MEDALION JOURNAL: Medical Research, Nursing, Health and Midwife Participation | ISSN (e): 2986-7754
Volumes 6 No. 4 (2025)

DETERMINANTS OF HOME ENVIRONMENTAL HEALTH RELATED TO PULMONARY TUBERCULOSIS SCORE IN THE WORKING AREA OF UPTD JOHAN PAHLAWAN PUBLIC HEALTH CENTER

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Received	: 23 November 2025	Published	: 02 January 2026
Revised	: 01 December 2025	DOI	: https://doi.org/10.59733/medalion.v6i4.256
Accepted	: 20 December 2025	Publish Link	: https://medalionjournal.com/index.php/go

Abstract

This study aims to analyze the relationship between determinants of home environmental health, including ventilation, lighting, residential density, temperature and humidity, and home sanitation with the incidence of Pulmonary Tuberculosis in the working area of the Johan Pahlawan Community Health Center (UPTD). The research method uses a quantitative approach with a correlational design. The study population is households that have family members with pulmonary TB based on the Puskesmas medical records, with a sample of 50 respondents determined using *a purposive sampling technique* . Data were collected through questionnaires and home observations, then analyzed using descriptive statistical tests, validity and reliability tests, classical assumption tests, and multiple linear regression analysis with the help of SPSS software version 26. The results of the study indicate that residential density has a positive and significant effect on the incidence of pulmonary TB, while home sanitation has a negative and significant effect on the incidence of pulmonary TB. Meanwhile, ventilation, lighting, and temperature and humidity do not show a statistically significant relationship with the incidence of pulmonary TB. The conclusion of this study confirms that residential density and home sanitation are the main determinants of the incidence of pulmonary TB, so that prevention efforts based on improving the home environment are needed to reduce the risk of pulmonary TB transmission in the community.

Keywords: Pulmonary Tuberculosis, Home Environment, Residential Density, Home Sanitation, Environmental Health

INTRODUCTION

Tuberculosis is one of the most common multisystem infectious diseases, with a variety of manifestations and clinical presentations. The most common organ that causes tuberculosis is the lungs (WHO, 2018). Globally, approximately 58% of pulmonary tuberculosis cases are concentrated in three regions, one of which is Southeast Asia (Fitrianti et al., 2022:167). Tuberculosis (TB) remains one of the ten leading causes of death worldwide, with an estimated 10 million people suffering from TB globally in 2018. The majority of cases and deaths, approximately 95%, occur in developing countries. The global TB burden is dominated by countries with high incidence, particularly Asia, which accounts for approximately 61% of new cases, followed by Africa at 26%, and six countries—India, Indonesia, China, Nigeria, Pakistan, and South Africa—which contribute approximately 60% of all new TB cases. In addition, TB also attacks the child age group, with around one million children aged 0–14 years suffering from TB and around 170,000 children dying from this disease in 2015 (Suma et al., 2021:483).

Indonesia is the country with the third-highest number of pulmonary TB cases in the world after India and China, with 842,000 cases. Of those who reported pulmonary TB, 442,000 were reported, and 400,000 were unreported and undiagnosed. Pulmonary TB sufferers comprised 429,000 men, 349,000 women, and approximately 49,000 were children (Fitri et al., 2025:1256). In 2022, the Ministry of Health, together with all health workers, successfully detected more than 700,000 cases of pulmonary TB. This figure was the highest since pulmonary TB became a national priority program (Ministry of Health of the Republic of Indonesia, 2023). The incidence of pulmonary TB is not only caused by *Mycobacterium tuberculosis infection* , but is also influenced by various other factors, both individual and environmental. Research shows that individual factors such as age, gender, and education level are associated with the incidence of pulmonary TB. Low education levels, including illiteracy, are known to

