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Health Determinants of Physical Conditions of Homes Incidence of Pulmonary TB in the Nganjuk Community Health Center Working Area Year 2020

Sherly Novalia Rahmawati[1*] , Setyo Budi Susanto [2]
Institut Ilmu Kesehatan STRADA Indonesia
[*]**Corresponding author:** sherlynovalia@gmail.com

ABSTRACT
Tuberculosis is a direct infectious disease caused by TB germs (*Mycobacterium tuberculosis*). Houses that do not meet health requirements are one of the risk factors for pulmonary tuberculosis. This study aims to analyze the factors of physical conditions of houses against the incidence of pulmonary TB in the Nganjuk health center work area in 2020.This study is a type of analytical survey research with a case-control study design . *The* population in this study were patients with pulmonary TB and non-patients with pulmonary TB totaling 82 people. The sampling technique used total sampling. Data analysis used logistic regression analysis.The results of the study showed that the physical condition of the house that influenced the incidence of TB in the Nganjuk Health Center work area was ventilation with a significant value of 0.002 with an R odd value = 1.424.

Keywords: Physical Condition, Pulmonary TB

INTRODUCTION
Tuberculosis is an infectious disease directly caused by the *Mycobacterium tuberculosis bacteria* . About one-third of the world's population has been infected by Mycobacterium tuberculosis, there are 9 million patients with pulmonary tuberculosis and 3 million deaths from pulmonary tuberculosis worldwide, an estimated 95% of cases of pulmonary tuberculosis and 98% of deaths from pulmonary tuberculosis in the world occur in developing countries (Ministry of Health, 2019).

Tuberculosis is an infectious disease, the highest number of people infected with this disease is found in India, which is 1.5 million people, then the second rank is China which reaches 2 million people (Alsagaff & Mukty, 2010). While Indonesia ranks 4th for morbidity and mortality, it ranks 5th as a cause of death, attacking most of the productive age group from the low socio-economic group (Djojodibroto, 2015). Tuberculosis (TB) is still the main cause of morbidity and mortality in the world, but lack of priority in its handling can have negative consequences.

Currently, Indonesia is the country with the fourth highest TB burden in the world. However, TB sufferers still face challenges in getting treatment and care. New cases of TB reach 842,000 per year and this is estimated to only reach 46 percent of the total estimated cases. East Java Province in 2018 ranked second in Indonesia in the number of *tuberculosis sufferers discovered* , namely 33.99%, in Nganjuk Regency there were 4.9% (PROFILE_KES_ PROVINCE_2018/15_East Java_ 2018), The discovery of pulmonary TB sufferers at the Nganjuk Community Lung Health Center 2 reached 1,897 cases in 2018 (Data BBKPM Nganjuk) while in the Nganjuk Health Center work area there were 41 people.

Risk factors that play a role in the occurrence of pulmonary tuberculosis are gender, age, nutritional status, socio- economic conditions, and environment (dense housing, ventilation,

humidity, temperature, type of house floor, type of house wall, and lighting) (Alsagaff & Mukty, 2010). According to the results of the study (Fatimah, 2010) concluded that there is a relationship between the variables of room density, temperature, humidity, lighting, type of house floor and type of house wall with the occurrence of pulmonary tuberculosis.

Based on observations of the physical condition of houses in the Nganjuk Health Center work area and in the homes of pulmonary tuberculosis sufferers in general do not meet health requirements, seen from the lack of house ventilation and some ventilation that is tightly closed with clear plastic resulting in a lack of air circulation entering the house, lack of natural lighting because the house windows are not wide enough and are tightly closed with clear plastic so that there is a lack of sunlight entering and causing conditions inside the house to tend to be damp and dark, the density of occupancy exceeds the capacity of the house with a bedroom area and used by more than 2 people, the floor of the house is still waterproof, soil, and damp.

The walls of the house are still planks and some are permanent but have not been plastered. The physical condition of the house plays a very important role in the spread of pulmonary tuberculosis bacteria to healthy people. The source of transmission of this disease is through the intermediary of saliva or phlegm of sufferers containing *Mycobacterium* tuberculosis. When the sufferer coughs or sneezes, saliva droplets fly in the air and will live for several hours and in a humid and poorly lit room (Alsagaff & Mukty, 2010).

