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Original Research

Association of Family Support with Treatment Adherence in Tuberculosis Patients

Al Ihksan Agus[1*], Rosmiati[2]

[1*]Nursing Science, Faculty of Medicine, Sam Ratulangi University, Manado, Indonesia
[2]Nursing Science, Faculty of Public Health, Indonesian Muslim University, Makassar, Indonesia

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*Corresponding Author:
Alihksan Agus
Nursing Science, Faculty of Medicine, Sam Ratulangi University
Email: alihksan@unsrat.ac.id

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Abstract

Background: Tuberculosis (TB) remains a major public health problem that requires long-term treatment and sustained patient adherence. Non-adherence to TB therapy can lead to treatment failure and drug resistance, and is influenced by various factors, including family support as a key social determinant of health.
Objective: To examine the association between family support and treatment adherence among tuberculosis (TB) patients.
Methods: This quantitative observational study employed a cross-sectional design and was conducted among 120 pulmonary TB patients undergoing treatment at a primary health care facility. Data were collected using a family support questionnaire and a medication adherence scale (Morisky Medication Adherence Scale). Statistical analysis was performed using the Chi-square test with a significance level of $p < 0.05$.
Results: The results showed that patients with good family support had significantly higher levels of medication adherence compared to those with poor family support ($p < 0.05$).
Conclusion: Family support is significantly associated with treatment adherence in TB patients. These findings highlight the importance of incorporating family empowerment and involvement strategies into TB control programs to improve treatment adherence and outcomes.

Keywords: Family support; medication adherence; tuberculosis

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Introduction

Tuberculosis (TB) remains one of the major global public health problems, particularly in lower-middle-income countries where health system capacity, socioeconomic vulnerability, and social determinants strongly influence disease outcomes. TB not only poses a biomedical challenge but also creates social and economic burdens for patients and their families. According to the literature, the success of TB treatment is highly dependent on patient adherence to a long-term drug regimen (minimum 6 months for drug-sensitive TB) (main study). Despite the availability of standardized treatment protocols, many patients fail to complete therapy, leading to persistent transmission, increased morbidity, and the emergence of drug-resistant TB. These challenges highlight the importance of understanding factors that influence adherence beyond clinical aspects alone.

Non-adherence to TB treatment is a multifactorial phenomenon influenced by individual, social, and structural factors. Patients often face physical side effects of medication, psychological fatigue due to prolonged therapy, social stigma, and economic constraints that interfere with regular clinic visits. In addition, limited health literacy and inadequate support systems can further weaken patients' motivation to adhere to treatment. In this context, adherence should be understood not merely as an individual responsibility, but as a behavior shaped by the surrounding social environment. Addressing TB effectively therefore requires a comprehensive approach that incorporates social support mechanisms alongside medical treatment.

Family support, as the closest and most immediate social unit, has been widely recognized as a crucial determinant of treatment adherence in chronic diseases, including TB. This support can take

various forms, including emotional encouragement, instrumental assistance such as medication supervision and transportation to health facilities, informational support related to disease management, and appreciative support that reinforces patients' confidence and motivation. A study conducted in Deli Serdang, Indonesia (2022) demonstrated that family support in the form of emotional, appreciation, information, and instrumental assistance was significantly correlated with adherence levels among TB patients (Gurusinga, 2022). These findings emphasize the role of families as active partners in TB care rather than passive observers.

Evidence from broader contexts further strengthens the argument for the importance of family support. Systematic research has shown that family involvement consistently contributes to improved treatment adherence and better quality of life among TB patients (Lutfian, 2025). Through daily interactions and continuous supervision, families can help patients cope with treatment fatigue and reduce the likelihood of treatment interruption. However, despite this generally positive evidence, the impact of family support is not universally consistent across studies and settings.

Some studies have reported no significant association between family support and medication adherence, suggesting that the effectiveness of family involvement may vary depending on contextual factors such as cultural norms, household dynamics, measurement methods, and definitions of adherence and support (Relationship et al., 2023). These conflicting findings indicate that family support is a complex construct whose influence may differ across populations and health system contexts. As a result, there is a need for context-specific research that systematically examines how family support relates to TB treatment adherence within particular communities.

