The Impact Of Clients' Knowledge On Compliance With Anti-Tuberculosis Medication At Home

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Abstract. Pulmonary tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis, namely acid-fast bacteria. Successful treatment of patients with tuberculosis (TB) is a problem in today's society. One of the reasons for the increase in pulmonary TB cases is the low level of education of sufferers. One of the causes of failure of tuberculosis treatment therapy is the side effects of anti-tuberculosis drugs (OAT) which can affect the adherence to medication in tuberculosis patients. The success of TB treatment is compliance in taking anti-tuberculosis medication at the prescribed dose. The aim of this research was to determine the relationship between clients' knowledge of pulmonary tuberculosis and compliance with taking anti-pulmonary tuberculosis medication at Harapan Pematang Siantar Hospital. This research was conducted at Harapan Pematangsiantar Hospital in May 2023. This type of research is descriptive quantitative correlational with a cross-sectional approach. Data collection was carried out using a questionnaire with the Gutman scale. The population of this study was all outpatient clinic patients at Harapan Pematang Siantar Hospital in October-December 2022. The sampling technique was accidental sampling, namely 58 respondents who came in May 2023. Statistical test results used the chi square test with a confidence level of 95% (α = 0.05) shows the p value = 0.001, meaning that there is a relationship between the level of knowledge of tuberculosis clients and compliance with taking anti-tuberculosis medication at Harapan Pematang Siantar Hospital in 2023

Keywords: Compliance, Knowledge, Pulmonary Tuberculosis

1. INTRODUCTION

Tuberculosis is a threat to world health. Pulmonary tuberculosis is an infectious disease that attacks the lung parenchyma caused by the disruption of pathogenic microbes, namely acid-resistant mycobacterium tuberculosis.(Togatorop et al., 2024). but can also attack other organs (extrapulmonary TB). The source of transmission is a patient with positive BTA (acid-fast bacteria) TB through the sputum droplets they expel. TB with negative BTA also still has the possibility of transmitting TB disease although with a small level of transmission. Ending the tuberculosis epidemic is one of the goals of the SDGs (sustainable development goals) in 2030(Rosadi, 2020).

Based on data from the World Health Organization (WHO), it is known that pulmonary tuberculosis is in second place as an infectious disease that causes the most deaths in the world's population after the Human Immunodeficiency Virus (HIV). Of the 34 provinces in Indonesia and the Case Detection Rate (CDR%) of 34 provinces in Indonesia as much as 60.7% in 2018. Data in 2020 estimated the incidence of tuberculosis to be 845,000 people. Indonesia ranks 3rd

in tuberculosis sufferers after India in 1st place and China in 2nd place. As a result of this disease, 93,000 people have died.(Tangkilisan et al., 2020).

The success factor in TB therapy is compliance in the use of OAT. In order to prevent multi-drug resistant tuberculosis (MDR-TB), where the TB disease condition is resistant or cannot be treated with various OATs so that more complex antibiotics are required.(Lastri Mei Winarni et al., 2019). People who are infected with drug-resistant TB germs can develop TB disease and will experience MDR TB disease with the presence of MDR TB bacteria in the body. Transmission of drug-resistant TB germs can occur from MDR TB patients to the surrounding community.(Suryatinah & Sulasmi, 2021)

Treatment will be effective if TB patients comply with the rules for treatment.(Saragih & Sirait, 2020). One indicator of compliance of TB patients in taking medication is whether or not the patient comes after receiving a recommendation for a follow-up check-up. The type of TB patient is said to be compliant if the patient takes the medication according to the rules of the drug package and takes the medication on time.(Amalyanda Azhari, 2022). Success in the treatment of pulmonary TB patients is influenced by compliance in taking medication. Factors that can influence a person's compliance in taking medication are age, knowledge, free time, supervision, type and dose of medication, occupation and attitude and counseling from health workers.

In the effort to overcome TB disease must be balanced with good knowledge. Knowledge is what is known by people related to health and illness or health, in this case sufferers need to have knowledge of the meaning, causes, symptoms and methods of transmission and how to handle tuberculosis disease.(Siburian et al., 2023). Knowledge affects compliance in treatment. Very low patient knowledge can determine the irregularity of patients taking medication due to the lack of information provided by health workers about pulmonary tuberculosis, how to treat the dangers of irregular medication and how to prevent it.(Arifin et al., 2017).