increase a person's risk of developing TB. Furthermore, smoking also plays a role in increasing the risk of pulmonary TB, with smokers having a greater chance of contracting TB than non-smokers. Another contributing factor is a history of *Bacillus Calmette-Guérin* (BCG) immunization, as BCG immunization can provide protection against the development of tuberculosis (Dzakiyah et al., 2023:603). Based on data from the Aceh Health Office, the number of TB cases in Aceh reached 10,745, with the highest number of cases in Pidie Regency, Banda Aceh City, and North Aceh (BPS Aceh, 2024). The 2022 Aceh Health Profile showed that only 35.64% of suspected TB cases received standardized care out of a total of 85,945 cases. In West Aceh, the number of TB cases in 2021 was recorded at 252, with a detection rate of 193 cases and a CNR of 96 per 100,000 residents, with Johan Pahlawan District being the area with the highest number of cases, namely 33 cases. In 2022, the number of TB cases in West Aceh increased to 290 cases (West Aceh Health Office, 2022). The high number of TB cases in Johan Pahlawan District is influenced by the low level of public knowledge and awareness in preventing transmission and the lack of participation in TB control efforts, which mostly attacks the productive age group of 15-50 years (Fitri et al., 2025:1256).

Based on medical records from the Johan Pahlawan Community Health Center's Technical Implementation Unit (UPTD) for 2021–2025, the number of pulmonary TB cases fluctuated but tended to increase. In 2021, there were 37 cases, then increased to 45 cases in 2022 and remained relatively stable in 2023 with 44 cases. The number of cases increased again in 2024 to 50 cases. In 2025, although data only covered the third quarter, the number of cases had reached 50. This indicates that pulmonary TB remains a health problem that requires serious attention and ongoing management. Pulmonary tuberculosis (TB) is closely related to the sanitation of the home environment, patient behavior, especially adherence to medication, education level, and family income. A home environment that does not meet health requirements can support the survival of *Mycobacterium tuberculosis bacteria* , which can survive for several hours to weeks, depending on sunlight exposure, ventilation quality, humidity levels, room temperature, flooring type, and occupant density. Inadequate ventilation can increase indoor humidity due to evaporation and absorption of fluids from the body, thus creating conditions that support the growth and development of pathogenic bacteria, including the germ that causes pulmonary TB. In addition, physical aspects of the home such as ventilation, natural lighting, occupancy density, and floor conditions are also related to the incidence of pulmonary TB, because these factors directly affect air quality and the health of the living environment (Tumiwa et al., 2023:793).

Furthermore, efforts to control pulmonary TB through medical approaches alone are not fully effective if they are not balanced with improvements in the environmental factors in which people live. The home, as the primary place of interaction and daily activities, plays a crucial role in determining the risk of pulmonary TB transmission, especially in areas with high population density and diverse socioeconomic conditions. An unhealthy home environment, such as inadequate ventilation and lighting, high occupancy rates, temperature and humidity below health standards, and poor home sanitation, can accelerate the process of airborne TB transmission *(* Nandavania, 2023:45). Therefore, identifying the determinants of home environmental health is crucial as a basis for planning more targeted interventions, particularly in the Johan Pahlawan Community Health Center (Puskesmas) work area, which continues to show an increasing trend in pulmonary TB cases. Based on the initial data and findings, this study aims to analyze the relationship between ventilation, lighting, residential density, temperature and humidity, and home sanitation with the incidence of Pulmonary Tuberculosis in the working area of the Johan Pahlawan Community Health Center UPTD.

RESEARCH METHODS

This study uses a quantitative approach with a correlational research type to analyze the relationship between home environmental determinants (ventilation, lighting, occupancy density, temperature, humidity, and sanitation) to the incidence of Pulmonary Tuberculosis. The study population was all households in the Johan Pahlawan Community Health Center UPTD area that had family members with Pulmonary TB based on medical records for the past five years. The sample was selected using a *purposive sampling technique* based on inclusion criteria, namely households that had members with Pulmonary TB and were willing to be observed, amounting to 50 people. Primary data were obtained through questionnaires and home observations, while secondary data came from Puskesmas medical records. The study location was in Johan Pahlawan District and was implemented for four months, including one month of field data collection. Data were collected using a Likert-scale questionnaire and then analyzed through validity and reliability tests, classical assumption tests (normality, multicollinearity, heteroscedasticity), and multiple linear regression analysis. The t-test was used to examine the partial influence of each independent variable, while correlation and determination coefficients were used to determine the level of relationship and the contribution of home environment variables in explaining the incidence of pulmonary TB. This analysis used SPSS *software* version 26.

