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The Relationship between Family Support and Medication Adherence among Pulmonary Tuberculosis Patients at Panekan Magetan

Diza Arfrida Puspitasari[1], Riska Ratnawati[2], Avicena Sakufa Marsanti[3]*

[1,2,3]Faculty of Public Health, STIKes Bhakti Husada Mulia Madiun

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Abstract

Pulmonary tuberculosis (TB) remains one of the major public health challenges in Indonesia. The success of TB treatment is highly dependent on patients' adherence to taking Anti-Tuberculosis Drugs (OAT) regularly and completing the prescribed regimen. One of the key factors that plays an important role in improving adherence is family support. This study aimed to determine the relationship between family support and medication adherence among pulmonary TB patients at the Panekan Public Health Center in Magetan Regency. This research employed an analytical cross-sectional design. The study involved 51 respondents selected through simple random sampling. Data were collected using a validated and reliable questionnaire and analyzed using univariate and bivariate methods with the Chi-Square test. The results showed a significant relationship between family support and medication adherence among pulmonary TB patients (p = 0.001). Patients with good family support were more likely to adhere to their medication regimen compared to those with poor family support. In conclusion, family support plays a crucial role in the success of TB treatment. It is recommended that healthcare providers increase family involvement in the treatment process to prevent treatment interruption and drug resistance.

Correspondence Address:
Faculty Of Public Health, STIKes Bhakti Husada Mulia, Madiun City Indonesia
E-mail:
dizaarfrida39@gmail.com

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Introduction

Pulmonary tuberculosis (TB) remains a major global public health problem. It is caused by *Mycobacterium tuberculosis*, which primarily attacks the lungs and spreads through airborne droplets when an infected individual coughs or sneezes (Rahmawati, Yulanda, et al., 2024). According to the World Health Organization (WHO), the global incidence of TB reached 10.8 million cases in 2023, affecting mostly adults and more than 1 million children (World Health Organization, 2023). Indonesia ranks third after India and China in terms of TB burden, contributing approximately 10% of global cases (BPS, 2018). The Indonesian government has launched the vision of a "TB-Free Indonesia 2050," with an elimination target set for 2030 through improved case detection and treatment success (Saragi et al., 2024). East Java Province is among the regions with the highest TB burden in Indonesia. In 2022, TB cases reached 81,753, the second-highest number in the province after West Java (Rahmawati, Karno, et al., 2024). In Magetan Regency, 735 TB cases were reported in 2023, with Panekan Health Center recording the highest number of pulmonary TB cases

(166 in 2022). Nevertheless, the treatment success rate remains low at 47.8%, which is far below the national target of ≥85% (Kesehatan, 2023).

Medication adherence is critical for TB treatment success, as non-adherence may lead to relapse, treatment failure, drug resistance, and continued transmission within the community. Previous studies have shown that non-adherent patients have up to a four times higher risk of developing multidrug-resistant TB (MDR-TB) compared to adherent patients (Noviana et al., 2023). Similarly, research by Hasina et al. (2023) reported that poor adherence was associated with a significantly lower treatment success rate, while consistent adherence improved cure rates by more than 80% (Hasina et al., 2023). One of the key factors influencing adherence is family support. Family members provide emotional encouragement, practical assistance, and consistent reminders, which help patients adhere to their treatment regimen. Adequate family support has been shown to significantly improve patients' motivation and adherence to TB therapy (Siallagan et al., 2023).

Previous studies have demonstrated that TB patients with higher levels of family support are more likely to complete their treatment compared to those with low family support. This highlights the important role of families in supporting treatment adherence, particularly in areas with a high TB burden. Given the high prevalence of TB in Magetan Regency and the low treatment success rate, it is essential to examine the role of family support in improving medication adherence. This study aims to analyze the relationship between family support and medication adherence among pulmonary TB patients at Panekan Health Center. The findings are expected to provide valuable input to strengthen community-based TB control strategies that involve active family participation.

Methods

This study employed an observational analytic cross-sectional design to examine the relationship between family support and medication adherence among patients with pulmonary tuberculosis. The research was conducted at the Panekan Health Center in Magetan Regency in 2025. The population included all pulmonary TB patients registered at the health center, and 51 respondents were recruited using a total sampling technique based on inclusion and exclusion criteria. Patients aged 15–65 years who were undergoing anti-tuberculosis treatment and willing to participate were included, while critically ill patients or those refusing consent were excluded.

The independent variable in this study was family support, and the dependent variable was medication adherence. Family support was measured using a structured questionnaire adapted from Friedman's theory, covering emotional, informational, instrumental, and appraisal support. Medication adherence was assessed using a standardized adherence questionnaire focusing on treatment regularity and consistency. Both instruments had been tested for validity and reliability, with Cronbach's alpha coefficients above 0.70.

Data were collected through direct interviews using questionnaires, with participants' informed consent. Data analysis was performed using SPSS version 25, beginning with univariate analysis to describe respondents' characteristics, family support, and adherence levels. Bivariate analysis was then conducted using the Chi-Square test with a significance level of $\alpha = 0.05$ to determine the relationship between family support and medication adherence.

Results

The results of the univariate data analysis for general characteristics, including gender, age, employment, and family support. The status of the respondents is presented in the following table. The univariate data analysis results for the independent variable include family support. In addition, the univariate data analysis results for the dependent variable are the levels of medication adherence.

