



Enhancing Tb Care: Mental Health Screening and Support for Drug-Resistant Tuberculosis Patients.

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Received: 08 July 2024

Published: 20 July 2024

DOI: <https://doi.org/10.5281/zenodo.12793888>

Abstract

Background: The complex treatment regimen, extended treatment period, isolation, severe side effects, and social stigma associated with drug-resistant tuberculosis (DR-TB) can cause significant psychological distress.

Aim: To identify and address mental health challenges in DR-TB patients

Methodology: A pre-test post-test design was used, involving 274 DR-TB patients screened with the PHQ-4 and a suicide assessment question. Patients showing mental health issues received two counseling sessions over two weeks. Those reporting suicidal ideation were referred to appropriate mental health services.

Result: Participants had a mean age of 31.83 years; 70% were male. Of the participants, 50.7% showed mental health issues: mild (26.6%), moderate (17.5%), and severe (6.6%). Suicidal ideation was reported by 16.8%. Counseling significantly reduced PHQ-4 scores in mild and moderate cases but not in severe cases.

Conclusion: Integrating mental health counseling into DR-TB treatment significantly improves mental well-being and treatment outcomes, advocating for comprehensive mental health support in DR-TB care.

Keyword: Drug-resistant tuberculosis (DR-TB), mental health, counselling intervention, suicidal ideation.

Introduction

Drug-resistant tuberculosis (DR-TB) poses a significant public health challenge globally due to its complex treatment regimen and higher mortality rates compared to drug-sensitive TB. According to the 2024 India TB Report, there were an estimated 2.78 million (27.8 lakh) tuberculosis (TB) cases in India in 2023. India accounted for 27% of the global TB burden; making it the highest among the eight countries with the highest TB burden (WHO Global Tuberculosis Report, 2023)¹. Additionally, the India TB Report, 2024 indicated 63,939 cases of MDR/RR-TB (multidrug-resistant or rifampicin-resistant TB) in India.

The extended treatment period, isolation, severe side effects, and social stigma associated with DR-TB contribute to significant psychological distress among patients²⁻⁵. Moreover, the side effects of DR-TB

medications can exacerbate this distress, leading to neuropsychiatric symptoms such as psychosis, depression, and cognitive impairment^{2,6}.

Individuals infected with tuberculosis (TB) often experience high rates of mental disorders, including depression and anxiety. Depression is particularly widespread, and is one of the most common psychiatric disorders among TB patients. Studies estimate that the prevalence of depression in individuals with TB is three times higher compared to those without TB⁷⁻¹¹. The mental health burden of DR-TB patients is multifaceted. Despite these challenges, mental health care is often not given enough attention in TB treatment programs. This can result in poor health-seeking behavior, negative treatment outcomes, loss of follow-up, disease progression, and increased mortality¹²⁻¹⁴. Addressing these mental health challenges is critical to improving overall treatment outcomes and ensuring holistic care for DR-TB patients.

The systematic review by Agbeko et al. (2022), titled "Mental Health Status and Its Impact on TB Treatment and Its Outcomes: A Scoping Literature Review," found that implementing interventional approaches resulted in better mental wellbeing and improved medical compliance among patients, compared to studies that only examined the subjects without interventions¹⁵.

Pasha et al. (2021) stated that incorporating mental health interventions within tuberculosis (TB) treatment programs can significantly alleviate symptoms of depression and anxiety. Additionally, such integrated approaches have been shown to enhance the likelihood of patients completing their TB treatment regimens, thereby improving overall treatment outcomes¹⁶.

Agarwal and Sarthi (2020) concluded that mental health issues can complicate tuberculosis (TB) outcomes and must be adequately addressed. They emphasized the need for comprehensive psychoeducation, psychological first aid (including listening, protecting, connecting, modeling, and teaching), and timely interventions through accurate diagnosis, specific treatment, and rehabilitation to improve TB treatment results¹⁷.

104 Helpline:

Piramal Swasthya operated a 104 helpline in Ranchi, Jharkhand, staffed by around 60 call center executives and psychologists. This helpline provided various services, including grievance redressal related to the health system, online consultations with doctors, mental health counseling, and follow-up support for TB patients. The well-equipped call center was capable of assessing the mental health status of DR-TB patients and providing necessary counseling and referral services.

