



Self-efficacy, social support, and their relationship to treatment adherence in pulmonary tuberculosis: A cross-sectional study

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ABSTRACT

Background: Tuberculosis (TB) remains a leading global health problem, with high morbidity and mortality. Adherence to long-term treatment regimens is essential to eradicate *Mycobacterium tuberculosis* and prevent drug resistance, yet many patients face psychosocial barriers that reduce adherence. **Objective:** To examine the association of self-efficacy and social support with treatment adherence among patients with pulmonary TB.

Methods: This cross-sectional study was conducted in the Outpatient Department of Kendari City Hospital, Indonesia, from April to June 2024. Using consecutive sampling, 88 patients with pulmonary TB aged 20 to 50 years who were undergoing treatment and met inclusion criteria were enrolled. Self-efficacy was assessed using the General Self-Efficacy Scale, social support with the Multidimensional Scale of Perceived Social Support, and treatment adherence with the 8-item Morisky Medication Adherence Scale. Associations were analyzed using chi-square tests and multiple linear regression.

Results: Among 88 participants, 63.6% demonstrated high adherence, 63.6% reported good self-efficacy, and 63.6% reported high social support. Self-efficacy was positively associated with treatment adherence ($r=0.265$; $p=0.024$). Similarly, social support was positively associated with adherence ($r=0.263$; $p=0.025$). Regression analysis indicated that social support had the greatest influence on adherence ($B=0.257$; $p=0.013$), explaining 13.6% of the variance in adherence when combined with self-efficacy.

Conclusion: Self-efficacy and social support are significant predictors of treatment adherence in pulmonary TB patients. Nursing interventions that enhance patient confidence and mobilize family and community support may improve adherence and optimize TB treatment outcomes

Keywords: adherence; self-efficacy; social support; tuberculosis

INTRODUCTION

Tuberculosis disease is still a major health problem and is a global health problem as the main cause of death in millions

Nursing and Healthcare Practices

- *Nursing interventions that strengthen patient self-efficacy can enhance confidence and independence in managing long-term TB treatment.*
- *Family and community support should be mobilized as part of nursing care to address emotional, informational, and practical barriers to medication adherence.*
- *A multidimensional nursing approach, integrating patient education, psychosocial support, and adherence monitoring, is essential to improve treatment outcomes in pulmonary TB care*

of people every year in worldwide after Human Immunodeficiency Virus (HIV). The death toll was 98,000 or equivalent to 11 deaths/hour (WHO 2020). The World Health Organization (WHO) reported that in 2021 the number of tuberculosis sufferers globally is estimated to reach 10.6 million cases and of these cases, 6.4 million (60.3%) people are undergoing treatment. Indonesia is one of the developing countries with the highest burden of tuberculosis in the world. Tuberculosis (TB) patients must adhere to medication regimens to ensure effective treatment and prevent complications such as drug resistance. Compliance is especially important because of the long duration of TB treatment, which can last several months.

TB requires long-term treatment through complete treatment for 6 months. In addition to period of the long treatment, the Anti-Tuberculosis Drugs (OAT) side effects are one of the factors that make this disease difficult to treat and can cause patients to be non-compliant in taking medication. Consistent medication consumption is essential for successful eradication of *Mycobacterium tuberculosis* bacteria, reducing the risk of treatment failure and disease recurrence (Pardede et al., 2021). While compliance with taking medication is needed to prevent Multi

Drug Resistant (MDR-TB) (Ministry of Health 2020). While adherence is clearly beneficial, some patients may struggle due to factors such as lack of confidence in their ability to carry out treatment or support. Addressing these barriers is important to improving treatment outcomes in TB patients. Various factors that cause non-compliance in taking medication include a lack of self-efficacy in patient (Harahap et al, 2020).

Self-efficacy is related to "belief in one's own ability to organize and carry out actions necessary for a given achievement." Compliance in treatment is related to the ability to manage oneself in health care (Heltty, et al., 2023). Self-efficacy increases the patient's confidence in performing self-care behaviors. Self-efficacy has a positive impact on self-confidence and belief in one's ability to do something. Self-efficacy can develop due to the learning process, which guides individuals to play their roles to carry out tasks and challenges in an effort to achieve the expected goals. However, in the implementing of self-efficacy in treatment, a support system is also needed. The support system refers to the support that provided by family and peers.

Previous research has shown that stroke patients who have received social support show significantly better functional ability status compared to patients who receive little support (Heltty et al., 2021). Although family support is important, research shows that its direct impact on adherence can vary, suggesting that other factors need further investigation (Pitoy et al., 2022). Self-efficacy research to date has been quite thorough, but the involvement of support systems in self-efficacy to improve TB patient compliance with treatment is still lacking in research. Therefore, the aimed of this study was to explore the correlation between self-efficacy and social support with treatment adherence in pulmonary TB patients.

