

Environmental Hygiene and Sanitation Practices Against TB Incidents in the Work Area of Kesamben Health Center, Blitar Regency

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ABSTRACT

Tuberculosis is an infectious disease caused by *Mycobacterium Tuberculosis*. Indonesia is ranked 3rd largest burden of tuberculosis in the world (8%) after India (27%) and China (9%). The increase in the number of cases in Indonesia continues to increase every year. Although many prevention and management efforts, the spread of tuberculosis bacteria is very easy to spread. This study aims to determine the relationship between hygiene practices and environmental sanitation to the incidence of tuberculosis in the Kesamben Health Center Work Area, Blitar Regency. This study is a quantitative study with a survey design and analytical observation with a retrospective approach (case control). The population of this study was the community in the Kesamben Health Center work area using purposive sampling techniques and 40 respondents were found. Data collection using questionnaires and observation sheets, analyzed using SPSS with Logistic Regression Test with $\alpha = 0.05$. The results of the statistical test showed that there was a relationship between hygiene practices and the incidence of tuberculosis with a sig value. 0.005 and there is no relationship between environmental sanitation and TB incidence with a sig. value of 0.121. This is because the habit of implementing cleanliness is not practiced, especially the use of masks which are considered to interfere with breathing when doing activities such as working and other activities. It is hoped that further research can develop research related to TB incidence using other variables such as health services, knowledge, PMO and more variables.

Keywords: Hygiene Practices, Environmental Sanitation, TB

INTRODUCTION

Tuberculosis is a cause of death, especially in developing countries around the world. This disease is spread throughout the world, and Indonesia is known as one of the largest countries with tuberculosis sufferers worldwide. This disease attacks the lungs (Ahmadi, 2011)

In 2019, Indonesia was ranked 2nd as the highest tuberculosis sufferer. In 2019, the incidence of tuberculosis in Indonesia was 543,874 cases. The highest case reporting of provinces with large populations include West Java, East Java, and Central Java, which together account for 45% of the total number of tuberculosis cases in Indonesia (Ministry of Health, 2020)

East Java is ranked 2nd based on the achievement of the BTA+ TB patient discovery indicator in Indonesia in 2018. The number of BTA+ case findings in East Java is 27,193 patients or a case detection rate (CDR) of 50% (Dinkes, 2019). According to the East Java Riskesdas (2018), Blitar is ranked 21st at 0.15%.

Data found at the Kesamben Health Center, Blitar Regency through a preliminary study on October 21-25, 2019, found 11 new cases in 2017, 16 new cases in 2018, and in the 3rd quarter of 2019, 15 new cases of Positive BTA were found

The cause of pulmonary tuberculosis is the *Mycobacterium Tuberculosis* germ, which is rod-shaped and has special properties, namely resistance to acid in staining. Therefore, it is also called Acid-Resistant Basil (BTA). *Mycobacterium tuberculosis* will die quickly in direct



sunlight, but can survive for several hours in dark and humid places. Therefore, in the body's tissue, this germ can be dormant (sleeping), sleeping for a long time for several years (Ministry of Health, 2015).

The results of the study showed that the physical environment of the house, namely house ventilation ($p = 0.018$), lighting ($p = 0.044$), humidity ($p = 0.044$), residential density ($p = 0.007$), had a significant relationship with the incidence of Pulmonary TB in the Mandala Health Center Work Area, Medan Tembung District in 2017 (Simamarta, 2017)

A person's knowledge of Pulmonary TB will affect the person's attitude on how to keep themselves from getting Pulmonary TB. From this attitude, it will affect a person's behavior to avoid Pulmonary TB (Notoatmodjo, Health Promotion and Behavioral Sciences, 2007) Hygiene practices are needed to protect oneself from transmission of diseases caused by tuberculosis microbacteria which are spread through phlegm droplets and spread in the air.

From the description above, the researcher is interested in conducting a research proposal in formulating the title "Hygiene Practices and Environmental Sanitation Against the Incidence of TB in the Kesamben Health Center Work Area, Blitar Regency".

