

A Correlation Between Socio-Economical and The Role of Health Workers with The Occurrence of Pulmonary Tuberculosis at Lesung Batu Health Center in Empat Lawang Regency

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ABSTRACT

Introduction: Pulmonary tuberculosis is an infectious disease caused by Mycobacterium tuberculosis, which attacks the lungs and bronchi. Treatment of pulmonary tuberculosis is one of the primary strategies for controlling pulmonary tuberculosis to stop the cycle of transmission. This study aims to determine the correlation between socioeconomic factors and the role of health workers and the occurrence of pulmonary tuberculosis at Lesung Batu Health Center in Empat Lawang Regency. **Method:** The method used was an analytical survey with a case-control design. Primary data were collected by distributing questionnaires to 24 individuals with AFB (positive) as cases using a total sampling technique and 24 individuals with AFB (negative) as controls using a simple random sampling technique. Data analysis was performed using the Chi-Square test. **Result and Discussion:** Univariate analysis showed that more than half of respondents (58.3%) with incomes below Rp 3,916,635 and more than half of respondents (54.2%) reported that the role of health workers was inadequate. Bivariate analysis results showed a correlation between socioeconomic status and the occurrence of pulmonary tuberculosis ($p=0.040$) and socioeconomic status with the occurrence of pulmonary tuberculosis ($p=0.009$). **Conclusion:** The researchers recommend that the Lesung Batu Health Center use the results of this study as input in developing programs to reduce the occurrence of pulmonary tuberculosis.

INTRODUCTION

Pulmonary tuberculosis (TB) is an infectious disease caused by the mycobacterium tuberculosis germ that attacks the lungs and bronchi. Pulmonary TB is classified as an airborne infection that can enter the body through the air we breathe into the lungs. The bacteria then spread from the lungs to other parts of the body through the circulatory system, the lymphatic system, the bronchi, or direct spread to other parts of the body (Candra and Triwibowo, 2019).

Currently, an estimated 95% of pulmonary tuberculosis cases and 98% of deaths from pulmonary tuberculosis worldwide occur in developing countries. Tuberculosis affects more than 75% of the productive-age population and causes 20-30% of families to lose income each year. An active TB patient will infect 10 to 15 people around them, and 50-60% of TB patients will die without effective treatment (Laban and Yoannes, 2018).

Indonesia ranked fifth with the highest number of TB cases in 2019, with 410,000 cases. Ironically, the number of cases continues to increase, reaching 520,000 in 2020. Furthermore, the 2017 Global Tuberculosis Report again released a list of the five countries with the highest incidence of TB, with Indonesia ranking second after India with 593,000 cases (WHO, 2021).

Based on the 2022 achievements (based on the 2021 case discovery cohort), the tuberculosis treatment success rate was 86.5% (the target was 90%). The treatment success rate per province ranged from 72.1% to 96.2%, with the highest rates in Lampung, South Sumatra, Riau, West Nusa Tenggara, and North Sulawesi provinces, and the lowest rates in West Papua, Papua, North Kalimantan, Maluku, and DKI Jakarta provinces. Based on the 90% success rate target, 9 provinces (26.5%) achieved the target, namely Lampung Province, South Sumatra, Riau, West Nusa Tenggara, North Sulawesi, Banten, West Sulawesi, North Sumatra, and West Sumatra.

Based on the South Sumatra Provincial Health Office Profile (2023), new cases of positive BTA in South Sumatra Province are among the 10 highest numbers of cases in South Sumatra Province. Meanwhile, the total number of new cases found, both positive BTA and negative BTA/positive X-ray, in South Sumatra Province is 16,686 cases. The success rate is 89.5%, exceeding the national target of 85%. This figure shows that the national target for tuberculosis recovery has been achieved. Based on data from the South Sumatra Provincial Health Office, the number of bacteriologically confirmed pulmonary tuberculosis cases registered and treated from the highest number of cases was in Empat Lawang Regency with 1,987 cases. Meanwhile, the total number of all registered and treated

tuberculosis cases in Empat Lawang District was 5,110 cases (South Sumatra Provincial Health Office, 2024). Based on data from the Lesung Batu Community Health Center in Empat Lawang District, there were 24 cases of pulmonary tuberculosis recorded in 2024 (Lesung Batu Community Health Center, 2024).

The Indonesian Ministry of Health (2023) states that factors that can influence a person to become a tuberculosis patient are low immunity, generally caused by poor nutrition and unhealthy lifestyles. Unhealthy lifestyle behaviors that can lead to tuberculosis infection are influenced by factors such as age, socioeconomic status, gender, education, knowledge, patient attitudes, occupation, nutritional status, the role of health workers, housing density, and the environment (Azwar, 2020).

Socioeconomic factors influence the fulfillment of an individual's and family's basic needs. Poverty (low socioeconomic status) is a condition that leads to inadequate housing or poor working conditions. This situation can weaken the body's resistance, making it easier for infections to occur. People living in these conditions also often experience malnutrition due to an inability to provide nutritious food as a result of low income. This complex of poverty facilitates the development of TB into disease (Caffton, 2018). The results of a study conducted by Susilowati, Tini, and Purwanti (2023) state that there is a significant relationship between family socioeconomic status and the risk of TB transmission in the working area of the Tanjung Selor Community Health Center.

