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Association Between Family Support and Quality of Life Among Patients Undergoing Pulmonary Tuberculosis Treatment in Primary Care: A Cross-Sectional Study

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Abstract

Introduction: *Pulmonary tuberculosis and prolonged treatment can disrupt patients' physical, psychological, and social well-being. Family support may help patients cope with these challenges.* ***Objective:*** *To examine the association between family support and quality of life among patients undergoing treatment for pulmonary tuberculosis.* ***Method:*** *This cross-sectional study included 65 patients selected through total sampling after excluding 10 preliminary-study participants. Family support and quality of life were assessed using questionnaires. For this article, Spearman's correlation was recalculated from the reported cross-tabulation of ordinal support and quality-of-life categories.* ***Result and Discussion:*** *Good family support was reported for 58 patients (89.2%), and good quality of life for 45 (69.2%). The categorical reanalysis indicated a moderate positive association (correlation coefficient = 0.581; probability value < 0.001). This association supports attention to family involvement, although the cross-sectional design precludes causal conclusions and incomplete scoring documentation limits interpretation.* ***Conclusions:*** *Better family support was associated with better quality of life during pulmonary tuberculosis treatment. Family involvement merits attention within comprehensive patient care.*

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Introduction

Tuberculosis remains a public health problem requiring sustained care. The World Health Organization (2026) estimated that 10.7 million people developed tuberculosis and 1.23 million died from the disease in 2024. Indonesia accounted for approximately 10% of global cases. This burden highlights the importance of care that also addresses patients' well-being throughout treatment. Among patients with pulmonary tuberculosis, physical symptoms, changes in daily functioning, psychological distress, and difficulties in social relationships can affect the treatment experience. Quality of life is a relevant outcome because it encompasses physical health, psychological health, social relationships, and the environment. Research on tuberculosis frames quality of life as a multidimensional issue that should be considered alongside patient characteristics and the context of care (Djua et al., 2024; Fitriyadi & Era, 2023).

Families provide support close to patients' everyday lives. This support may include emotional attention, information that assists decision-making, practical help, and recognition of patients' efforts during treatment. (Mochartini, 2022) examined the relationship between family support and medication adherence, while the scoping review by (Lutfian et al., 2025) highlighted the relevance of family support to adherence and quality of life. In the primary care context, treatment accompaniment is also an important component of tuberculosis control. An evaluation of DOTS implementation at Kandangan Primary Health Center showed that medication supervisors (Pengawas Menelan Obat/PMO), who may be selected from family members or people living in the same household as the patient, did not always perform routine medication supervision and assistance as intended (Faizah & Raharjo, 2019). Although the clinical context differs, a study among patients with hypertension in the Kedungmundu Primary Health Center area also found an association between family support and treatment adherence (Qorry Putri et al., 2021). Although related, adherence and quality of life are distinct outcomes, making direct assessment of the association with quality of life necessary.

(Rachmawati et al., 2021) included family and patient factors in models of quality of life and subjective well-being among patients with pulmonary tuberculosis. (Chen et al., 2021) also identified interrelationships between social support, stigma, psychological distress, and quality of life. These findings highlight the relevance of patients' social environment; statistical relationships in cross-sectional models do not establish that family support directly causes changes in quality of life. Based on these findings, the conceptual framework of this study positions family support as the independent variable and quality of life as the dependent variable. Family support encompasses emotional, informational, instrumental, and appraisal support, which may be associated with physical, psychological, social, and environmental dimensions of quality of life. This association may be influenced by potential confounding factors, including age, sex, educational level, socioeconomic status, disease severity, treatment duration, comorbidities, and psychological distress. These factors may affect both the availability or perception of family support and patients' quality of life. Therefore, their potential influence should be considered when interpreting the observed association

This evidence provides a basis for examining family support among patients receiving treatment in primary care. The magnitude of the association may vary with patient characteristics, the distribution of available support, and measurement instruments. Within the proposed conceptual framework, family support is expected to be

positively associated with quality of life, although the strength of this relationship may differ according to individual, clinical, and socioeconomic characteristics. This study aimed to examine the association between family support and quality of life among patients undergoing treatment for pulmonary tuberculosis. The research hypothesis was that family support would be positively associated with patients' quality of life.

Method

This quantitative study used a descriptive correlational, cross-sectional design. Family support and quality of life were assessed at a single observation point without an intervention (Balaka, 2020). Research activities took place during April–May 2026 in a primary care context. The population frame comprised 75 registered patients undergoing treatment for pulmonary tuberculosis. Ten patients who had participated in a preliminary study were excluded from the main study, leaving 65 participants. Total sampling was applied to the remaining patients within this frame, with consideration of population coverage and potential selection bias (Swarjana & Skm, 2022).

