

Respect, Effective Communication, Family Support and Motivation on Patient Compliance to Improve Drug-Resistant Tuberculosis

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Abstract

Background: The treatment compliance of rifampicin-resistant tuberculosis (TB RO) patients in Indonesia remains suboptimal, with a therapy success rate of only 51%. Various psychosocial determinants such as perceived respect from healthcare providers, effective communication, and family support are believed to influence patients' adherence, with motivation serving as a potential psychological mediator.

Objective: This study aimed to examine the effects of respect, effective communication, and family support on treatment compliance among TB RO patients, with motivation as an intervening variable. **Method:** A quantitative approach using a cross-sectional design was applied. The study population comprised 116 TB RO patients treated at Tangerang City Hospital, and 90 respondents were selected using Slovin's formula with simple random sampling. Data were collected through structured questionnaires and analyzed using SmartPLS 4. **Results:** Respect from healthcare providers did not significantly affect treatment compliance ($T=0.533$; $p=0.594$). Effective communication showed no direct influence on compliance, but had a significant indirect effect through motivation ($T=3.349$; $p=0.001$). Family support had a significant direct effect on compliance ($T=2.058$; $p=0.040$) and also influenced compliance indirectly via motivation.

Motivation acted as a mediator between effective communication and family support with compliance, but did not mediate the effect of respect. **Conclusion:** Family support emerged as the most influential factor in improving treatment compliance among TB RO patients. Strengthening patients' motivation through enhanced respect and effective communication from healthcare providers is recommended to improve adherence outcomes.

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Introduction

Tuberculosis (TB) remains one of the leading global health challenges. The World Health Organization (1) reports that TB caused

10.6 million new cases and 1.3 million deaths, making it the second leading cause of death from infectious diseases after COVID-19. A growing concern is the increase of Drug-



Resistant Tuberculosis (DR-TB), a condition in which *Mycobacterium tuberculosis* becomes resistant to first-line drugs, particularly rifampicin and isoniazid. Globally, the treatment success rate for rifampicin-resistant TB (TB-RO) is only around 60%, still far below the target of TB elimination by 2035 (1). Indonesia is one of the countries with the highest TB burden and currently ranks second in the world, after India (2).

Each year, an estimated >24,000 cases of TB-RO are identified, yet the national treatment success rate remains low at 48–55%, indicating persistent challenges in treatment adherence. Low compliance with long-term therapy is consistently identified as one of the main factors contributing to unsuccessful outcomes, treatment failure, prolonged infectiousness, and increased risk of further drug resistance.

Previous studies indicate that several psychosocial factors contribute to treatment adherence among TB-RO patients. Respectful treatment by healthcare workers, effective patient-provider communication, and strong family support are repeatedly identified as determinants influencing adherence behavior (3-4).

Motivation also plays an essential mediating role, serving as the internal psychological driver that connects external support to behavioral compliance. However, findings across studies remain inconsistent. Certain studies show significant associations between these psychosocial factors and adherence, while others report weak or no effects (5-6). This inconsistency indicates the need for more context-specific evidence.

A similar situation is reflected at Tangerang City Hospital, a referral center for TB-RO in Banten Province. Since the establishment of the Akasia TB-RO Polyclinic in June 2021, 348 TB-RO patients have been treated. However, review of the 2021–2024 service data shows fluctuating and still-suboptimal treatment success, with notable proportions of *lost to follow-up* and *treatment failure* cases each year. Medical records in 2022 also showed an 18% default rate, indicating substantial gaps in patients' adherence, which may stem from inadequate communication, low patient motivation, or limited family engagement during long-term treatment.

Although psychosocial factors such as respect, communication effectiveness, and

family support are recognized as critical in influencing adherence, empirical evidence regarding their combined effects and the mediating role of motivation among TB-RO patients in Indonesia remains scarce. Most existing studies focus on drug-sensitive TB, with limited research specifically targeting the TB-RO population, whose treatment duration, side effects, and psychosocial burden differ significantly. Moreover, no studies have examined these variables within the context of Tangerang City Hospital, despite its high TB-RO caseload and documented adherence challenges

Objective

The study aims to analyze the influence of respect, effective communication, and family support on treatment compliance among TB-RO patients, with motivation as an intervening variable, at the Akasia TB-RO Polyclinic of Tangerang City Hospital

METHOD

Design

This study is an explanatory research employing a cross-sectional design, conducted through observations at a single point in time to describe a particular phenomenon and to examine the relationships or effects between independent and dependent variables. Study was conducted at the Drug-Resistant TB Polyclinic of Tangerang City Hospital

Sample, sample size, & sampling technique

Population in study is all over patients who are undergo Treatment at the TB RO service polyclinic of Tangerang City Hospital. determination sample done with techniques purposive sampling where the population being sample set based on inclusion criteria. A total of 90 respondents out of 116 eligible individuals met the inclusion criteria and participated in the study.