The healing of tuberculosis patients is greatly influenced by compliance in taking tuberculosis medication. Compliance is the level of patient implementation of the treatment method and behavior recommended by their doctor or others. In undergoing long-term treatment, patient compliance is highly demanded to know the patient's attitude and behavior towards the treatment program that has been given by health workers. Poor compliance with recommended treatment can result in adverse side effects.(Suryana & Nurhayati, 2021). Non-compliance results in high cases of treatment failure in pulmonary TB patients and has an

impact on increasing the risk of morbidity, mortality, and causes more and more pulmonary TB patients to experience resistance to treatment.(Amalia, 2020).

Based on a survey conducted at Harapan Hospital Pematang Siantar in 2022, the number of patients suffering from pulmonary TB is very high, it was reported that there were 34 cases in July-September 2022 and in October-December 2022 there was a significant increase, namely 58 who were infected with pulmonary TB. This figure has also increased from the previous year, namely in 2021 the number of pulmonary TB sufferers at Harapan Hospital Pematang Siantar was only 28 people. Based on the background above, the researcher is interested in conducting research on the Relationship between Knowledge of Pulmonary Tuberculosis Clients and Compliance in Taking Anti-Tuberculosis Drugs at Harapan Hospital Pematang Siantar in 2023.

2. LITERATURE REVIEW

Pulmonary tuberculosis (TB) is a major public health issue, particularly in low- and middle-income countries. Effective treatment requires strict adherence to a long-term antibiotic regimen. However, non-compliance with anti-tuberculosis medication is a widespread problem, leading to treatment failure, drug resistance, and continued transmission of the disease. Research shows that a patient's knowledge about TB, including its transmission, symptoms, and the importance of completing the full course of treatment, significantly influences their compliance with the prescribed medication. Patients who understand the disease are more likely to adhere to their treatment regimen, reducing the risk of complications and improving overall treatment outcomes.

Several studies have explored the relationship between clients' knowledge and their adherence to TB treatment. For instance, educational interventions that enhance understanding of TB have been associated with higher compliance rates. In Ethiopia, a study found that patients with greater knowledge of TB were more likely to follow their treatment protocols diligently. However, knowledge alone may not be sufficient to ensure compliance, as other factors such as social support, healthcare access, and side effects of the medication also play a crucial role. These findings suggest that while educating patients is essential, a multifaceted approach is necessary to address the various barriers to treatment adherence.

To improve compliance with anti-tuberculosis medication, strategies must include patient education, social support, and healthcare access. Providing clear and culturally appropriate information about TB can empower patients to adhere to their treatment regimens. Additionally, support from family and community, coupled with accessible healthcare services,

can help address challenges such as stigma, economic barriers, and medication side effects. By combining knowledge enhancement with broader support systems, healthcare providers can better ensure that patients complete their treatment, leading to more successful TB control efforts.

3. METHODS

This research is a study descriptive quantitative correlation method with cross-sectional approach. The purpose of this study was to determine the relationship between knowledge of pulmonary tuberculosis clients and compliance in taking anti-pulmonary tuberculosis drugs at Harapan Pematang Siantar Hospital. This study was conducted at Harapan Pematang Siantar Hospital in May 2023.Data collection of respondents' knowledge was carried out using a questionnaire developed by researchers using the Gutman scale. Validity and reliability tests of the questionnaire were carried out on 10 respondents with the same characteristics as the sample of this study. This was obtainedsignificance level of 5% then the r table obtained is 0.361 with a Cronbach alpha value of 0.98> 0.361 s for each statement. The population of this study was all patients with pulmonary tuberculosis who were controlled by the Outpatient Polyclinic at Harapan Pematang Siantar Hospital in October-December 2022. The sampling technique was accidental sampling so that a sample size of 58 respondents was obtained in May. Before the study was conducted, theletter of permission to Harapan Siantar Hospital and obtain informed consent from the respondents. This study has also been approved byEthics Committee of Santa Elisabeth Health College Medan No.: 567/STIKes/RSE/1V/2023.The collected data was then processed and analyzed using SPSS software. Statistical analysis usingChi-square test with a significance level of 95% confidence level

The methods section outlines the steps followed in executing the study and provides a brief justification for the research methods used. This section should contain sufficient detail to allow the reader to evaluate the appropriateness of your methods and the reliability and validity of your findings. Additionally, the information should enable experienced researchers to replicate your study.

