Poltekita: Jurnal Ilmu Kesehatan
e-ISSN: 2527-7170 | p-ISSN: 1907-459X
Volume 19 Issue 2, 2025, page 324-331
DOI: 10.33860/jik.v19i2.4225
Website:https://ojs.polkespalupress.id/index.php/JIK
Publisher: Poltekkes Kemenkes Palu

Determinant of Depression in Multi - Drug Resistant Tuberculosis (MDR) at Waled Cirebon Regional General Hospital

Endah Sari Purbaningsih*, Muadi, Thia Oktiany, Rosalia Rahayu, lili Wahyuni, Ani Nurhaeni, Dewi Erna Marisa
Institut Teknologi dan Kesehatan Mahardika, West Java, Indonesia
*Corresponding Author: endah@mahardika.ac.id

ARTICLE INFO

Article History:
Received: 2025-07-02
Published: 2025-09-30

Keywords:

MDR-TB; depression; illness duration; comorbidities; social stigma.

ABSTRACT

Depression is a common psychological complication among patients with multidrug-resistant tuberculosis (MDR-TB), affecting treatment adherence and recovery outcomes. Identifying the determinants of depression in this population is essential for developing comprehensive care strategies. This cross-sectional study was conducted among 28 MDR-TB patients at RSUD Waled. Data on demographic, clinical, and psychosocial variables were collected through structured questionnaires. Depression was assessed using a standardized screening tool. Bivariate analysis was performed using chi-square tests, followed by multivariate logistic regression to identify independent predictors of depression. The bivariate analysis showed no significant association between age (p=0.063), gender (p=0.07), income (p=0.065), or educational attainment (p=0.63) with depression, indicating that these demographic and socioeconomic factors did not influence depressive outcomes. In contrast, comorbidities (p<0.001), duration of illness (p=0.011), and community stigma (p<0.001) were significantly associated with depression. Respondents with comorbidities, longer illness duration, and negative community stigma were markedly more likely to experience depression, suggesting that clinical and psychosocial factors are stronger determinants than demographic variables. Comorbidities, longer illness duration, and community stigma were significantly related to depressive outcomes. Future research with larger and more diverse populations is needed to validate these findings and explore contextual factors influencing depression in MDR-TB patients.

INTRODUCTION

Tuberculosis (TB) remains a significant global health issue. According to the World Health Organization (WHO), more than 10.6 million TB cases were recorded globally in 2023, with Indonesia ranking second after India in terms of the highest number of cases.[1,2] One of the most complex and difficult forms of TB to treat is Multidrug-Resistant Tuberculosis (MDR-TB), which refers to a form of TB that is resistant to two first-line drugs: isoniazid and rifampicin. This disease not only imposes a considerable clinical burden but also carries severe psychosocial implications, particularly a high risk of mental health disorders such as depression.

Treatment for MDR-TB is prolonged lasting a minimum of 9 to 24 monthsoften accompanied by severe drug side effects and not always resulting in successful outcomes.[2] Furthermore, patients

frequently face social stigma, isolation, loss of employment, and high treatment costs.[3] These factors make individuals with MDR-TB highly vulnerable to mental health issues, especially depression. Depression is a mood disorder marked by persistent sadness, loss of interest in activities, fatigue, changes in appetite, sleep disturbances, and in some cases, suicidal ideation.[4]

Depression is highly prevalent among patients with multidrug-resistant tuberculosis (MDR-TB), as reported by numerous international studies, with estimates ranging from 40% to 70%.[5] A study in Ethiopia revealed that about 62% of MDR-TB patients experienced depression [6], while research in Pakistan reported a prevalence of 49%.[7] Evidence from Indonesia, though still limited, demonstrates a similar trend. A study in Surabaya found that nearly 60% of MDR-TB patients suffered from depression with varying levels of severity. These findings indicate that depression is a common comorbidity in MDR-TB across different settings, underscoring the need for comprehensive patient care that addresses both physical and mental health.[8,9]

Several risk factors are believed to contribute to the onset of depression in patients with MDR-TB. These include comorbidities such as Diabetes Mellitus and HIV/AIDS, prolonged disease duration which leads to both physical and mental exhaustion, low socioeconomic status characterized by unemployment, low education levels, and lack of insurance and the experience of social stigma and isolation, which exacerbate feelings of helplessness and loneliness.[10,11]

Depression in MDR-TB patients can significantly reduce adherence to treatment regimens, increase the risk of treatment dropout, prolong recovery time, and deteriorate the patient's overall quality of life.[12] In severe cases, depression may even lead to suicide attempts. As such, early detection and management of psychological problems in TB patients, particularly those with MDR-TB, is a crucial component of a holistic approach to TB control and care.[13–15] Although several studies have examined the relationship between MDR-TB and depression, specific research focusing on the Cirebon region, particularly at Waled Regional General Hospital (RSUD Waled) key referral center for MDR-TB treatment in West Java is still lacking. Local data are essential, as cultural, social, and health system differences can influence patients' perceptions of illness and their responses to treatment. Therefore, this study aims to identify the determinant factors associated with depression among MDR-TB patients at RSUD Waled Cirebon, with a focus on sociodemographic and clinical characteristics, and to highlight duration of illness as the most significant predictor.