METHODS

Design

This study employed a quantitative approach with a cross-sectional design, which allows researchers to examine the relationship between variables at a single point in time.

Sample and Setting

The sampling technique applied in this study was consecutive sampling, in which all eligible participants who met the inclusion criteria were

recruited sequentially, based on their arrival during the study period, until the required sample size was achieved. Sampling was conducted in the Outpatient Department of Kendari City Hospital from April to June 2024, resulting in a total of 88 respondents. The minimum required sample was determined using the Slovin formula, which provides an estimate based on population size and margin of error. The inclusion criteria were: (1) patients diagnosed with pulmonary TB, (2) aged 20 to 50 years, (3) currently undergoing TB treatment, (4) regularly attending outpatient visits, and (5) willing to participate in the study. Patients with pulmonary TB who were not receiving treatment regularly were excluded.

Variable and Instruments

The independent variables in this study were self-efficacy and social support, while the dependent variable was treatment adherence. To measure these constructs, three standardized instruments with established psychometric properties were employed.

Self-efficacy was assessed using the General Self-Efficacy Scale (GSES), a 10-item instrument developed by Schwarzer and Jerusalem, which evaluates an individual's belief in their ability to cope with a variety of difficult demands in life. Responses are rated on a 4-point Likert scale ranging from 1 (not at all true) to 4 (exactly true), with higher scores indicating stronger self-efficacy. The GSES has demonstrated good internal consistency in previous studies, with Cronbach's alpha coefficients ranging from .76 to .90 across different populations.

Social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS), a 12-item scale that assesses perceived support from three sources: family, friends, and significant others. Each item is scored on a 7-point Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree). Higher scores indicate greater perceived social support. The MSPSS has been widely used in health-related research, showing strong reliability with Cronbach's alpha values above .85.

Treatment adherence was evaluated using the Morisky Medication Adherence Scale-8 (MMAS-8), which consists of 8 items addressing common barriers and behaviors related to medication-taking. Responses are scored dichotomously (yes/no) for the first 7 items, and item 8 uses a 5-point Likert scale.

Total scores range from 0 to 8, categorized as high adherence (score = 8), medium adherence (score = 6–7), and low adherence (score < 6). The MMAS-8 has been validated in multiple patient populations and has demonstrated acceptable reliability (Cronbach's alpha = .83).

Data Collection

Data collection was conducted over a 3-month period, from April to June 2024, in the Outpatient Department of Kendari City Hospital. Prior to data collection, ethical approval was obtained, and permission was granted by the hospital administration. Eligible participants were identified based on the inclusion and exclusion criteria, and each was approached directly during their outpatient visit. The purpose of the study was explained, and informed consent was obtained before participation.

Data were collected through structured face-to-face interviews using standardized questionnaires. A trained research assistant, who also served as an enumerator, assisted in administering the instruments to ensure clarity of questions and accuracy of responses. The enumerator underwent training to standardize procedures, minimize interviewer bias, and maintain confidentiality. Participants completed the GSES, MSPSS, and MMAS-8 under supervision to ensure completeness of data.

To maintain data quality, the completed questionnaires were checked daily for accuracy and missing responses. Any incomplete responses were clarified immediately with the participants. All data were coded and stored securely, with access restricted to the research team, in order to uphold confidentiality and ethical standards.

Data analysis

Univariate, bivariate, and multivariate test were conducted to analyze the frequency distribution of variables and the correlation between self-efficacy and social support with patient treatment adherence. Data on the correlation between self-efficacy and TB patient treatment adherence used the chi square test, as well as data on social support with treatment adherence using the chi square test. Multiple Linear Regression was performed to analyze and model the correlation between one dependent variable (treatment adherence) and two or more independent variables (self-efficacy and social support). Data processing is performed using SPSS version 25.

Table 1. Characteristics of respondents

Characteristics of Respondents	n	%
Gender		
Male	56	63.64
Female	32	36.36
Age		
15-24 years	16	18.18
25-44 years	30	34.09
45-64 years	39	44.32
65-70 years	3	3.41
Work		
Not yet working	17	19.32
Self-employed	38	43.18
Retired	24	27.27
Farmer	9	10.23
Last Education		
Primary School	12	13.64
Secondary School	44	50
Collage	32	36.36
Treatment Adherence		
High Adherence	56	63.64
Low Adherence	32	36.36
Self-efficacy		
Good	56	63.64
Less Good	32	36.36
Social Support		
High	56	63.64
Low	32	36.36

Ethical consideration

This study received ethical approval from the Ethics Committee of Universitas Mandala Waluya, with certificate number 985/UMW/III/2024. All participants were provided with information about the purpose, procedures, and potential risks and benefits of the study before enrollment. Written informed consent was obtained from each participant prior to data collection. Confidentiality and anonymity were strictly maintained by assigning unique codes to the data and ensuring that no personal identifiers were disclosed. Participants were assured of their right to decline or withdraw from the study at any time without any consequences for their medical care.

