

RESEARCH ARTICLE

## SOCIAL SUPPORT BUILD RESILIENCE IN MULTIDRUG-RESISTANT TUBERCULOSIS PATIENTS: A CROSS-SECTIONAL STUDY IN MDR-TB PATIENT SUPPORT GROUP

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### ABSTRACT

**Background:** Multidrug-resistant tuberculosis (MDR-TB) patient faces multi-dimensional challenges due to the physical factor, long-term treatment, negative stigma, and psychosocial challenges. Addressing these issues requires resilience from the patient. Both internal and external factors, including social support influence the formation of resilience. This study purposed to assess the social support impact on resilience in MDR-TB patients.

**Methods:** This study was an observational analytic study with cross sectional design. A total of 33 respondents with MDR-TB confirmed, a member of MDR-TB support group, and under treatment were involved. The social support level was measured using the ISEL-12 (Interpersonal Support Evaluation List) questionnaire, while the level of resilience was assessed using the CD-RISC-25 (Connor-Davidson

Resilience Scale). Spearman correlation test in SPSS Ver 24.0 was used to examine the relationship between social support and resilience among patients with MDR-TB.

**Results:** Most respondents (17 respondents, 51.6%) have good social support, and 23 (69.7%) exhibited a good level of resilience. The Spearman correlation test revealed a significant positive correlation between social support and resilience, with a p-value of 0.030 and a moderate strength correlation coefficient (r) of 0.378.

**Conclusion:** This finding showed that good social support toward MDR-TB patients positively impacts patients' resilience. Thus, strengthening the social support system in support group is important to decrease the psychosocial challenges and help succeed in the treatment.

**Keywords:** drug-resistant TB, psychosocial, behavioral treatment

### INTRODUCTION

The Global TB Report 2024 from WHO highlights a concerning rise in tuberculosis (TB) cases worldwide, with an estimated 8.2 million newly diagnosed TB cases were reported in 2023, marking a notable increase from the previous year (7.5 million in 2022). The report emphasises that TB continues to be one of the deadliest infectious diseases, exacerbated by the COVID-19 pandemic's impact on healthcare systems. Countries like Indonesia remain heavily affected, contributing significantly to global TB prevalence, underscoring the need for intensified efforts in prevention, diagnosis, and treatment strategies to combat this public health crisis.<sup>1</sup> Multidrug-resistant tuberculosis

(MDR-TB) is a type of tuberculosis that does not respond to isoniazid and rifampicin, the two most effective first-line medications for TB. Globally in 2023, 400.000 people are estimated to have developed MDR-TB. The rise of MDR-TB presents major global health challenges by complicating treatment protocols and extending both the duration and cost of therapy.<sup>2,3</sup>

Studies indicate that the treatment success rate for MDR-TB is significantly lower than drug-susceptible TB, ranging from 50% to 70% depending on geographic location and healthcare access. It has been reported widely that living with MDR-TB can lead patient to experience significant stigma, financial burden and psychological distress, and cause poor adherence and treatment outcomes.<sup>4</sup> Study in

Pakistan found that about 64% of patients with MDR-TB experienced adverse events, with psychiatric illness (depression=33% and psychosis=7.3%) being the most significant adverse events documented in patients.<sup>5</sup> This finding was consistent with that reported in studies from China, where the prevalence of psychological distress was 64.1%.<sup>6</sup> Some TB drugs themselves, such as Cycloserine was reported to induce psychiatric disorders in one-tenth of Chinese MDR-TB patients.<sup>7</sup> As MDR-TB is a multi-dimensional disease, effective management of MDR-TB requires a comprehensive approach to both medical and psychosocial needs.<sup>4,8</sup>

Providing comprehensive care to TB patients by integrating mental health support and social services become part of the commitments at the second UN high-level meeting on TB in 2023.<sup>1</sup> Strong social support was mentioned as a part of effective strategies to reduce treatment default, help patient to mitigate their emotional burdens, enhancing patient's mental well-being and improving their quality of life. Social support from family, friends, and community organizations ensures patients stay committed to their medication schedules despite the lengthy duration and potential side effects.<sup>9</sup> In Indonesia, a national-level TB patient organization (POPTB) has been formed as a result of a national workshop in Surabaya in 2016. The main purpose of the organization is to provide social and humanitarian support for TB patients. Until the end of 2020, there were at least 19 TB patient organizations spread across 14 provinces throughout Indonesia. This organization also recruits TB survivors to become volunteers who provide support in four aspects: informational, emotional, material, and companionship. Malang City has a TB patient organization (OPT) called PANTER (Pantang Menyerah). The PANTER headquarters is located in Malang City but also oversees the coaching areas in the cities of Probolinggo, Tulungagung, Blitar Regency/City, Batu, and Situbondo.<sup>10</sup>

