

## The Relationship Between Optimism, Emotional Factors, and Health Worker Services with Medication Adherence for Pulmonary Tuberculosis Patients at Bades Community Health Center

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### ABSTRACT

Pulmonary tuberculosis (TB) is a global health problem characterized by low medication adherence, which can lead to drug resistance and treatment failure. Optimism, emotional factors, and health worker services are believed to play a significant role in adherence among pulmonary TB patients. This study aims to analyze the relationship between optimism, emotional factors, and health worker services with medication adherence for pulmonary TB patients at Bades Community Health Center. This correlational study uses a cross-sectional design and involves 21 pulmonary TB patients in categories 1 and 2 who meet the inclusion criteria. Data were analyzed using linear regression tests to evaluate the relationships between variables. The results show that most respondents have a good level of optimism (66.7%), good emotional factors (61.9%), and receive good healthcare services (81%). Medication adherence among pulmonary TB patients is categorized as adherent in 57.1% of respondents. Bivariate analysis indicates a significant relationship between optimism ( $p=0.000$ ), emotional factors ( $p=0.000$ ), and health worker services ( $p=0.008$ ) with medication adherence for pulmonary TB patients. The multivariate analysis reveals that emotional factors have the strongest influence on adherence, with a beta value of 0.751, indicating that emotional conditions, such as fear, anxiety, or motivation, play a crucial role in influencing patients' adherence to treatment. In contrast, optimism has a lower impact with a beta value of 0.320, while health worker services show a negative association with adherence (beta = -0.254). The emotional factor has been found to have the greatest impact on patient adherence at Puskesmas Bades, while optimism and the quality of healthcare service have a lesser effect. The negative beta value for healthcare service suggests that service quality may need improvement. The focus should be on enhancing emotional support and evaluating service quality to improve patient adherence.



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Keywords: pulmonary Tuberculosis; optimism; emotional factors; health worker services; medication adherence

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### INTRODUCTION

Pulmonary Tuberculosis (TB) remains a global health issue. In 2021, pulmonary TB was the second deadliest infectious disease, following COVID-19. Additionally, it ranked as the 13th leading cause of death worldwide. Approximately 10.6 million people were diagnosed with pulmonary TB globally, with 1.5 million fatalities. Graphically, the WHO states that the majority of pulmonary TB cases are found in Southeast Asia and the Western Pacific (Siallagan et al., 2023). Geographically, the highest incidence of TB cases is in Southeast Asia (45.6%), Africa (23.3%), and the Western Pacific (17.8%), with the lowest in the Eastern Mediterranean (8.1%), the Americas (2.9%), and Europe (2.2%). Ten countries contribute two-thirds of the total TB cases: India (27.9%), Indonesia (9.2%), China (7.4%), the Philippines (7.0%), Pakistan (5.8%), Nigeria (4.4%), Bangladesh (3.6%), the Democratic Republic of the Congo (2.9%), South Africa (2.9%), and Myanmar (1.8%). The estimated incidence of TB in Indonesia in 2021 was 969,000, or 354 per 100,000 population; TB-HIV cases were approximately 22,000 per year, or 8.1 per 100,000 population. TB-related deaths were estimated at 144,000, or 52 per 100,000 population, while TB-HIV deaths were around 6,500, or 2.4 per 100,000 population (Berutu et

al., 2024; Zaetun Naimah et al., 2023). According to data from the Lumajang District Health Office in 2023, the number of TB cases reached 2,118, with 16,414 suspected cases.

TB is caused by *Mycobacterium tuberculosis*, which primarily attacks the lungs but can also affect the skin, lymph nodes, bones, and the membranes surrounding the brain. TB is a disease that can be cured and prevented. It spreads from person to person through the air; when a patient coughs, sneezes, or spits, they release TB germs into the air. If someone inadvertently inhales these germs, they can become infected (Limoy & Yuniantinii, 2021; Suptya et al., 2022). According to the Indonesian Dictionary (KBBI), optimism is the belief in the positive and pleasant aspects of everything; a mindset that always holds good hopes for all things. Tjiptono (2014) defines emotion as the awareness of various psychological events accompanied by behavioral responses and evaluations (Novelina & Alvian Muzakki, 2021).