The role of health workers is an activity expected of health workers who provide health services to the community to improve public health. Their role in health is very much needed, therefore health workers must be able to provide conditions that can influence patients' positive behavior towards their health as communicators, motivators, facilitators, and counselors (Potter and Perry, 2018). Based on the research by Saleh and Nurfadhillah (2023), it was concluded that there is a statistically significant relationship between the Role of Health Workers and the implementation of the TOSS TB program in pulmonary TB patients at the Dumbo Raya Community Health Center, Gorontalo City.

Based on an initial survey conducted on 10 patients with BTA (+) pulmonary TB at the Lesung Batu Community Health Center in Empat Lawang Regency, 5 patients complained that health workers did not play a significant role in their treatment. Health workers never informed them about their regular treatment schedule, nor did they ever tell them about the duration of treatment and the effects of not taking their medication regularly. Furthermore, 6 patients had socioeconomic conditions below the minimum wage.

RESEARCH METHODS

The research design in this study used a case-control study design. The study was conducted in June 2025 at the Lesung Batu Community Health Center in Empat Lawang Regency. The case population in this study consisted of 24 people with BTA (+) recorded in the register of the Lesung Batu Community Health Center in Empat Lawang Regency from January to February 2025. The control population in this study consisted of 152 people with BTA (-) recorded in the register of the Lesung Batu Community Health Center in Empat Lawang Regency from January to February 2025. Sampling was conducted using the total sampling technique, where the entire population was used as the research sample. Bivariate analysis was used to determine the relationship between the independent and dependent variables using the Chi-square (χ^2) test, at a 95% confidence level or a significance value (p) of 0.05.

RESULTS

Univariate analysis was conducted to determine the socioeconomic profile, the role of health workers, and the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang District. The results of the univariate analysis are as follows:

Tabel 1. Frequency Distribution

Variable	Frequency (n)	Percent (%)
Socioeconomical		
Income <Rp. 3.916.635	28	58,3
Income ≥Rp. 3.916.635	20	41,7
Role of Health Workers		
Not Good	26	54,2
Good	22	45,8

Sumber: Data Diolah, 2025

Table 1 socioeconomic frequency distribution shows that of the 48 respondents, more than half (58.3%) had an income of <Rp. 3,916,635 at the Lesung Batu Community Health Center in Empat Lawang Regency. Meanwhile, the frequency distribution of health worker roles shows that of the 48 respondents, more than half (54.2%) said that the role of health workers was not good at the Lesung Batu Community Health Center in Empat Lawang Regency. Bivariate analysis was conducted to determine the socioeconomic relationship and the role of health workers in the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang District. The results of the bivariate analysis are as follows:

Tabel 2. A Correlation Between Socio-Economical with The Occurrence of Pulmonary Tuberculosis at Lesung Batu Health Center in Empat Lawang Regency

Socio Economical	Pulmonary Tuberculosis				Total		χ^2	P	OR (95%CI)
	BTA (+)		BTA (-)		f	%			
	f	%	f	%					
Income <Rp. 3.916.635	18	75	10	41,7	28	58,3	4,200	0,040	42 (1,2-14,4)
Income ≥Rp. 3.916.635	6	25	14	58,3	20	41,7			
Total	24	100	24	100	48	100			

Sumber: Data Diolah, 2025

Table 2 shows that of the 24 respondents with BTA (+) pulmonary tuberculosis, 18 respondents had an income of <Rp. 3,916,635 and 6 respondents had an income of ≥Rp. 3,916,635. Meanwhile, of the 24 respondents with BTA (-) pulmonary tuberculosis, 10 respondents had an income of <Rp. 3,916,635 and 14 respondents had an income of ≥Rp. 3,916,635 at the Lesung Batu Community Health Center in Empat Lawang Regency. To determine the socioeconomic relationship with pulmonary tuberculosis cases at the Lesung Batu Community Health Center in Empat Lawang Regency using the Chi-Square test.

The Chi-Square test result was 4.200 with a p-value of 0.040. Because the p-value was <0.05, there was a significant relationship between socioeconomic status and pulmonary tuberculosis cases at the Lesung Batu Community Health Center in Empat Lawang Regency. The risk value of socioeconomic status in relation to pulmonary tuberculosis cases at the Lesung Batu Community Health Center in Empat Lawang Regency was assessed using the odds ratio (OR) value, which was found to be 4.2 (95% CI: 1.2-14.4). This means that respondents with a socioeconomic status of <Rp. 3,916,635 have a 4.2 times greater risk of developing BTA (+) pulmonary tuberculosis than respondents with socioeconomic status ≥Rp. 3,916,635.