RESULTS AND DISCUSSION

Research result

Validity Test Results

Validity testing is conducted to determine whether each question in the questionnaire is able to accurately measure the research variables. An item is declared valid if the calculated r-value is greater than the table r-value.

Table 1. Validity Test Results

Variables	Question Items	R-count	R-table	Information
Ventilation (X1)	1	0.677	0.2787	Valid
	2	0.829		
	3	0.639		
	4	0.737		
	5	0.728		
Lighting (X2)	1	0.875	0.2787	Valid
	2	0.798	0.2787	
	3	0.899	0.2787	
	4	0.881	0.2787	
	5	0.871	0.2787	
Residential Density (X3)	1	0.842	0.2787	Valid
	2	0.900	0.2787	
	3	0.868	0.2787	
	4	0.888	0.2787	
	5	0.658	0.2787	
Temperature and Humidity (X4)	1	0.741	0.2787	Valid
	2	0.775	0.2787	
	3	0.866	0.2787	
	4	0.669	0.2787	
	5	0.773	0.2787	
Home Sanitation (X5)	1	0.855	0.2787	Valid
	2	0.919	0.2787	
	3	0.879	0.2787	
	4	0.480	0.2787	
	5	0.642	0.2787	
Pulmonary TB Incident (Y)	1	0.784	0.2787	Valid
	2	0.851		
	3	0.797		
	4	0.709		
	5	0.510		

Source: SPSS Output (2025)

Based on Table 1 , it can be noted that all statement items on the variable own higher r-value big from r-table of 0.2787. With Thus, all items of the statement in questionnaire declared valid and worthy used as tool measuring in study This.

Reliability Test Results

Reliability test done For know level consistency or reliability instrument study in measure variables studied. Instruments it is said reliable if mark *Cronbach's Alpha* more big from the set test limit, namely 0.60. The results of the reliability test on each variable study presented in Table 3 below.

Table 2. Reliability Test Results

No	Variables	*Cronbach's Alpha*	Test Limits	Information
1	Home Ventilation (X1)	0.770	0.60	Reliable
2	Home Lighting (X2)	0.915	0.60	Reliable
3	Residential Density (X3)	0.892	0.60	Reliable
4	Temperature and Humidity (X4)	0.821	0.60	Reliable
5	Home Sanitation (X5)	0.823	0.60	Reliable
6	Pulmonary TB Incident (Y)	0.758	0.60	Reliable

Source: SPSS Output (2025)

Based on Table 3 , it is known that that all over variable study own mark *Cronbach's Alpha* more big from 0.60. With thus, all over instrument study stated reliable, so that questionnaire used own level good consistency and can trusted For used in data collection and analysis at stages analysis furthermore.

Classical Assumption Test Results

Normality Test

A normality test was conducted to determine whether the residual data in the regression model was normally distributed. The results of the normality test in this study are presented in Table 4 below.

Table 4. Results of the Normality Test with *One Sample Kolmogorov-Smirnov*

		Unstlandardiz ed residu
N		50
Normal Parameter [ab]	Mean	.0000000
	Std. Deviation	2.17796413
Most Extreme Differences	Absolute	.052
	Positive	.052
	Negative	-.052
Test Statistics		.052
Asymp, Sig. (2-tailed)		.200 [cd]

a. Test distribution is normal
Source: SPSS Output (2025)

Based on the table above, the results of the normality test using *the One Sample Kolmogorov-Smirnov method* show that the number of data analyzed was 50 data. *The Asymp. Sig. (2-tailed) value* obtained was 0.200. This value is greater than the 0.05 significance level, so it can be concluded that the residual data in this study is normally distributed.