Disease prevention and breaking the chain of transmission need to be done at the family level. Family members are easily transmitted subjects because they live with TB sufferers and the transmission is easy, especially in dense environmental conditions and unsuitable housing, especially in families with low economy and poor physical conditions of the house. The spread of pulmonary tuberculosis bacteria will attack healthy people more quickly if they are in a damp, dark and poorly lit house (Ministry of Health, 2011).

From the description above as the basis for this research, the researcher raised the title of Health Determinants of Physical Condition Factors of Homes on the Incidence of Pulmonary TB in the Nganjuk Health Center Work Area in 2020 and used it as input for actions to control and eradicate Pulmonary Tuberculosis in Nganjuk Regency.

METHODS

This study is a type of analytical survey research with a case-control study design . *The* population in this study were patients with pulmonary TB and non-patients with pulmonary TB totaling 82 people. The sampling technique used total sampling. Data analysis used logistic regression analysis.

RESULT

Research Location Description

Nganjuk District is one of the Districts in Nganjuk Regency and is also the center of government of Nganjuk Regency which is located in the capital city of Nganjuk Regency. Nganjuk District is located in the lowlands with an altitude of ± 56 meters above sea level with an area of 2258.67 Ha.

In 2018, based on the results of population registration according to BPS, the population of Nganjuk sub-district was 66,470 people with a composition of 32,336 men and 34,134 women with a sex ratio of 94.73. With an area of 22,586 Ha, the average population density of Nganjuk Sub-district is 2,942.57 people per Ha.

Wide	22,586 km²
Density	2,942.97 people/km²
Village / sub-district	2 Villages
	13 sub-districts

The boundaries of Nganjuk District, North Rejoso and Gondang Districts, East Sukomoro District, South Loceret and Berbek Districts and West Berbek and Bagor Districts

Demographic Conditions

Job Sector Table

No	Sector Work	Percentage
1	Agriculture as big as	20.98%
2	Mining And excavation	1.54%,
3	Industry as big as	8.14%,
4	Electricity, gas and drinking water	0.07%,
5	Construction	4.52%,
6	Trade , home ladder And service accommodation as big as	51.73%,
7	Transportation , warehousing And communication	2.49%,
8	Institution finance , real estate, business rental And service company	0.57%,
9	Service community , social And individual	9.95 % .

Source: www.nganjuk.go.id

Based on this table, the majority of the people of Nganjuk district work in the fields of trade, households and accommodation services.

Table of percentage of education of the people of Nganjuk district

No	Level Education	Percentage
1	diploma ,	15.4%,
2	Certificate of Elementary Madrasah There is	1.2%,
3	There is a Junior High School/MPLB certificate	32.5%
4	Certificate of Junior High School	2.8%,
5	High school/vocational high school diploma available	7.2%,
6	Graduated from Aliyah	2.2%,
7	Vocational High School Certificate	7.4%,
8	Certified College High (D.1 to S.3)	3.4 % .
9	No own diploma .	27.7%

Based on education, the majority of the population of Nganjuk District have junior high school education, as much as 32.5%.

Respondent characteristics

Frequency distribution table of respondents' ages

No	Age Year	Control Group		Case Group	
		Frequency	Percentage	Frequency	Percentage
1	5-11	1	2.44%	2	4.88%
2	12-16	0	0.00%	0	0.00%
3	17-25	4	9.76%	3	7.32%
4	26-35	13	31.71%	13	31.71%
5	36-45	2	4.88%	2	4.88%
6	46-55	7	17.07%	7	17.07%
7	55-65	10	24.39%	10	24.39%
8	> 65	4	9.76%	4	9.76%
Amount		41	100.00%	41	100.00%

The frequency distribution of respondents' ages was mostly 26-35 years, namely 13 respondents (31.71%) in both the control and case groups.

Frequency distribution table of respondents' education

No	Control Group		Case Group	
	Education	Frequency	Percentage	Frequency	Percentage
1	Not Yet In Elementary School	1	2.44%	2	4.88%
2	SD	15	36.59%	16	39.02%
3	Junior High School	15	36.59%	14	34.15%
4	Senior High School	10	24.39%	9	21.95%
5	Academy	0	0.00%	0	0.00%
6	S1	0	0.00%	0	0.00%
	Amount	41	100.00%	41	100.00%

The frequency distribution of respondents' education in the control group was that the most respondents had elementary school and junior high school education, 15 respondents (36.59%) each, while in the case group, the most respondents had elementary school education, 16 respondents (39.02%).