METHODS

This study employed a quantitative analytic approach with a cross-sectional design[16], conducted at Waled Cirebon Regional General Hospital in 2025. The primary aim was to analyze the determinant factors of depression in patients diagnosed with Multi-Drug Resistant Tuberculosis (MDR-TB).

Study Population and Sampling

The study population included all MDR-TB patients registered and undergoing treatment at the MDR-TB clinic of Waled Hospital during the study period. A total of 28 respondents were included using a total sampling technique, as the number of MDR-TB patients at the hospital was limited. Although the sample size was relatively small, this approach ensured that all eligible patients were represented in the analysis.[17]

Data Collection Instruments

Data were collected through structured interviews and medical record reviews. The primary outcome variable, depression, was assessed using the Beck Depression Inventory-II (BDI-II), a validated 21-item instrument rated on a 4-point Likert scale (0–3), yielding total scores between 0 and 63. For descriptive purposes, depression was initially categorized into minimal (0–13), mild (14–19), moderate (20–28), and severe (29–63). For analytical purposes, these categories were dichotomized into two groups: "not depressed" (<14) and "depressed" (≥14). Independent

variables were grouped into demographic characteristics (age, gender, education level), clinical characteristics (treatment duration, comorbidities such as diabetes or HIV) and psychosocial characteristics (stigma perception). Stigma was assessed using the 11-item TB stigma scale validated in Bahasa Indonesia.

Data Analysis

Descriptive statistics were used to summarize respondent characteristics. Since the outcome variable (depression) was binary, bivariate associations between independent variables and depression were tested using chi-square or Fisher's exact tests, as appropriate. Variables with $p < 0.25$ in the bivariate analysis were entered into a multivariate regression model to identify independent predictors of depression. Results are presented as adjusted odds ratios (AOR) with 95% confidence intervals (CI). Statistical significance was defined as $p < 0.05$.

Ethical Considerations

The study protocol was reviewed and approved by the Health Research Ethics Committee of the Mahardika Institute of Technology and Health, Cirebon (No: 132/KEP_ITEKESMA/III/2025). All participants provided written informed consent prior to data collection. Confidentiality and anonymity of respondents were strictly maintained throughout the research process.

RESULTS

The research results are divided into univariate and bivariate analysis.

Table 1. Univariate Analysis of Determinant Factors and Depression Experienced

Characteristics	n	%
Age		
Adulthood	11	39.3
Elderly	17	60.7
Gender		
Male	15	53.6
Female	13	46.4
Income		
Low	14	50.0
High	14	50.0
Comorbidities		
Comordities	15	53.6
No comordities	13	46.4
Duration of Illness		
New	16	57.1
Long	12	42.9
Last Educational Attainment		
Low education	17	60.7
High education	11	39.3
Community Stigma		
Positive Stigma	11	39.3
Negative Stigma	17	60.7
Depression		
No Depression	10	35.7
Depression	18	64.3

The majority of respondents were in the elderly age group (60.7%), with a nearly equal gender distribution (53.6% male and 46.4% female). Half of them (50.0%) had a monthly income below Rp. 2.500.000, and 53.6%% reported comorbidities. Most participants had been ill for more than 12 months (42.9%) and had relatively low educational attainment, with only 39.3% achieving higher

education. Negative community stigma was reported by the majority (60.7%), and 64.3% respondents experienced of depression.