RESULTS

The distribution of respondent characteristics in the outpatient room of Kendari City Hospital can be seen in [table 1](#). That most respondents were male 56 (63.64%) compared to female. Based on age, most were in the age range of 45-64 years (44.32%), most were self-employed (43.18%), and most had elementary school education (42.05%). Table 1 also shows the distribution of respondents based on medication adherence, self-efficacy, and social support in pulmonary TB patients at Kendari City Hospital. Respondents on average had high medication adherence (63.64%), had good self-efficacy (63.64%), and had high social support (63.64%).

[Table 2](#) shows the correlation between self-

efficacy and treatment adherence in pulmonary TB patients at Kendari City Hospital (p value <0.05). The correlation test of the relationship obtained a weak relationship and a positive pattern ($r=0.265$), meaning that the better the self-efficacy, the higher the respondent's compliance in taking medication. Likewise with social support. The results of the statistical test also found that there was a correlation between social support and treatment adherence in pulmonary TB patients at Kendari City Hospital (p value <0.05). The results of the correlation

test also obtained a weak relationship and a positive pattern ($r=0.263$), meaning that the higher the social support obtained, the higher the respondent's compliance in taking medication. Based on the chi square test, it was also found that out of 56 respondents who had good self-efficacy, 38 (74.5%) of them had high treatment adherence and out of 32 respondents who had poor self-efficacy, there were 18 (48.6%) who had high treatment adherence. For social support, of the 56 who received high social support, 41 (73.2%)

Table 2. The correlation between self-efficacy and social support with treatment adherence in pulmonary tuberculosis

Pulmonary tuberculosis						
Variable	Treatment Adherence in Pulmonary Tuberculosis		Total	p	OR	r
	High Adherence n (%)	Low Adherence n (%)	(n=88)			
Self-Efficacy						
Good	38 (74.5)	13 (25.5)	56	0.024	3.085 (1.257 - 7.598)	0.265
Less Good	18 (48.6)	19 (90.7)	32			
Social Support						
High	41 (73.2)	15 (26.8)	56	0.025	3.098 (1.244 – 7.712)	0.263
Low	15 (46.9)	17 (53.1)	32			

Table 3. Results of multiple linear regression models

Model	B	Standard error	t	P value	R square
Self-efficacy	0.252	0.098	2.565	0.012	0.136
Social support	0.257	0.101	2.545	0.013	

had high treatment adherence and of the 32 respondents who had low social support, 15 (46.9%) had high treatment adherence.

Based on table 3, it is known that R square was 0.136, which means that the two independent variables (self-efficacy and social support) can explain the variable of treatment adherence by 13.6% while the rest is explained by other variables. The results of the regression model showed that with a self-efficacy coefficient of 0.252, it had a significant positive effect on treatment adherence in pulmonary TB patients. Likewise, the social support coefficient

of 0.257 also had a significant positive effect on treatment adherence in pulmonary TB patients. However, of the two independent variables, the one with the greatest effect on treatment adherence in pulmonary TB patients was social support.

DISCUSSION

This study aimed to determine the correlation between self-efficacy and social support with treatment adherence of respondents with pulmonary TB. The results of this study found that there was a correlation between self-

efficacy and social support with treatment adherence of respondents with pulmonary TB. This is in line with other studies that found that there was a correlation between self-efficacy and TB patient compliance in undergoing treatment (Shen et al., 2020). Self-efficacy is defined as an individual's belief in their ability to carry out the behaviors needed to produce certain performance achievements. Self-efficacy plays an important role in treatment adherence in various patient populations. Studies consistently show a positive correlation between self-efficacy and adherence to prescribed treatment regimens, indicating that increased self-efficacy can lead to better health outcomes.

Self-efficacy plays a significant role in medication adherence across a range of chronic conditions, as it reflects an individual's belief and confidence in their ability to effectively manage their health. Research shows that higher self-efficacy is consistently associated with improved adherence to medication regimens, which is particularly important for managing chronic illnesses such as mental disorders (Velentza et al., 2024), fibromyalgia (Mawar et al., 2024), hypertension (Lubis, 2024), rheumatoid arthritis (Oshotse et al., 2018), and diabetes mellitus (Helitty & Nazaruddin, 2023).

