Factors Associated With The Occurrence of Pulmonary Tuberculosis In The Working Area of Bulasat Public Health Center Mentawai Islands Regency, In 2025

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Abstract.

Background: According to the 2024 Global TB Report, tuberculosis remains one of the leading causes of death worldwide. Indonesia ranks second among the countries with the highest TB burden. The TB problem in Bulasat Public Health Center, Mentawai Islands Regency, is partly influenced by community behavioral factors, particularly among populations living in remote and island areas. Methods: This study is a quantitative research using a case-control design involving 60 community samples within the working area of Bulasat Public Health Center. The sampling technique used was non-probability purposive sampling. Results: The findings show a significant association between pulmonary TB occurrence and sex (p-value = 0.039; OR = 3.45), age (p-value = 0.018; OR = 4.3), education (p-value = 0.011; OR = 5.7), accessibility (p-value = 0.036; OR = 3.6), perception (p-value = 0.038; OR = 3.5), attitude (p-value = 0.018; OR = 4.3), and knowledge (p-value = 0.019; OR = 4.1). Knowledge was found to be the most dominant factor influencing TB incidence. Conclusion: This study indicates that TB incidence in the Bulasat Public Health Center working area is associated with sex, age, education, accessibility, perception, attitude, and knowledge. Knowledge is the most dominant associated factor. Strengthening health education, developing information media, and enhancing cross-sector collaboration are needed to improve community knowledge about TB and reduce the incidence rate.

Keywords: *Tuberculosis; knowledge and accessibility.*

I. INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*. This bacterium primarily infects the lungs (pulmonary TB), but it can also affect organs outside the lungs (extrapulmonary TB), such as the brain, bones, and skin. Pulmonary TB is transmitted through droplets containing the bacteria, which are released when an infected person coughs, sneezes, or talks, and subsequently inhaled by others.[1]Globally, TB remains one of the most serious public health problems. According to the 2024 Global Tuberculosis Report, there were more than 10.8 million new TB cases, with an incidence rate of 134 cases per 100,000 population and approximately 1.3 million deaths annually. In 2024, Indonesia ranked second among countries with the highest TB burden after India, with an estimated 1 million new cases each year.[2] In 2024, the Indonesian Ministry of Health reported approximately 885,000 detected TB cases, consisting of 496,000 males, 359,000 females, and 135,000 children aged 0–14 years.[3] In West Sumatra Province, there were 25,083 TB cases reported in 2024, with 793 TB-related deaths (3.17%).[4]The Mentawai Islands Regency is an archipelagic region in West Sumatra that continues to face a high burden of health problems. In 2024, a total of 171 TB cases were recorded in the Mentawai Islands.[5] Bulasat Public Health Center (Puskesmas Bulasat) is one of the health centers in the region and reported 15 new TB cases with one TB-related death in 2024.[6]

Due to the geographical challenges of island communities, the Mentawai Islands lag behind other districts in West Sumatra in terms of access to healthcare services, which remain limited and difficult to reach. Additionally, the strong traditional cultural values of local communities influence daily behaviors, contributing to social isolation and high levels of stigma, particularly regarding health issues.TB continues to pose a major challenge due to its infectious nature, the long duration of treatment required, and the influence

of various social determinants. Factors such as poverty, malnutrition, overcrowded living conditions, unhealthy lifestyle behaviors, and poor treatment adherence contribute to the persistently high incidence of TB.[7] Moreover, stigma toward TB patients, driven by limited knowledge and poor accessibility, further hinders prevention and control efforts.Research on the factors associated with TB cases at the health center level is essential to understand the underlying issues within the community. Identifying the determinants related to TB incidence is expected to guide the development of more targeted, effective, and sustainable interventions to reduce TB cases within the working area of the health center.

II. METHODS

This study employed a quantitative approach with a case–control design. The research was conducted in the working area of Bulasat Public Health Center (Puskesmas Bulasat), Mentawai Islands Regency, West Sumatra Province. Data collection took place from August to November 2025. The study population consisted of residents living within the health center's working area, which includes 27 hamlets. Six hamlets with the highest number of tuberculosis cases were selected as the study locations. A total of 60 respondents were recruited, divided into case and control groups. The case group consisted of individuals with active pulmonary TB or a history of pulmonary TB within the past two years, whereas the control group consisted of individuals who had never been diagnosed with pulmonary TB. The sampling technique used was non-probability purposive sampling.Primary data were collected by asking respondents to complete a questionnaire that had previously been tested for validity and reliability. The questionnaire aimed to obtain information needed to measure the study variables. The dependent variable in this study was the occurrence of tuberculosis. The independent variables included sex, age, marital status, education level, occupation, knowledge, perception, and accessibility.Bivariate analysis was conducted using the chi-square test with a significance level of $\alpha = 0.05$ to determine the relationship between sex, age, marital status, education level, occupation, knowledge, perception, and accessibility with the occurrence of tuberculosis in the working area of Bulasat Public Health Center.