Adherence to TB Treatment is crucial because if treatment is not carried out consistently or according to the prescribed schedule, it can lead to the development of resistance to tuberculosis medications (known as Multi-Drug Resistant TB or MDR). Non-adherence to treatment can result in treatment failure for pulmonary TB patients, increasing risks such as morbidity, mortality, and a rise in cases of drug-resistant TB (Letmau et al., 2023; Purnamasari et al., 2023). Several reasons contribute to non-adherence to pulmonary TB treatment among Indonesians, including a lack of optimism for recovery, emotional factors, side effects, stigma, and patient attitudes. Many patients fear the stigma associated with the disease and tend to deny their illness rather than seek diagnosis and treatment, resulting in a condition that feels like imprisonment and making it difficult for them to understand their disease, particularly the possibility of recovery and the investment in a healthier life. Patients also face challenges with the medications, including significant side effects, large pill sizes that make swallowing difficult, and effects such as nausea, dizziness, and weakness that hinder daily activities (Asih & Cholisah, 2023; Herawati et al., 2020).

Nurses play a crucial role in managing and caring for TB patients as educators, counselors, and facilitators. As educators, nurses are responsible for enhancing patients' knowledge about the causes, symptoms, and treatment programs that must be followed, emphasizing the importance of adhering to the treatment schedule. The goal of the nurse's role as an educator is also to change client behavior so they can consistently follow the treatment plan, ultimately improving their health and accelerating recovery from TB (Mawarti et al., 2024). Additionally, efforts to anticipate non-adherence to medication include boosting clients' motivation, fostering a sense of optimism for recovery, and promoting positive emotions to improve adherence. Providing accurate information through therapeutic communication and explaining that TB can be cured with regular, uninterrupted treatment is essential (Ethycia, 2020; Marvia et al., 2024).

## METHOD

This study uses a correlational design based on a cross-sectional approach, with the research population consisting of all Category 1 and 2 pulmonary TB patients, totaling 21 patients. The sampling technique in this study employed a total sampling approach, with a total of 21 research samples. The data analysis technique in this study was used to test the hypothesis using linear regression correlation tests. The research was conducted at Bades Public Health Center in Lumajang from July 2024 to August 2024. In this study, research instruments included a questionnaire on optimism, emotional factors, healthcare services as educators, and a medication adherence questionnaire using the Morisky Medication Adherence Scale (MMAS-8).

## RESULTS

## Respondent Characteristics

Table 1. Characteristics of Research Respondents

Characteristics	Frequency	Percentage
Age		
26-35 years	2	9.5
36-45 years	2	9.5
46-55 years	13	61.9
56-65 years	4	19.0
Gender		
Male	16	76.2
Female	5	23.8
Education		
Primary School	4	19
Middle School	4	19
High School	12	57.1
Higher Education	1	4.8
Occupation		
Unemployed	5	23.8
Farmer	2	9.5
Entrepreneur	14	66.7
Total	21	100.00

## The Relationship Between Optimism, Emotional Factors, and Healthcare Workers' Services with Adherence to Pulmonary TB Medication

Table 2. Cross-tabulation of Optimism, Emotional Factors, and Healthcare Workers' Services with Adherence to Pulmonary TB Medication

Factor	Adherence		Total	p-value
	Adherent	Non- Adherent		
Optimism				
Good	12 57,1%	2 9,5%	14 66,7%	0.000
Moderate	0 0,0%	5 23,8%	5 23,8%	
Poor	0 0,0%	2 9,5%	2 9,5%	
Emotional Factors				
Good	12 57,1%	1 4,8%	13 61,9%	0.000
Moderate	0 0,0%	6 28,6%	6 28,6%	
Poor	0 0,0%	2 9,5%	2 9,5%	
Healthcare Workers' Services				
Good	12 57,1%	5 23,8%	17 81,0%	0.008
Moderate	0 0,0%	4 19,0%	4 19,0%	

## DISCUSSION

### **The Relationship Between Optimism and Adherence to Pulmonary TB Medication at Bades Health Center**

Optimism plays a crucial role in enhancing patient adherence to pulmonary TB treatment. Patients with an optimistic attitude tend to be more motivated to undergo the long and sometimes challenging treatment regimen. They believe in the success of the treatment and have hope for their recovery. Optimism can also reduce the levels of stress and anxiety that often accompany long-term treatment, allowing patients to stay focused on their treatment goals. In this context, optimism not only improves patients' emotional well-being but also strengthens their motivation to follow medical advice more consistently (Masyfahani et al., 2020). Moreover, optimism can influence patients' perceptions of the treatment and its side effects. Optimistic patients tend to view the treatment as a positive step in their recovery journey, even when faced with challenges or unpleasant side effects. This attitude can shift their perception of treatment from a burden to an opportunity for better recovery. Thus, optimism not only helps improve adherence to pulmonary TB medication but also plays a role in speeding up the overall recovery process (Nasution et al., 2023).