Objective:

This study aims to identify and address mental health challenges in patients with drug-resistant tuberculosis (DR-TB).

Methodology**Design of the Study:**

The present study employed a pre-test post-test design. Patients were screened and received counselling sessions via phone call. They were assessed at baseline (pre-test) and immediately after the intervention (post-test) using the PHQ-4 and a suicide assessment question.

Participants:

The study involved 274 DR-TB patients who agreed to participate. State TB cell, Jharkhand provided a list of approximately 440 DR-TB patients between July 2022 and December 2022. Out of these, 333 patients were successfully contacted via phone call, and 274 consented to participate in the study. The remaining patients were untraceable due to reasons such as not picking up the call, being unreachable, or having their phones switched off.

Criteria for Counselling and Referral**Counselling Enrolment:**

- Patients who showed 'mild', 'moderate', or 'severe' symptoms on the PHQ-4 were enrolled for counselling.
- These patients received two counselling sessions over two consecutive weeks.

Referral:

- Patients who continued to show mental health symptoms after counselling were referred for further intervention.
- Patients who exhibited suicidal ideation were immediately refer

Referred patients were linked to appropriate mental health services including DMHP (District Mental Health Program), RINPAS (Ranchi Institute of Neuro-Psychiatry & Allied Sciences), CIP (Central Institute of Psychiatry), and State Tele-MANAS service for further intervention.

Assessment Tools:

Patient Health Questionnaire-4 (PHQ-4): Used to measure depressive and anxiety symptoms. The PHQ-4 consists of four items, rated on a 4-point Likert scale (0 = "not at all" to 3 = "nearly every day"), covering symptoms over the past two weeks. Total scores range from 0 to 12, categorized as normal (0-2), mild (3-5), moderate (6-8), and severe (9-12), and are categorized as normal (0-2), mild (3-5), moderate (6-8), and severe (9-12) (Kroenke et al., 2009).

Suicidal Ideation Question: A single self-prepared question, "Have you felt that life wasn't worth living?" and/or "Have you had thoughts of hurting or killing yourself?" to assess suicidal thoughts.

Description of Counselling Sessions:

The Mental Health Counseling Intervention consists of two structured psychosocial treatment sessions delivered over two consecutive weeks. The core psychological framework used is behavioural activation, a well-established technique in cognitive-behavioural therapy aimed at increasing patients' engagement in meaningful activities to counteract depression and anxiety.

Session 1: Identifying Triggers and Behavioural Activation

Objective: To identify the triggers of mental health symptoms and initiate behavioural activation strategies.

Content:

- **Personal Context Discussion:** Counsellors discuss the patient's personal context and the challenges they face, including family concerns, stigma, discrimination, and isolation.
- **Trigger Identification:** Specific triggers related to mental health symptoms are identified through guided discussions.
- **Behavioural Activation Techniques:** Patients are introduced to behavioural activation techniques, encouraging them to engage in meaningful activities and seek social support to overcome identified triggers. Activities may include exercise, hobbies, social interactions, and routine establishment.

Techniques Used:

- **Activity Scheduling:** Encouraging patients to plan and participate in activities that they find enjoyable or fulfilling.
- **Problem-Solving:** Helping patients develop practical solutions to overcome barriers to engaging in activities.
- **Cognitive Restructuring:** Addressing negative thoughts and beliefs that may prevent patients from engaging in positive behaviours.

Session 2: Adapting Skills and Relapse Prevention

Objective: To adapt coping skills and strategies to prevent relapse.

Content:

- **Progress Review:** Reviewing progress since the first session, reinforcing behavioural activation techniques, and discussing the patient's experiences when performing activities.
- **Adaptive Skill Teaching:** Teaching adaptive skills to manage stress, stigma, and isolation, including relaxation techniques, and stress management strategies.
- **Relapse Prevention Planning:** Motivating patients to sustain positive changes and identifying early signs of distress to prevent relapse. Patients are taught how to recognize warning signs and develop action plans to address them.