Frequency distribution table of respondents' occupations

No	Control Group		Case Group	
	Work	Frequency	Percentage	Frequency	Percentage
1	housewife	3	7.32%	3	7.32%
2	Private sector employee	7	17.07%	6	14.63%
3	Trader	6	14.63%	6	14.63%
4	Student	1	2.44%	2	4.88%
5	Retired	1	2.44%	1	2.44%
6	Farmer	11	26.83%	10	24.39%
7	Private	0	0.00%	2	4.88%
8	Self-employed	12	29.27%	11	26.83%
	Amount	41	100.00%	41	100.00%

The frequency distribution of respondents' jobs showed that most respondents in the control group worked as self-employed, there were 12 respondents (29.27%) and in the case group, most worked as self-employed, there were 11 respondents (26.83%).

Variable Characteristics

Table of Physical Conditions in the Control Group

No	Variables	Qualify		Not eligible		Amount	
		F	%	F	%	F	%
1	Window	24	58.54%	17	41.46%	41	100.00%
2	Ventilation	27	65.85%	14	34.15%	41	100.00%
3	Floor	34	82.93%	7	17.07%	41	100.00%
4	Wall	35	85.37%	6	14.63%	41	100.00%
5	Palate	34	82.93%	7	17.07%	41	100.00%
6	Lighting	24	58.54%	17	41.46%	41	100.00%
7	Kitchen Smoke Hole	24	58.54%	17	41.46%	41	100.00%
8	Humidity	31	75.61%	10	24.39%	41	100.00%
9	Temperature	26	63.41%	15	36.59%	41	100.00%
10	Residential Density	32	78.05%	9	21.95%	41	100.00%
	average	29.1	70.98%	11.9	29.02%	41	100%

The physical conditions that most meet the requirements are on the walls, namely 35 respondents, the most that do not meet the requirements are on Windows, Lighting and Kitchen Holes, there are 24 respondents (41.46%).

Table of frequency distribution of physical conditions of houses in the case group

No	Variables	Qualify		Not eligible		Amount	
		F	%	F	%	F	%
1	Window	17	41.46%	24	58.54%	41	100.00%
2	Ventilation	15	36.59%	26	63.41%	41	100.00%
3	Floor	27	65.85%	14	34.15%	41	100.00%
4	Wall	27	65.85%	14	34.15%	41	100.00%
5	Palate	27	65.85%	14	34.15%	41	100.00%
6	Lighting	16	39.02%	25	60.98%	41	100.00%
7	Kitchen Smoke Hole	16	39.02%	25	60.98%	41	100.00%
8	Humidity	26	63.41%	15	36.59%	41	100.00%
9	Temperature	19	46.34%	22	53.66%	41	100.00%
10	Residential Density	23	56.10%	18	43.90%	41	100.00%
	Average	21.3	51.95%	19.7	48.05%	41	100.00%

The physical condition of the house in the case group that most meets the requirements is the walls, floor, ceiling, there are 27 respondents (65.85%) and the least meets the requirements is the lighting, kitchen smoke hole, there are 16 respondents (39.02%).

Cross tabulation

Cross-tabulation table of window physical conditions with TB events

TB incident	Control Group Window				Total		Case Group Window				Total	
	TMS		MS				TMS		MS			
	f	%	f	%	F	%	F	%	F	%	f	%
TB	1	2.44%	1	2.44%	2	4.88%	24	58.54%	15	36.59%	39	95.12%
Non-TB	16	39.02%	23	56.10%	39	95.12%	0	0.00%	2	4.88%	2	4.88%
Total	17	41.46%	24	58.54%	41	100%	24	58.54%	17	41.46%	41	100%

The cross-tabulation results showed that in the control group, the house windows met the requirements and there were no TB incidents in 23 respondents (56.10%), while in the case group, the physical condition of the windows did not meet the requirements and there were TB incidents in 24 houses (58.4%).