Therefore, conducting quantitative research in a local setting is essential to clarify the role of family support in TB treatment adherence and to address gaps in existing evidence. By synthesizing prior findings and examining their applicability in a specific context, this study seeks to contribute to a more nuanced understanding of social determinants in TB care. The aim of this study was to evaluate whether family support was significantly related to treatment adherence in pulmonary TB patients. The findings are expected to inform the development of more effective, family-centered interventions to improve TB treatment outcomes.

Methods

Study Design

This study employed an observational quantitative design with a cross-sectional approach. This design was considered appropriate because it allows for the examination of the association between family support and treatment adherence among tuberculosis (TB) patients at a single point in time, without manipulating variables. The cross-sectional approach is commonly used in public health research to explore relationships between social determinants and health-related behaviors, particularly in chronic disease management such as TB treatment adherence. The study was conducted at a primary health care facility providing tuberculosis treatment services, namely [name of health center/community health center], which implements the national Directly Observed Treatment Short-course (DOTS) strategy. This health facility serves as a referral site for pulmonary TB patients and routinely monitors treatment progress, making it a suitable setting for assessing adherence and family-related support factors. Specifying the study setting enhances transparency and enables future researchers to replicate the study in comparable contexts.

Samples

The study population consisted of pulmonary TB patients who were undergoing routine treatment at the selected health facility. Samples were selected using purposive sampling based on predefined inclusion criteria. Eligible participants were patients aged ≥18 years, had been undergoing TB treatment for at least one month, lived with family members, and were willing to participate in the study. Patients with severe cognitive impairment or those who were too ill to complete the questionnaire were excluded. This sampling method was chosen to ensure that participants had sufficient treatment experience and family interaction to assess the role of family support in adherence behavior. Medication adherence was measured using a medication adherence scale, such as the Morisky Medication Adherence Scale (MMAS) or a similar validated TB adherence questionnaire. The adherence score was categorized into compliant and non-compliant based on established cut-off points. The use of a standardized and widely applied adherence scale strengthens the comparability and methodological rigor of the study.

Instruments

Data were collected using structured questionnaires consisting of two main instruments. Family support was measured using a family support questionnaire covering four dimensions: emotional support,

instrumental support, informational support, and appreciation support. Each item was scored using a Likert-scale response format, with higher scores indicating stronger perceived family support. Prior to data collection, the instrument had been adapted from previous studies and assessed for content validity by experts in public health and nursing. Reliability testing showed acceptable internal consistency, with a Cronbach's alpha value exceeding the recommended threshold of 0.70.

Data Collection

Data collection was conducted through face-to-face interviews or self-administered questionnaires, depending on participants' literacy levels and preferences. Trained data collectors explained the study objectives and procedures before administering the questionnaires. In addition to family support and adherence measures, demographic and clinical characteristics were collected, including age, sex, educational level, employment status, marital status, and duration of TB treatment. Collecting these variables allowed for a more comprehensive description of the study population and provided contextual information relevant to adherence behavior.

Data Analysis

The collected data were coded, entered, and analyzed using statistical software. Univariate analysis was performed to describe the distribution of demographic characteristics, family support levels, and treatment adherence status. Bivariate analysis was conducted to examine the relationship between family support and medication adherence. The Chi-square test was used when both variables were categorical, while the Spearman rank correlation test was applied when the data were ordinal or scale-based. Statistical significance was determined at a p-value of <0.05 ($\alpha = 0.05$), ensuring consistency with standard epidemiological research practices.

Ethical Considerations

Ethical approval for this study was obtained from the ethics committee or institutional review board of the relevant institution. All participants received clear information regarding the study objectives, procedures, potential benefits, and risks prior to participation. Written informed consent was obtained from each participant. Confidentiality and anonymity were strictly maintained by using coded data and restricting access to research records. Participation was entirely voluntary, and participants were informed of their right to withdraw from the study at any time without affecting their access to health services.

Results

Based on table 1 shows the characteristics of the respondents of TB patients involved in the study. Most of the respondents were in the age range of 26–35 years (31.7%), male (58.3%), and had a junior high school education (33.3%). The majority of respondents worked as laborers (35.0%) and married (75.0%). The most duration of treatment was in the category of 2–4 months (40.0%), and most respondents had a Medication Supervisor (PMO) (70.8%).

