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Factors Related to Adherence to Taking Anti-Tuberculosis (OAT) Drugs in Pulmonary Tuberculosis Patients at Cut Meutia General Hospital, North Aceh Regency

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ABSTRACT

Tuberculosis (TB) is a disease with a high risk of transmission and is one of the diseases whose cases continue to increase and cause death worldwide. Until now, pulmonary tuberculosis has been difficult to treat because of the patient's non-compliance with taking anti-tuberculosis drugs (OAT). This study aims to investigate the factors associated with adherence to taking OAT drugs in tuberculosis patients at Cut Meutia General Hospital. This research is an observational study with a cross-sectional design. The study was conducted at the pulmonary disease polyclinic of Cut Meutia General Hospital, North Aceh Regency. The study was conducted on 100 patients, with the sampling technique being total sampling. The sample inclusion criteria in this study were patients who had been diagnosed with pulmonary tuberculosis, were willing to participate in the study, and had signed an agreement to participate in the study. A total of 100 patients participated in this study. Most of the patients were male (64%), aged over 46 years (52%), had low education (75%), had difficult hospital access (70%), and had poor knowledge regarding TB treatment (60%). In conclusion, the factors of age, gender, and distance of residence are related to adherence to taking OAT. Meanwhile, education and knowledge are not related to adherence to taking OAT in pulmonary TB patients at Cut Meutia General Hospital, North Aceh Regency.

1. Introduction

Pulmonary tuberculosis (pulmonary TB) is one of the infectious diseases whose cases have continued to increase every year until now.^{1,2} This disease is caused by an infection with the acid-fast bacterium *Mycobacterium tuberculosis*, which is transmitted through splashes of saliva when a person coughs or sneezes.^{3,4} Data from the Ministry of Health of the Republic of Indonesia states that the number of cases of pulmonary tuberculosis in Indonesia has reached 824,000 cases, 86% of which have been cured, and 15,186 cases have died.^{5,6} Cases of tuberculosis in Indonesia are influenced by community conditions

such as poverty, income inequality, difficulty in accessing health services, lifestyle, and poor environmental sanitation.⁷ Aceh is one of the provinces in Sumatra with a high number of TB cases.⁸ Data on the number of tuberculosis cases in Aceh based on Aceh Health profile data in 2020 in 6,456 cases, and the highest number of cases is in the North Aceh region, which is 13% of all tuberculosis cases in Aceh.⁸

One of the efforts that can be made to reduce the number of cases of tuberculosis is to take regular treatment. Taking tuberculosis drugs regularly can reduce the risk of transmission and spread of the

disease to the wider community. Tuberculosis treatment is carried out in 2 stages, namely the intensive stage (for 2 months) and the advanced stage (for 4 months).⁹

Due to the length of the treatment process that the patient has to undergo, the patient's commitment and adherence to complete treatment are needed. Patient adherence to treatment is an important key to the success of tuberculosis treatment. Non-adherence in undergoing treatment will lead to resistance to anti-tuberculosis drugs (OAT), thus causing the length of the treatment process and increasing costs to be incurred.⁹ This study aims to investigate the factors associated with adherence to taking OAT drugs in tuberculosis patients at Cut Meutia General Hospital.

2. Methods

This research is an observational study with a cross-sectional design. The study was conducted at the pulmonary disease polyclinic of Cut Meutia General Hospital, North Aceh Regency. The study was conducted on 100 patients with a sampling technique of total sampling. The sample inclusion criteria in this

study were patients who had been diagnosed with pulmonary tuberculosis, were willing to participate in the study, and had signed an agreement to participate in the study. The exclusion criteria in this study were children with TB. This research has obtained ethical approval from the Research Ethics Committee of the Faculty of Medicine, Universitas Malikussaleh (Ref. Number: 110/2022).

The variables in this study were sociodemographic data and patient adherence to taking OAT. Data were collected using a questionnaire given directly to the patient. Data analysis was performed using SPSS version 25.0.

3. Results and Discussion

A total of 100 patients participated in this study. Most of the patients were male (64%), aged over 46 years (52%), had low education (75%), had difficult hospital access (70%), and had poor knowledge regarding TB treatment (60%). Based on medication adherence, most of the respondents had poor adherence (Table 1).