III. RESULTS AND DISCUSSION

Descriptive

This study involved a total of 60 respondents with the following characteristics:

Tabel 1. "Frequency Distribution of Respondents' Characteristics"

Variables	f	%
Sex		
Female	31	51,7
Male	29	48,3
Age		
Elderly (≥ 60 years)	24	40
Adult (< 60 years)	36	60
Education Level		
Low	42	70
High	18	30
Marital Status		
Unmarried	7	11,7
Married	53	88,3
Occupation		
Unemployed	14	23,3
Employed	46	76,7
Attitude		
Poor	36	60
Good	24	40
Perception		
Negative	33	55
Positive	27	45
Accessibility		
Poor	35	58,3
Good	25	41,7

Knowledge		
Poor	34	56,7
Good	26	43,3
Total	**60**	**100,0**

Table 1 shows that more than half of the respondents were female (51.7%) and adults aged <60 years (60%). The majority of respondents had a low level of education (70%), were married (88.3%), employed (76.7%), had poor attitudes (60%), had negative perceptions (55%), had good accessibility (55%), and had low levels of knowledge (56.7%).

Association Between Sex and Tuberculosis

Table 2. Bivariate Analysis of the Association Between Sex and Tuberculosis

Sex	Tuberculosis Occurrence				Total		OR (95% CI)	*p-value*
	Case		Control					
		%		%	*f*	%		
Male	19	5,5	0	34,5	29	100		
Female	11	5,5	0	64,5	31	100	3,455	0,039
Total	**0**	**50**	**30**	**50**	**60**	**100**		

Based on the data analysis, a p-value of 0.039 was obtained, indicating a significant association between sex and the occurrence of tuberculosis in the working area of Bulasat Public Health Center. Individuals with male sex were 3.455 times more likely to develop tuberculosis compared to females.

Association Between Age and Tuberculosis

Table 3. Bivariate Analysis of the Association Between Age and Tuberculosis

Age	Tuberculosis Occurrence				Total		OR (95% CI)	*p-value*
	Case		Control					
Adult	3	3,9	3	6,1	6	00		
Elderly	7	9,2	7	0,8	4	00	4,297	0,018
Total	**0**	**0**	**0**	**0**	**0**	**00**		

Based on the data analysis, a p-value of 0.018 was obtained, indicating a significant association between age and the occurrence of tuberculosis in the working area of Bulasat Public Health Center. Individuals in the adult age group (<60 years) were 4.297 times more likely to develop tuberculosis compared to the elderly (≥60 years).

Association Between Education Level and Tuberculosis

Table 4. Bivariate Analysis of the Association Between Education Level and Tuberculosis

Education Level	Tuberculosis Occurrence				Total		OR (95% CI)	*p-value*
	Case		Control					
Low	6	1,9	6	8,1	2	00		
High	4	2,2	4	7,8	8	00	5,688	0,011
Total	**0**	**0**	**0**	**0**	**0**	**00**		

Based on the data analysis, a p-value of 0.011 was obtained, indicating a significant association between education level and the occurrence of tuberculosis in the working area of Bulasat Public Health Center. Individuals with a low level of education were 5.688 times more likely to develop tuberculosis compared to those with a high level of education.

Association Between Marital Status and Tuberculosis

Table 5. Bivariate Analysis of the Association Between Marital Status and Tuberculosis

Marital Status	Tuberculosis Occurrence				Total		OR (95% CI)	*p-value*
	Case		Control					
Married	6	9,1	7	0,9	3	00		
Unmarried	4	7,1	3	2,9	7	00	0,722	1,00
Total	**0**	**0**	**0**	**0**	**0**	**00**		

Based on the data analysis, a p-value of 1.00 was obtained, indicating that there is no significant association between marital status and the occurrence of tuberculosis in the working area of Bulasat Public Health Center.