Cross tabulation table of physical condition of ventilation with TB incidence

TB incident	Control Group Ventilation				Total		Case Group Ventilation				Total	
	TMS		MS				TMS		MS			
	f	%	f	%	f	%	f	%	f	%	F	%
TB	1	2.44%	1	2.44%	2	4.88%	26	63.41%	13	31.71%	39	95.12%
Non-TB	13	31.71%	26	63.41%	39	95.12%	0	0.00%	2	4.88%	2	4.88%
Total	14	34.15%	27	65.85%	41	100%	26	63.41%	15	36.59%	41	100%

The cross-tabulation results show that the physical condition of the ventilation in the control group that met the requirements and there were no TB incidents was 26 houses or 63.41%, while in the case group there were 26 houses or 63.41% whose ventilation did not meet the requirements and there were no TB incidents.

Cross-tabulation table of floor physical conditions with TB incidence

TB incident	Control Group Floor				Total		Case Group Floor				Total	
	TMS		MS				TMS		MS			
	F	%	f	%	f	%	f	%	f	%	F	%
TB	1	2.44%	1	2.44%	2	4.88%	14	34.15%	25	60.98%	39	95.12%
Non-TB	6	14.63%	33	80.49%	39	95.12%	0	0.00%	2	4.88%	2	4.88%
Total	7	17.07%	34	82.93%	41	100%	14	34.15%	27	65.85%	41	100%

The cross tabulation results show that in the control group, the physical condition of the floor met the requirements and there were no TB incidents, there were 33 respondents (80.49%) and in the case group, the floor met the requirements and there were TB incidents, there were 25 respondents (60.98%).

Cross-tabulation table of physical condition of walls with TB incidence

TB incident	Control Group Wall				Total		Case Group Wall				Total	
	TMS		MS				TMS		MS			
	F	%	f	%	f	%	f	%	f	%	F	%
TB	1	2.44%	1	2.44%	2	4.88%	14	34.15%	25	60.98%	39	95.12%
Non-TB	5	12.20%	34	82.93%	39	95.12%	0	0.00%	2	4.88%	2	4.88%
Total	6	14.63%	35	85.37%	41	100%	14	34.15%	27	65.85%	41	100%

The cross-tabulation results in the control group showed that the wall conditions met the requirements and there were no TB incidents in 34 houses (82.9%) of the house occupants and in the case group, the wall conditions met the requirements and there were TB incidents in 25 houses (60.98%).

Cross tabulation of physical floor conditions with TB incidence

TB incident	Control Group Palate				Total		Case Group Palate				Total	
	TMS		MS				TMS		MS			
	F	%	f	%	f	%	f	%	f	%	F	%
TB	1	2.44%	1	2.44%	2	4.88%	14	34.15%	25	60.98 %	39	95.12%
Non-TB	6	14.63%	33	80.49%	39	95.12%	0	0.00%	2	4.88%	2	4.88%
Total	7	17.07%	34	82.93%	41	100%	14	34.15%	27	65.85%	41	100%

The cross-tabulation results in the control group showed that the ceiling that met the requirements and there were no TB incidents was 33 houses (80.49%) and in the case group, the ceiling that met the requirements and there were TB incidents was 25 respondents (60.98%).

Cross tabulation table of physical lighting conditions with TB incidence

TB incident	Control Group Lighting				Total		Case Group Lighting				Total	
	TMS		MS				TMS		MS			
	F	%	F	%	f	%	F	%	f	%	f	%
TB	1	2.44%	1	2.44%	2	4.88%	25	60.98%	14	34.15%	39	95.12%
Non-TB	16	39.02%	23	56.10%	39	95.12%	0	0.00%	2	4.88%	2	4.88%
Total	17	41.46%	24	58.54%	41	100%	25	60.98%	16	39.02%	41	100%

The cross-tabulation results showed that in the control group, the lighting in houses that met the requirements and there were no TB incidents was 23 houses (56.10%) and in the case group, the lighting in houses that did not meet the requirements and there were TB incidents was 25 houses (60.98%).

Cross-tabulation table of physical condition of kitchen smoke holes with TB incidence

TB incident	Control Group kitchen smoke hole				Total		Case Group kitchen smoke hole				Total	
	TMS		MS				TMS		MS			
	F	%	f	%	f	%	f	%	f	%	f	%
TB	1	2.44%	1	2.44%	2	4.88%	25	60.98%	14	34.15%	39	95.12%
Non-TB	16	39.02%	23	56.10%	39	95.12%	0	0.00%	2	4.88%	2	4.88%
Total	17	41.46%	24	58.54%	41	100%	25	60.98%	16	39.02%	41	100%

The cross-tabulation results showed that there were 23 houses (56.1%) with kitchen smoke holes that met the requirements and no TB incidents and in the case group of kitchen smoke holes, there were 25 houses (60.98%) with no TB incidents.

