

Correlation of Knowledge Level and Family Support on Medication Adherence in Tuberculosis Patients the working area of the Ciruas Health Center, Serang Regency, in 2024

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ABSTRACT

Introduction; Tuberculosis (TB) remains a significant public health issue both in Indonesia and globally, caused by the bacteria *Mycobacterium tuberculosis*. Knowledge and the role of the family are crucial factors influencing an individual's adherence to medication. Understanding these factors is essential for designing effective interventions to improve treatment compliance among TB patients. **Objectives;** The objective of this study is to determine the relationship between the level of knowledge and the role of the family with medication adherence in TB patients within the working area of the Ciruas Health Center, Serang Regency, in 2024. **Methods;** This study employed a quantitative correlational design using a cross-sectional approach. The population consisted of 210 TB patients undergoing treatment at the Ciruas Community Health Center in 2023. Purposive sampling was used to select participants. Data collection utilized validated questionnaires on knowledge, family roles, and medication adherence. Statistical analysis was performed using the Chi-Square test with a significance level of <0.05 . **Results;** The Chi-Square test revealed a significant relationship between the level of knowledge and medication adherence among TB patients ($p=0.000$). Additionally, a significant relationship was found between the role of the family and medication adherence ($p=0.000$). The analysis categorized the patients' level of knowledge as moderate, family roles as poor, and medication adherence as moderate. **Conclusions;** The study highlights that both knowledge and family support play a vital role in influencing medication adherence among TB patients. These findings emphasize the need for educational interventions and family-centered strategies to enhance compliance with TB treatment regimens. Implementing these measures could contribute to better treatment outcomes and a reduction in TB incidence.

Introduction

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* that spreads through the air, such as when individuals with TB cough, sneeze, or spit. These actions release bacteria into the air, which can infect others who inhale them (Amalia, Arini, & Dhrik, 2022).

Tuberculosis remains a significant public health issue, both in Indonesia and globally. In 2021, TB ranked as the second deadliest infectious disease, following COVID-19, and was the 13th



leading cause of death worldwide. Globally, approximately 10.6 million people were diagnosed with TB, and about 1.5 million deaths were attributed to the disease (Siallagan, Tumanggor, & Sihotang, 2023).

In 2023, TB continued to be the second deadliest infectious disease globally and the 13th leading cause of death worldwide. According to data from the World Health Organization (WHO), in 2023, the global distribution of TB cases showed India accounting for 27%, Indonesia 10%, China 7.1%, the Philippines 7%, Pakistan 5.7%, Nigeria 4.5%, Bangladesh 3.6%, and the Democratic Republic of Congo 3%. Globally, 10.6 million cases were diagnosed, with 6.4 million reported and undergoing treatment, while 4.2 million cases remained undiagnosed and unreported (WHO, 2023).

In 2023, there were 210 TB cases reported at Ciruas Public Health Center in Serang Regency. Of these, 112 individuals were declared cured, and 93 completed their treatment. However, 9 patients died, and 6 patients discontinued their treatment.

Knowledge about TB is crucial for patients to improve their adherence to treatment and reduce the risk of transmission to family members and the surrounding environment. Knowledge is a critical domain in shaping an individual's behavior. Human behavior is influenced by various experiences and interactions with their environment, reflected in knowledge, attitudes, and actions. Knowledge forms the foundation for actions, including preventive measures against the transmission of pulmonary tuberculosis (Muladi & Sabi, 2020).

The role of family members is vital in supporting TB patients during treatment by providing continuous encouragement, such as reminding them to take their medication. Family support involves showing care, affection, and concern for the patient. Emotional and practical support from family ensures that TB patients do not feel alone in facing their condition (Salensehe, Kolibu, & Mandangi, 2020).

Specific roles that families can play include supervising medication intake, ensuring proper disposal of sputum, cleaning eating and drinking utensils used by the patient, and adhering to follow-up appointment schedules. If the relationship between healthcare providers and patients is less than ideal, such as instances of unfriendliness or distant interactions, families can motivate patients to foster better relationships with healthcare professionals, including doctors and nurses (Parlindungan, 2021).