Data collection process and instrumentation

Data collection was conducted after obtaining approval from the Head of Tangerang City Hospital. The primary data for this study were collected directly from respondents using structured questionnaires. The questionnaire completion process was supervised to minimize misinterpretation of

the items, ensuring the validity and reliability of the data obtained.

Data were gathered through self-administered questionnaires and telephone interviews with patients or family members of those who had defaulted on treatment and declined face-to-face contact. The questionnaire consisted of 59 items, including 16 items measuring patient compliance, 10 items assessing motivation, 10 items for respect, 13 items for effective communication, and 10 items evaluating family support. All items were rated using a five-point Likert scale.

Patient compliance was assessed using a modified version of the Morisky Medication Adherence Scale (MMAS) with a 1–5 Likert format. Effective communication was measured using an adapted CAT (Communication Assessment Tool), while family support was assessed with the Family Support Scale (FSS), both of which also used a 1–5 Likert scale.

Data analysis

Mediation analysis was conducted using Structural Equation Modeling (SEM) with the SmartPLS 4 application to explain the relationships among the predictor variables. The collected data were tabulated and processed using the Three Box Method. The outer model was assessed to evaluate convergent and discriminant validity, while reliability was tested through Cronbach's alpha, composite reliability, and multicollinearity analysis. After the indicators were confirmed to be valid and reliable, the inner model evaluation was performed.

The purpose of the inner model assessment was to determine the direction and strength of the relationships between

Variables	R-square	R-square adjusted
Compliance patient	0.729	0.716
Motivation	0.581	0.566

constructs. The inner model evaluation included testing the coefficient of determination (R^2), predictive relevance (Q^2), path coefficients, significance levels using the t-test, effect size (F^2), hypothesis testing, and mediation analysis to examine indirect effects between variables. All relationships among the dependent and independent constructs were represented in structural equations.

Path analysis and factor analysis served as the two primary analytical approaches within the SEM framework. SEM was selected because it enables the testing of complex models involving multiple variables, supports the examination of theoretical frameworks, and allows simultaneous analysis of both pathways and latent factors within a single analytical structure.

RESULTS

Characteristic of respondents.

The majority of respondents were male (61.1%). Most participants were between 47 and 54 years of age. The highest level of education attained by most respondents was high school, and the largest proportion were unemployed. The duration of treatment ranged from 12 to 16 months. A total of 58.9% of patients adhered to treatment regularly, while 33% had discontinued treatment.

The average compliance score was 62.31, indicating a moderate level. The mean motivation score was 64.06 (moderate), the mean respect score was 55.56 (moderate), and the average effective communication score was 59.86 (moderate). The family support score was 63.54 (moderate). Overall, all variables were categorized as being at a moderate level

Coefficients Determination

The two primary variables examined – Patient Compliance and Motivation – demonstrated satisfactory R^2 values, with Patient Compliance showing an R^2 of 0.729 and Motivation an R^2 of 0.581.

An R^2 value of 0.729 for Patient Compliance indicates that 73% of the variation in compliance can be explained by the independent variables included in the model. This value falls within the "good" category and suggests that the model is capable of adequately explaining the factors that influence patient compliance.

Table 1 Coefficients Determination

F^2 test

The results show that Family Support has an F^2 value of 0.210 for Patient Compliance, indicating a meaningful effect. This suggests that Family Support exerts a strong influence on patient compliance. Furthermore, the effect of Family Support on Motivation yields an F^2 of

0.396, demonstrating a highly significant impact on patient motivation.

In contrast, Effective Communication shows an F^2 value of 0.002 for Patient Compliance, indicating no meaningful influence. Its effect on Motivation is also minimal, with an F^2 of 0.035. Motivation, however, shows a very large effect on Patient Compliance, with an F^2 value of 6.328.

Meanwhile, Respect shows an F^2 value of 0.00 for Patient Compliance, signifying no effect of respectful attitudes from healthcare workers on compliance. Respect toward Motivation also shows a negligible influence, with an F^2 of 0.002.

Saturated model	Estimated model
SRMR	0.079
d_ULS	26,750
	40,982

Model Fit Test

It is used in statistical analysis and modeling to illustrate how well the proposed model aligns with the observed data. In this context, model fit refers to the extent to which the model is able to explain the patterns or relationships present within the dataset.

Direct effect of independent variable with dependent variable

Effect of Respect on Patient Compliance showed a T-statistic of 0.302 with a p-value of 0.763. Since the p-value is greater than 0.05 and the T-statistic is below 1.96, the effect is not statistically significant. The effect of communication on compliance patient yielded a T-statistic of 1.112 and a p-value of 0.266. As the p-value exceeds the 0.05 significance threshold, the alternative hypothesis is rejected.