Self-efficacy refers to an individual's belief and confidence in their capacity to perform the behaviors required to produce a particular performance outcome (Helitty, 2025). It is a belief in one's ability to influence events and control their environment. Based on Bandura's hypothesis, self-efficacy theory provides a comprehensive foundation for how and why behavior can change. In this study, the presence of self-efficacy in individuals/respondents influenced their adherence behavior in taking pulmonary TB medication. Although self-efficacy is an important factor in increasing medication adherence, it is important to consider that other factors, such as social support and correlation with health care providers, also significantly influence adherence behavior.

Social support plays an important role in improving treatment adherence in various patient populations. Studies have shown that perceived social support improves adherence to treatment programs, especially in chronic conditions such as coronary heart disease (Fan et al., 2024) and myasthenia gravis (Yu et al., 2024). This study also proved that the

support system is related to patient adherence in undergoing pulmonary TB treatment (p value <0.05). Adherence to treatment is very important for effective treatment outcomes, because it directly affects the efficacy of prescribed therapy. Support systems play an important role in improving adherence by overcoming barriers such as misinformation, lack of communication, and emotional support.

Family support is critical for treatment adherence in schizophrenia because it enhances therapeutic alliance, reduces symptoms, and prevents relapse. Patients without family support experience more severe symptoms, so family involvement is essential for effective treatment and better long-term outcomes. (Helitty, 2022; Jessica et al., 2021). While support systems are critical to improving treatment adherence, it is also important to consider that some patients may refuse external support due to privacy concerns or a desire for independence. Balancing support with patient autonomy remains a challenge in healthcare.

The findings of this study highlight the important role of nurses in promoting treatment adherence among pulmonary TB patients. Nursing interventions should focus on enhancing patients' self efficacy, for example through health education, counseling, and skills training that build confidence in managing long term therapy. Equally important is the mobilization of family and community support, as social support was found to be the strongest predictor of adherence. Nurses can engage family members in treatment planning, encourage peer support groups, and foster community based follow up to strengthen adherence. Furthermore, integrating psychosocial support into routine TB care such as motivational interviewing, adherence monitoring, and emotional support can help patients overcome barriers including misinformation, treatment fatigue, and medication side effects. By adopting a multidimensional nursing approach that addresses both individual and social determinants, nurses can play a pivotal role in improving adherence, preventing drug resistance, and ultimately enhancing treatment outcomes in pulmonary TB programs.

Strengths and Limitations

This study has several strengths. First, it employed validated instruments—the General Self-Efficacy Scale, the Multidimensional Scale of Perceived Social Support, and the Morisky

Medication Adherence Scale–8—which are widely used and recognized for their reliability in assessing psychosocial and behavioral constructs. Second, the study provides valuable insights into psychosocial determinants of treatment adherence in pulmonary TB patients in Indonesia, a country with a high TB burden, thereby contributing evidence relevant for nursing practice and TB control programs. Third, by incorporating both self-efficacy and social support as independent variables, the study offers a multidimensional perspective that can inform targeted nursing interventions.

However, several limitations should be noted. The cross-sectional design restricts the ability to establish causal relationships between self-efficacy, social support, and treatment adherence. The study was conducted at a single hospital with a relatively small sample size, which may limit the generalizability of the findings to broader TB populations. Self-reported measures of adherence may also be subject to recall bias or social desirability bias, potentially leading to overestimation of adherence rates. Additionally, the study explained only 13.6% of the variance in treatment adherence, indicating that other unmeasured factors (such as socioeconomic conditions, stigma, or healthcare system support) may also play important roles and warrant further investigation.

CONCLUSION

This study demonstrated a significant correlation between self efficacy, social support, and treatment adherence among patients with pulmonary TB. Self efficacy refers to an individual's perception of their ability to perform the necessary actions to achieve desired outcomes, in this case maintaining adherence to TB medication. Treatment adherence is also strongly influenced by the presence of a support system, particularly from family and community members. While adherence is crucial to achieving successful treatment outcomes, it is important to recognize that other factors beyond self efficacy and social support may also affect patient behavior. Future research should therefore explore additional determinants of adherence, including socioeconomic conditions, health system support, and stigma. A multidimensional approach that integrates psychosocial, clinical, and contextual factors will be essential for developing effective interventions to enhance

adherence and improve outcomes for patients with pulmonary TB.

Declaration of Interest

There was no declaration of interest in this study.

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Data Availability

The data in this study are available from the corresponding author and can be provided as long as there is a reasonable request.

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