of psychosocial interventions focused on strengthening familial and community ties to improve treatment outcomes. Participants aged 30–40 exhibited the highest levels of resilience, citing a sense of responsibility towards their children or dependents as a driving factor. The results of this study emphasize the complex interaction between mental health disturbances, social factors, and physical symptoms in shaping TB treatment adherence. These findings underscore the urgency of integrating mental health support into TB care frameworks to enhance overall treatment success.

DISCUSSION

This study highlights the significant influence of mental health disturbances on TB treatment adherence, emphasizing the complex interplay between psychological factors, social dynamics, and physical symptoms. The findings align with and expand upon existing literature, underscoring the urgent need for integrated approaches to TB care that address both physical and mental health challenges.

Mental Health and Adherence

Participants frequently reported apathy, fatigue, and lack of motivation as barriers to adhering to their TB treatment regimens. These symptoms are hallmark characteristics of depression, which has been shown to negatively impact treatment adherence across chronic diseases, including TB (21). Anxiety further compounded these challenges, with participants expressing fears about stigma and pessimism regarding treatment outcomes. This supports recent research suggesting that mental health disturbances disrupt patients' ability to adhere to demanding, long-term TB treatment schedules (19).

These findings highlight the bidirectional relationship between mental health and TB. While untreated mental health conditions exacerbate treatment non-adherence, poor adherence further intensifies the stress and anxiety associated with living with TB. Addressing these psychological factors is crucial to breaking this cycle and improving treatment outcomes.

The Role of Stigma

Social stigma was a recurring theme in the narratives of participants, reinforcing its detrimental impact on mental health and treatment adherence. Fear of judgment and discrimination often led patients to avoid healthcare facilities or conceal their condition, resulting in delayed treatment or non-compliance. This finding aligns with global evidence that stigma surrounding TB and mental health disorders remains a significant barrier to healthcare access (24).

Notably, participants without strong social support networks were disproportionately affected by stigma. This underscores the need for community-based interventions aimed at reducing stigma and fostering supportive environments for TB patients. Public health campaigns that address misconceptions about TB and mental health could play a pivotal role in this regard (25).

Social Networks and Resilience

The study revealed that patients with robust social networks demonstrated greater resilience and adherence to TB treatment. Family members often provided emotional support and practical assistance, such as reminders to take medication or accompaniment to clinic visits. This finding is consistent with studies highlighting the protective role of social support in mitigating the adverse effects of mental health challenges on treatment adherence (26).

Programs integrating family-centered approaches into TB care have shown promise in improving adherence and reducing stigma. For example, structured family counseling sessions have been associated with increased patient engagement in TB programs (27). Incorporating such models into TB treatment protocols could enhance adherence rates and improve overall outcomes.

The Need for Integrated Care

The lack of integrated mental health services within TB treatment programs emerged as a critical gap. Participants expressed a need for psychosocial support, yet healthcare providers primarily focused on the physical aspects of TB. This finding reflects broader systemic challenges in resource-limited settings, where mental health services are often underfunded or deprioritized (19).

Screening for mental health conditions such as depression and anxiety should be a routine part of TB care. Early identification and intervention can significantly improve adherence and outcomes. Moreover, training healthcare workers to recognize and address the mental health needs of TB patients is essential for providing holistic care (28).

Unexpected Findings

Younger participants reported higher levels of distress and lower adherence compared to older patients. This may be attributed to the perceived disruption of their social, educational, or professional activities caused by TB treatment. Previous studies have suggested that younger patients face unique psychosocial challenges, which necessitate tailored interventions to address their specific needs (29).

Comparison with Previous Studies

The findings of this study align with prior research indicating that mental health disturbances significantly hinder TB treatment adherence. Studies by Duko et al. (2020) and Kang & Lee (2021) similarly reported that depression and anxiety negatively affect adherence by diminishing patients' motivation and increasing psychological distress (7,22). These consistencies confirm the robustness of the observed trends and underscore the universal nature of these challenges across different settings.

However, disparities with the findings of Mitchison (2020), who noted minimal impact of mental health on TB outcomes in certain populations, highlight the importance of contextual factors such as healthcare infrastructure, cultural perceptions of mental health, and access to psychosocial support (21). These discrepancies may stem from differences in study populations, methodologies, and the level of mental health integration in TB care. Reconciling these conflicting findings requires further research to examine the interplay of these variables across diverse contexts.

Implications for Public Health

The study's implications for public health are significant. Integrating mental health services into TB treatment protocols could address barriers to adherence, such as stigma and emotional distress, thereby improving treatment success rates. The findings advocate for routine mental health screenings for TB patients and the inclusion of psychosocial interventions in TB care.

Furthermore, the study aligns with the WHO's End TB Strategy and Sustainable Development Goal 3, emphasizing holistic healthcare delivery. Addressing both the physical and psychological dimensions of TB care could reduce morbidity and mortality, particularly in resource-limited settings (1). The incorporation of family-centered approaches and community engagement could also enhance social support networks, mitigating the adverse effects of stigma and isolation on treatment adherence.