Association Between Employment Status and Tuberculosis

Table 6. Bivariate Analysis of the Association Between Employment Status and Tuberculosis

Employment	Tuberkulosis Case		Control		Total		OR (95% CI)	*p-value*
Unemployed	0	1,4	4	8,6	4	00		
Employed	0	3,5	6	6,5	6	00	3,250	0,127
Total	**0**	**0**	**0**	**0**	**0**	**00**		

Based on the data analysis, a p-value of 0.127 was obtained, indicating that there is no significant association between employment status and the occurrence of tuberculosis in the working area of Bulasat Public Health Center.

Association Between Accessibility Status and Tuberculosis

Table 7. Bivariate Analysis of the Association Between Accessibility Status and Tuberculosis

ccessbility	Tuberculosis Occurrence Case		Control		Total		OR (95% CI)	*p-value*
Poor	2	2,9	3	7,1	5	00		
Good	8	2	7	8	5	00	3,596	0
Total	**0**	**0**	**0**	**0**	**0**	**00**		,036

Based on the data analysis, a p-value of 0.036 was obtained, indicating a significant association between accessibility and the occurrence of tuberculosis in the working area of Bulasat Public Health Center. Individuals with poor accessibility were 3.6 times more likely to develop tuberculosis compared to those with good accessibility.

Association Between Perception and Tuberculosis

Table 8. Bivariate Analysis of the Association Between Perception and Tuberculosis

Perseption	Tuberculosis Occurrence Case		Control		Total		OR (95% CI)	*p-value*
Negatif	1	3,6	2	6,4	3	00		
Positif	9	3,3	8	6,7	7	00	3,5	0,038
Total	**0**	**0**	**0**	**0**	**0**	**00**		

Based on the data analysis, a p-value of 0.038 was obtained, indicating a significant association between perception and the occurrence of tuberculosis in the working area of Bulasat Public Health Center. Individuals with negative perceptions of TB were 3.5 times more likely to develop tuberculosis compared to those with positive perceptions.

Association Between Knowledge and Tuberculosis

Table 9. Bivariate Analysis of the Association Between Knowledge and Tuberculosis

Knowledge	Tuberculosis Occurrence Case		Control		Total		OR (95% CI)	*p-value*
Poor	2	4,7	2	5,3	4	00		
Good	8	0,8	8	9,2	6	00	4,125	0,019
Total	**0**	**0**	**0**	**0**	**0**	**00**		

Based on the data analysis, a p-value of 0.019 was obtained, indicating a significant association between knowledge and the occurrence of tuberculosis in the working area of Bulasat Public Health Center. Individuals with poor knowledge were 4.125 times more likely to develop tuberculosis compared to those with good knowledge.

Association Between Attitude and Tuberculosis

Table 10. Bivariate Analysis of the Association Between Attitude and Tuberculosis

Attitude	Tuberculosis Occurrence Case	Control	Total	OR (95% CI)	*p-value*

Poor	3	3,9	3	6,1	6	00		
Good	7	9,2	7	0,8	4	00	4,297	0,018
Total	**0**	**0**	**0**	**0**	**0**	**00**		

Based on the data analysis, a p-value of 0.018 was obtained, indicating a significant association between attitude and the occurrence of tuberculosis in the working area of Bulasat Public Health Center. Individuals with poor attitudes were 4.297 times more likely to develop tuberculosis compared to those with good attitudes.

Multivariate Analysis

Table 8. Multivariate Analysis

							95% C.I.for EXP(B)	
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Step 1[a]	Sex	1.459	.927	2.476	1	.116	4.301	.699	26.476
	Age	2.551	1.222	4.356	1	.037	12.815	1.168	140.600
	Education	2.118	1.041	4.138	1	.042	8.316	1.080	64.008
	Employment	2.293	1.147	3.998	1	.046	9.904	1.047	93.729
	Attitude	1.195	.880	1.845	1	.174	3.304	.589	18.536
	Perception	2.110	1.072	3.870	1	.049	8.245	1.008	67.450
	Accessbility	2.984	1.131	6.958	1	.008	19.760	2.153	181.391
	Knowledge	3.378	1.283	6.927	1	.008	29.310	2.369	362.671
	Constant	-8.902	2.667	11.142	1	.001	.000		
Step 2[a]	Sex	1.550	.902	2.948	1	.086	4.709	.803	27.615
	Age	2.601	1.135	5.249	1	.022	13.482	1.456	124.813
	Education	2.124	1.004	4.471	1	.034	8.361	1.168	59.851
	Employment	2.026	1.056	3.682	1	.055	7.584	.957	60.070
	Attitude	2.206	1.042	4.483	1	.034	9.078	1.178	69.949
	Perception	3.070	1.122	7.490	1	.006	21.544	2.390	194.178
	Accessbility	3.475	1.238	7.882	1	.005	32.286	2.855	365.167
	Knowledge	-8.425	2.504	11.319	1	.001	.000		