Unlike physical interventions, psychosocial treatment has resilience as one of the parameters to measure the patient's ability to face crises due to their illness. Resilience in patients refers to an individual's ability to cope with, adapt to, and recover from the challenges posed by this illness.<sup>11</sup> The complexity of the challenges and problems faced by MDR-TB patients, coupled with the limitations of medical personnel in meeting the multi-dimensional needs of each patient, requires patients to develop their own resilience.<sup>12</sup> Although social support is part of the global program to combat MDR-TB, the effectiveness of social support particularly from TB patient organization on patient's resilience outcomes was rarely reported. Thus, the objective of this research is to determine the relationship between social support and resilience among patients with MDR-TB to enhance the holistic care of patients.

## METHODS

This research was an observational analytic study using cross-sectional approach. Data was collected from July to September 2024. This study was conducted at the MDR TB polyclinic at Saiful Anwar Hospital, Malang, when patients came to take routine medication. Based on the sample size calculation, the minimum number of study samples was 26 respondents. Therefore, the consecutive sampling technique was used in this study, and 33 respondents were obtained. Inclusion criteria include confirmed MDR-TB adult patient who were undergoing treatment and a member of PANTER TB patient organization. Meanwhile, the exclusion criteria are patients who are unwilling to be involved or do not complete the questionnaire. During the data collection period, 35 MDR TB patients were under the supervision of PANTER. Two respondents were not involved because one was a teenager, while one did not complete the questionnaire. Each respondent expresses their willingness by signing an informed consent.

The level of perceived social support among respondents is assessed using the ISEL-12 questionnaire as the parameter. The ISEL-12 consists of 12 questions divided into three domains: appraisal, belonging, and tangible support. Each question has four response options ranging from 0 to 3 (Likert scale). This questionnaire illustrates the distribution of social support levels among respondents, categorizing the final accumulated scores into four levels: scores of 0-9 indicate the amount of social support received by the respondents. -13 ISEL-12 showed acceptable reliability and validity. A high level of internal consistency and reliability (Cronbach's alpha=0.866) and item homogeneity was confirmed.<sup>14</sup>

The Connor-Davidson Resilience Scale (CD-RISC-25) is a self-administered assessment tool designed to measure resilience. The CD-RISC-25 consists of items rated on a 5-point Likert scale, with responses ranging from 0 (completely untrue) to 4 (almost always true). Total scores span from 0 to 100, with higher scores reflecting greater levels of resilience. The scale has shown robust psychometric qualities, including high internal consistency and strong construct validity across various populations.<sup>15</sup> CD-RISC-25 demonstrated a high level of reliability with an overall estimate of Cronbach's Alpha of 0.8922 (95% CI [0.87, 0.91],  $z = 77.20$ ,  $p < 0.001$ ).<sup>16</sup> Patient confidentiality is maintained by coding patient data during data processing. We did not perform the imputation technique to handle the missing data. Due to the data analyzed being ordinal, the Spearman correlation test in SPSS Ver 24.0 was used to examine the relationship between social support and resilience among patients with MDR-TB.

## ETHICAL APPROVAL

Ethical approval released by the Institutional Review Board of FKIK UIN Maulana Malik Ibrahim Number: 65/01/EC/KEPK-FKIK/12/2023. All respondents provided their consent to participate in this study by signing an informed consent form. To ensure confidentiality, respondent data was coded during input for analysis.

## RESULTS

This study included a total of 33 respondents, with a higher number of males (17 patients, 51.5%) compared to females. The age group of 20-29 years had the highest representation, accounting for 30.3% of the participants.

**Table 1. Respondents' characteristics**

Variable	N	Frequency (%)
<b>Gender</b>		
Male	17	51.5%
Female	16	48.5%
<b>Total</b>	<b>33</b>	<b>100%</b>
<b>Age Group</b>		
20-29 years	10	30.3%
30-39 years	6	18.2%
40-49 years	8	24.2%
50-59 years	7	21.2%
60-69 years	2	6.1%
<b>Total</b>	<b>33</b>	<b>100%</b>

The distribution of social support as described in Table 2 shows that as many as 17 respondents (51.6%) have good

social support, and most of them (21.2%) are in the group of 40-49 years old.