Cross tabulation of physical condition of house humidity with TB incidence

TB incident	Control Group Humidity				Total		Case Group Humidity				Total	
	TMS		MS				TMS		MS			
	F	%	f	%	F	%	f	%	f	%	f	%
TB	2	4.88%	0	0.00%	2	4.88%	15	36.59%	24	58.54%	39	95.12%
Non-TB	8	19.51%	31	75.61%	39	95.12%	0	0.00%	2	4.88%	2	4.88%
Total	10	24.39%	31	75.61%	41	100%	15	36.59%	26	63.41%	41	100%

The cross tabulation results showed that the air humidity in the control group that met the requirements and there were no TB incidents was 31 houses (75.61%) and in the case group the air humidity met the requirements and there were 24 TB incidents (58.54%).

Cross tabulation of physical condition of house temperature with TB incidence

TB incident	Control Group Temperature				Total		Case Group Temperature				Total	
	TMS		MS				TMS		MS			
	F	%	F	%	f	%	f	%	f	%	f	%
TB	1	2.44%	14	34.15%	15	36.59%	22	53.66%	17	41.46%	39	95.12%
Non-TB	1	2.44%	25	60.98%	26	63.41%	0	0.00%	2	4.88%	2	4.88%
Total	2	4.88%	39	95.12%	41	100%	22	53.66%	19	46.34%	41	100%

The cross-tabulation results showed that the air temperature in the control group that met the requirements and there were no TB incidents was 25 houses (60.98%) and in the case group the air temperature did not meet the requirements and there were TB incidents in 22 houses (53.66%).

Cross tabulation of physical conditions of housing density with TB incidence

TB incident	Control Group Residential Density				Total		Case Group Residential Density				Total	
	TMS		MS				TMS		MS			
	F	%	F	%	F	%	f	%	F	%	f	%
TB	1	2.44%	1	2.44%	2	4.88%	17	41.46%	22	53.66%	39	95.12%
Non-TB	8	19.51%	31	75.61%	39	95.12%	1	2.44%	1	2.44%	2	4.88%
Total	9	21.95%	32	78.05%	41	100%	18	43.90%	23	56.10%	41	100%

The cross-tabulation results show that the density of housing that meets the requirements and there are no TB incidents is 31 houses (56.1%) and in the case group where the density of housing meets the requirements and there are TB incidents, there are 22 houses (53.66%).

Data analysis

Partial Test

The partial test results were obtained for the window $P_{value} = 0.879$, ventilation $P_{value} = 0.004$, floor $P_{value} = 1.000$, wall $P_{value} = 1.000$, lighting $P_{value} = 0.995$, humidity $P_{value} = 0.217$, temperature $P_{value} = 0.363$, and occupancy density $P_{value} = 0.144$. Based on the data above, it is said to be significant if the P value $<$ α value. The alpha value is the maximum error limit used as a benchmark by the researcher and the specified limit is 5%. So that those who meet the requirements below the value of 5% (X <0.05) at the ventilation value are 0.004, so 0.004 <0.05. so it is concluded that the ventilation variable significantly affects Y

Data interpretation

The results of the statistical test obtained a Nagelkerke R Square value of 0.15, so it can be concluded that the ventilation variable has a 15% effect on the incidence of TB, while 85% is caused by other factors outside this study.

DISCUSSION

Physical condition of houses of pulmonary TB sufferers in the Nganjuk Community Health Center working area.

The physical condition of the house of the TB patient that most meets the requirements is the walls, floor, ceiling, there are 27 respondents (65.85%) and the least meets the requirements is the lighting, the kitchen smoke hole is 16 respondents (39.02%).

A house is a place to live or take shelter from the influence of the surrounding natural conditions (rain and heat) and is a place to rest after carrying out activities to meet daily needs (Notoatmodjo, 2007).

Good physical condition of the house, namely a good house can prevent the spread of infectious diseases. Therefore, the house must meet health requirements, because an unhealthy house and environment will cause disease both among family members and to others (Adnani & Mahastuti, 2006)

1. Window

The physical condition of the windows of the houses of TB sufferers mostly does not meet the requirements (58.54%).