Multivariate analysis was performed using multiple logistic regression, including variables with a p-value < 0.25, namely sex, age, educational status, occupation, accessibility, knowledge, and attitude. Based on the analysis, knowledge was identified as the most dominant variable influencing the occurrence of tuberculosis in the working area of Bulasat Community Health Center (p-value = 0.005 and OR = 21.544). This study found that individuals with low levels of knowledge have a 21.5-times higher risk of developing tuberculosis compared to those with high levels of knowledge.

Discussion

Incidence of Tuberculosis in the Working Area of Bulasat Public Health Center

Tuberculosis (TB) is a global health problem and remains one of the leading causes of death worldwide. In 2024, there was one TB-related death in the working area of Bulasat Public Health Center out of a total of 15 confirmed cases. Respondents in the case group of this study were individuals with active TB or a history of confirmed TB.Case detection was carried out through both passive and active methods, including community screening. TB diagnosis was established by identifying *Mycobacterium tuberculosis* through microscopic examination and chest X-ray imaging to detect signs of pulmonary infection.

Relationship Between Sex and Tuberculosis Incidence

The statistical test results showed that sex had a significant relationship with the incidence of TB in the working area of Bulasat Public Health Center (p-value = 0.039). Individuals who were male had a 3.455-times higher risk of developing TB compared to females.These findings are consistent with research by Priambada et al. (2019) in Kupang City and by Sri Andayani (2020) in Ponorogo District, both of which reported an association between sex and TB incidence.Biological and behavioral factors contribute to the higher risk among males. Men generally engage in heavier physical activities, spend more time outdoors, and interact more frequently with others, increasing their likelihood of exposure to TB infection. Additionally, smoking and alcohol consumption—behaviors more commonly found among men—can weaken the immune system and impair lung function, making them more susceptible to TB.This is supported by national data, which show that from 1995 to 2024, the largest proportion of TB cases in Indonesia consistently occurred among men, ranging from 51.3% to 59.6%.

Relationship Between Age and the Incidence of Tuberculosis

The statistical test results in this study showed that age had a significant relationship with the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 0.018). Adults (<60 years) had a 4.297-times higher risk of developing tuberculosis compared to the elderly (≥60 years). These findings are consistent with the study by Sutrisna M (2022), which also found an association between age and TB incidence. Adults (<60 years) are in a productive age group, often engaging in more outdoor activities and having higher mobility.[11] This result also aligns with research conducted by Ardhia Amalia et al. (2021), which reported a significant relationship between age and pulmonary TB cases.[12]Age is a predisposing factor for behavioral changes associated with the physical and psychological maturity of pulmonary TB patients. According to Notoatmodjo, age is the duration of a person's life calculated from birth. As a person gets older, their ability to respond to problems improves. Older individuals tend to demonstrate better treatment-seeking behavior because they have fewer physical responsibilities and are generally more concerned about their health.[11]

Relationship Between Education Level and the Incidence of Tuberculosis

The statistical test results in this study showed that education had a significant relationship with the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 0.011). Individuals with low education levels (<senior high school) had a 5.688-times higher risk of developing tuberculosis compared to those with higher education (≥senior high school).These findings are consistent with research by Dewi NPAN and Susilawati NM (2024), which found an association between education level and pulmonary TB cases.[13] Similar results were also reported by Emir YM (2019), who found a significant relationship between educational status and TB incidence.[14] However, these findings differ from those of Annashr N and Laksimini P (2023), who reported no significant relationship between education level and TB incidence.[15]Education is an effort to help individuals develop their potential in self-regulation, personality, intelligence, and skills, including the ability to maintain health. Individuals with fewer than nine years of education or those who are unable to read and write are at higher risk for developing diseases.[14] Education influences a person's knowledge, attitudes, and health behaviors. Those with low education levels tend to lack understanding of TB transmission and prevention, making them more susceptible to infection.[16] Furthermore, education impacts socioeconomic status and treatment adherence, both of which play roles in the occurrence of pulmonary TB. The higher a person's education level, the better their awareness of maintaining health and preventing infectious diseases such as TB.[17]