Table 2. Bivariate Analysis of Dominant Factors Associated with Depression

Variables	Normal		Depression		P-Value
	n	%	n	%	
Age					
Adulthood	4	36.4	7	63.6	0.632
Elderly	6	35.3	11	64.7	
Gender					
Male	3	20.0	12	80.0	0.071
Female	7	53.8	6	46.2	
Income					
Low	5	35.7	9	64.3	0.653
High	5	35.7	9	64.3	
Comorbidities					
No comordities	10	76.9	3	23.1	<0.001
Comordities	0	0.00	15	100.0	
Duration of Illness					
New	9	56.3	7	43.7	0.011
Long	1	8.3	11	91.7	
Last Educational Attainment					
Low education	6	35.3	11	64.7	0.632
High education	4	36.4	7	63.6	
Community Stigma					
Positive Stigma	10	90.9	1	9.1	<0.001
Negative Stigma	0	0.00	17	100.0	

The bivariate analysis showed no significant association between age (p=0.632), gender (p=0.071), income (p=0.653), or educational attainment (p=0.632) with depression, indicating that these demographic and socioeconomic factors did not influence depressive outcomes. In contrast, comorbidities (p<0.001), duration of illness (p=0.011), and community stigma (p<0.001) were significantly associated with depression. Respondents with comorbidities, longer illness duration, and negative community stigma were markedly more likely to experience depression, suggesting that clinical and psychosocial factors are stronger determinants than demographic variables.

DISCUSSION

The bivariate analysis in this study revealed that demographic and socioeconomic characteristics—including age, gender, income, and educational attainment—were not significantly associated with depression among MDR-TB patients. These findings suggest that depressive symptoms in this population are not primarily determined by basic demographic or economic factors, but may rather be influenced by clinical and psychosocial conditions. This result is consistent with previous studies reporting that demographic variables alone often fail to explain mental health outcomes in chronic illness populations, as depression tends to emerge more strongly from illness-related and social stressors than from individual background characteristics. In contrast, comorbidities (p<0.001), duration of illness (p=0.011), and community stigma (p<0.001) demonstrated significant associations with depression. Patients with additional health problems were more likely to experience depressive symptoms, aligning with evidence that multimorbidity increases psychological burden, complicates treatment, and exacerbates health-related stress. Prolonged illness duration also showed a strong relationship with depression, reflecting the cumulative toll of long-term disease on patients' mental well-being. Prolonged

exposure to chronic symptoms, repeated hospital visits, and treatment fatigue may gradually undermine resilience and heighten vulnerability to depressive disorders. Similar findings have been reported in Ethiopia, India, and other low- and middle-income countries, where stigma was consistently associated with poor mental health outcomes in TB patients. [18–20]

Among the significant factors, community stigma emerged as a particularly strong determinant of depression. Stigma is widely recognized as a critical psychosocial stressor that compounds the burden of MDR-TB by fostering social isolation, eroding self-esteem, and reducing access to social support. Patients who encounter negative societal attitudes may internalize stigma, leading to self-blame and hopelessness, which in turn intensify depressive experiences. Previous research from Ethiopia, India, and other low- and middle-income countries consistently underscores the role of stigma in shaping poor mental health outcomes among TB patients. These findings highlight that beyond clinical management, addressing social determinants particularly stigma is essential for improving patients' psychological well-being and treatment adherence.[21,22]

Taken together, the present results indicate that while demographic and socioeconomic variables did not show significant associations with depression, clinical factors such as comorbidities and duration of illness, as well as psychosocial factors like community stigma, play a more substantial role. This emphasizes the need for holistic approaches in MDR-TB care that integrate psychosocial support, stigma reduction strategies, and routine mental health screening into clinical practice. [9,27]

The findings underscore the need for integrated interventions that combine MDR-TB treatment with psychosocial support and stigma reduction strategies. Community-based education, peer-support groups, and involvement of family caregivers may help reduce stigma and strengthen patients' coping capacity. In line with WHO's call for patient-centered care in MDR-TB management, integrating mental health services and anti-stigma programs should be prioritized to improve treatment outcomes and patients' quality of life. [25,26]

This study has several critical limitations. The small sample size (n = 28) was the most significant constraint, limiting statistical power and increasing the likelihood of type II error. This limitation likely contributed to inconsistencies between bivariate and multivariate findings, particularly for comorbidities and stigma. Potential biases also need to be acknowledged: recall bias in self-reported illness history, measurement bias from the use of self-administered BDI-II and stigma scales, and social desirability bias, especially in sensitive stigma-related responses. Additionally, wide confidence intervals and extreme odds ratios highlight estimation instability, further limiting generalizability.

CONCLUSION

This study demonstrates that depression among MDR-TB patients is more strongly influenced by clinical and psychosocial factors than by demographic or socioeconomic characteristics. While age, gender, income, and educational attainment showed no significant associations with depression, comorbidities, longer illness duration, and community stigma were significantly related to depressive outcomes. Future studies with larger and more representative samples are needed to validate these results and further explore the interaction between clinical and psychosocial determinants of depression.