METHOD

This study is a quantitative study with a Survey and Observational analytical design with a Retrospective approach (case control). The population in this study were all residents in the working area of the Kesamben Health Center, Blitar Regency. The number of samples in this study was 40 respondents, 20 respondents as cases and 20 respondents as controls. Sampling used the Purposive Sampling technique. Data collection used questionnaires and observation sheets. Before the questionnaire was submitted to respondents, it was first submitted to 32 people with TB and those who were not TB patients to conduct validity and reliability tests. Analysis using SPSS with Logistic Regression Test with $\alpha = 0.005$.

RESULTS

Respondent Characteristics

Table 1. General Characteristics

Karakteristik	F	%
Jenis Kelamin		
Laki – Laki	24	60%
Perempuan	16	10%
Usia		
<26	3	7%
26-45	14	35%
>45	23	58%

Based on the table above, it is found that the Gender Characteristics of most respondents are male as many as 24 Respondents (60%) and a small part is female as many as 16 respondents (10%). Respondents' Age Some are aged >45 years as many as 23 respondents (58%), aged 26-45 years as many as 14 respondents (35%), and Age >26 as many as 3 respondents (7%).

Characteristics of Variables

Table 2. Hygiene Practice Variables

Praktik Hygiene	F	%
Buruk	4	10%
Kurang	20	50%
Cukup	14	35%
Baik	2	5%
Total	40	100%

Based on the table of Characteristics of Hygiene Practice Variables, most of them practice Poor hygiene as many as 20 respondents (20%), 14 respondents (20%) practice Fair hygiene, 4 respondents (10%) practice Bad hygiene, and 2 respondents practice Good hygiene.

Table 3 Environmental Sanitation

Sanitasi Lingkungan	F	%
Buruk	2	5%
Kurang	24	60%
Cukup	9	22,50%
Baik	5	12,50%
Total	40	100%

From table 3 Environmental Sanitation, it was found that most respondents' environmental sanitation was Poor because 24 respondents (60%), 9 respondents (22.5%) had Sufficient environmental sanitation, 5 respondents (12.5) had Good environmental sanitation, 2 respondents (5%) had Poor environmental sanitation.

Cross Tabulation between Variables

Table 4 Cross Tabulation of TB Incidents with Age.

Usia	Kejadian TBC				Total	
	Negatif		Positif			
	F	%	F	%	F	%
<26	0	0%	3	7,5%	3	7,5%
26 - 45	7	17,5%	7	17,5%	14	35%
>45	13	32,5%	10	25%	23	57,5%
Total	20	50%	20	50%	40	100%

From table 4, it is found that the most TB incidents were found in the negative category, as many as 13 respondents (32.5%) aged >45 years and at least 26-45 years old as many as 7 respondents (17.5%). The most TB incidents in the positive category were found in the age of >45 years as many as 10 respondents (25%), and at least <26 years old as many as 3 respondents (7.5%).

Table 5. Cross-tabulation of hygiene practices with age

Usia	Praktik Hygiene								Total	
	Buruk		Kurang		Cukup		Baik			
	F	%	F	%	F	%	F	%	F	%
<26	0	0%	1	2,5%	2	5%	0	0%	3	7%
26 - 45	1	2,50%	7	17,5%	6	15%	0	0%	14	35%
>45	3	7,50%	12	30%	6	15%	2	5%	23	57,50%
Total	4	10%	20	50%	14	35%	2	5%	40	100%

In the table above, it is found that the cross tabulation of hygiene practices and age is at age >45 years with Poor Hygiene Practices as many as 12 respondents (30%), while the least cross tabulation of hygiene practices and age is at Age <26 and with Poor Hygiene Practices and Age 26 - 45 years with Poor Hygiene Practices as many as 1 respondent (2.5%)

Table 6. Cross tabulation of gender with age

Usia	Sanitasi Lingkungan								Total	
	Buruk		Kurang		Cukup		Baik			
	F	%	F	%	F	%	F	%	F	%
<26	0	0%	2	5%	0	0%	1	2,5%	3	7,5%
26 - 45	0	0%	7	17,5%	5	12,5%	2	5%	14	35%
>45	2	5%	15	37,5%	4	10	2	5%	23	57,5%
Total	2	5%	24	60%	9	22,5%	5	12,5%	40	100%

From table 6, it is found that the most cross-tabulation of environmental sanitation with age is at Age >45 years as many as 37 respondents (37.5%) with Poor environmental sanitation, while the least cross-tabulation of environmental sanitation with age is at Age <26 years as many as 1 respondent (2.5%) with Good environmental sanitation.