Counsellor Training:

Counsellors were trained through a structured program that included both theoretical and practical components. The training covered:

- **Basic Mental Health Education:** Understanding common mental health issues among DR-TB patients.
- **Behavioural Activation Techniques:** Detailed training on implementing behavioural activation and other cognitive-behavioural strategies.

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- **Communication Skills:** Enhancing empathy, active listening, and motivational interviewing techniques to effectively support patients.
 - **Crisis Intervention:** Preparing counsellors to handle emergencies, including recognizing and responding to suicidal ideation.

The training program ensured that counsellors were well-equipped to deliver effective mental health interventions and provide comprehensive support to DR-TB patients. This holistic approach aimed to address both the psychological and social aspects of the patients' mental health challenges, promoting overall well-being and better treatment outcomes.

Procedure:

State TB cell, Jharkhand provided a list of approximately 440 new DR-TB patients diagnosed between June 2022 and December 2022 to WHP, Ranchi, Jharkhand. This list was allocated to 104 call center executives for outreach. Out of the 440 patients, 333 were successfully contacted via phone calls, while 107 patients were untraceable due to reasons such as not picking up the call, being unreachable, or having their phones switched off. Call centre executives made up to three attempts to contact these untraceable patients. Ultimately, 274 patients consented to participate in the study. These patients were assessed at baseline using the PHQ-4 to screen for mental health issues, including depressive and anxiety symptoms, and a suicide assessment question to identify any suicidal ideation. Patients showing any mental health issues on the PHQ-4 received two counselling sessions over two consecutive weeks. Those reporting suicidal ideation were immediately referred and linked to appropriate mental health services, including DMHP (District Mental Health Program), CIP (Central Institute of Psychiatry), RINPAS (Ranchi Institute of Neuro-Psychiatry & Allied Sciences), and State Tele-MANAS (Mental Health Assistance and Networking Across States) for further intervention. A post-assessment was conducted 15 days after the baseline assessment to evaluate the effectiveness of the intervention. Patients who still exhibited mental health issues or suicidal thoughts during the post-assessment were referred for further evaluation and treatment. The referred patients were followed up via phone calls by the call centre executives to ensure they received the necessary support and intervention.

Result

Table-1: Age, and Gender of Drug-Resistant Tuberculosis Patients

Variable		Sample (N=274)
		Mean \pm SD
Age		31.83 \pm 12.81
		N (%)
Gender	Male	193(70.4)
	Female	81(29.6)

Table 1 presents the demographic and clinical characteristics of the sample consisting of 274 participants. The mean age of the participants is 31.83 years with a standard deviation of 12.81 years, indicating a relatively young sample with a moderate age spread.

In terms of gender distribution, the majority of the participants are male (193, 70.4%), while females constitute a smaller proportion of the sample (81, 29.6%).

Table-2: Frequency of MH issue in DR-TB patients, and eligibility of Counselling and Referral:

Variables		N(%)	Suicidal Ideation/ Referral (N)	MH Counselling (N)
PHQ-4	Normal	135(49.3)	0	0
	Mild	73(26.6)	13	60
	Moderate	48(17.5)	17	31
	Severe	18(6.6)	16	2
Suicidal Ideation	Yes	46(16.8)		
	No	228(83.2)		

Table 2 presents the frequency of mental health (MH) issues among DR-TB (drug-resistant tuberculosis) patients and their eligibility for counseling and referral. The table categorizes psychological distress into four levels: normal, mild, moderate, and severe. Out of the 274 participants, 135 (49.3%) were classified as normal, with no reported cases of suicidal ideation. Among those with mild distress (73, 26.6%), 13 participants reported suicidal ideation. In the moderate distress category (48, 17.5%), 17 participants reported

suicidal ideation. The severe distress group (18, 6.6%) had the highest incidence of suicidal ideation, with 16 participants reporting it. Overall, suicidal ideation was reported by 46 participants (16.8%).

