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The Relationship Between Education and Economic Status on Pulmonary Tuberculosis

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***Abstract* — Pulmonary tuberculosis is an infectious disease caused by the bacteria mycobacterium tuberculosis which is the second highest incident based on the data of Public Health of Kaliwungu, Kudus. Both education and economic status are risk factor that influence the incidence of pulmonary tuberculosis in the Working Area of Kaliwungu Public Health Center of *Kudus*. This study aims to examine the relationship between education, economic status and pulmonary tuberculosis. Analytic correlation study using cross sectional approach was conducted. The total samples were 40 respondents chosen using total sampling technique. The data were analyzed using univariate and bivariate analysis tested using Chi Square test. This study reveals that the relationship between education and Lung Tuberculosis obtained ρ value of 0.027 (> 0.05) and OR = 5.665, meanwhile the relationship between Economic Status and Lung Tuberculosis obtained ρ value of 0.039 (<0.05) and OR = 6.875. It means that there is a significant relationship between education and pulmonary tuberculosis at the Public Health Center of Kaliwungu. Further, there is also a significant relationship between economic status and pulmonary tuberculosis at Public Health Center of Kaliwungu.**

Keywords: education, economic status, pulmonary tuberculosis

I. INTRODUCTION

Pulmonary tuberculosis is one of the most infectious diseases in the world. According to the World Health Organization (WHO) [1] report, one third of the world's population, which is around two billion people, is infected with Mycobacterium Tuberculosis. More than 8 million people are exposed to active TB each year and around 2 million die. More than 90% of TB cases and deaths come from developing countries; one of them is Indonesia [2].

One of the big problems in developing countries is pulmonary tuberculosis. It is estimated that 95% of tuberculosis patients are in developing countries including Indonesia [3]. In Indonesia, there were 330,910 cases of Tuberculosis in 2015. It was an increase compared to all Tuberculosis cases found in 2014 which amounted to 324,539 cases [4].

Education is one of the risk factors that influence the incidence of pulmonary TB disease in which the level of education results in the lack of knowledge on the transmission of pulmonary TB disease and the danger of the disease. Therefore, one's education level influences the knowledge on factors related to pulmonary TB. With good knowledge, someone will try to prevent the risk of transmission and exposure to pulmonary TB [5].

Further, economic status is closely related to family income which has an impact on daily living patterns such as food consumption and health care. The head of the family who has income below the Average Minimum Wage will consume food with nutritional levels that are not in accordance with the needs of each family member so that they lack of nutrition which can facilitate infectious diseases including pulmonary TB [6]

There were 40 patients with pulmonary tuberculosis in the public health center of Kaliwungu, Kudus in 2017 [7]. Based on the data, it is ranked third of the highest incidence of pulmonary tuberculosis in Kudus in 2017. Therefore, this study attempts to examine the relationship between education, economic status and pulmonary tuberculosis at the public health center of Kaliwungu, Kudus.

II. METHOD

A. Research Design

This is a correlational analytic study with cross sectional research. Cross sectional is a type of research that observes/measures/asks for answers on a one-time opportunity, one time [8]. This study analyzed the

relationship between education and economic status toward pulmonary tuberculosis.

B. Population and Samples

The population of this study was all pulmonary tuberculosis patients in the work area of Kaliwungu Public Health Center of Kudus. The total samples were 40 patients chosen through total sampling technique.

C. Data Collection and Analysis

The data were taken from the primary data through questionnaires to obtain data on education and economic status with the incidence of pulmonary tuberculosis. The secondary data from patient medical records were used to determine the number of visits and sample identity. Then, the data were analyzed using the chi square formula and rank spearman test.

III. RESULTS AND DISCUSSION

A. Characteristics of Respondents

TABLE I. DISTRIBUTION FREQUENCY OF RESPONDENTS CHARACTERISTICS

Age	Frequency	Percentage (%)
20 – 29 30 – 39 40 – 49 > 50	12 8 9 11	30.0 20.0 22.5 27.5
Total	40	100,0

As presented in table I, it can be concluded that the majority of the respondents is 20-29 years old, as many as 12 respondents (30.0%), and the smallest one is 30 - 39 years old, as many as 8 respondents (20.0%).

TABLE II. DISTRIBUTION FREQUENCY OF RESPONDENTS CHARACTERISTICS BASED ON SEX

Sex	Frequency	Percentage (%)
Men Women	22 18	55.0 45.0
Total	50	100.0

As shown in table II, it can be concluded that most of the sexes of the respondents are male, as many as 22 respondents (55.0%), and the smallest ones are women, as many as 18 respondents (45.0%).

TABLE III. DISTRIBUTION FREQUENCY OF RESPONDENTS CHARACTERISTICS BASED ON THE EDUCATIONAL BACKGROUND OF LUNG TB PATIENT AT PUBLIC HEALTH CENTER OF KALIWUNGU KUDUS 2017 (N=40)

Education	Frequency	Percentage (%)
Primary school Secondary school	17 23	42.5 57.5
Total	40	100.0

As presented in table III, it can be concluded that the patients with secondary education are 23 respondents (57.5%) while the ones with primary education are 17 respondents (42.5%).