The research results showed that most respondents at Bades Health Center who had a good level of optimism also demonstrated adherence to pulmonary TB treatment, with 12 respondents (57.1%) in the treatment group showing compliance. This finding highlights a significant relationship between optimism and patient adherence to TB medication. The bivariate analysis revealed a p-value of 0.000, where  $p < 0.05$ , statistically indicating that the relationship between optimism and adherence to pulmonary TB medication at Bades Health Center is significant. This implies that patients with an optimistic attitude are more likely to adhere to their treatment regimen. Optimism can influence adherence behavior by increasing patients' motivation to follow medical recommendations and overcome challenges that may arise during treatment. An optimistic attitude can also help patients cope with side effects or other difficulties associated with long-term treatment.

### **The Relationship Between Emotional Factors and Adherence to Pulmonary TB Medication at Bades Health Center**

Emotions play a key role in influencing patient adherence to pulmonary TB treatment. Patients with good emotional stability tend to be better equipped to face the challenges of long-term treatment (Lahuo et al., 2024). High levels of stress and anxiety can disrupt their adherence to the treatment regimen, whereas strong emotional support can reduce anxiety and improve mental well-being. In this context, support from family, friends, and healthcare providers not only provides moral encouragement but also helps patients manage their emotions positively, thereby increasing the likelihood of consistent treatment adherence (Rosyanti & Hadi, 2020). Additionally, emotional factors also affect how patients perceive the treatment and its potential side effects. Patients who feel emotionally supported are generally more prepared to face and cope with any side effects that may arise during pulmonary TB treatment. They are also more likely to seek help or consult healthcare providers when encountering problems, ensuring that treatment proceeds smoothly and according to medical advice. Thus, attention to the emotional aspect of patients not only improves their quality of life but also positively impacts the success of pulmonary TB treatment by enhancing adherence and reducing the risk of treatment discontinuation (Agustina Mardi et al., 2023).

The research results indicated that the majority of respondents at Bades Health Center with a good emotional condition also showed adherence to pulmonary TB treatment, with 12 respondents (57.1%) in the treatment group being compliant. This finding suggests a significant relationship between patients' emotional condition and their adherence to TB medication. A bivariate analysis, with a p-value of 0.000, where  $p < 0.05$ , confirms that the relationship between emotional condition and adherence to pulmonary TB medication at Bades Health Center has strong statistical significance. This implies that patients with good emotional conditions are more likely to adhere to their treatment regimen. Emotional support provided by family, friends, or even healthcare providers can play an important role in reducing patients' stress and anxiety levels, thereby increasing their likelihood of consistently following medical advice. This discussion underscores the importance of addressing patients' emotional aspects in efforts to improve adherence to pulmonary TB treatment. Improved adherence can be achieved by strengthening social and psychological support for patients, as well as ensuring they feel supported throughout their treatment journey. Thus, integrating holistic care that includes emotional aspects can be an effective strategy for enhancing treatment outcomes and quality of life for pulmonary TB patients.

### **The Relationship Between Healthcare Workers' Services and Adherence to Pulmonary TB Medication at Bades Health Center**

Healthcare workers' services play a crucial role in improving patient adherence to pulmonary TB treatment. Positive interactions between healthcare workers and patients can provide comprehensive education about the disease and treatment, helping patients better understand the importance of adhering to their treatment regimen (Herawati et al., 2020).

Empathetic and supportive healthcare workers can also help reduce the anxiety and discomfort patients often experience during treatment, thereby increasing their motivation to consistently follow medical advice. Additionally, the availability of healthcare workers to provide regular guidance and answer patients' questions can boost patients' confidence in managing their own treatment. The quality of interaction between healthcare workers and patients also affects patients' perceptions of the care they receive. Patients who feel valued and supported by healthcare workers are more likely to respond positively to treatment advice and follow-up. Effective collaboration between healthcare workers and patients helps address any problems or challenges that arise during treatment, reducing the likelihood of patients discontinuing treatment prematurely. Therefore, good healthcare services not only enhance patient adherence to pulmonary TB medication but also significantly contribute to better treatment outcomes and overall patient well-being (Agustina Mardi et al., 2023; Marvia et al., 2024).