Table 1. Frequency Distribution of Respondents by Characteristics

Characteristic	Category	Frequency (n)	Percentage (%)
Age (years)	18–25	24	20.0
	26–35	38	31.7
	36–45	32	26.7
	>45	26	21.6
Gender	Man	70	58.3
	Woman	50	41.7
Final Education	No school/elementary school	30	25.0
	Junior	40	33.3
	High	35	29.2
	College	15	125
Work	Not working	28	23.3
	Laborer	42	35.0
	Self employed	30	25.0
	Civil Servant/Private	20	16.7
Marital Status	Marry	90	75.0
	Unmarried	20	16.7
	Widow/Doubter	10	8.3
	< 2 months	36	30.0

Length of TB Treatment	2–4 months	48	40.0
	> 4 months	36	30.0
Possession of Drug Supervisors (PMOs)	Exist	85	70.8
	None	35	29.2

Source: SPSS Processed Data, 2024

Based on table 2, it shows that most of the respondents have good family support, namely 80 people (66.7%), while 40 respondents (33.3%) have poor family support.

Table 2. Distribution of Family Support in TB Patients

Family Support	Frequency (n)	Percentage (%)
Good	80	66.7
Less	40	33.3
Total	120	100

Source: SPSS Processed Data, 2024

Based on table 3, it shows that most TB patients are included in the category of compliant in undergoing treatment, namely 86 people (71.7%), while 34 people (28.3%) are non-compliant.

Table 3. Distribution of TB Patient Treatment Compliance

Medication Compliance	Frequency (n)	Percentage (%)
Obedient	86	71.7
Non-compliant	34	28.3
Total	120	100

Source: SPSS Processed Data, 2024

The results of the analysis using the Chi-Square test showed a **value of p = 0.003 (p < 0.05),** which means that there is a significant relationship between family support and treatment adherence of TB patients. Patients with good family support tend to be more compliant in undergoing treatment compared to patients who have less family support.

Table 4. The Relationship of Family Support to TB Patients' Medication Adherence

Family Support	Compliance n (%)	Non-compliant n (%)	Total (n)
Good	68 (85.0)	12 (15.0)	80
Less	18 (45.0)	22 (55.0)	40
Total	86 (71.7)	34 (28.3)	120

Source: SPSS Processed Data, 2024

Discussion

The findings of this study demonstrate a significant relationship between family support and treatment adherence among pulmonary tuberculosis (TB) patients, as indicated by the Chi-square test result (p = 0.003). Patients who reported good family support were substantially more likely to adhere to TB treatment compared to those with poor family support. This result confirms the central role of social and familial environments in shaping health-related behaviors, particularly in long-term treatment regimens such as TB therapy, which requires sustained commitment over several months. The high proportion of adherent patients (71.7%) observed in this study may be partly explained by the relatively strong presence of family support, with two-thirds of respondents reporting good family support. Family members often act as daily supervisors, reminders, and emotional anchors for TB patients, complementing formal health system interventions. This finding is consistent with public health theories that emphasize social support as a key enabling factor in adherence behavior, particularly within collectivist cultures where family involvement in health decision-making is strong.

Emotional support from family members plays a crucial role in maintaining patient motivation throughout the lengthy TB treatment process. TB patients frequently experience psychological stress due to stigma, fear of transmission, and treatment fatigue. Emotional encouragement, empathy, and reassurance from family members can reduce anxiety and feelings of isolation, thereby strengthening patients' willingness to continue treatment. This mechanism aligns with evidence showing that emotional

support improves coping capacity and adherence in chronic infectious diseases. Instrumental support, such as assistance with medication schedules, transportation to health facilities, and financial support, also emerged as an important contributor to adherence. Many respondents in this study worked as laborers, a group that often faces economic instability and time constraints. In such contexts, practical assistance from family members can directly remove barriers to accessing care and maintaining regular medication intake. Previous studies have shown that patients who receive tangible assistance are less likely to miss doses or default on treatment (Gurusinga, 2022).