In terms of support family to compliance patient explained that T-statistic of 3.108 with a p-value of 0.002. Since the p-value is below 0.05, indicating that family support has a significant influence on patient compliance. Another result of respect to motivation patient showed the significant correlation with p-value $< .05$. Additionally, support family also influences the motivation of patient with p-value $< .05$. However, some of variable showed no significant between communication with motivation of patient and

motivation to compliance on drug adherence with p-value $> .05$.

Correlation	Path coefficient	T-Statistic	P-Value
Motivation to patients' adherence	0.476	4.208	.000
Respect to patients' adherence	0.006	0.065	0.949
Respect to Motivation	-0.041	0.311	0.756
Effective communication to patients' adherence	-0.036	0.292	0.770
Effective communication to Motivation	0.155	0.119	0.263
Family support to patients' adherence	0.459	3.859	.000
Family support to Motivation	0.664	5.485	.000

Indirect Effect

Respect → Motivation → Compliance Patient

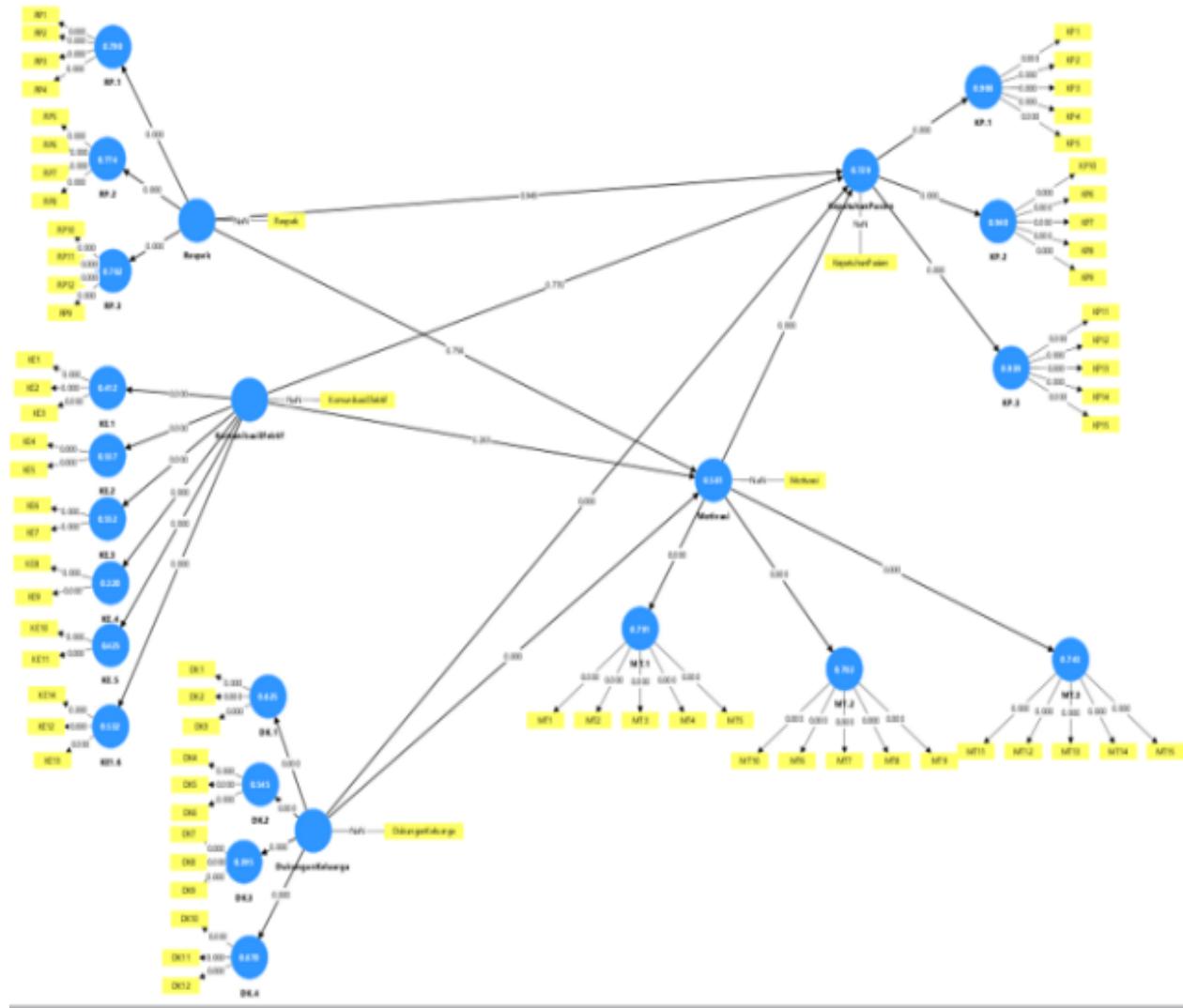
The T-statistic for the relationship Respect → Motivation → Patient Compliance is 0.302, with a p-value of 0.763, which is greater than 0.05. These results indicate that the indirect effect of Respect on Patient Compliance through Motivation is not significant.