**Table 2. Distribution of social support in MDR-TB patients**

	Poor		Fair		Good		Very Good		Total	
	N	(%)	n	(%)	N	(%)	N	(%)	N	(%)
<b>Gender</b>										
Male	0	0%	7	21.2%	9	27.3%	1	3%	17	51.5%
Female	0	0%	2	6%	8	24.3%	6	18.2%	16	48.5%
20-29 years	0	0%	1	3.05%	5	15.2%	4	12.1%	9	30.3%
30-39 years	0	0%	2	6.06%	2	6.06%	2	6.06%	6	18.2%
40-49 years	0	0%	1	3.05%	7	21.2%	0	0%	8	24.2%
50-59 years	0	0%	4	12.1%	3	9.1%	0	0%	7	21.2%
60-69 years	0	0%	1	3.05%	0	0%	1	3.05%	2	6.1%

The distribution of resilience levels is described in Table 3.

**Table 3. Distribution of resilience level in MDR-TB patients**

Variabel	Poor		Fair		Good		Very Good		Total	
	n	(%)	N	(%)	N	n	(%)	n	(%)	n
<b>Gender</b>										
Male	0	0%	2	6.1%	15	45.4%	0	0%	17	51.5%
Female	0	0%	1	3%	8	24.3%	7	21.2%	16	48.5%
<b>Age Group</b>										
20-29 years	0	0%	1	3%	4	12.1%	5	15.1%	10	30.2%
30-39 years	0	0%	0	0%	4	12.1%	2	6.1%	6	18.2%
40-49 years	0	0%	2	6.1%	6	18.2%	0	0%	8	24.2%
50-59 years	0	0%	0	0%	7	21.2%	0	0%	7	21.2%
60-69 years	0	0%	0	0%	2	6.1%	0	0%	2	6.1%

A significant majority (69.7%) exhibited a good level of resilience, suggesting that most patients were able to cope effectively with the challenges posed by MDR-TB. The

proportion of the 50-59 years old is the group with the highest level of good resilience (21.2%).

**Table 4. Spearman rank test correlation between resilience and social support level**

Social Support level	Resilience										p value	r
	Poor		Fair		Good		Very good		Total			
	n	%	n	%	n	%	n	%	N	%		
Poor	0	0%	0	0%	0	0%	0	0%	0	0%	0.030	0.378
Fair	0	0%	0	0%	9	27.3%	0	0%	9	27.3%		
Good	0	0%	3	9.1%	11	33.3%	3	9.1%	17	51.5%		
Very good	0	0%	0	0%	3	9.1%	4	12.1%	7	21.2%		
Total	0	0%	3	9.1%	23	69.7%	7	21.2	33	100%		

The Spearman correlation test revealed a significant positive correlation between social support and resilience, with a p-

value of 0.030 and a correlation coefficient (r) of 0.378.

## DISCUSSION

The management of MDR-TB requires a robust and effective strategic plan on both pharmacotherapy and behavioral interventions, at both the national and local levels, to increase the successful outcome.<sup>17,18</sup> The duration, complexity, and adverse effects associated with therapy have intricately already complex phenomena. Stress reaction is an emotional response that encompasses not only subjective experiences but also changes in perception, attention, and thought, as well as physiological activation at various levels - for instance, the autonomic nervous system (ANS), the hypothalamic-pituitary-adrenal (HPA) axis, along with the brain and related behavioral tendencies or observable behaviors.<sup>19</sup> Studies report a high prevalence of psychiatric comorbidity among MDR-TB cases and that the prevalence of depression significantly correlates with the severity and duration of the disease. This extended duration can lead to treatment fatigue and decreased adherence. The stigma associated with tuberculosis, particularly MDR-TB, can discourage individuals from seeking timely medical care or adhering to treatment protocols. These challenges can also worsen with medication side effects, making patients susceptible to maladaptive behaviors and depression.<sup>11,18</sup> A study in western India showed that in MDR-TB patients, the psychological domain (including self-esteem, emotional stability, spirituality, and coping abilities) had the lowest mean score among all domains, indicating significant challenges in psychological resilience and emotional health. Fear of death, fear of disease transmission, anger with the situation, anxiety, and guilt prevailed in many were such a negative emotional felt by MDR-TB patient.<sup>20</sup>

