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The Relationship between Socioeconomic and Nutritional Status with the Incidence of Pulmonary Tuberculosis at the Nangkaan Public Health Center Bondowoso

Damon Wicaksi[1], Yuni Priyo Wahyudi[2], Shelly Dwi Kurniawati Atmadja[3]
[1.2]Nursing Diploma III Program, Universitas Bondowoso, Bondowoso, Indonesia
[3]Nangkaan Health Center, Bondowoso, Indonesia
[1]Corresponding author: damonwicaksi75@gmail.com

ABSTRACT

Introduction: Tuberculosis lungs are still a major public health problem in Indonesia. The incidence of pulmonary tuberculosis continues to increase as well as the incidence of pulmonary tuberculosis at the Nangkaan Bondowoso Health Center every year there is always an increase. The purpose of this study was to analyze the relationship between socioeconomic status and nutritional status with the incidence of pulmonary tuberculosis.

Method: Research design is cross sectional. Data collection was taken from medical records of patients with pulmonary tuberculosis at the Nangkaan Health Center which was held from October to November 2021 with a population of 56 people. The sample used is total sampling. Data collection techniques with questionnaires and observations, then the data were analyzed by ANOVA test.

Result: Based on the data obtained, most of the respondents socioeconomic levels are low socio-economic as many as 51 people (91%), while most of the respondents' nutritional status is poor nutrition status as many as 44 people (78%), and the incidence of pulmonary tuberculosis is mostly with positive BTA as many as 49 people (87%). From the results of the ANOVA test, it was found that there was a significant relationship between socioeconomic status and nutritional status with the incidence of pulmonary tuberculosis at the Nangkaan Bondowoso Public Health Center with p-values of 0.16 and 0.00 (p-value <0.05).

Conclusion: Low socioeconomic status will affect the low nutritional status of patients with pulmonary tuberculosis and can worsen the body's immunity which has an impact on increasing the risk of transmission of pulmonary tuberculosis.

Keywords*: Level Socioeconomic; Level of Nutritional Status; Incidence of Pulmonary Tuberculosis*

Introduction

Tuberculosis (TB) which is also known by the abbreviation TB is an infectious disease that causes the second largest health problem in the world after HIV. This disease is caused by the bacteria Mycobacterium tuberculosis. Tuberculosis itself can attack any part of the body, but the most common and most common is tuberculosis infection of the lungs. The spread of this disease can occur through people who already have TB. Then, coughing or sneezing spit out saliva that has been contaminated and inhaled by healthy people whose immune systems are weak against tuberculosis (Agustin, 2018).

Pulmonary Tuberculosis is influenced by various factors, including the socio-economic conditions of the community, namely poverty, malnutrition, low educational background and population density (Kementerian Kesehatan RI, 2015). The risk of transmission every year is indicated by the Annual Risk of Tuberculosis Infection (ARTI), which is the proportion of the population at risk of being infected with TB for one year. The ARTI is 1%, meaning that 10 (ten) people among the population are infected every year. Factors that influence a person's likelihood of becoming a TB patient are low immune systems, including HIV/AIDS infection and malnutrition (poor nutrition) (Kementerian Kesehatan RI, 2016).

Based on the results of a preliminary study in the form of interviews and observations of 15 respondents on October 5, 2021 at the Nangkaan Health Center, and based on data on the Regional Minimum Wage (UMR) for the people of Bondowoso Regency in 2020, it was found that the majority of respondents with low socioeconomic levels were 47% and from nutrition using the Body Mass Index (BMI) formula, it was found that there were 33% malnutrition data. This proves that there is a gap between the existing theory and the reality on the ground.

Millions of people continue to contract this TB disease every year. In 2017 TB killed about 1.3 million people. Globally, it is estimated that 10 million people developed TB disease in 2017, 5.8 million men, 3.2 million women and 1 million children. There is incidence across countries and age groups, but overall 90% are adults (over 15 years of age) (World Health Organization, 2018).

In 2016 Indonesia's TB burden was in the second position in the world, in 2017 it was in the third position. In Indonesia, it is estimated that there are 842,000 new TB

cases or relapses every year, but the coverage of new TB discovery and treatment is around 446,000 cases (53%) so that there are still 47% missing cases. There were 3,092 cases starting MDR TB treatment and 7,729 cases of HIV TB coinfection, while the TB treatment success rate was 86% (Kementerian Kesehatan RI, 2017).

TB patients in East Java Province in 2018 which were recorded until December 2018 reached 54,863 people. The high cases of pulmonary tuberculosis also have an impact on the high mortality rate in East Java which reached 1,125 cases from 2018 to December 2018. The city of Surabaya is the first in East Java Province as the city that contributes the most cases of pulmonary tuberculosis to 7,007 cases, then Jember Regency, Sidoarjo, and Pasuruan (Dinas Kesehatan, 2018).