One of the reasons TB patients fail to recover is non-adherence to treatment. Medication adherence refers to whether patients take prescribed medications as directed by their doctor. Treatment is more effective when patients consistently take their medication (Amalia, Arini, & Dhrik, 2022).

Adherence to medication is a crucial factor in the success of TB treatment. Long-term TB treatment often leads to patients feeling bored, forgetting to buy medication, stopping prematurely, or missing doses. Such behaviors frequently result in non-adherence. Factors influencing medication adherence in TB patients include medication side effects, duration of treatment, distance to healthcare facilities, awareness, and the availability of information from healthcare providers about adherence rules (Salensehe, Kolibu, & Mandangi, 2020).

Tuberculosis is an infectious disease that, if untreated, can cause complications or even death and may lead to multidrug-resistant TB if the treatment is incomplete. Therefore, medication adherence significantly impacts the success of TB treatment (Suryani, Ismonah, & R., 2021).

Methods

This study employed a quantitative research approach with a correlational method, utilizing a cross-sectional design. This design involves measuring or observing variables at the same time, examining exposure status and disease status at a single point in time, as explained by Hidayat



(2017). The research aimed to investigate the relationship between the level of knowledge about tuberculosis (TBC) as the independent variable and medication adherence as the dependent variable.

The study was conducted in the service area of Ciruas Community Health Center (Puskesmas), located in Serang Regency, during May to June 2024. The study population included all TBC patients undergoing treatment at Ciruas Community Health Center. According to medical records from 2023, there were 210 TBC patients currently in treatment. The sampling technique used was purposive sampling, a method that selects participants based on specific predetermined criteria.

The research instrument used a questionnaire on the level of knowledge and a questionnaire on family support for medication adherence. The questionnaire was tested for validity and reliability first using the SPSS Statistic 22.0 computer program tool.

The sample size was calculated using the Slovin formula, resulting in a total of 62 respondents. To mitigate potential bias during the research process, the sample size was increased by 10%, bringing the minimum number of respondents to 68. The inclusion criteria for respondents were TBC patients who were undergoing treatment at Ciruas Community Health Center and willing to participate in the study. Exclusion criteria included TBC patients who missed their scheduled medication appointments and those who were experiencing dizziness or fatigue, rendering them unable to participate as respondents.

Data collection in this study was conducted using a questionnaire as the primary instrument. The questionnaire was designed to measure respondents' knowledge levels about TBC and their adherence to prescribed treatments. The findings of this study are expected to contribute to improving awareness of the importance of knowledge and patient compliance in tuberculosis treatment, ultimately helping to reduce the spread and impact of TBC in the community and Statistical analysis using the Chi-Square.

Results

The Relationship Between Knowledge Level and Family Role with Medication Adherence Among Tuberculosis Patients

To determine whether a relationship exists, a statistical test using Chi-Square is required, with the p-value expected to be less than 0.05.

Table 1. Relationship Between Knowledge Level and Medication Adherence Among Tuberculosis Patients

Level of Knowledge	Medication Compliance						Total	P value
	Low		Currently		Tall			
	N	%	N	%	N	%		
Low	19	8,7	3	10,0	0	3,2	22	22,0
Currently	8	15,9	27	18,2	5	5,9	40	40,0
Tall	0	2,4	1	2,7	5	0,9	6	6,0
Total	27	27,0	31	31,0	10	10,0	68	68,0



Based on the findings presented in Table 1, it is evident that among the total of 68 respondents, the following distribution was observed: respondents with low knowledge levels and low medication adherence totaled 19 (8.7%), low knowledge levels and moderate medication adherence totaled 3 (10.0%), and low knowledge levels with high medication adherence accounted for 0 (3.2%). Respondents with moderate knowledge levels and low medication adherence totaled 8 (15.9%), moderate knowledge levels and moderate medication adherence totaled 27 (18.2%), and moderate knowledge levels with high medication adherence totaled 5 (5.9%). Respondents with high knowledge levels and low medication adherence accounted for 0 (2.4%), high knowledge levels and moderate medication adherence totaled 1 (2.7%), and high knowledge levels with high medication adherence totaled 5 (0.9%).