CONCLUSION

In conclusion, this study sheds light on the significant impact of mental health disturbances on TB treatment adherence, providing valuable insights into the interplay of psychological, social, and physical factors affecting patient outcomes. The comprehensive analysis of our findings, contextualized within existing literature, contributes to the growing body of knowledge in international health. Our results underscore the critical need for integrating mental health services into TB care frameworks and highlight the importance of addressing stigma and leveraging social support to improve treatment adherence.

This research has several implications for healthcare practices, policies, and interventions. For healthcare providers, the findings advocate for routine mental health screenings and the incorporation of psychosocial support into TB treatment protocols. Community health programs should prioritize stigma reduction campaigns and family-centered approaches to strengthen support networks for TB patients.

RECOMMENDATIONS

For Educational Institutions: This study can serve as a valuable resource in libraries to educate healthcare professionals and public health students on the importance of addressing mental health in TB care. It can also help raise awareness about integrating psychosocial support into treatment strategies.

For Health Centers: Health facilities, including those in Makassar, should intensify outreach programs focusing on mental health and TB. Specific efforts should target families and caregivers, encouraging proactive involvement in the patient's treatment journey to foster better adherence and outcomes.

For Future Researchers: Researchers undertaking similar studies are encouraged to expand on these findings by utilizing larger and more diverse populations. Developing advanced methodologies and acquiring adequate training will ensure higher-quality research that contributes meaningfully to the field of public health and nursing.

This study emphasizes the importance of interdisciplinary collaboration in addressing TB and mental health, aligning with global health goals to achieve sustainable improvements in healthcare delivery. Future research should build upon these findings to further advance our understanding and implementation of holistic care for TB patients.

Limitations and Cautions

Despite its contributions, the study has several limitations. The small sample size (10 participants) limits the generalizability of the findings to broader populations. Additionally, the reliance on self-reported data introduces the potential for recall and social desirability biases, which may affect the accuracy of responses. The study's qualitative nature, while providing rich insights, may not capture the full scope of the relationship between mental health and TB treatment adherence in quantitative terms.

Another limitation is the exclusive focus on urban and semi-urban settings in Makassar City. Rural populations, who may face unique challenges, were not included in this study. Addressing these gaps in future research could provide a more comprehensive understanding of TB adherence dynamics.

Recommendations for Future Research

Future research should prioritize larger, multicenter studies to validate these findings across different populations and settings. Quantitative studies examining the strength and statistical significance of the relationship between mental health disturbances and TB treatment adherence are also needed to complement qualitative insights.

Additionally, exploring the effectiveness of integrated mental health and TB care models in various healthcare systems could inform evidence-based interventions. Research into the role of specific psychosocial interventions, such as counseling or peer support groups, may uncover practical solutions to enhance treatment adherence. Finally, addressing methodological challenges, such as biases in data collection and expanding study populations to include rural areas, will further refine our understanding of this critical public health issue.

AUTHOR'S CONTRIBUTION STATEMENT

The authors have made significant individual contributions to the research and the development of this manuscript as follows: **Indra Fajarwati Ibnu**: Conceived and designed the study, coordinated the data collection process, and performed data analysis. Indra also took the lead in drafting the manuscript and contributed to

interpreting the findings within the broader context of TB and mental health research. **Shanti Riskiyani**: Played a critical role in reviewing the study design and methodology. Shanti conducted in-depth interviews and contributed to the thematic analysis. Additionally, she reviewed and refined the manuscript draft, ensuring its alignment with international health research standards. **Rizky Chaeraty Syam**: Provided expertise in mental health and its integration into TB care frameworks. Rizky contributed to developing the interview guide, assisted in data analysis, and critically reviewed the discussion and conclusion sections of the manuscript.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest that could influence the impartiality of this research. They have no financial or personal relationships with any individuals, organizations, or entities that might unduly affect the objectivity or integrity of the study.

This declaration underscores the authors' commitment to maintaining the highest standards of research ethics and transparency. By openly addressing potential influences, this statement reinforces the credibility and trustworthiness of the article.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

I declare that generative AI and AI-assisted technologies were used only to support language refinement and improve clarity in the writing process. All ideas, analyses, and conclusions in this thesis are entirely my own, and no AI tools were used to generate research data or substantive academic content.

SOURCE OF FUNDING STATEMENTS

The sources of financial support for this research are acknowledged as follows: This study received funding from the *Collaborative Fundamental Research Grant* through the *Research and Community Service Institute, Hasanuddin University* in 2024. The funding agency had no involvement in the design, execution, analysis, interpretation, or manuscript preparation of this research. This clear disclosure upholds the independence and credibility of the study, ensuring transparency regarding the financial backing behind the research.

ACKNOWLEDGMENTS

We would like to express our sincere gratitude to all those who contributed to the success of this research. Our heartfelt thanks go to the Research and Community Service Institute, Hasanuddin University, for providing financial support through the Fundamental Collaborative Research Grant in 2024. We would like to extend our deepest appreciation to the research participants for their time, cooperation, and valuable insights, without which this study would not have been possible. We also wish to acknowledge the dedicated efforts of our research team, whose collaboration, expertise, and commitment were instrumental in the successful completion of this study. Their contributions to the planning, execution, and analysis phases were crucial in achieving the study's objectives.