Support Family → Motivation → Compliance Patient

The T-statistic for the pathway Support Family → Motivation → Patient Compliance is 3.108, with a p-value of 0.002, which is below 0.05. This indicates that Family Support has a significant indirect effect on Patient Compliance through Motivation.

Communication Effective → Motivation → Compliance Patient

The T-statistic for the pathway Effective Communication → Motivation → Patient Compliance is 1.112, with a p-value of 0.266, which is considerably higher than 0.05. This indicates that Effective Communication does not have a significant indirect effect on Patient Compliance through Motivation.



Direct effect	T-statistic	p-value
Respect → motivation	.302	.763
motivation → patients' adherence		
Family support → Motivation	3.108	.002
→ patients' adherence		
Effective communication → motivation	1.112	.266
→ patients' adherence		

DISCUSSION

The association between respect to compliance patient showed a significant correlation. It was consistent with a previous study mentioned that respect in connection medical can increase comfort patients (7). The high P- value This indicates that other factors

may be more dominant in influence compliance patient. This suggests that respect Possible more play a role in build positive relationship.

Communication effective to improve compliance patient. This is in line with the previous study stated that communication that is not effective can bother understanding patients (8). Family support also becomes the predictor on patients' compliance

This finding is consistent with the study which suggests that social support from family can enhance patient adherence to treatment (9). Similarly, social support—particularly from family—plays a substantial role in improving patient compliance with prescribed therapy (10-11). These results reinforce the idea that family support can strengthen patients' motivation to follow their treatment regimen more effectively. Another study mentioned that social support from family can enhance patients' adherence to treatment (12).

Other results found that respect and communication were not significant on patients' motivations. On the contrary, numerous studies consistently find that effective communication and respect are crucial motivators for patients and are linked to positive health outcomes and satisfaction (13). Another study mentioned that Clinicians with higher respect When clinicians had higher respect for a patient, they engaged in more rapport-building, social chitchat, and positive talk (14). Effective communication or strong social support from family and the surrounding environment—may play a more substantial role in motivating patients to adhere to treatment (15). Thus, while respect is important for fostering positive interactions, its indirect influence on patient compliance via motivation was not found to be significant in this model

Previous studies emphasize that family support plays a substantial role in enhancing patients' motivation to adhere to treatment. These findings affirm that family involvement can be a key motivating factor for patients to comply more consistently with their therapy, reinforcing the importance of social support within the context of medical care (16-17).

A highlights that clear and open communication between patients and healthcare providers is essential for improving patients' understanding of their treatment, which subsequently enhances their motivation to adhere to the prescribed therapy. This supports the notion that effective communication plays an important role in increasing patient motivation, which in turn can positively influence adherence (11).

Although this study did not find a significant indirect effect of Effective Communication on compliance through Motivation, efforts to improve communication remain crucial. Enhancing the quality of information exchange may help increase patient motivation and ultimately encourage better adherence to treatment procedures

CONCLUSION

this study concludes that Family Support has a significant effect on Patient Compliance, both directly and indirectly through the mediating role of Motivation. In contrast, Respect and Effective Communication did not demonstrate significant effects on

Patient Compliance, either directly or indirectly via Motivation.

These results highlight the critical importance of strengthening family involvement as a key factor that enhances patient motivation and adherence to long-term TB RO treatment. Although Effective Communication did not show a significant indirect effect in this model, improving the quality of information exchange between healthcare providers and patients remains essential, as it contributes to better patient understanding and may foster greater motivation in practice. Meanwhile, Respect—despite being valuable for fostering positive therapeutic relationships—did not exert a significant direct impact on compliance in this study. Nonetheless, cultivating mutual respect between patients and healthcare workers remains important, as it can enhance trust and support the development of stronger intrinsic motivation over time.

Overall, the study emphasizes the need to reinforce family support systems and promote effective, empathetic provider-patient communication as strategic efforts to improve adherence among TB RO patients.

IMPLICATIONS

The findings highlight the need to strengthen family engagement, as family support is the most influential factor in improving patient motivation and treatment adherence. Healthcare providers should receive training in motivational and empathetic communication to better support long-term adherence. Facilities should also standardize patient education and enhance monitoring systems to identify and prevent treatment default. Promoting a respectful, trust-building care environment remains essential to sustaining patient motivation over time

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