Table 7 Cross-tabulation of TB Incidence with Gender.

Jenis kelamin	Kejadian TBC				Total	
	Negatif		Positif			
	F	%	F	%	F	%
Laki - laki	11	27,5%	13	32,5%	24	60%
Perempuan	9	22,5%	7	17,5%	16	40%
Total	20	50%	20	50%	40	100%

From the table above, it can be seen that the incidence of TB with a negative category is mostly male with 11 respondents (27.5%) and the least female with 9 respondents (22.5%). The incidence of TB with a positive category is mostly found in male with 13 respondents (32.5%) and the least female with 7 respondents (17.5%).

Table 8 cross-tabulation of hygiene practices and gender

Jenis Kelamin	Praktik Hygiene								Total	
	Buruk		Kurang		Cukup		Baik			
	F	%	F	%	F	%	F	%	F	%
Laki - laki	4	10%	14	35%	6	15%	0	0%	24	6%
Perempuan	0	0%	6	15%	8	20%	2	5%	16	40%
Total	4	10%	20	50%	14	35%	2	5%	40	100%

In the table above, it is found that the Male Gender is most often found with Poor Hygiene Practices as many as 14 respondents (35%) and the least bad hygiene practices as many as 4 respondents (10%). The Female Gender is the most 8 respondents (20%) with sufficient hygiene practices, and the least 2 respondents (5%) with Good hygiene practices.

Table 9 cross-tabulation of environmental sanitation by gender

Jenis Kelamin	Sanitasi Lingkungan								Total	
	Buruk		Kurang		Cukup		Baik			
	F	%	F	%	F	%	F	%	F	%
Laki - laki	2	5%	13	32,5%	7	17,5%	2	5%	24	60%
Perempuan	0	0%	11	27,5%	2	5%	3	7,5%	16	40%
Total	2	5%	24	60%	9	22,5%	5	12,5%	40	100%

From the table above, it is found that the male gender is most often found with less environmental sanitation as many as 13 respondents (32.5%) and at least 2 respondents (5%) with poor and less environmental sanitation. The female gender is most often found with less environmental sanitation as many as 11 respondents (27.5%), and the least with less environmental sanitation as many as 2 respondents (27.5%).

Table 6 Cross Tabulation of TB Incidents and Hygiene Practices

Kejadian TBC	Praktik Hygiene								Total	
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	buruk		kurang		cukup		baik			
	F	%	F	%	F	%	F	%	F	%
negatif	0	0.	8	20.	10	25.	2	5.	20	50.
positif	4	10.	12	30.	4	10.	0	0.	20	50.
total	4	10.	20	50.	14	35.	2	5.	40	100

Dari table diatas didapatkan bahwa kejadian TBC dengan kategoori Negatif paling banyak ditemukan berpraktik *hygiene* Cukup sebanyak 10 responden (25%) dan paling sedikit berpraktik *hygiene* Baik sebanyak 2 responden (5%). Kejadian TBC dengan kategori Positif paling banyak ditemukan berpraktik *hygiene* Kurang sebanyak 12 responden (30%) dan paling sedikit berpraktik *hygiene* Cukup sebanyak 4 responden (10%).

Tabel 7 Kejadian TBC dan Sanitai Lingkungan

Kejadian TBC	Sanitasi Lingkungan								total	
	buruk		kurang		cukup		baik			
	F	%	F	%	F	%	F	%	F	%
negatif	1	2,5	13	32,5	4	10	2	5	20	50
positif	1	2,5	11	27,5	5	12,5	3	8	20	50
total	2	5	24	60	9	22,5	5	12,5	40	100

From the table above, it is found that the incidence of TB with the negative category is most often found with poor environmental sanitation, as many as 13 respondents (32%), and the least with poor environmental sanitation, as many as 1 respondent (2.5%). The incidence of TB with the positive category is most often found with poor environmental sanitation, as many as 11 respondents (27.5%), and the least with poor environmental sanitation, as many as 1 respondent (2.5%).