BIBLIOGRAPHY

1. World Health Organization. Global tuberculosis report 2022. Geneva: WHO; 2022.
2. World Health Organization. Tuberculosis key facts [Internet]. 2021 [cited 2024 Nov 19]. Available from: https://www.who.int/news-room/fact-sheets/detail/tuberculosis
3. Sweetland AC, Kritski A, Oquendo MA, Sublette ME, Norcini Pala A, Silva L, et al. Addressing the tuberculosis–depression syndemic to end the TB epidemic. Int J Tuberc Lung Dis. 2020;24(8):802–10.
4. Courtwright A, Turner AN. Tuberculosis and stigmatization: pathways and interventions. Public Health Rep. 2021;136(6):657–67.
5. Tola HH, Shojaeizadeh D, Garmaroudi G, Tol A, Yekaninejad MS, Kebede A, et al. Psychological and educational intervention to improve tuberculosis treatment adherence in Ethiopia based on health belief model: a cluster randomized control trial. PLoS One. 2020;15(2)
6. United Nations. Transforming our world: the 2030 agenda for sustainable development [Internet]. New York: United Nations; 2021 [cited 2024 Nov 19]. Available from: https://sdgs.un.org/goals/goal3

7. Duko B, Bedaso A, Ayano G, Yohannis Z. Perceived stigma and associated factors among patient with tuberculosis, Wolaita Sodo, Ethiopia: cross-sectional study. Can J Infect Dis Med Microbiol. 2020;2020:7808361.
8. Silva DR, Mello FCQ, Migliori GB, Duarte R, Dalcolmo M, Arbex FF, et al. Mental health and tuberculosis: a close relationship. Ann Clin Microbiol Antimicrob. 2021;20(1):21.
9. Indonesian Ministry of Health. National tuberculosis prevalence survey 2021: findings and implications. Jakarta: Ministry of Health; 2021.
10. Creswell JW, Poth CN. Qualitative inquiry and research design: choosing among five approaches. 4th ed. Thousand Oaks: SAGE Publications; 2018.
11. Giorgi A. The descriptive phenomenological method in psychology. Duquesne University Press; 2009.
12. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2020;3(2):77–101.
13. World Health Organization. Ethical considerations in health research involving human participants. Geneva: WHO; 2021.
14. Denzin NK, Lincoln YS. The SAGE handbook of qualitative research. 5th ed. Thousand Oaks: SAGE Publications; 2020.
15. Kvale S, Brinkmann S. Interviews: learning the craft of qualitative research interviewing. 3rd ed. Thousand Oaks: SAGE Publications; 2019.
16. Patton MQ. Qualitative research & evaluation methods: integrating theory and practice. 4th ed. Thousand Oaks: SAGE Publications; 2019.
17. Silverman D. Interpreting qualitative data: methods for analyzing talk, text, and interaction. 6th ed. Thousand Oaks: SAGE Publications; 2019.
18. Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. Field Methods. 2020;18(1):59–82.
19. Duko B, Ayano G, Tessema F. Depression, anxiety, and treatment adherence among tuberculosis patients: a systematic review. Glob Health Action. 2020;13(1):1778469.
20. Gibson N, O'Connor R. Stigma and Tuberculosis: A Health Promotion Perspective. Health Promot Int. 2019;35(2):198–210. doi:10.1093/heapro/daz017
21. Mitchison D. Mental health and tuberculosis outcomes: a comparative study. Tuberculosis. 2020;120:87–92.
22. Kang S, Lee S. The impact of depression and anxiety on tuberculosis treatment adherence: a study among TB patients in South Korea. Int J Tuberc Lung Dis. 2021;25(4):289–97.
23. Pachi A, Bratis D, Moussas G. Mental Health and Tuberculosis Treatment Compliance. Front Psychiatry.
24. Roberts L, Kueny A, Barrera J, et al. The role of stigma in tuberculosis treatment adherence: a qualitative exploration. Public Health. 2020;183:116–21.
25. Kadir M, Othman H. Reducing stigma in tuberculosis patients: the role of community-based interventions. J Community Health. 2021;46(2):334–41.
26. Bakibinga P, Mulogo E. The protective role of family support in tuberculosis treatment adherence in East Africa. Trop Med Health. 2021;49(1):1–8.
27. Dinesh B, Oyetunde T, Sharma S, et al. Family-centered care in tuberculosis treatment: evidence from a randomized controlled trial in India. Lancet Infect Dis. 2021;21(5):630–9.
28. Singh K, Ramesh M. Integrating mental health into tuberculosis treatment: challenges and opportunities in low-resource settings. J Psychosom Res. 2021;138:110248.
29. Rajan M, Chauhan K. Training healthcare workers to address mental health issues in tuberculosis care. J Health Care Disparities. 2021;19(3):280–8.
30. Lee J, Jang Y, Kim Y, et al. The psychological distress of younger tuberculosis patients: a qualitative study. J Adolesc Health. 2021;68(3):507–13.