TABLE IV. DISTRIBUTION FREQUENCY OF RESPONDENTS CHARACTERISTICS BASED ON ECONOMIC STATUS AMONG LUNG TB PATIENT AT PUBLIC HEALTH CENTER OF KALIWUNGU KUDUS 2017 (N=40)

Economic Status	Frequency	Percentage %
Low < UMK Moderate = UMK	17 23	42.5 57.5
Total	40	100.0

As presented in table IV, it can be concluded that the majority of patients with low income <MSE is as many as 17 respondents (42.5%) while the ones with middle income = UMK are as many as 23 respondents (57.5%).

B. Bivariate Analysis

TABLE V. ANALYSIS OF RELATION BASED ON EDUCATIONAL BACKGROUND OF LUNG TB RESPONDENT AT PUBLIC HEALTH CENTER OF KALIWUNGU KUDUS 2017 (N=40)

Education	Incident				Total		OR (95% CI)	P *value*
	AFB (-)		AFB (+)					
	N	%	N	%	N	%	5.665	0.027
Primary	2	11.8	15	88.2	16	100		
Secondary	11	47.8	12	52.2	24	100		
Total	13		27		40			

As displayed in table V, it can be seen that the patients who are AFB (-) with basic education are as many as 2 respondents (11.8%), and the ones with secondary education are as many as 11 respondents (47.8%). Whereas the patients with AFB (+) who have basic education are as many as 15 respondents (88.2%) and the ones with secondary education are as many as 12 respondents (52.2%).

The results of the statistical test conducted using Chi-square reveal that there is no relationship between the level of education with the incidence of pulmonary tuberculosis in the work area of Kaliwungu Public Health Center of Kudus with a p value of 0.027 and OR = 5.665 (95% CI = 0.614 - 5,862) in which OR is more than one. It means that the level of education is a risk factor for pulmonary Tuberculosis or the respondents who have low education risk 5.665 times are more likely to suffer from pulmonary tuberculosis than the respondents who have higher education. However, because the CI is one, it means that there is no significant relationship between the level of education and the incidence of pulmonary tuberculosis.

The results of this study are consistent with the results of the research conducted by Purba (2016) in which it finds that there is no significant relationship between education and the incidence of pulmonary tuberculosis [9]. On the contrary, the results of this study are not in accordance with the results of a research conducted by Sumarmi (2012) in

which there is a relationship between education and pulmonary tuberculosis with a risk of 2,550 times [10].

The level of education does not have a relationship with the incidence of pulmonary tuberculosis in the work area of Paniki Bawah Community Health Center because pulmonary tuberculosis is caused by an interaction between an agent, namely Mycobacterium Tuberculosis, Environment and Host, namely host or human with various risk factors such as education, nutritional status, and immunity. The respondents may be exposed to risk factors of pulmonary tuberculosis other than educational factors.

TABLE VI. ANALYSIS OF RELATION BASED ON ECONOMIC STATUS OF LUNG TB RESPONDENT AT PUBLIC HEALTH CENTER OF KALIWUNGU KUDUS 2017 (N=40)

Economic status	Incident				total		OR (95% CI)	P *value*
	AFB (-)		AFB (+)					
	N	%	N	%	N	%	6.875	0.039
Below standart	5	11.8	11	88.2	16	100		
stndart	9	47.8	15	52.2	24	100		
Total	14		26		40			

As shown in table 4.6, it can be seen that AFB patients (-) who have low income <MSE are 5 respondents (11.8%) and those who have medium income = MSEs are as many as 9 respondents (47.8%). Meanwhile patients with low income AFB (+) <UMK are 11 respondents (88.2%) and those who have medium income = MSE are as many as 15 respondents (52.2%).

The statistic test conducted through Chi-square reveals that there is a relationship between income and incidence of pulmonary tuberculosis in the work area of Kaliwungu Public Health Center of Kudus with a p value of 0.039 and OR = 6.878 (95% CI = 1.716-13,493) in which OR is more than one. It means that economic status is a risk factor for pulmonary tuberculosis or respondents who have income < UMP have a risk of 6.678 times greater for pulmonary tuberculosis than respondents who have income ≥ UMP and CI is not considered as one. It means that there is a significant relationship with the incidence of pulmonary tuberculosis.

This research is in line with a research conducted by Muaz (2014) in which there is a relationship between income and the incidence of pulmonary tuberculosis; the respondents with low income are 7,682 times more at risk of developing pulmonary tuberculosis than the respondents who have sufficient income [11]. Contrastingly, the results of this study are not in accordance with the results of research conducted by Firdiansyah (2014) in which there is no significant influence between the respondents' income on the incidence of positive AFB pulmonary TB disease in Genteng District [12].

Suryo (2010), the head of a family who has an income below the UMR, stated that he cannot afford food that is in accordance with the needs of family members which results in a lack of nutritional status which causes decreased immunity and low immunity that facilitate someone to become infected with Tuberculosis [13].

IV. CONCLUSION

Based on the results of the research involving 40 respondents of pulmonary tuberculosis patients in the work area of Kaliwungu Kudus Community Health Center, it can be concluded that the largest percentage in primary education is 88.2%, while in the low economic status <UMK is 88.2%. There is a relationship between education and the incidence of pulmonary TB in Kaliwungu Kudus Health Center in 2017 with a value of 0.027 <0.05. There is a correlation between economic status and the incidence of pulmonary TB in Kaliwungu Kudus Health Center in 2017 with a value of 0.039 <0.05.

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