Participants reporting suicidal ideation in the mild (13), moderate (17), and severe (16) categories were referred to DMHP (District Mental Health Program), CIP (Central Institute of Psychiatry), RINPAS (Ranchi Institute of Neuro-Psychiatry & Allied Sciences), and TELE-Manas, Jharkhand. Additionally, participants showing MH issues in the PHQ-4 without suicidal ideation received counselling. Among these, 60 participants in the mild category, 31 in the moderate category, and 2 in the severe category received counselling.

Table-3: Comparison of the scores of PHQ-4 in DR-TB patients between baseline and after MH counselling

PHQ-4	N	Pre Mean \pm SD	Post Mean \pm SD	t	df	p
Mild	60	4.00 \pm .637	.183 \pm .853	26.24	59	.000
Moderate	31	7.00 \pm .966	3.06 \pm 3.69	5.91	30	.000
Severe	2	10.50 \pm 2.12	5.50 \pm 7.71	1.25	1	.430
Total Score of PHQ-4	93	5.91 \pm 2.32	1.96 \pm 2.51	13.59	94	.000

Table 3 compares the scores of the Patient Health Questionnaire-4 (PHQ-4) in DR-TB (drug-resistant tuberculosis) patients before and after receiving mental health (MH) counseling. The table presents the mean scores along with the standard deviation (SD) for both the pre-counseling (Pre) and post-counseling (Post) phases, across different levels of psychological distress: mild, moderate, and severe.

For participants with mild distress (N=60), the mean PHQ-4 score significantly decreased from 4.00 \pm 0.637 before counselling to 0.183 \pm 0.853 after counselling (t=26.24, df=59, p<0.001). Similarly, for those with moderate distress (N=31), there was a notable reduction in the mean score from 7.00 \pm 0.966 to 3.06 \pm 3.69 after counselling (t=5.91, df=30, p<0.001). However, for the small subset of participants experiencing severe distress (N=2), although the mean score decreased from 10.50 \pm 2.12 to 5.50 \pm 7.71 after counselling, the difference was not statistically significant (t=1.25, df=1, p=0.430).

Overall, across all participants (N=93), the total mean score of PHQ-4 significantly decreased from 5.91 \pm 2.32 to 1.96 \pm 2.51 after counselling (t=13.59, df=94, p<0.001). This indicates a significant improvement in psychological distress levels following MH counseling intervention among DR-TB patients.

Discussion

The analysis reveals that a majority of DR-TB patients in the sample are male, comprising 70.4% of the population, while females make up the remaining 29.6%. Additionally, the mean age of the participants is 31.83 years. These findings are consistent with previous studies. For instance, a study on multidrug-resistant tuberculosis (MDR-TB) patients showed a similar trend, with over two-thirds being male (68.8%) and a mean age of 32 years¹⁸. Similarly, another study conducted in Visakhapatnam, India, reported a male-to-female sex ratio of 2:1 among DR-TB patients¹⁹. These consistent patterns across studies highlight the demographic characteristics prevalent among DR-TB patients and provide valuable context for understanding the distribution of the disease within different populations.

Among the 274 participants, 26.6% exhibited mild, 17.5% exhibited moderate, and 6.6% showed severe mental health (MH) issues as indicated by the PHQ-4 scores. This aligns with findings from Laxmeshwar et al. (2022), who reported that 29.9% of DR-TB patients were diagnosed with psychiatric comorbidities². Additionally, previous studies on individuals undergoing treatment for DR-TB have highlighted depression, anxiety, and psychosis as the most prevalent mental health challenges²⁰⁻²². These consistent findings emphasize the importance of integrating mental health support into tuberculosis treatment programs.

The impact of MH counselling on the psychological distress levels of DR-TB patients, as measured by the Patient Health Questionnaire-4 (PHQ-4). The results demonstrate a significant reduction in PHQ-4 scores following counselling across all levels of distress, indicating improved mental well-being. Notably, participants with mild to moderate distress experienced substantial decreases in PHQ-4 scores post-counselling, suggesting the effectiveness of MH interventions in alleviating psychological distress among DR-TB patients. Pasha et al. (2021) reported no MH symptoms after counselling sessions, and patients who completed these sessions had higher rates of TB treatment completion than those who did not¹⁶. Additionally, a systematic review by Agbeko et al. (2022) found that studies adopting interventional approaches reported improved mental well-being outcomes and better medical compliance compared to studies that only investigated the subjects¹⁵. These findings underscore the significance of MH counselling in DR-TB treatment programs and highlight the potential benefits of such interventions in enhancing treatment outcomes and overall patient well-being.