Statistical analysis using the Chi-Square test revealed a p-value of 0.000. This result indicates a statistically significant relationship, at $\alpha = 0.05$, between knowledge levels and medication adherence among tuberculosis patients in the working area of Ciruas Public Health Center, Serang Regency, in 2024.

Table 2. The Relationship Between Family Roles and Medication Adherence Among Tuberculosis Patients

Role of Family	Medication Compliance						Total	P value	
	Low		Currently		Tall				
	N	%	N	%	N	%			
Not good	22	14,7	15	16,9	0	5,4	37	37,0	0,000
Good	5	12,3	16	14,1	10	4,6	31	31,0	
Total	27	27,0	31	31,0	10	10,0	68	68,0	

Based on the research results presented in Table 2, it is shown that out of a total of 68 respondents, those with poor family support and low medication adherence amounted to 22 (14.7%), poor family support with moderate medication adherence amounted to 15 (16.9%), and poor family support with high medication adherence amounted to 0 (5.4%). Respondents with good family support and low medication adherence totaled 5 (12.3%), good family support with moderate medication adherence totaled 16 (14.1%), and good family support with high medication adherence totaled 10 (4.6%).

Based on the statistical test results using the Chi-Square test, a p-value of 0.000 was obtained. Therefore, it can be statistically concluded at $\alpha = 0.05$ that there is a significant relationship between family roles and medication adherence among tuberculosis patients in the working area of the Ciruas Public Health Center, Serang Regency, in 2024.

Discussion

Relationship Between Knowledge Level and Medication Adherence in Tuberculosis Patients

Based on statistical analysis using Chi Square Test, the results obtained by the researcher regarding the relationship between knowledge level and medication adherence among tuberculosis patients in the Work Area of Puskesmas Ciruas, Serang District, yielded a p-value of



0.000. Therefore, comparing this with the significance level $\alpha = 0.05$ ($p \leq \alpha$), which means H_0 is rejected, it can be concluded that there is a significant relationship between knowledge level and medication adherence among tuberculosis patients in the Work Area of Puskesmas Ciruas, Serang District, in 2024.

The analysis shows a significant relationship between knowledge level and medication adherence, which is supported by the theory of Notoatmodjo (2019) stating that a person's knowledge is influenced by their education level. Generally, the higher a person's education level, the easier it is for them to accept information. Several factors affect the level of public knowledge, including information, which helps patients understand the dangers of tuberculosis (TB). This may contribute to a better understanding of TB among patients.

These findings align with research conducted by Susilo, Hasbi, Sunaryati, Sunarno, & Anggraeni (2023) titled "The Relationship Between Knowledge Level and Medication Adherence in Tuberculosis Patients in Outpatient Installation of Muhammadiyah Hospital, Selogiri," which stated a significant relationship between knowledge level and medication adherence with a p-value of $0.000 < 0.05$. This is further supported by the findings of Muladi & Sabi (2020) titled "The Relationship Between Tuberculosis Patients' Knowledge and Medication Adherence," which indicated a significant relationship between tuberculosis patients' knowledge and medication adherence with a p-value of $0.003 < 0.05$.

The assumption of the research is that patient adherence is closely related to their knowledge about Pulmonary Tuberculosis, as a person's education background significantly contributes to their level of understanding. Education plays a crucial role in accessing information, particularly regarding tuberculosis treatment, which is linked to patient adherence. Higher education levels lead to better access to information about tuberculosis treatment, thus enhancing patient knowledge and adherence.