Multicollinearity Test

A multicollinearity test is performed to determine whether there is a strong relationship between variables in a regression model. A good regression model should be free of multicollinearity to ensure reliable regression coefficient estimates.

Table 4. Multicollinearity Test Results

Coefficients

Model		Unstandardized coefficients		Standardized coefficients			Colinearity	
		B	Std.Error	Beta	t	Sig.		
	(Contrant)	13,209	2,808		4,701	.000	Tolerance	VIF
	X1	.212	.121	.214	1,750	.087	0.576	1,735
	X2	.082	.126	.092	.652	.518	0.431	2,320
1	X3	.354	.070	.556	5,044	.000	0.707	1,415
	X4	.086	.134	.079	.643	.524	0.567	1,764
	X5	-.354	.139	-.343	-2,484	..017	0.452	2,213

a. Dependent Variable: Y
Source: SPSS Output (2025)

Based on Table 4, it is known that all independent variables have a tolerance value greater than 0.10 and *a Variance Inflation Factor* (VIF) value less than 10. Based on these criteria, it can be concluded that there is no multicollinearity among the independent variables in the regression model. Therefore, the regression model in this study meets the multicollinearity assumption and is suitable for use in subsequent analysis stages.

Heteroscedasticity Test

To determine whether or not there are symptoms of heteroscedasticity in the regression model used, a heteroscedasticity test is carried out using a scatterplot graph between the residual values and the standardized predicted values.

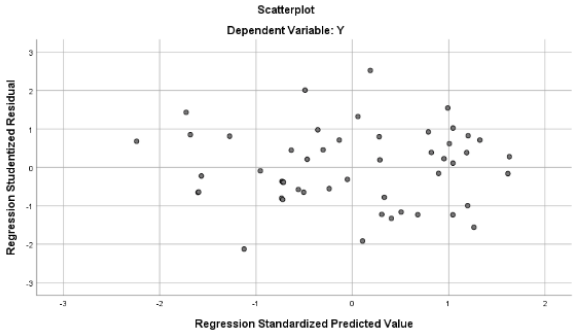

Figure 1. Heteroscedasticity Test Results
Source: SPSS Output (2025)

Based on Figure 1, the points on the graph are randomly distributed and do not form any particular pattern, either above or below the zero axis. This indicates that there are no symptoms of heteroscedasticity in the regression model used. Therefore, it can be concluded that the regression model meets the assumption of homoscedasticity and is suitable for use in subsequent regression analysis.

Multiple Linear Regression Analysis

Once the regression model is deemed to meet the classical assumptions, the next step is to conduct a multiple linear regression analysis. This analysis aims to determine the effect of each independent variable on the dependent variable.

Table 5. Multiple Linear Regression Analysis

Coefficients

Model		Unstandardized coefficients		Standardized coefficients		
		B	Std.Error	Beta	T	Sig.
1	(Contrant)	13,209	2,808		4,701	.000
	X1	.212	.121	.214	1,750	.087
	X2	.082	.126	.092	.652	.518
	X3	.354	.070	.556	5,044	.000
	X4	.086	.134	.079	.643	.524
	X5	-.354	.139	-.343	-2,484	..017

a. Dependent Variable: Y

Source: SPSS Output (2025)

Based on Table 5 , it is obtained equality multiple linear regression as following:

$$\mathbf{Y = 13.209 + 0.212X_1 + 0.082X_2 + 0.354X_3 + 0.086X_4 - 0.345X_5}$$

From the equation this, then can described explanation each variable independent to variable dependent namely as following:

a. Constant
   Value constanta as big as 13,209 show that if variable ventilation house, lighting house, density occupancy, temperature and humidity, and sanitation House considered worth zero, then mark The incidence of pulmonary TB was 13,209.
b. House Ventilation (X 1)