The results of this study are in accordance with research by Anggie Mareta Rosiana (2017) which states that windows that are rarely opened and left closed will become a place for the presence of Mycobacterium Tuberculosis bacteria.

Researchers' observations on windows that are always left closed and are not accustomed to opening windows every morning, so that most of the windows in respondents' houses are not included in ventilation and are not measured in this study, as well as the area of ventilation most of which do not meet the requirements of 10% of the floor area. Respondents should be aware of opening windows every day so that the house is not stuffy because the air circulation can be maximized.

2. Ventilation

The physical condition of ventilation in the homes of TB sufferers is mostly inadequate (63.41%)

The results of this study are in accordance with the opinion of Kurniawati, (2015) who showed that the area of ventilation had a significant relationship with the incidence of pulmonary TB with a p-value of 0.001.

The main function of ventilation is to maintain air circulation in the house. Lack of ventilation will cause a lack of oxygen in the house and cause the room to feel damp. Another function of ventilation is to free the room air from pathogenic bacteria, because with good ventilation there is continuous air circulation so that bacteria attached to dust will be carried away by the wind . Most of the case groups had inadequate ventilation because the ventilation was blocked by cupboards or other furniture so that it could not be opened. This was exacerbated by the behavior of respondents who rarely opened the ventilation in the bedroom in the morning and afternoon. Generally they only open the ventilation on the windows in the living room.

3. Floor

The physical condition of the floor of the house of the majority of pulmonary TB sufferers meets health requirements (65.85%)

This study is in accordance with the opinion of Kurniawati (2015) who stated that the condition of the house can be one of the risk factors for TB transmission. Dust that sticks to the floor that is difficult to clean can be a breeding ground for Mycobacterium tuberculosis bacteria.

The results of the assessment of the floor variable in the bedroom showed that most of the floors in the respondents' homes had been tiled so that they were waterproof and easy to clean so that they could be said to have met the requirements according to the Decree of the Minister of Health No. 829 of 1999 concerning Housing Health Requirements. However, most respondents admitted that they rarely mopped their floors with floor cleaning fluid. They only cleaned the floor by sweeping it every morning and evening.

4. Wall

The physical condition of the walls of the houses of pulmonary TB sufferers in the majority meets the requirements at 65.85%

The results of the study showed that most of the walls were made of plaster, but were rarely cleaned, so they could become a breeding ground for bacteria.

5. Palate

The physical condition of the ceilings in the houses of pulmonary TB sufferers in the majority meets the requirements at 65.85% .

The results of the study showed that there was no relationship between the ceiling variable and the presence of bacteria that cause pulmonary TB, this is likely because the condition of the respondents' house ceilings was good.

This finding is in line with research conducted by Novita Diah Dwi Lestari Muslimah (2018) that there is no relationship between the ceiling and the incidence of Pulmonary TB because the majority of respondents' houses have ceilings that have met the requirements, namely easy to clean and not prone to accidents. A ceiling that meets the requirements aims to ensure sufficient air volume and is easy to clean and not prone to accidents. Sufficient indoor air volume does not make the house feel humid because the circulation of CO2 and body evaporation is blocked, which results in the growth of Pulmonary TB bacteria.

6. Lighting

The physical condition of lighting in the homes of TB sufferers mostly does not meet the requirements (60.98%).

The results of the study are in accordance with the opinion of May Liani S. Sinaga (2019) that there is no relationship between natural lighting and the incidence of pulmonary TB in the Tuminting Health Center Work Area.

The results of the study at the time of measurement by opening the door showed that natural lighting was going well. But every day the door was closed. The entry of light is related to the condition of the door function.

7. Kitchen smoke hole

The physical condition of the smoke holes in the kitchens of houses of TB sufferers mostly does not meet the requirements (60.98%).

The results of the study showed that most houses did not have or did not have a kitchen smoke hole .

The results of the study do not match the opinion of Nur Anisah Apriliani (2020) who showed that there was an influence of kitchen smoke vents on the incidence of pulmonary TB. However, the results of observations of most respondents had cooked with LPG gas and did not produce much smoke, so its influence on the incidence of pulmonary TB was very small compared to those who cooked using firewood.

8. Humidity

The physical humidity conditions of the houses of TB sufferers mostly meet the requirements at 63.41%.

The results of this study do not correspond to the opinion of Novita Indriyani (2016) who stated that someone who lives in a house with high humidity has a 2.571 higher risk of contracting pulmonary TB compared to someone who lives in a house with low humidity.