Relationship Between Marital Status and the Incidence of Tuberculosis

The statistical test results in this study showed that marital status had no significant relationship with the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 1.00). This finding is consistent with research by Octaviani P and Kusuma IY (2018), which reported no association between marital status and TB incidence.[18] However, it differs from the study by Annashr N and Laksimini P (2023), which found a significant relationship between marital status and TB incidence.[15]Marital status is one of the sociodemographic characteristics associated with tuberculosis. However, there is no biological relationship between marital status and TB. Studies that reported a relationship explained that marital status

is linked to social support.[15] In this study, most respondents—both in the case and control groups—were married, resulting in no significant difference between the two groups. Additionally, early marriage is common in the working area of Bulasat Public Health Center, with individuals often marrying before the age of 21 or even at 18. Even if someone is not married, living in the same household as a TB patient still places them at risk of contracting the disease.[18]

Relationship Between Employment Status and the Incidence of Tuberculosis

The statistical analysis in this study showed that employment status had no significant relationship with the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 0.127). This finding is consistent with previous studies by Octaviani P and Kusuma IY (2018), who found no association between employment status and TB incidence.[18] Similarly, research by Dewi NPAN and Susilawati (2024) also concluded that employment status was not related to TB incidence.[13] However, this finding contradicts the study by Widiati B and Majdi M (2021), which reported that employment status was associated with TB.[19]Employment refers to an individual's effort to meet socioeconomic needs. Theoretically, working individuals are more susceptible to infectious diseases due to increased outdoor activities. Respiratory problems are more likely to occur in workplaces with high dust exposure. The risk of TB transmission increases when workers are exposed to unhealthy environments or have contact with infectious TB patients.[13]In this study, most respondents—both in the case and control groups—were employed, resulting in no significant difference between the groups. This suggests that beyond outdoor activity levels, TB incidence is more strongly influenced by home environmental conditions, such as humidity, ventilation, window availability, and natural lighting.[20]

Relationship Between Accessibility and the Incidence of Tuberculosis

The statistical test results showed that accessibility had a significant relationship with the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 0.036). Individuals with poor accessibility to health services were 3.6 times more likely to develop tuberculosis compared to those with good accessibility.These findings are consistent with research conducted by Ardhia Amalia et al. (2021), who reported an association between accessibility and TB prevention behaviors. Their study stated that accessibility is an important factor influencing public access to information regarding TB prevention.[12] However, these findings differ from those of Cana A et al. (2024), who found no relationship between access to health services and TB incidence.[21]Accessibility measures the ease of reaching health services, assessed by the distance from home to the health facility, travel time, and availability of transportation. Health services are considered accessible when the distance is <5 km or the travel time is <15 minutes.[22] TB case detection decreases as the distance between a person's home and the nearest health facility increases.[23]Geographical factors in the working area of Bulasat Public Health Center—located in an archipelagic region with unpaved roads and unstable weather conditions—pose significant limitations to healthcare access. In addition to long distances, residents must bear high transportation costs for both land and sea travel. These conditions make it difficult for residents to utilize health services, resulting in limited access to TB prevention information, diagnostic examinations, and treatment.[22]

Relationship Between Perception and the Incidence of Tuberculosis

The statistical test results in this study showed that perception had a significant relationship with the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 0.019). Individuals with a negative perception of TB were 4.125 times more likely to develop tuberculosis compared to those with a positive perception. This finding is consistent with research by Ali FS and Ngadino (2020), which found an association between perception and TB transmission prevention behaviors.[24] However, it is not consistent with the study by Sajodin et al. (2022), which reported no significant relationship between perception and attitudes toward TB patients.[25]Perception is a human experience that arises from sensory input and the way individuals process information from that input. In this study, perception is associated with respondents' views on the risk of TB transmission, health-seeking behavior or willingness of patients to visit health facilities for examinations, stigma toward TB patients, and the importance of TB-related information. Perception greatly influences actions. The more positive a person's perception, the better their efforts in preventing TB transmission.[26]Field findings showed that most respondents had a negative perception of TB.