Variables ventilation House own coefficient regression as big as 0.212 , which means that every improvement condition ventila si
House will increase mark The incidence of pulmonary TB was 0.212 with assumptions other variables are constant. However, the value significance as big as 0.087 (> 0.05) show that ventilation House No influential significant to Pulmonary TB Incident.

c. Home Lighting (X 2)
Variables lighting House own coefficient regression as big as 0.082 , which shows existence influence positive to Pulmonary TB incidence. However, value significance as big as 0.518 (> 0.05) show that lighting House No influential significant to Pulmonary TB Incident.

d. Residential Density (X 3)
Variables density residence own coefficient regression as big as 0.354 , which means that the more tall density residence, then The incidence of pulmonary TB will the more increased. Significant value as big as 0.000 (< 0.05) show that density residence influential positive and significant to Pulmonary TB Incident.

e. Temperature and Humidity (X 4)
Variables temperature and humidity own coefficient regression of 0.086 . Although show influence positive, value significant as big as 0.524 (> 0.05) show that temperature and humidity No influential significant to Pulmonary TB Incident.

f. Home Sanitation (X 5)
Variables sanitation House own coefficient regression as big as −0.345 , which means that the more Good condition sanitation home, then The incidence of pulmonary TB will decreased. Significance value as big as 0.017 (< 0.05) show that sanitation at home influential negative and significant to Pulmonary TB Incident.

Hypothesis Test Results

Partial hypothesis testing (t-test) aims to determine the influence of each independent variable on the dependent variable. The basis for decision-making in the t-test is as follows:

a. If the calculated t value > t table (2.01537) and the significance value < 0.05 , then the hypothesis is accepted (has a significant effect).
b. If the calculated t value ≤ t table (2.01537) and the significance value ≥ 0.05 , then the hypothesis is rejected (no significant effect).

Based on the results of the multiple linear regression analysis in Table 5 above , the following t-test results were obtained:

a. Home Ventilation (X1)
The calculated t value of the home ventilation variable (X1) is 1.750 , with a significance value of 0.087 . Because the calculated t value is smaller than the t table (1.750 < 2.01537) and the significance value is greater than 0.05 , it can be concluded that home ventilation (X1) does not have a significant effect on the incidence of pulmonary TB. Thus, the hypothesis stating that home ventilation has an effect on the incidence of pulmonary TB is rejected
b. Home Lighting (X2)
The calculated t value of the home lighting variable (X2) is 0.652 , with a significance value of 0.518 . Because the calculated t value is smaller than the t table (0.652 < 2.01537) and the significance value is greater than 0.05 , it can be concluded that home lighting (X2) does not have a significant effect on the incidence of pulmonary TB. Therefore, the research hypothesis is rejected .
c. Residential Density (X3)
The calculated t value of the residential density variable (X3) is 5.044 , with a significance value of 0.000 . Because the calculated t value is greater than the t table (5.044 > 2.01537) and the significance value is less than 0.05 , it can be concluded that residential density (X3) has a significant effect on the incidence of pulmonary TB. Thus, the research hypothesis is accepted .
d. Temperature and Humidity (X4)
The calculated t value of the temperature and humidity variable (X4) is 0.643 , with a significance value of 0.524 . Because the calculated t value is smaller than the t table (0.643 < 2.01537) and the significance value is greater than 0.05 , it can be concluded that temperature and humidity (X4) do not have a significant effect on the incidence of pulmonary TB. So the research hypothesis is rejected .
e. Home Sanitation (X5)
The calculated t value of the home sanitation variable (X5) is -2.484 , with a significance value of 0.017 . If seen from the absolute value of the calculated t (|−2.484| = 2.484) which is greater than the t table (2.01537) and the

significance value is less than 0.05 , it can be concluded that home sanitation (X5) has a significant effect on the incidence of pulmonary TB. The negative regression coefficient indicates that the better the home sanitation, the incidence of pulmonary TB tends to decrease. Thus, the research hypothesis is accepted .