Author's Contribution Statement: **Endah Sari Purbaningsih**: Conceptualization, Methodology, Software, **Muadi**: Data curation, Writing-Original draft preparation. **Thia Octiany**: Data curation, Writing-Original draft preparation **Rosalia Rahayu**: Visualization, Investigation. **Lily Wahyuni**: Supervision. **Ani Nurhaeni**: Software, Validation. **Dewi Erna Marisa:** Writing- Reviewing and Editing.

Conflicts of Interest: The authors declare that there is no conflict of interest related to the conduct of this study, authorship, or publication of this manuscript.

Source of Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. The study was conducted independently using the authors' institutional resources.

Acknowledgments

The authors sincerely thank all MDR-TB patients who participated in this study and the healthcare staff at the participating facilities for their cooperation and support. Appreciation is also extended to the Institutional Review Board and the Faculty of Nursing for their valuable guidance throughout the research proces.

REFERENCES

1. Global Tuberculosis Report 2023 [Internet]. [cited 2025 Jul 23]. Available from: https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2023
2. Indonesia's Movement to End TB [Internet]. [cited 2025 Jul 23]. Available from: https://kemkes.go.id/eng/indonesias-movement-to-end-tb
3. Tuberculosis [Internet]. [cited 2025 Jul 23]. Available from: https://www.who.int/news-room/fact-sheets/detail/tuberculosis
4. Chand SP, Arif H. Depression. StatPearls [Internet]. 2023 Jul 17 [cited 2025 Jul 23]; Available from: https://www.ncbi.nlm.nih.gov/books/NBK430847/
5. Panibatla V, Nagaraja SB, Mohan D, Kizhakkethil SMP, Sangeetha MD. Depression and Anxiety among Tuberculosis Patients: A Systematic Review and Meta-analysis. Indian J Soc Psychiatry. 2024;40(4):326–40. Available from: https://journals.lww.com/ijsp/fulltext/2024/40040/depression_and_anxiety_among_tuberculosis.2.aspx
6. Ambaw F, Mayston R, Hanlon C, Medhin G, Alem A. Untreated depression and tuberculosis treatment outcomes, quality of life and disability, Ethiopia. Bull World Health Organ. 2018 Apr 1;96(4):243–55. Available from: https://pubmed.ncbi.nlm.nih.gov/29695881/
7. Walker IF, Khan AM, Khan AM, Khan NM, Ayub RM, Ghias KN, et al. Depression among multidrug-resistant tuberculosis patients in Punjab, Pakistan: a large cross-sectional study. The International Journal of Tuberculosis and Lung Disease. 2018;22(7):773–8. Available from: http://dx.doi.org/10.5588/ijtld.17.0788
8. Susanto TD, Widysanto A, Cipta DA, Tanara A, Wirawan GR, Kosim AB, et al. Anxiety and depression level of patients with multidrug-resistant tuberculosis (MDR-TB) in two hospitals in Banten province, Indonesia. Dialogues in Health. 2023;2:100115. Available from: http://dx.doi.org/10.1016/j.dialog.2023.100115
9. Mendoza-Torres JC, Durán-Hernández N, Choreño-Parra JA, Sánchez-Garibay C, Salinas-Lara C. Hippocampal syndrome secondary to tuberculosis: From neuroinflammation to neurodegeneration. Tuberculosis. 2025 Jul 1;153. https://pubmed.ncbi.nlm.nih.gov/40446382/
10. Samal J, Dehury RK, Thomas MB, Singh H. Prevalence and predictors of depression in tuberculosis patients in india: a systematic review and meta-analysis. Discover Mental Health. 2025 Dec 1;5(1):104. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC12255643/
11. Tuberculosis resurges as top infectious disease killer [Internet]. [cited 2025 Jul 23]. Available from: https://www.who.int/news/item/29-10-2024-tuberculosis-resurges-as-top-infectious-disease-killer