4. RESULTS

Table 1. Frequency Distribution of Respondents' Characteristics Regarding Taking Anti-Tuberculosis Drugs at Harapan Hospital, Pematang Siantar in 2023.

No	Characteristics	Frequency (f)	Percentage (%)
Age			
1	17 – 41	30	57.72
2	42 – 65	28	48.28
	Amount	58	100
Gender			
3	Man	39	67.24
4	Woman	19	32.76
	Amount	58	100
Work			
5	Private	30	51.72
6	civil servant	15	25.87
7	Farmer	13	22.41
	Amount	58	100
Education			
8	Low	27	46.55
9	Intermediate	20	34.48
10	Tall	11	18.97
	Amount	58	100

Based on age characteristics, the majority are in the age category of 17 - 41 years as many as 30 people (57.72%), and the lowest are in the age category of 42 - ≥ 65 years as many as 28 people (48.28%). The gender of the respondents is mostly male as many as 39 people (67.24%), and female as many as 19 people (32.76%). The majority of private jobs are 30 people (51.72%), and the lowest are in the Farmer category as many as 13 people (22.41%). Based on the level of education of the respondents, the majority are low as many as 27 people (46.55%), middle as many as 20 people (34.48%) and high as many as 11 people (18.97%).

Table 2. Frequency Distribution of Respondents Based on Knowledge About Taking Anti-Tuberculosis Drugs at Harapan Hospital Pematang Siantar in 2023.

No.	Knowledge	f	%
1.	Not enough	10	17.2
2.	Enough	23	39.7
3.	Good	25	43.1
Total		**58**	**100%**

Based on table 2, it can be seen that the number of respondents based on knowledge means that the majority of respondents who have good knowledge are 25 people (43.1%) and the minority have poor knowledge are 10 people (17.2%).

Table 3.Frequency Distribution of Respondents Based on Compliance Regarding Taking Anti-Tuberculosis Drugs at Harapan Hospital, Pematang Siantar in 2023.

No.	Compliance	f	%
1.	Not obey	15	25.9
2.	Obedient	43	74.1
Total		58	100%

Based on table 3, it can be seen that the number of respondents based on Compliance, the majority of respondents have Compliant Compliance, as many as 43 people (74.1%) and the minority have Non-Compliance, as many as 15 people (25.9%).

Table 4. Relationship between Knowledge and Level of Compliance Regarding Taking Anti-Tuberculosis Drugs at Harapan Hospital, Pematang Siantar in 2023.

Knowledge	Medication Compliance			
	Not obey	Obedient	Total	P Value
	n %	n %	n %	
Not enough	8 80	2 20	10 100	
Enough	5 21.7	18 78.3	23 100	0.001
Good	2 17.1	23 82.9	25 100	
Total	15 25.9	43 74.1	58 100	

Based on table 4, it shows that out of 10 respondents who have less knowledge with medication adherence, 8 people (80.0%) are not compliant, and 2 people are compliant (20.0%) and out of 23 respondents who have sufficient knowledge with medication adherence, 5 people are not compliant (21.7%) and 28 people are compliant (78.3%). and out of 25 respondents who have good knowledge with medication adherence, 2 people are not compliant (17.1%) and 23 people are compliant (82.9%).

The results of the statistical test using the chi square test with a 95% confidence level ($\alpha = 0.05$) showed a p value = 0.001.in this study, namely: if the p value ≤ 0.05, then the hypothesis in this study is accepted, which means there isThe relationship between the level of knowledge of tuberculosis clients and compliance in taking anti-tuberculosis drugs at Harapan Hospital, Pematang Siantar in 2023.

5. DISCUSSION

Based on the knowledge described the majority of respondents have good knowledge as many as 25 people (43.1%) and the minority have poor knowledge as many as 10 people (17.2%). According to the assumption of the researcher with good knowledge can increase the level of client healing against tuberculosis, so that the level of healing for clients can be better

according to their level of knowledge, which is 25 respondents (43.1%). Furthermore, high knowledge can reduce the death rate in tuberculosis and reduce the number of tuberculosis cases. The results obtained that the most knowledge is found in productive age, which is 30 people (57.72%). And in this case it can be seen that high knowledge is found in most of those who work because they predominantly get a lot of information from other people.