Correlation Coefficient and Determination

The correlation and determination coefficients are used to determine how strong the relationship is between the independent variable and the dependent variable, and how much the independent variable contributes to explaining changes in the dependent variable.

Table 6. Correlation and Determination Coefficients

	Summery Model			
Model	R	*R Square*	*Adjusted R Square*	*Standard Error of the Estimate*
1	0.789 [a]	0.622	0.579	2,298

Source: SPSS Output (2025)

Based on Table 6 , it is obtained mark coefficient correlation (R) of 0.789. This value show that there is strong relationship between variable ventilation house, lighting house, density occupancy, temperature and humidity, and sanitation House in a way together to incidence of pulmonary TB. Increasingly approach value 1, then connection intervariable the more strong. Coefficient value determination (*R Square*) of 0.622 shows that 62.2% of the variation the incidence of pulmonary TB can explained by variables ventilation house, lighting house, density occupancy, temperature and humidity, and sanitation home. Meanwhile that, the remaining 37.8% influenced by other outside factors variables studied in study This. In addition, the value *Adjusted R Square* of 0.579 shows that after customized with amount variable independent variables used, the ability of the regression model in explain variable dependent is by 57.9%. This is signify that the regression model used in study This Enough good and worthy For explain connection between variable independent with incident of pulmonary TB.

Discussion

The Relationship Between Home Ventilation and the Incidence of Pulmonary Tuberculosis

The study results showed that statistically, home ventilation had no relationship to the incidence of pulmonary tuberculosis. This finding is because, although homes have physical ventilation openings, their use by occupants is suboptimal or inconsistent, resulting in ineffective air circulation in reducing the concentration of *Mycobacterium tuberculosis bacteria* indoors. This situation suggests that ventilation must be accompanied by proper behavior in its use to be effective for health. However, these results do not completely contradict several studies conducted by Wulandari et al. (2023) who found that the ratio of ventilation to house area is related to the incidence of pulmonary TB, where good ventilation is related to a decrease in the incidence of pulmonary TB (for example, ventilation volume per hour and ventilation area show a significant relationship), so that houses with better ventilation tend to have a lower risk of TB. This difference in results may occur due to differences in respondent characteristics, the size of the ventilation measured, or the daily activities of residents that affect air circulation. These findings indicate that the importance of ventilation is not only seen from the presence or absence of ventilation openings, but from how well the ventilation is operated so that the air in the house can circulate well.

The Relationship Between Home Lighting and the Incidence of Pulmonary Tuberculosis

The results of this study indicate that the home lighting variable has no relationship with the incidence of pulmonary TB. Theoretically, natural lighting plays a crucial role in maintaining a healthy home environment because sunlight can help reduce the number of pathogenic microorganisms in the home, including the bacteria that cause pulmonary tuberculosis. These findings align with research by Nasution et al. (2024), who found that home lighting is associated with the incidence of pulmonary tuberculosis. In particular, substandard natural lighting increases the risk of pulmonary tuberculosis because ultraviolet light from the sun plays a role in deactivating bacteria. However, some studies have shown that the relationship between lighting and pulmonary TB is not always statistically significant in certain locations, depending on variations in light intensity in the home, the duration of sunlight exposure, and the occupants' behavior in utilizing the lighting. Research by Wulandari et al. (2023) also found that lighting intensity has a significant influence on the incidence of pulmonary TB, indicating that homes with adequate lighting tend to have a lower incidence of TB. These differences in results indicate that natural lighting does have the

potential to be a driving factor for general home health, but its influence can vary depending on the socio-cultural context, occupant habits, and local climate.