Resilience is defined as the ability to sustain or quickly recover from a state of mental well-being during and

after adversity.<sup>19</sup> In our study, we found that the majority of respondents categorized as good social support, with 17 respondents (51.6%) reporting this. The proportion of male and female respondents receiving social support is nearly equal, while the highest distribution of age is in the 40-49 year group. Social support can be defined as the presence of trustworthy individuals who can provide encouragement, attention, assistance, and acceptance, allowing patients to enhance their resilience and quality of life. Social support is not only in terms of biological health, but also in mental, social, cultural and spiritual functions.<sup>21</sup> Study in South Africa indicated that patients' adherence was positively associated with social support ( $B = 0.380$ ,  $P < 0.001$ ).<sup>22</sup>

Most respondents in our study posed a good resilience level (69.7%), particularly males in the 50-59 age group. It might indicate that most MDR-TB patients involved could effectively cope with and adapt to challenging situations, stress, or adversity. Resilience is typically defined as the ability to "bounce back" from adversity, indicating a positive adaptation to stressful events, even if they persist over time. For patients with chronic illnesses, resilience is essential for maintaining both physical and mental well-being despite continuous health challenges. Resilience serves as a crucial indicator of the overall quality of life and psychosocial functioning in patients dealing with chronic diseases such as MDR-TB.<sup>23,24</sup>

This study result showed that social support provides resources that help to build resilience ( $p=0.030$ ;  $r=0.378$ ). It reflects the effectiveness of support from marital relationships, family support and environmental support, including from the MDR-TB patient support group. The World Health Organization's framework for social support is divided into four subtypes: informational, emotional, companionship, and material support.<sup>22</sup> Having a support



network is like having emotional backup since it fosters a sense of belonging and security, which is crucial for building resilience. Social support can offer practical assistance and coping strategies that help individuals manage their conditions more effectively. The presence of MDR-TB support group involving successful survivors may become an effective strategy to prevent social isolation, resulting from stigma and loneliness.<sup>20</sup> This support group not only give informational and companionship support through their programs and social media, but also gives emotional and material help. For instance, they may motivate patients to adhere the treatment regimens, remind them to attend medical appointments, or in some cases, giving material and technical help such as provide transportation to hospital, donating rice, money and daily essential needs, and even helping to pay for the patient's child's school fees.<sup>10</sup> This practical support can alleviate feelings of helplessness and promote a proactive approach to managing health issues.<sup>25</sup> Supportive relationships encourage open discussions about the illness, helping patients feel accepted and understood. This acceptance is vital for enhancing resilience, allowing individuals to confront their challenges without fear of judgment. Social support can also empower individuals by reinforcing their ability to take control of their health journey. When patients receive encouragement and validation from their support networks, they are more likely to engage actively in their treatment and recovery processes. This empowerment contributes to greater resilience as patients become more confident in overcoming obstacles and fosters a positive outlook on life.<sup>26</sup>

Building a supportive ecosystem for MDR-TB patients cannot solely rely on healthcare providers due to the limited number and distribution. However, the role of caring communities as volunteers and also of MDR-TB survivors who have successfully completed their treatment will have a significant impact on MDR-TB patients and enhance their confidence that this disease can be cured. Emotional, informational, companionship and technical support from family, peers, and healthcare providers has been shown to reduce the psychological burden of prolonged treatment, side effects of therapy, and also socio-financial burden. In particular, participation in support groups provides a platform for sharing experiences, reducing feelings of isolation, and encouraging adherence to treatment regimens.<sup>10</sup> The existence of MDR-TB support groups that are managed systematically and officially supported by policymakers at the national, regional, and local levels will give significant impact on MDR-TB patients and reduce the negative stigma in our society.

Due to a researcher limitation, this study involved a small number of respondents in a MDR-TB patient organization. This may lead to potential bias in the data analysis; therefore future studies should consider large-scale research in multi-center settings as the geographical and

cultural diversity in community influence the support systems model and their impact. Despite the limitations of this research, we believe that the results of this study can help enhance the activation of social support systems to improve the therapeutic outcomes as well as the quality of life for MDR-TB patients.

## CONCLUSION

As many as 17 respondents (51.6%) have good social support, and 23 respondents (69.7%) exhibited a good level of resilience. The Spearman correlation test revealed a significant positive correlation between social support and resilience in moderate strength ( $p=0.030$ ;  $r=0.378$ ). The importance of this study lies in the evidence that a good social support system for MDR TB patients is able to build patients' resilience. This also serves as a consideration for healthcare providers to foster a support group for MDR TB patients and ensure the sustainability of such a support system.

## CONFLICT OF INTEREST

The author declares no conflict of interest and had access to all the study data. No intervention was made to the data of this study.

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