This is also in accordance with research by Ismail (2018) who stated that pKnowledge is considered very important for the success of TB treatment because patients will get information about how it is transmitted, stages of treatment, goals of treatment, side effects of drugs, and complications of the disease. The knowledge that a person has will affect how he or she behaves, plans, and makes decisions.

This is also in accordance with research by Mellyana (2021) which states that knowledge greatly influences compliance with taking medication, because lack of knowledge can increase the number of tuberculosis cases. This study differs from Made's (2017) study which stated that with work and a good income, it is easier for someone to get information and get health services.

Compliance with taking anti-tuberculosis drugs at Harapan Pematang Siantar Hospital in 2023, the majority of respondents had Compliant Compliance of 43 people (74.1%) and the minority had Non-Compliance of 15 people (25.9%). According to the researcher's assumption, with a high level of compliance, the success in treating Pulmonary TB will be higher, and the transmission rate will also decrease so that the TB disease can be cured.

This study is supported by what was stated by Herlina (2020) who stated that out of 35 respondents, the majority of respondents were compliant in taking medication, namely 19 people (54.3%), stating that compliance in taking medication was influenced by the amount of medication consumed. This study is also supported by research by Merlindawati (2018) which states that compliance depends on a person's knowledge, because knowledge greatly influences a person's compliance in taking medication.

The relationship between knowledge of tuberculosis clients and compliance with taking anti-tuberculosis drugs at Harapan Hospital Pematang Siantar in 2023 using the chi-square test shows a p value of 0.001 (p>0.005), so H0 is rejected and it can be concluded that there is a relationship between the level of knowledge of tuberculosis clients and compliance with taking anti-tuberculosis drugs at Harapan Hospital Pematang Siantar in 2023.

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compliance, 5 people are not compliant (21.7%) and 28 people are compliant (78.3%). and out of 25 respondents who have good knowledge with medication compliance, 2 people are not compliant (17.1%) and 23 people are compliant (82.9%).

According to the researcher's assumption that knowledge is one of the factors that influences whether or not TB patients comply with taking medication regularly. With knowledge about tuberculosis, it can influence compliance in taking OAT regularly or routinely by tuberculosis patients or sufferers so that it can accelerate the recovery or healing process of tuberculosis sufferers. Therefore, patients who have good knowledge about tuberculosis are also expected to comply and obey or regularly take OAT. However, from the results of the questionnaire, it was found that in the study there were 2 respondents who were not compliant in taking anti-tuberculosis drugs with good knowledge. This is due to work factors, and feeling better after taking the medicine.

This is also in accordance with research from Fitri (2018) who stated that this can occur due to the sufferer himself, and feels cured. Albert (2023) also stated that with good knowledge it is possible that the client is obedient in taking medication, this is also related to PMO.is the risk factor that most influences the medication-taking behavior of TB patients.

The results section summarizes the data collected for the study using descriptive statistics and reports the outcomes of relevant inferential statistical analyses (e.g., hypothesis tests) conducted on the data. Report the results in sufficient detail so that the reader can understand which statistical analyses were performed, why they were conducted, and to justify your conclusions. Mention all relevant results, including those that contradict the stated hypotheses.

There is no fixed formula for presenting the findings of a study. Therefore, we will first consider general guidelines and then focus on options for reporting descriptive statistics and the results of hypothesis tests.

Present your findings as concisely as possible while providing enough detail to justify your conclusions and enable the reader to understand exactly what you did in terms of data analysis and why. Figures and tables, detached from the main body of the manuscript, often allow for clear and concise presentation of findings.

6. CONCLUSION

Based on the research results, it is described that respondents with moderate to good levels of knowledge mostly have medication adherence; there areThe relationship between the level of knowledge of tuberculosis clients and compliance in taking anti-tuberculosis drugs at

Harapan Hospital, Pematang Siantar in 2023.Future research is expected to consider the knowledge and benefits of medication monitoring (PMO) from health workers, families, and health cadres on the success of pulmonary tuberculosis treatment

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