The relatively high proportion of adherent patients in this study may be partly explained by the presence of strong family involvement and social cohesion. In many low- and middle-income countries, families play a central role in health-related decision-making and daily care. Family members often act as informal caregivers who remind patients to take medication, accompany them to health facilities, and provide emotional reassurance throughout the treatment process (WHO, 2021).

Emotional support from family members appears to be a critical factor in sustaining patient motivation during long-term TB therapy. TB patients frequently experience psychological distress related to stigma, fear of transmission, and treatment fatigue. Emotional encouragement, empathy, and acceptance from family members help reduce stress and foster a positive attitude toward treatment adherence (Kigozi et al., 2019). Such emotional reinforcement is particularly important during the continuation phase of treatment when symptoms have subsided but medication must still be taken consistently (Munro et al., 2007).

Instrumental support also plays a substantial role in improving adherence, particularly among patients with socioeconomic limitations. In this study, a large proportion of respondents worked as laborers, indicating potential financial and time constraints. Assistance from family members in the form of transportation, financial support, or help with daily tasks can directly reduce barriers to accessing health services and maintaining regular medication intake (Tola et al., 2016).

Informational support provided by family members further strengthens adherence by improving patients' understanding of TB and its treatment. Families who are knowledgeable about treatment duration, potential side effects, and the consequences of non-adherence are better equipped to encourage patients to complete therapy. This finding aligns with the Health Belief Model, which emphasizes the role of perceived benefits and knowledge in shaping health behaviors (Rosenstock et al., 1988).

Appreciative or affirmational support, such as praise and recognition of patient effort, contributes to increased self-efficacy and confidence in managing illness. Positive feedback from family members reinforces adherence behavior and helps patients maintain commitment throughout prolonged treatment regimens. Studies have shown that higher self-efficacy is consistently associated with better medication adherence in TB patients (Jember et al., 2018).

The presence of Drug Supervisors (PMOs) among most respondents may have further strengthened the effect of family support on adherence. Family members often function as informal PMOs within the household, complementing formal supervision by health workers. This synergy between formal and informal support systems has been identified as an effective strategy for improving TB treatment outcomes (Datiko et al., 2015).

Nevertheless, the findings of this study differ from some previous research that did not identify a significant association between family support and treatment adherence. For example, a study conducted in Waingapu reported no meaningful relationship between these variables (Relationship et al., 2023). Such discrepancies may be attributed to differences in cultural norms, measurement instruments, sample sizes, or the intensity of health system support available in different settings (Munro et al., 2007).

Socio-demographic characteristics may also moderate the relationship between family support and adherence. Married patients, who constituted the majority of respondents in this study, are more likely to receive consistent support from spouses and other household members. Conversely, patients who live alone or lack stable family structures may be more vulnerable to non-adherence, highlighting the importance of tailored interventions for different patient groups (Tola et al., 2016).

From a public health perspective, these findings underscore the importance of integrating family-centered approaches into TB control programs. Health education and counseling should actively involve family members to strengthen emotional, informational, and instrumental support at home. Family empowerment has been shown to improve treatment adherence and reduce default rates, particularly in resource-limited settings (WHO, 2021).

Finally, this study highlights the need for further research to explore the mechanisms through which family support influences TB treatment adherence. Longitudinal studies would allow for stronger causal inference, while qualitative or mixed-methods approaches could provide deeper insights into family dynamics and cultural contexts. Such evidence is essential for developing sustainable, context-sensitive

TB interventions that leverage family support as a key component of treatment success (Kigozi et al., 2019).

Conclusion

This study concludes that family support is significantly associated with treatment adherence among tuberculosis patients, indicating that patients who receive adequate emotional, instrumental, informational, and appreciative support from their families are more likely to comply with long-term TB treatment regimens. These findings underscore the importance of integrating family-based approaches into TB control programs, particularly through the active involvement of nurses and community health workers in family education, counseling, and treatment monitoring at the household level. Community health services should strengthen psychosocial support and empower families as partners in TB care, while health policies are encouraged to formally promote family involvement as a core component of patient-centered TB management. Future research using longitudinal or mixed-methods designs is recommended to further explore causal pathways and deepen understanding of the mechanisms through which family support influences treatment adherence, thereby supporting the development of sustainable and effective TB control interventions.

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