Table 1. Patient characteristics

Characteristics	Category	Frequency (n)	Percentage (%)
Gender	Male	64	64
	Female	36	36
Age	≤ 46 years	52	52
	> 46 years	48	48
Education Level	Low	75	75
	High	25	25
Knowledge	Good	40	40
	Poor	60	60
Distance from home to hospital	Easy	30	30
	Difficult	70	70
Adherence	Good	40	40
	Poor	60	60

The results of the bivariate analysis show that there is a relationship between gender and adherence to taking OAT in pulmonary TB patients, with a p-value of 0.002 (table 2). Gender can influence healthy and sick behavior patterns. In this case, women are more likely to seek treatment than men. Men tend to be less obedient to treatment than women. Men suffer from

pulmonary tuberculosis more because they tend to have an unhealthy lifestyle, such as smoking habits which will interfere with lung function and increase the risk of pulmonary tuberculosis. In addition, men often move outside the home to earn a living, so they tend not to take OAT on time as recommended by health workers.¹⁰⁻¹³

Table 2. The relationship between gender and adherence to taking OAT

Gender	Adherence						p-value
	Good		Poor		Total		
	n	%	n	%	N	%	
Male	18	28.1	46	71.9	64	100	0.002
Female	22	61.1	14	38,9	36	100	

Based on the results of the chi-square test, it is known that there is a relationship between sex, age, and adherence to taking OAT in pulmonary TB patients with a p-value <0.001 (table 3). Pulmonary tuberculosis often occurs at productive ages because this group has activities and interacts with other

people. This high mobility allows patients to be infected and spread TB infection to other people and the environment around where they live. High mobility also contributes to causing respondents to often forget to visit for treatment and take OAT regularly.^{14,15}

Table 3. The relationship between age and adherence to taking OAT

Age	Adherence						p-value
	Good		Poor		Total		
	n	%	n	%	N	%	
≤ 46 years	1	1.9	51	98.1	52	100	<0.001
> 46 years	39	81.3	9	18,7	48	100	

Meanwhile, the results of the chi-square analysis show that there is no relationship between the level of education and knowledge and adherence to taking OAT (tables 4 and 5). A person's behavior is influenced by the level of education. If a person has motivation in him and that motivation arises with the need for fulfillment, that cannot be postponed. Higher education affects a person's intellectual power in deciding something, including the decision to comply with taking the medication regularly. The lower level of adherence in respondents with higher education could be due to a combination of other factors.¹⁶

supporting factors for the successful treatment of pulmonary TB. Someone who has good knowledge or understanding of a disease is expected to be able to apply this knowledge to maintain his health. Healthy behavior can appear after a stimulus from the outside in response to the stimulus. Adherence to taking TB drugs is not always influenced by knowledge but can be influenced by other factors such as the surrounding environment, health care facilities/systems, lack of medication supervisors, and patients who feel bored and uncomfortable because they have to take medication for a long time.^{17,18}

Knowledge of pulmonary TB is also one of the

Table 4. The relationship between education and adherence to taking OAT

Education	Adherence						p-value
	Good		Poor		Total		
	n	%	n	%	N	%	
High	6	24	19	76	25	100	0.098
Low	34	45.3	41	54.7	75	100	

Table 5. The relationship between knowledge and adherence to taking OAT

Knowledge	Adherence						p-value
	Good		Poor		Total		
	n	%	n	%	N	%	
Good	14	35	26	65	40	100	0,532
Poor	26	43.3	34	56.7	60	100	

Table 6. The relationship between the distance of residence to health facilities and adherence to taking OAT

Distance	Adherence						p-value
	Good		Poor		Total		
	n	%	n	%	n	%	
Easy to reach	30	100	0	0	30	100	<0.001
Difficult to reach	10	14.3	60	85.7	70	100	

The results showed a relationship between the distance of residence in health facilities with OAT adherence in pulmonary TB patients (p -value <0.001; table 6). The distance between residence and health facilities is an important factor in the success of pulmonary TB treatment. Good health facilities are those that are easily accessible by the community and well distributed in urban areas and in villages. The unavailability of means of transportation, as well as the cost, can be an obstacle for someone to reach health facilities. It affects a person's adherence to treatment. The farther the distance from the place of residence to health care facilities, the more expensive the costs that must be incurred by the patient, causing TB patients to be lazy to seek treatment. The closer the patient's residence is to the health facility, the more obedient a person is to doing treatment and health checks at health care facilities.¹⁹

4. Conclusion

There is a relationship between age, gender, and distance from the patient's residence to health facilities with adherence to taking OAT. Meanwhile, education and knowledge were not related to adherence to taking OAT in pulmonary TB patients at Cut Meutia General Hospital, North Aceh Regency.

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