Research findings show that the majority of respondents at Bades Health Center who received good healthcare services also exhibited adherence to pulmonary TB treatment, with 12 respondents (57.1%) in the treatment group demonstrating compliance. This finding highlights the importance of healthcare service quality in improving patient adherence to the treatment regimen. A bivariate analysis with a p-value of 0.008, where  $p < 0.05$ , indicated a significant relationship between healthcare services and adherence to pulmonary TB medication at Bades Health Center. These results suggest that patients who receive good healthcare services, such as comprehensive education, emotional support, and adequate access to healthcare, are more likely to comply with their treatment recommendations. This discussion underscores the critical role of healthcare workers' services in supporting patient adherence. Good service not only encompasses the technical aspects of treatment but also the interpersonal and psychological aspects that can motivate patients to adhere more closely to their treatment regimen. Therefore, investing in improving the quality of healthcare services can enhance the effectiveness of pulmonary TB treatment, reduce the risk of treatment discontinuation, and ultimately improve patient health outcomes.

### **The Relationship Between Optimism, Emotional Factors, Healthcare Workers' Services, and Adherence to Pulmonary TB Medication at Bades Health Center**

The results of multivariate analysis indicate that emotional factors have the strongest influence on respondents' adherence to the pulmonary TB treatment program at Bades Health Center, with a beta value of 0.751. This suggests that emotional conditions, such as fear, anxiety, or motivation, play a key role in influencing how adherent respondents are to their treatment. Emotional factors encompass various aspects such as levels of stress, anxiety, social support, and positive perceptions of treatment. Good emotional conditions can reduce the levels of stress and anxiety that often accompany long-term treatments like pulmonary TB. Patients who feel emotionally supported by family, friends, or healthcare workers tend to be more motivated to adhere to their treatment regimen. On the other hand, optimism has a lower influence, with a beta value of 0.320, meaning that while optimism contributes positively to adherence, its effect is not as strong as that of emotional factors. Optimism helps shape patients' positive attitudes toward the healing process and boosts their confidence in the effectiveness of the treatment. Meanwhile, the factor of healthcare workers' services shows a negative beta value of -0.254, indicating a negative relationship between patients' perceptions of service quality and their adherence. This may suggest that negative perceptions of the services provided can reduce patient adherence to treatment. Overall, these results emphasize the importance of managing patients' emotional aspects and improving the quality of healthcare services to enhance adherence to pulmonary TB treatment.

### **CONCLUSION**

The study concludes that adherence to pulmonary TB medication at Bades Health Center is significantly influenced by optimism, emotional factors, and healthcare workers' services, with emotional factors playing the most crucial role. Patients with good emotional conditions, supported by family, friends, or healthcare providers, are more likely to adhere to their treatment regimen, as emotional stability reduces stress and anxiety often associated with long-term treatments. Optimism also contributes positively to adherence by fostering a hopeful outlook and confidence in recovery, though its impact is less pronounced compared to emotional factors. Interestingly, perceptions of healthcare service quality showed a negative correlation with adherence, possibly highlighting the importance of patient-centered care that addresses both technical and interpersonal aspects. These findings emphasize the need for holistic approaches that integrate emotional support, motivational strategies, and improved healthcare service quality to enhance treatment adherence and outcomes for pulmonary TB patients.

This study has several limitations. First, it involved only 21 respondents from Bades Health Center, which may limit the generalizability of the findings to a broader population and may not reflect conditions in other health centers. Second, the assessment of optimism and emotional conditions was subjective and heavily reliant on individual perceptions, which

can vary among respondents. Third, the study may not have accounted for other variables that could influence treatment adherence, such as social support, patient understanding of the disease, economic factors, or accessibility. Fourth, while emotional factors were found to have a significant influence, the results only encompass the analyzed variables and do not consider additional factors that might contribute to adherence. Lastly, the study may not have accounted for external factors that could impact the outcomes, such as changes in health policies, intervention programs, or socio-economic conditions.

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