The results of the field research found that the air humidity was good but it appeared that the mattresses, sheets, and pillows had never been dried in the sun, giving a shabby impression, plus towels and clothes drying in the room became a breeding ground for bacteria.

9. Temperature

The physical condition of the house temperature of the majority of pulmonary TB sufferers does not meet the requirements, there are 53.66%

The results of this study are in accordance with the opinion of Anggie Mareta Rosiana (2018) who stated that there was no relationship between temperature and the incidence of pulmonary TB in the work area of the Kedungmundu Health Center, Semarang City.

During the research in the respondent's homes, the temperature varied, this was influenced by several things such as humidity in the house, closed ventilation, and unopened windows, thus affecting the movement of air entering the house. However, the results of the statistical test showed that there was no relationship between temperature and the incidence of pulmonary TB.

10. Residential Density

The physical condition of ventilation in the homes of TB patients mostly meets the requirements (56.10%).

The results of this study are in accordance with the opinion of Anggie Mareta Rosiana (2018) who stated that there was no relationship between the density of sleeping space and the incidence of pulmonary TB in the work area of the Kedungmundu Health Center, Semarang City.

From the survey in the field in the respondent's house, on average each room is occupied by 2 to 3 people, namely occupied by husband and wife or with their children. There are also those who only have 1 room occupied by 1 person. On average, children under 10 years old with a bedroom size that meets the requirements, so it is likely that pulmonary TB is not affected by the density of bedroom occupants.

The incidence of pulmonary TB in the Nganjuk Community Health Center working area

The incidence of pulmonary TB in the Nganjuk Community Health Center work area was 41 cases

According to Hendrick L. Blum, the level of public health is greatly influenced by four factors, namely behavioral factors, environmental factors, hereditary factors, and health service factors. Of the four factors, the one with the greatest influence is behavioral factors, followed by environmental factors, then health service factors, and finally hereditary factors. The four factors above are closely related and influence each other (Syukra and Sriani, 2015).

The physical condition of the houses of TB sufferers in the health center area is mostly good and meets the requirements, but there are still many who are affected by TB. This is due to poor behavior in implementing clean and healthy living behaviors, even though they are supported by good health services , but do not implement PHBS properly, for example smoking, spitting anywhere and not wanting to open windows and curtains, then TB transmission still occurs.

Factors of physical conditions of houses towards the incidence of pulmonary TB in the region

The results of the study showed that 15% had an effect on the incidence of TB.

Natural ventilation is measured by comparing the area of the ventilation with the floor area. Whether or not a respondent's home meets the requirements for natural ventilation can be caused by several things such as the area of the house that is not comparable to the area of the ventilation and windows or air vents made of glass that cannot be opened. Some respondents' houses have ventilation that can be opened and closed, but for reasons of home security, respondents choose not to open the house ventilation even during the day. Lyzigos (2013) stated that closed windows cause poor home ventilation, increasing the risk of TB transmission. Ventilation is a condition of a house that has sufficient air circulation in and out with a ventilation area of at least 10% of the floor area. Poor ventilation can affect the incidence of TB.

A room with inadequate ventilation (<10% of floor area) causes high humidity and temperature in the room due to lack of air exchange from outside the house, thus giving 10

TB bacteria the opportunity to survive in the room due to the nature of TB bacteria which are able to survive in dark and humid rooms.9 Adequate natural ventilation makes it easier for ultraviolet (UV) rays to enter the house. UV rays can kill pathogenic bacteria including TB bacteria due to the nature of TB bacteria which are unable to survive if exposed directly.

CONCLUSION

1. Physical condition of houses of pulmonary TB patients in the Nganjuk Health Center working area In the control group, the physical condition that most meets the requirements is the walls, namely 35 respondents, the most do not meet the requirements are Windows, Lighting and Kitchen Holes, there are 24 respondents 41.46% and the physical condition of the house in the case group that most meet the requirements are walls, floors, ceilings, there are 27 respondents 65.85% and the least meet the requirements are Lighting, kitchen smoke holes, there are 16 respondents 39.02%.
2. The incidence of pulmonary TB in the Nganjuk Community Health Center work area was 41 cases
3. Factors that influence the incidence of TB in the Nganjuk Health Center work area are ventilation with an influence of 15%.

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