Family support was assessed using a questionnaire covering emotional, informational, instrumental, and appraisal support. Responses used four frequency options never, sometimes, often, and always scored from 1 to 4. Under the study's operational definition, total scores of 15–37 indicated poor support and scores of 38–60 indicated good support. Alignment between indicators and the construct being measured is a consideration when using research instruments (Kurniawan, 2022). The research report describes the instrument as adopted from (Marselina K. Ndok et al., 2024), whose study involved stroke patients. This reference identifies its reported provenance but does not establish validity among patients with tuberculosis. Sample-specific validity and reliability coefficients are not reported.

Quality of life was assessed using the 26-item WHOQOL-BREF, covering physical health, psychological health, social relationships, and the environment. (Tornu & Quarcoopome, 2022) illustrate its use with domain-level reporting among patients with tuberculosis. This article uses the good, moderate, and poor quality-of-life categories recorded in the study's results tables. The overall scoring formula and application of category thresholds were not consistently documented in the report. These categories are therefore treated as operational classifications in the source data, rather than standard WHOQOL-BREF classifications. Composite and domain scores were not recalculated for this article.

Participants received information about the study and completed the questionnaires with researcher assistance to support understanding of the questions. Completed questionnaires were checked for completeness and consistency before coding, scoring, and data entry. All 65 participants had complete data for family support and quality of life. Frequencies and percentages were used for descriptive analysis. For this article, Spearman's correlation was recalculated from the reported categorical cross-tabulation, retaining all cell frequencies. Family support was coded as 1 = poor and 2 = good; quality of life was coded as 1 = poor, 2 = moderate, and 3 = good. Ties were assigned average ranks. This analysis assesses the association between ordinal categories, rather than the original questionnaire scores. Two-sided asymptotic testing used a significance level of 0.05, with results reported as a coefficient and probability value (Darma, 2021).

Probability values below 0.001 are presented as $p < 0.001$. No multivariable confounder adjustment was performed.

Result and Discussion

1. Results

The analysis included 65 participants. Of these, 37 (56.9%) were male and 48 (73.8%) had completed senior high school (Table 1).

Table 1
Participant characteristics (n = 65)

Characteristic	n	%
Sex: male	37	56.9
Sex: female	28	43.1
Education: primary school	10	15.4
Education: junior high school	7	10.8
Education: senior high school	48	73.8

Most participants reported good family support: 58 patients (89.2%). Good quality of life was reported by 45 participants (69.2%), while the remaining 20 had moderate or poor quality of life (Table 2). This distribution shows that a predominance of good family support does not mean that all patients have good quality of life.

Table 2
Distribution of family support and quality of life

Variable and category	n	%
Family support: good	58	89.2
Family support: poor	7	10.8
Quality of life: good	45	69.2
Quality of life: moderate	17	26.2
Quality of life: poor	3	4.6

Among the 58 participants with good family support, 45 (77.6%) had good quality of life and 13 (22.4%) had moderate quality of life. In the poor-support group, four of seven participants (57.1%) had moderate quality of life and three (42.9%) had poor quality of life. No participant in this group had good quality of life (Table 3).

Table 3
Quality of life by family support

Family support	Good n (%)	Moderate n (%)	Poor n (%)	Total n (%)
Good	45 (77.6)	13 (22.4)	0 (0.0)	58 (100.0)
Poor	0 (0.0)	4 (57.1)	3 (42.9)	7 (100.0)
Total	**45 (69.2)**	**17 (26.2)**	**3 (4.6)**	**65 (100.0)**

Note: Percentages are calculated within rows. Source for all tables: primary data, 2026.

Reanalysis of the categorical cross-tabulation indicated a moderate positive association between family support and quality of life ($r_s = 0.581$; $p < 0.001$; $n = 65$). This value agrees with the Symmetric Measures output in the report's appendix. The coefficient of 0.725 also appearing in the report was not used because the score-

processing basis for that value could not be established. The article's finding is limited to the association between categories and does not represent a causal effect.

2. Discussion

The main finding of this study was a positive association between family support and quality of life among patients undergoing pulmonary tuberculosis treatment. All participants reporting good quality of life belonged to the good-support group, although 13 participants with good family support still reported moderate quality of life. This finding suggests that family support is associated with better quality of life but does not independently determine patients' well-being. Other clinical, psychological, and socioeconomic factors may also contribute to variations in quality of life. This finding is consistent with the review by (Lutfian et al., 2025), ho highlighted the relevance of emotional and practical family support to quality of life among patients with tuberculosis. Family support may contribute to patients' well-being through emotional reassurance, assistance with daily activities, and improved access to healthcare information. However, these potential mechanisms were not examined individually in the present study.