The Relationship Between Residential Density and the Incidence of Pulmonary Tuberculosis

The results of this study indicate that the residential density variable has a relationship with the incidence of pulmonary TB. This is consistent with research by Ikhlasiah et al. (2024), which states that residential density is a key determinant in the spread of infectious diseases, particularly pulmonary tuberculosis. Housing with many occupants in limited space increases the likelihood of droplet transmission from an infected individual to other occupants. Several previous studies have also shown a positive relationship between residential density and the incidence of pulmonary tuberculosis, with high density increasing the risk of infection. High residential density is also often associated with poor indoor air quality due to impaired air circulation and intense contact between residents. Therefore, this study emphasizes the importance of regulating the number of occupants in a home as part of a community TB prevention strategy.

The Relationship Between Temperature and Humidity with the Incidence of Pulmonary Tuberculosis

The results of the study showed that temperature and humidity variables had no relationship with the incidence of pulmonary TB. Temperature and humidity can theoretically affect the survival of bacteria in the home environment, but in many field studies, variations in temperature and humidity between homes are often not large enough to show statistically significant differences in the incidence of pulmonary TB. In a study by Ikhlasiah et al. (2024), it was found that temperature and humidity variables can indeed play a role as supporting factors but are not always proven significant in all study locations because many other factors are more dominant, such as ventilation, occupant density, and the behavior of the occupants themselves. This indicates that although temperature and humidity are part of the physical conditions of the home environment, their impact on the incidence of pulmonary TB must be seen in the context of the larger overall environment and social habits.

The Relationship Between Home Sanitation and the Incidence of Pulmonary Tuberculosis

The study results indicate that home sanitation is associated with the incidence of pulmonary TB. This finding aligns with research by Wijayanti et al. (2024), which found that home sanitation is closely linked to the incidence of pulmonary TB. Poor sanitation conditions, such as poor waste management, accumulated household waste, and poor general hygiene, can create an environment conducive to the spread of infectious diseases, including pulmonary TB. Another study by Mayasari et al. (2022) also confirmed that home environmental sanitation plays a crucial role in reducing the risk of infectious diseases, including pulmonary tuberculosis, because good sanitation helps reduce exposure to potential sources of infection and improves the general health of household occupants. Therefore, improving home sanitation is an important strategy in preventing pulmonary tuberculosis in the community, alongside interventions aimed at other environmental factors.

CONCLUSION

Based on results study about connection determinant environment House with incident Pulmonary Tuberculosis (TB) in the working area of the Johan Pahlawan Community Health Center UPTD, can withdrawn a number of conclusion as following:

1. Ventilation House No own significant relationship with incidents of pulmonary TB, because t-value more small from t table and value significance more big of 0.05. This is show that existence ventilation in a way physique Not yet Of course effective if No accompanied with behavior residents in utilise ventilation optimally.
2. Lighting House No show significant relationship with incidence of pulmonary TB. Although in a way theory ray sun play a role in pressing growth bacteria, lighting House Not yet become factor determinant incidents of pulmonary TB at the location study.
3. Density residence own significant relationship with incidence of pulmonary TB. Increasingly tall density residence, then the more big risk transmission of pulmonary TB due to increasing contact between residents and limited room as well as circulation air.
4. Temperature and humidity House No own significant relationship with incidents of pulmonary TB. This show that temperature and humidity between House Not yet Enough influential in a way direct to incident of pulmonary TB.
5. Sanit asi rumah h own significant relationship with Pulmonary TB incident. Conditions good sanitation tend lower risk of pulmonary TB, so that repair sanitation House is one of the effort important in prevention of pulmonary TB in the community.

SUGGESTION

Based on conclusion research, some suggestions that can be submitted is as following:

1. For Health Centers and the Government
   Health centers and government expected increase education about House healthy, facilitating repair condition House pulmonary TB patients, as well as do monitoring periodically for intervention environment walk effective and risk transmission can pressed.
2. For the Community
   The community is expected guard cleanliness and condition healthy home, implementing behavior prevention TB transmission, as well as give support to member families undergoing Pulmonary TB treatment.
3. For Researchers Furthermore
   Researchers furthermore recommended expand coverage variables and research areas, including socio-economic factors and quality air house, in order to obtain a clearer picture comprehensive about factor risk of pulmonary TB.

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