However, individuals with severe distress showed non-significant changes in their PHQ-4 scores post-counseling, suggesting that the current intervention may be insufficient for those with severe mental health issues. This indicates the need for more intensive and tailored interventions. Possible reasons include the

severity of symptoms requiring specialized care, the complex psychological and social factors in severe cases, and limited access to comprehensive mental health resources.

Conclusion

Integrating mental health (MH) counselling into DR-TB treatment is crucial for enhancing psychological well-being and improving treatment outcomes. Our study demonstrates that MH counselling significantly reduces psychological distress, as evidenced by substantial decreases in PHQ-4 scores across all levels of distress. Comprehensive MH support mechanisms, including structured referral systems and tailored counselling interventions, ensure holistic care that addresses both the psychological and physical health of patients. By adopting these comprehensive approaches, healthcare providers can significantly improve the quality of life and recovery outcomes for DR-TB patients, ultimately leading to more effective and sustainable treatment programs.

Future Recommendations

Based on the findings of this study, the following recommendations for future research and practice are proposed to enhance the integration of mental health support into DR-TB treatment programs:

- 1. Expand Longitudinal Studies:** Conduct long-term studies to assess the sustained impact of mental health interventions on DR-TB patients. These studies should track patients' mental health and treatment adherence over extended periods to provide deeper insights into the long-term benefits and challenges of integrating mental health support.
- 2. Develop Tailored Interventions:** Design and implement interventions tailored to different levels of mental health distress. For instance, while brief counseling sessions may suffice for mild to moderate cases, more intensive and personalized approaches should be developed for patients with severe mental health issues.
- 3. Enhance Training Programs:** Expand and enhance training programs for counselors and healthcare providers. This training should cover advanced counseling techniques, crisis intervention skills, and knowledge about the specific mental health challenges faced by DR-TB patients. Additionally, continuous professional development opportunities should be provided to keep the staff updated with the latest practices

and research.

4. Integrate Technology in Care: Utilize digital health technologies, such as mobile health applications and telemedicine, to provide remote mental health support. These technologies can help in monitoring patients' mental health status, delivering interventions, and facilitating regular follow-ups, especially in resource-limited settings.

5. Promote Multi-Disciplinary Collaboration: Foster collaboration between TB treatment programs and mental health services. Establishing multi-disciplinary teams that include psychiatrists, psychologists, social workers, and TB specialists can ensure comprehensive care for DR-TB patients.

6. Strengthen Community Engagement: Engage community leaders and organizations in promoting mental health awareness and reducing stigma associated with both TB and mental health issues. Community-based interventions and support groups can play a crucial role in providing a supportive environment for patients.

7. Expand Access to Care: Ensure that mental health services are accessible to all TB patients, regardless of their geographic location or socio-economic status. Implementing scalable models of care that can be adapted to different settings is essential for reaching underserved populations.

By taking these steps, future research and practice can build on the current findings to develop more effective and sustainable approaches to integrating mental health support into DR-TB treatment programs. This holistic approach will ultimately lead to better health outcomes and improved quality of life for DR-TB patients.

Acknowledgment: The authors gratefully acknowledge the enthusiastic efforts of the Piramal Swasthya call center executives and the State Tuberculosis Officer (STO) of Jharkhand for their invaluable contributions in making this study possible.

Conflict of Interest: No conflict of interest.

Funding: This study was made possible by the generous support of the American people through the United States Agency for International Development (USAID). The work described in this article was carried out under the USAID CLOSING THE GAPS IN TB CARE CASCADE Project, managed by World Health Partners.

Disclaimer: The contents of this article are the responsibility of the individual authors and do not necessarily reflect the views of USAID or the United States Government.

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