Similarly, Tornu & Quarcoopome (2022) reported associations between family support and psychological and environmental quality-of-life domains. In contrast In contrast, Sofiana (2022) found no significant association between family support and quality of life ($p = 0.227$). These differences suggest that the relationship may vary according to patient characteristics, healthcare settings, and measurement approaches. Family support encompasses emotional, informational, instrumental, and appraisal dimensions, each potentially contributing to patients' physical, psychological, social, and environmental well-being. Nevertheless, this study assessed the overall association rather than the independent contribution of each support dimension.

The relationship between family support and adherence discussed by (Mochartini, 2022) examined family support in relation to medication adherence, while Alinaitwe (2025) and Yadav (2021) discussed adherence and related patient outcomes. Although adherence may represent a possible pathway linking family support with quality of life, it was not measured as an outcome in this study. Therefore, no conclusions can be drawn regarding its mediating role or the effects of family support on treatment adherence. (Wang & Pang, 2026) reported that a family collaboration care model was associated with better quality of life and self-management among older patients with multidrug-resistant pulmonary tuberculosis. The similar direction of the findings supports attention to families in patient care. However, that study was retrospective and involved a different clinical population. The magnitude of its findings cannot be equated with the correlation observed in this cross-sectional study. Although these studies support the relevance of family-centered care, their intervention designs and populations differ from the present cross-sectional study. Consequently, their findings provide contextual support rather than evidence of a causal effect in this study

The interpretation of the observed association should also consider potential confounding factors. Intervention evidence offers an additional perspective. In a randomized trial involving 88 patients, (Saidi & Abdul Manaf, 2023) found that family support health education improved several quality-of-life domains and the mental component compared with conventional care, although results were not uniform across all measures. Through participatory action research with a family, (Devlin et al., 2022)

integrated tuberculosis care with improvements in housing and access to nutritious food. This approach situates family involvement within everyday living conditions, using a design and outcomes different from those of the present study. Sample characteristics also require consideration. The predominance of male participants and senior high school graduates describes the sample but does not establish that these characteristics explain the observed quality of life. Studies by (Djua et al., 2024; Fitriyadi & Era, 2023) demonstrate the relevance of examining factors associated with quality of life in tuberculosis. In this study, age, economic circumstances, comorbidities, nutritional status, and treatment duration were not controlled for. The observed association therefore cannot be interpreted as independent of other factors. Because age, socioeconomic conditions, comorbidities, nutritional status, and treatment duration were not controlled for, the observed relationship cannot be considered independent of these factors. Furthermore, the cross-sectional design prevents conclusions about the direction or causality of the association

Clinically, these findings emphasize the importance of assessing family support alongside quality of life during tuberculosis treatment. Healthcare professionals may involve family members in patient education and daily assistance according to patients' preferences. However, family support alone may be insufficient, as some participants with good support continued to experience moderate quality of life. The World Health Organization (2022) recommends integrating social support, education, and counselling into tuberculosis care. Accordingly, patient-centered services should address both family support and individual physical, psychological, social, and environmental needs.

Study limitations

The cross-sectional design cannot establish temporal order or causality. Self-reported questionnaires are susceptible to recall, perception, and social desirability biases. A sample drawn from one service population and the exclusion of preliminary-study participants limit generalizability. The poor-support group included only seven participants, requiring caution when interpreting its percentages. In addition to the absence of confounder adjustment, categorization may reduce information compared with original scores. The lack of domain-specific results limits identification of the quality-of-life dimensions most closely associated with family support. Documentation of the overall WHOQOL-BREF score and consistency of category thresholds was insufficient to verify the accuracy of quality-of-life classification. Reanalysis retained the source classifications and does not resolve this measurement limitation. The family support instrument's provenance in stroke research also limits assessment of construct suitability in this tuberculosis sample.

Conclusion

The reanalysis of categorized family support and quality-of-life data using Spearman's rank correlation demonstrated a moderate positive association among patients undergoing pulmonary tuberculosis treatment ($r_s = 0.581$; $p < 0.001$). Of 65 participants, 58 (89.2%) reported good family support, and 45 (69.2%) had good quality of life. These findings indicate a statistically significant association between the two categorical measures but do not establish causality or an independent effect of family support. The results support involving families in patient assistance while addressing individual needs.

Future longitudinal studies with larger samples, domain-specific quality-of-life assessments, and adjustment for potential confounding factors are needed to validate and further clarify this association.

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