Tabel 3. A Correlation Between Role of Health Workers with The Occurrence of Pulmonary Tuberculosis at Lesung Batu Health Center in Empat Lawang Regency

Role of Health Workers	Pulmonary Tuberculosis				Total		χ^2	P	OR (95%CI)
	BTA (+)		BTA (-)		f	%			
	f	%	f	%					
Not Good	18	75	8	33,3	26	54,2	6,797	0,009	6,0 (1,7-21,0)
Good	6	25	16	66,7	22	45,8			
Total	24	100	24	100	48	100			

Sumber: Data Diolah, 2025

Table 3 shows that of the 24 respondents with BTA (+) pulmonary tuberculosis, 18 respondents stated that the role of health workers was poor and 6 respondents stated that the role of health workers was good. Furthermore, of the 24 respondents with BTA (-) pulmonary tuberculosis, 8 respondents stated that the role of health workers was not good and 16 respondents stated that the role of health workers was good at the Lesung Batu Community Health Center in Empat Lawang District.

To determine the socioeconomic relationship with the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang Regency using the Chi-Square test. The Chi-Square test result was 6.797 with a p-value of 0.009. Because the p-value was <0.05, there was a significant relationship between the role of health workers and the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang Regency.

The risk value of the relationship between the role of health workers and the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang District was determined based on the odds ratio (OR) and obtained an OR value of 6.0 (95% CI: 1.7-21.0), meaning that respondents who said that the role of health workers was not good had a 6 times greater risk of experiencing BTA (+) pulmonary tuberculosis than respondents who said that the role of health workers was good.

DISCUSSION

A Correlation Between Socio-Economical with The Occurrence of Pulmonary Tuberculosis at Lesung Batu Health Center in Empat Lawang Regency

The results of the bivariate analysis of the relationship between socioeconomic status and pulmonary tuberculosis cases at the Lesung Batu Community Health Center in Empat Lawang District show that of the 24 respondents with BTA (+) pulmonary tuberculosis, there were still 6 respondents with an income of \geq Rp. 3,916,635. This was due to hereditary factors from the parents and also because the respondents more often ate food from outside sources whose hygiene was unknown. Meanwhile, out of 24 respondents with BTA (-) pulmonary tuberculosis, there were still 10 respondents with an income <Rp. 3,916,635. This was due to the respondents adopting a clean and healthy lifestyle in their daily lives.

The results of bivariate analysis using the Chi-Square test show a significant relationship between socioeconomic status and the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang District, meaning that the lower the respondent's income, the greater the risk of developing BTA (+) pulmonary tuberculosis, and conversely, the higher the respondent's income, the lower the risk of developing BTA (+) pulmonary tuberculosis. This is supported by an OR value of 4.2 (95% CI: 1.2-14.4), meaning that respondents with socioeconomic status <Rp. 3,916,635 are 4.2 times more likely to experience BTA (+) pulmonary tuberculosis than respondents with socioeconomic status \geq Rp. 3,916,635.

The results of this study are in line with the theory proposed by Pernanda (2019), which states that socioeconomic status is closely related to family income, which can indirectly lead to the easy transmission of childhood pulmonary TB. This is because low income prevents people from living a decent life that meets health requirements (Naga, 2020). In addition, economic conditions can also affect parents' ability to meet their children's nutritional needs and their efforts to provide BCG immunization to prevent pulmonary TB.

A Correlation Between Role of Health Workers with The Occurrence of Pulmonary Tuberculosis at Lesung Batu Health Center in Empat Lawang Regency

The results of the bivariate analysis of the relationship between the role of health workers and the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang Regency showed that of the 24 respondents with BTA (+) pulmonary tuberculosis, there were still 6 respondents who stated that the role of the health workers was good.

This was because the respondents felt that they were treated very kindly when they came for treatment at the clinic, and the health workers often motivated patients to be enthusiastic about their treatment so that they would recover quickly. Meanwhile, of the 24 respondents with BTA (-) pulmonary tuberculosis, there were still 8 respondents who stated that the role of health workers was not good. This was because when they came to the outpatient clinic, the respondents asked questions and were answered indifferently by the health workers, and the respondents felt that there was no good communication between the health workers and the respondents.

The results of bivariate analysis using the Chi-Square test show a significant relationship between the role of health workers and the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang District, meaning that the poorer the role of health workers, the greater the risk of experiencing BTA (+) pulmonary tuberculosis and vice versa, the better the role of health workers, the lower the risk of experiencing BTA (+) pulmonary tuberculosis. This is supported by an OR value of 6.0 (95% CI: 1.7-21.0), meaning that respondents who said that the role of health workers was poor were 6 times more likely to experience BTA (+) pulmonary tuberculosis than respondents who said that the role of health workers was good.

The results of this study are in line with the theory proposed by Kozier et al. (2018), which states that efforts to increase TB case detection rates can be carried out by the community and all health workers, including nurses. Screening for suspected TB cases and providing TB information, education, and communication (IEC) services are the roles of health workers. A role is a set of individual behaviors expected by others in accordance with their position in the system.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research and discussion on socioeconomic relationships and the role of health workers in the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang Regency, the conclusion of this study is that there is a significant relationship between socioeconomic factors and the role of health workers in the incidence of pulmonary tuberculosis at the Lesung Batu Community Health Center in Empat Lawang Regency. The researchers hope that the results of this study can be used as input for the Lesung Batu Community Health Center in developing programs to reduce the incidence of pulmonary tuberculosis.

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