Table 8 Cross-tabulation of hygiene practices with environmental sanitation

Praktik Hygiene	Sanitasi Lingkungan								Total	
	buruk		kurang		cukup		baik			
	F	%	F	%	F	%	F	%	F	%
buruk	1	2,5%	3	7,5%	0	0%	0	0%	4	10%
kurang	1	2,5%	12	30%	5	12%	2	5%	20	50%
cukup	0	0,%	7	17%	4	10%	3	7,5%	14	35%
baik	0	0,%	2	5%	0	0%	0	0%	2	5%
total	2	5,%	24	60%	9	22,5%	5	12,5%	40	100%

In the table above, it is found that the hygiene practices of most environmental sanitation are lacking as many as 24 respondents (60%). Most of the cross-tabulation results found that the hygiene practices with environmental sanitation are lacking as many as 12 respondents (30%).

Table 9 Results of statistical data analysis of variables

Variabel	Simultan	R2	Sig	Exp (B)
Praktik Hygiene	0,819	0,374	0,05	0,122
Sanitasi Lingkungan			0,121	2,286
Hosmer sig	0,819			

In the table above, it is found that the research model can be accepted and hypothesis testing can be carried out, because there is a significant difference between the model and the questionnaire or observation value where the sig value in the Hosmer test with a sig value of $0.819 > 0.05$, this indicates that the data used is fit. The ability of the independent variable to explain the dependent variable is 37%, this indicates that there are 63% other factors outside the study that explain the dependent variable.

Environmental Hygiene and Sanitation Practices do not have a significant relationship with the incidence of TB where the sig value is $0.082 > 0.05$, then H_0 is accepted. Based on the

results of each variable that has a relationship, only Hygiene Practices sig. 0.005, while for Environmental Sanitation there is no relationship. The magnitude of the relationship is indicated by the OR value. The Hygiene Practice variable with an OR of 0.122 means that respondents with poor Hygiene Practices are more closely related to the incidence of TB by 0.122 times compared to respondents with good Hygiene Practices.

DISCUSSION

Practice of Community Hygiene in the Work Area of Kesamben Health Center.

A person's behavior or habits in carrying out daily life related to cleanliness (Personal hygiene) which can also affect Health. Personal Hygiene is a person's effort to maintain cleanliness and Health to obtain physical and psychological well-being (Wartonah, 2010)

Based on the results of this study, it was found that the majority of Hygiene Practices mostly practiced Poor hygiene as many as 20 respondents (20%), 14 respondents (20%) practiced Fair hygiene, 4 respondents (10%) practiced Poor hygiene, and 2 respondents practiced Good hygiene. Based on these results, it can be explained that the majority of respondents practiced poor hygiene

Cleanliness is the first effort to maintain individual cleanliness. The behavior of a person or community regarding health is determined by the level of education, knowledge, attitude, culture of some of the people or communities concerned. In addition, the availability of facilities, and the behavior of health workers will also support and strengthen the formation of behavior (Notoatmodjo, 2011)

Age > 45 years with Poor Hygiene Practices as many as 12 respondents (30%) are more often found. Age > 45 is the age of entering the elderly, at the age of the elderly begins to decline interest in personal hygiene on the other hand the decline in physical condition and habits applied to the family can affect the habit of implementing hygiene.

Male gender with Poor Hygiene Practices in this study were found as many as 14 respondents (35%). Too often doing activities outside the home, the application of hygiene is often ignored, because it hinders the activities that will be carried out. This makes the hygiene practices applied to the male gender lacking.

Community Environmental Sanitation in the Kesamben Health Center Work Area

Environmental sanitation is the health status of an environment that includes housing, waste and garbage disposal, provision of clean water and so on" (Mundiatun, 2015) this study found that out of 40 respondents, most of the Environmental Sanitation was lacking with a total of 24 respondents (60%).

(Mundiatun, 2015) "Poor sanitation allows various infectious diseases to continue to spread and has a negative impact on the health of living things in the environment." The results of the cross tabulation in this study showed that more Environmental Sanitation with Age >45 years as many as 37 respondents (37.5%) were categorized as Less, while the least Environmental Sanitation was found with Age <26 years as many as 1 respondent (2.5%) was categorized as Good.

Sanitation is a health effort by maintaining and protecting the cleanliness of the environment, both housing, offices and public places. Environmental cleanliness is the main factor that influences the transmission or spread of a disease. The better the sanitation of the house, the less the spread of disease that occurs and vice versa (Indonesian Ministry of Health, 2008).