Table 1. Presentation of General Research Data

Data	f	%
Gender		
- Female	28	39,2
- Male	23	54,9
Respondent's Age		
- 15-49 years	19	38,0

Data	f	%
- 50-64 years	32	62,0
Employment		
- Employed	48	94,1
- Unemployed	3	5,9
Total	**51**	**100,0**

Table 1 shows that the majority of respondents were female (28 respondents, 54.9%), that most respondents were in the age group of 50–64 years (32 respondents, 62%), and that nearly all respondents were employed (48 respondents, 94.1%).

Table 2. Univariate Data Analysis

Level of Family Support	Frequency (f)	Percentage (%)
Low Family Support	10	19.6
High Family Support	41	80.4
Total	51	100

Based on the distribution of family support, the majority of respondents reported high family support (41; 80.4%), while only 10 (19.6%) reported low family support. This indicates that most patients received adequate support from their families throughout treatment. Meanwhile, regarding medication adherence, most respondents demonstrated high adherence (34; 66.7%), while 17 (33.3%) showed low adherence. These results suggest that the majority of patients adhered to the prescribed treatment, although some still exhibited suboptimal adherence.

Table 3. Bivariate Data Analysis

Family Support	Low Adherent (f/%)	High Adherent (f/%)	Total	PR (95% CI)	p-value
High	9 (22%)	32 (78%)	41	14.222 (2.555–79.180)	0.001
Low	8 (80%)	2 (20%)	10		
Total			51		

The table shows that most respondents with high family support demonstrated higher treatment adherence (78%) than those with low family support (80%). The Chi-Square test indicated a significant relationship between family support and medication adherence (p-value = 0.001).

Discussion

The present study demonstrated a significant association between family support and medication adherence among pulmonary tuberculosis patients at the Panekan Health Center, Magetan Regency. The statistical analysis showed a p-value of 0.001 (< α = 0.05) with a Prevalence Ratio (PR) of 14.222 (95% CI = 2.555–79.180). This indicates that patients with low levels of family support were 14.222 times more likely to exhibit poor adherence compared to those with high levels of family support. When viewed in terms of respondents' characteristics, patients with high family support were generally those with higher education and more stable occupations, which facilitated understanding and adherence to treatment instructions. Conversely, those with low family support were more frequently found among respondents with lower education and unstable jobs, which may reduce their ability to comply with long-term treatment. The univariate analysis further showed that most respondents with high family support also had high adherence, whereas those with low support tended to fall into the low-adherence category.

These findings are consistent with the study conducted by Afifa & Sumiatin (in Tuban, which revealed a significant relationship between family support and medication adherence among pulmonary tuberculosis patients. Their research reported a p-value of 0.000 (< 0.05) with a positive correlation coefficient of 0.556, suggesting that stronger family support was associated with higher treatment adherence. Similarly, (Noviana et al., 2023) found that 92.6% of tuberculosis patients at Cut Meutia Hospital, North Aceh, who received good family support demonstrated better adherence p-value 0.000, thus confirming the significant impact of family support. Furthermore, (Harahap et al., 2020) at Kalabahi Hospital also documented a very strong positive correlation between family support and treatment adherence, with a p-value of 0.000 and a correlation coefficient of 0.738, reinforcing the role of family

involvement in treatment success. A study in Palopo revealed that 50% of respondents with good family support demonstrated medication adherence, while only 3.33% with good support were non-adherent; in contrast, 16.7% of those with poor family support failed to adhere to treatment (Sugiyanto & Sigala, 2023).

According to Friedman (2021), family support is defined as the attitudes, actions, and acceptance of family members toward those experiencing health problems, expressed through attention, assistance, and involvement in care. This support can take various forms, including emotional, informational, instrumental, and appraisal support. For tuberculosis patients, family involvement is particularly important for providing motivation, serving as reminders, and ensuring regular intake of antituberculosis drugs (OAT) until the end of treatment. Adequate support helps patients cope with fatigue, side effects, and treatment fatigue, while inadequate family support increases the risk of low motivation and premature treatment discontinuation.

Based on these findings and field observations, it is evident that family support plays a vital role in improving medication adherence among patients with pulmonary tuberculosis. Patients who receive optimal support—through motivation, reminders, and consistent supervision—are more likely to complete treatment successfully. This highlights the importance of involving family members in tuberculosis care strategies to ensure adherence, improve treatment outcomes, and prevent drug resistance.

Conclussion

Based on the results of this study on the relationship between family support and medication adherence among tuberculosis patients at Panekan Health Center, Magetan Regency, it can be concluded that family support has a significant impact on patients' adherence to tuberculosis treatment. Patients who receive strong family support tend to follow their medication regimen more consistently, while those with low family support are at higher risk of non-adherence. This finding highlights the critical role of the family in supporting patients throughout their treatment, suggesting that involving family members in patient care is essential to improve treatment outcomes and ensure the effectiveness of tuberculosis therapy.

Authors Contribution

DA, RR, ASM.; methodology, validation, resources, writing—original draft preparation, writing—review and editing, project administration, and funding acquisition.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of STIKes Bhakti Husada Mulia Madiun Number: 015/E-KEPK/STIKES/BHM/VII/2025.

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Conflicts of Interest:

The authors declare no conflict of interest.

Appendix A

Table 1. Presentation of General Research Data
Table 2. Presentation of Univariate Data Analysis
Table 3. Presentation of Bivariate Data Analysis

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