This contributes to the persistence of TB-related stigma, indicating the need for improved education and awareness about TB within the community. Stigma is a negative perception or view formed due to social distance and feelings of shame or isolation. TB often has significant social consequences and is associated with high levels of stigma, which can reduce individuals' willingness to seek medical care, undergo treatment, and adhere to TB therapy.[27]

Relationship Between Knowledge and the Incidence of Tuberculosis

The statistical test results showed that knowledge had a significant relationship with the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 0.019). Individuals with poor knowledge about TB were 4.125 times more likely to develop tuberculosis than those with good knowledge. This finding is consistent with research by Wisesa W et al. (2021), which showed an association between knowledge and TB incidence.[28] It also aligns with research by Zulaikhah et al. (2019), who reported a significant relationship between knowledge and pulmonary TB cases.[29] However, it contradicts the findings of Isnaeni (2025), who stated that knowledge had no significant relationship with TB incidence.[30]Knowledge is the result of sensing a particular object and is essential for shaping an individual's actions.[16] Awareness or information about TB prevention leads to further perceptual responses, which ultimately influence the attitudes necessary for TB prevention. A person's actions are shaped by experiences, understanding, beliefs, and inherent knowledge.[31] In this study, the assessed knowledge included causes, transmission, symptoms, prevention, and treatment of TB. Reports from the Directorate General of Communicable Disease Control also stated that poor knowledge is one of the contributing factors to the high incidence of pulmonary TB.[32] Therefore, good knowledge is highly expected to help prevent and control pulmonary TB.

Relationship Between Attitude and the Incidence of Tuberculosis

The statistical test results showed that attitude had a significant relationship with the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 0.018). Individuals with poor attitudes were 4.297 times more likely to develop tuberculosis than those with good attitudes.This finding is consistent with research by Amin M and Fausi A (2025), which reported a significant relationship between attitude and TB prevention efforts.[33] It also aligns with research by Indriyagi et al. (2023), which found a significant association between attitude and pulmonary TB incidence.[34] However, it does not align with the findings of Aviliana and Grace (2015), who reported no significant relationship between attitude and TB incidence.[35]In this study, attitude referred to TB prevention practices, including smoking habits, exercise habits, handwashing behavior, and cough etiquette. Environmental factors—physical, sociocultural, and economic—also influenced respondents' attitudes. A person's attitude plays a crucial role in determining their health status.Most respondents were found to have poor attitudes, particularly regarding smoking habits. Smoking prevalence in rural communities is often higher due to cultural norms or long-standing habits. Smoking worsens TB symptoms, and passive smokers who inhale cigarette smoke are also more susceptible to TB infection because smoke weakens the lungs' defense against bacteria.[36] Additionally, handwashing habits and cough etiquette were still poor among respondents, contributing to ongoing TB transmission.

Multivariate Analysis

Based on the logistic regression analysis conducted, it was found that knowledge is the most dominant variable influencing the incidence of tuberculosis in the working area of Bulasat Public Health Center (p-value = 0.005 and OR = 21.5). This means that respondents with poor knowledge about TB have a 21.5-fold higher risk of developing TB compared to respondents with good knowledge. This finding is consistent with the study conducted by Nasution NH et al. (2022), which stated that knowledge is the main factor associated with TB incidence, where respondents with poor knowledge were 2.75 times more likely to experience pulmonary TB compared to those with good knowledge. Knowledge is the initial foundation for an individual's ability to perform TB prevention behaviors. Lack of knowledge about TB prevents the community from being able to prevent transmission and avoid spreading the disease to others, which may increase TB incidence at the community level. Poor knowledge among community members may be caused by insufficient information provided by health workers regarding TB. Therefore, efforts are needed to enhance education and health promotion through regular counseling

sessions, strengthening the role of community health volunteers (kader), and increasing cross-sector collaboration with educational institutions, community leaders, and village governments. In addition, printed media should be utilized as a source of information to enhance knowledge and support TB prevention within families and the community.

IV. CONCLUSION

Based on the findings of this study, it was identified that there is a significant relationship between sex, age, education, attitude, perception, accessibility, and knowledge with the incidence of tuberculosis. However, marital status showed no significant association with TB incidence. Knowledge is the most dominant factor influencing TB occurrence. Poor community knowledge about TB can increase the risk of transmission due to limited prevention capabilities. Continuous education through counseling, strengthening community health volunteers, cross-sector collaboration, and the use of printed media are essential to improve community knowledge and reduce TB transmission.

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