TB Incidence in the Kesamben Health Center Work Area

TB incidence is the magnitude of direct transmission caused by the Tuberculosis germ, namely *Mycrobacterium tuberculosis*. The results of the study conducted on 40 respondents

with TB (positive) as many as 20 respondents (50%) as cases and those who were not TB sufferers (negative) as controls as many as 20 respondents (50%).

Most of the TB incidents aged >45 years were 35.5% in the positive category and the most Negative TB incidents were aged >45 years as many as 25%. In this case, it can be seen that the negative TB incidents are still more numerous and at risk of contracting TB. In the study (Nadhiroh, 2013) that the age of 52-60 years was found to be more because at that age the desire for better changes will begin to decline accompanied by immunity at that age has also begun to decline

The incidence of TB in the Kesamben Health Center Work Area is mostly male, as many as 13 respondents (35.5%) are categorized as Positive and the least is female, as many as 7 respondents (17.5%) are categorized as negative. Tuberculosis does not attack sufferers with a certain gender, but many studies show that men are more common than women. This was also found in the study %. Environmental sanitation hygiene practices with the incidence of tuberculosis, 56.7% of TB cases were found in men, and 43.3% of TB cases occurred in women (Pertiwi, 2012)

Relationship between hygiene practices and environmental sanitation to the incidence of TB

In this study, it was found that the sig. value was 0.05. The results show that there is a relationship between Hygiene Practices and TB Incidents in the Kesamben Health Center Work Area, Blitar Regency with a transmission risk of 0.122. Transmission of TB disease through the air when sufferers cough or sneeze or talk without using a mouth cover so that TB bacteria can spread through the air and be inhaled by other humans.

The application of cleanliness is actually known by TB sufferers but many do not apply it. Rarely wearing masks because they are not used to it and their breathing is disturbed when wearing a mask. Throwing phlegm in the wrong place. Most respondents threw phlegm on the ground without covering it with soil and some threw phlegm into the river. This condition can worsen the transmission of TB bacteria where TB bacteria can come out through phlegm splashes released by sufferers. In a study (Pertiwi, 2012), the habit of not covering the mouth when coughing (56.7%), and the habit of throwing phlegm in the wrong place (86.7%). In this study, the incidence of positive TB with poor hygiene practices was 30% and the least hygiene practices in the incidence of negative TB with a good category of 5%.

The results of statistical tests conducted to determine the relationship between environmental sanitation and TB incidence found that the sig value was $0.121 > 0.05$, which means there is no relationship between TB incidence and environmental sanitation.

In this case, there are still many cases of poor environmental sanitation in TB incidence in the Puskesmas work area. TB incidence with a negative category was most often found with poor environmental sanitation, as many as 13 respondents (32%) and TB incidence with a positive category was most often found with poor environmental sanitation, as many as 11 respondents (27.5%).

TB transmission can be exacerbated by humid environmental conditions, no sunlight, poor air circulation, and dense housing. However, in this study, the environmental sanitation of positive TB sufferers was less often found with the poor category compared to negative TB sufferers.

The relationship between hygiene practices and environmental sanitation with the incidence of TB in the Kesamben Health Center Work Area can be seen from the results of the statistical test obtained that the Hosmer sig. value is $0.819 < 0.05$. These results can be concluded that there is no relationship between hygiene practices and environmental sanitation with the incidence of TB in the Kesamben Health Center Work Area, Blitar Regency or accept H_0 .

CONCLUSION

Based on the results of the Logistic Regression test, it was found that Hygiene Practices on TB incidence sig. 0.05 and Environmental Sanitation on TB Incidence sig. 0.121. The results obtained can be interpreted that there is an influence between Hygiene Practices and TB Incidence, while Environmental Sanitation does not affect TB incidence in the Kesamben Health Center Work Area, Blitar Regency. Hygiene Practices have an effect because the application of personal hygiene is very important to maintain environmental and personal health.

Environmental sanitation does not affect TB incidence because some respondents' house floors are waterproof so that the room is not damp, adequate air ventilation, there are windows to maximize sunlight entering and are opened every morning which can kill or inhibit the growth of TB bacteria from entering the house. Windows which are access for sunlight are always opened in the morning. Air exchange must rotate at all times so that bacteria that breed in the house can get out of the house's air ventilation.

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