12. Wang X bo, Li X lian, Zhang Q, Zhang J, Chen H yan, Xu W yuan, et al. A Survey of Anxiety and Depressive Symptoms in Pulmonary Tuberculosis Patients With and Without Tracheobronchial Tuberculosis. Front Psychiatry. 2018;9. Available from: http://dx.doi.org/10.3389/fpsyt.2018.00308
13. Dong X, Zhao L, Sun T, Yun F, Qiu L. Prevalence of Depressive Symptoms and Associated Factors among Internal Migrants with Tuberculosis: A Cross-Sectional Study in China. Am J Trop Med Hyg. 2020;102(1):31–5. Available from: http://dx.doi.org/10.4269/ajtmh.19-0542
14. Gong Y, Yan S, Qiu L, Zhang S, Lu Z, Tong Y, et al. Prevalence of Depressive Symptoms and Related Risk Factors among Patients with Tuberculosis in China: A Multistage Cross-Sectional Study. Am J Trop Med Hyg. 2018;98(6):1624–8. Available from: http://dx.doi.org/10.4269/ajtmh.17-0840
15. Javaid A, Mehreen S, Khan MA, Ashiq N, Ihtesham M. Depression and its Associated Factors with Multidrug-Resistant Tuberculosis at Baseline. J Depress Anxiety. 2017;06(01). Available from: https://www.longdom.org/open-access/depression-and-its-associated-factors-with-multidrugresistant-tuberculosis-at-baseline-30558.html
16. Patel M, Patel N. Exploring Research Methodology: Review Article. International Journal of Research & Review. 2019 Mar;6(3):48–55. Available from: https://www.ijrrjournal.com/IJRR_Vol.6_Issue.3_March2019/Abstract_IJRR0011.html
17. Subhaktiyasa PG. Menentukan Populasi dan Sampel: Pendekatan Metodologi Penelitian Kuantitatif dan Kualitatif. Jurnal Ilmiah Profesi Pendidikan. 2024;9(4):2721–31. Available from: http://dx.doi.org/10.29303/jipp.v9i4.2657
18. Duko B, Bedaso A, Ayano G. The prevalence of depression among patients with tuberculosis: a systematic review and meta-analysis. Ann Gen Psychiatry [Internet]. 2020;19(1). Available from: http://dx.doi.org/10.1186/s12991-020-00281-8
19. Stanikzai MH, Ishaq N, Zafar MN, Baray AH, Anwary Z, Ahmad M, et al. Depression symptoms among Afghan TB patients: A multi-center study. Indian Journal of Tuberculosis. 2024 Jan 1;71:S264–8. https://pubmed.ncbi.nlm.nih.gov/39370194/
20. Stanikzai MH, Wafa MH, Baray AH, Rahimi AF, Sayam H. Anti-TB treatment non-adherence predictors: A multi-center cross-sectional study in Kandahar, Afghanistan. Indian Journal of Tuberculosis. 2025 Jul 1;72(3):298–303. https://pubmed.ncbi.nlm.nih.gov/40707079/
21. Pachi A, Bratis D, Moussas G, Tselebis A. Psychiatric Morbidity and Other Factors Affecting Treatment Adherence in Pulmonary Tuberculosis Patients. Tuberc Res Treat. 2013;2013:489865. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC3649695/
22. Ambaw F, Mayston R, Hanlon C, Alem A. Burden and presentation of depression among newly diagnosed individuals with TB in primary care settings in Ethiopia. BMC Psychiatry. 2017;17(1). Available from: http://dx.doi.org/10.1186/s12888-017-1231-4
23. Suratmini D, Berliana Togatorop L. Hubungan Stigma Dan Efikasi Diri Dengan Kepatuhan Pengobatan Obat Anti Tuberkulosis (OAT) Pasien Tuberkulosis: Literatur Review. Jurnal Keperawatan Widya Gantari Indonesia. 2023 Jul 12;7(2). https://ejournal.upnvj.ac.id/Gantari/article/view/5736
24. Morris MD, Quezada L, Bhat P, Moser K, Smith J, Perez H, et al. Social, economic, and psychological impacts of MDR-TB treatment in Tijuana, Mexico: a patient's perspective. The International Journal of Tuberculosis and Lung Disease. 2013;17(7):954–60. Available from: http://dx.doi.org/10.5588/ijtld.12.0480
25. Paul R, Muhammad T, Rashmi R, Sharma P, Srivastava S, Zanwar PP. Depression by gender and associated factors among older adults in India: implications for age-friendly policies. Sci Rep. 2023 Dec 1;13(1):17651. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC10582097/

26. Epriliani, P., Candra IW. Mindfullness-Based Cognitive Therapy (MCBT) Menurunkan Tingkat Depresi. Jurnal Gema Keperawatan. 2019;12(2). https://ejournal.poltekkes-denpasar.ac.id/index.php/JGK/article/view/1031
27. Shevchenko OS, Todoriko LD, Synenko TO, Kiba VP, Pohorielova OO, Pidverbetska OV. Tuberculosis Diagnosis with Rapid Molecular Tests of Stool Samples in Adults with Severe Mental Illness (Review). Tuberculosis, Lung Diseases, HIV Infection. 2025 Jul 29;(3):100–6. http://tubvil.com.ua/article/view/336304