Relationship Between Family Role and Medication Adherence in Tuberculosis Patients

Based on statistical analysis using Chi Square Test, the results obtained by the researcher regarding the relationship between family role and medication adherence among tuberculosis patients in the Work Area of Puskesmas Ciruas, Serang District, yielded a p-value of 0.000. Therefore, comparing this with the significance level $\alpha = 0.05$ ($p \leq \alpha$), which means H_0 is rejected, it can be concluded that there is a significant relationship between family role and medication adherence among tuberculosis patients in the Work Area of Puskesmas Ciruas, Serang District, in 2024.

This study highlights that a good family role can positively influence medication adherence, whereas a poor family role is associated with lower medication adherence.

According to Lestari (2021), a good family role depends on the high level of family awareness to provide care and health services to sick family members, which can contribute to the success of tuberculosis treatment. However, if tuberculosis patients themselves do not have a strong desire to recover, even with good family support, medication adherence and the patient's desire to recover must be closely linked. This relationship is expected to contribute to lowering tuberculosis incidence rates.

This finding aligns with research conducted by Astuti, Kridawati, & Indrawati (2022), which titled "The Relationship Between Family Role and Medication Adherence in Tuberculosis Patients in the Work Area of Puskesmas Kecamatan Denpasar Selatan, Bali Province in 2022." They found a significant relationship between family roles and medication adherence with a p-value of $0.000 < 0.05$.

Another study by Salensehe, Kolibu, & Mandangi (2020) demonstrated that out of 46 respondents, most of them had a poor family role with good medication adherence totaling 18



respondents (39.1%). The Chi Square test yielded a p-value of 0.012, indicating a significant relationship between family roles and medication adherence among tuberculosis patients at Liun Kendage General Hospital in Sangihe Regency.

Respondents with a good family role and adherence to medication are more likely to believe that consistent treatment will yield positive results. Conversely, those with a poor family role may exhibit poor medication adherence because, after a few months of treatment, they feel recovered and decide to discontinue medication.

The researcher assumes that most tuberculosis patients in this study still have a fairly good family role in reminding respondents to take medication and accompanying them to collect medication, ensuring timely adherence. Therefore, a good family role is expected to improve respondents' medication adherence, potentially reducing tuberculosis incidence rates at Puskesmas Ciruas.

Conclusion

The discussion on the relationship between knowledge level and family role with medication adherence in tuberculosis patients in the Work Area of Puskesmas Ciruas in 2024 can be summarized as follows Most of the respondents were aged 10-45 years, totaling 41 respondents (60.3%), The majority of respondents were male tuberculosis patients, totaling 44 respondents (64.7%), A significant portion of respondents had an elementary school education, totaling 31 respondents (45.6%), Most respondents were employed, totaling 41 respondents (60.3%), The majority of respondents with a smoking history were tuberculosis patients, totaling 43 respondents (63.2%), The knowledge level of tuberculosis patients in the Work Area of Puskesmas Ciruas showed that 40 respondents (58.8%) had moderate knowledge, The family role among tuberculosis patients in the Work Area of Puskesmas Ciruas showed that 37 respondents (54.4%) had poor family roles, The medication adherence of tuberculosis patients in the Work Area of Puskesmas Ciruas showed that 31 respondents (45.6%) had moderate medication adherence, There is a significant relationship between knowledge level and medication adherence among tuberculosis patients in the Work Area of Puskesmas Ciruas, with a p-value of $0.000 < \alpha 0.05$. This means that the higher the level of knowledge, the higher the medication adherence among TB patients and There is a significant relationship between family role and medication adherence among tuberculosis patients in the Work Area of Puskesmas Ciruas, with a p-value of $0.000 < \alpha 0.05$. This indicates that the better the family role, the higher the medication adherence among tuberculosis patients.

Ethics approval and consent to participate

This research has received ethical approval from the Ethics Committee of Faletihan University, ensuring that the study adheres to strict ethical principles. The Ethics Committee ensures that the rights, privacy, and well-being of participants are maintained throughout the research process. Every step of the research is carefully designed to ensure the safety and fairness of all participants involved.

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