Based on data from the Bondowoso District Health Office in 2020, the number of pulmonary tuberculosis sufferers increases from year to year, with an average percentage of 2-3%. The increase in the incidence of pulmonary tuberculosis is very threatening the health of other people. So if this is not handled immediately, it will have several impacts, one of which is an increase in the death rate due to pulmonary tuberculosis (Dinas Kesehatan, 2020).

Based on the description above, the researchers were interested in conducting research on the relationship between socioeconomic status and nutritional status with an increase in the incidence of pulmonary tuberculosis at the Nangkaan Public Health Center, Bondowoso.

Method

1. Research design

The research design in this study uses a correlation analytic research method, where this method aims to reveal the relationship between the independent variable and the dependent variable in a situation or group of subjects. In this study based on time using Cross Sectional, which is a type of research that emphasizes the timing of variable measurements that are carried out together or all at once (Nursalam, 2017).

Each research subject was observed only once and the measurement of variables was measured and analyzed during examination or assessment only. This study aims to determine the relationship between socioeconomic status and nutritional status with an

increase in the incidence of pulmonary tuberculosis at the Nangkaan Bondowoso Public Health Center.

2. Population

Population is every subject that meets the criteria that have been applied (Nursalam, 2017). The population of patients with pulmonary tuberculosis in the working area of the Nangkaan Bondowoso Public Health Center is 56 people.

3. Sample

The sample is a part taken from the whole object under study and is considered to represent the entire population(Nursalam, 2017). The sample in this study were all patients with pulmonary tuberculosis at the Nangkaan Bondowoso Public Health Center, namely 56 people.

4. Sampling

Sampling is a sampling technique. To determine the sample in the study, there are various sampling techniques used(Sugiyono, 2011). This study uses total sampling, namely the sample used is the entire population of patients with pulmonary tuberculosis at the Nangkaan Bondowoso Public Health Center.

5. Research variable

Research variable is a concept from various levels of abstract which is defined as a facility for measurement and or manipulation of a research(Notoatmodjo, 2018).

6. Independent Variable

Independent variable is a variable whose value determines another variable. In this study, the independent variables (independent) include: 1. Socio-economic, 2. Nutritional status.

7. Dependent variable

The dependent variable is a variable whose value is determined by another variable. In other words, the dependent variable is the part that is observed and measured to determine whether there is a relationship or influence of the independent variable. In this study, the dependent variable is an increase in the incidence of pulmonary tuberculosis.

8. Research Instruments

Research instruments are tools used and selected in research, the activities of which are to collect data so that these activities become systematic and easier (Nursalam, 2017). The instruments used in this study were questionnaires and observations. It is a measuring tool by means of which the respondent is given a questionnaire with several questions to the respondent and uses a measuring instrument for height and weight scales and observing the results of sputum smear examination of patients with pulmonary tuberculosis.

The questionnaire used is a closed questionnaire, where there is a questionnaire that has been given an answer so that the respondent just chooses an answer. Questionnaires are given to respondents who choose the established criteria and then are given a letter of approval willing to be researched, before filling out the questionnaire respondents are given an explanation in advance about the aims and objectives of the study. The questionnaire contains, among others:

a. General data includes the number of respondents, age, weight, height and education.
b. Socio-economic questions that include the type of work, the amount of income, and others - others.

Observations were made to assess nutritional status by weighing and measuring the height of patients with pulmonary tuberculosis by dividing the results of body weight (kg) by height $(m)^2$ using Body Mass Index (BMI). The score is adjusted according to the results of the division obtained

a. Malnutrition:<17.0
b. Malnutrition:17.0-18.5
c. Good Nutrition: >18.5-25.0
d. Overnutrition (Light): > 25.0-27.0
e. Over Nutrition (Weight): > 27.0

Then, to assess the incidence of pulmonary tuberculosis, a BTA examination was observed in patients in the working area of the Nangkaan Bondowoso Public Health Center.

Result

Table 1 Socioeconomic Frequency of Pulmonary Tuberculosis Patients at the Nangkaan Health Center Bondowoso, 2021

Variable Category	Frequency	Percentage
Low socioeconomic	51	91%
Medium socioeconomic	3	5.4%
High socioeconomic	2	3.6%
Total	**56**	**100%**

Source: Primary Data, 2021

Based on table 1 of 56 patients with Pulmonary Tuberculosis at the Public Health Center of Nangkaan Bondowoso the majority have low socio-economic as many as 51 respondents (91%)

Table 2 Frequency of Nutritional Status of Patients with Pulmonary Tuberculosis at the Nangkaan Health Center Bondowoso, 2021

Variable Category	Frequency	Percentage
Malnutrition	44	78.6%
Malnutrition	11	19.6%
Good Nutrition	1	1.8%
Total	**56**	**100%**

Source: Primary Data, 2021

Based on table 2 of 56 patients with Pulmonary Tuberculosis at the Public Health Center Nangkaan Bondowoso the majority had poor nutritional status as many as 44 respondents (78.6%)

Table 3 Frequency of Incidence of Pulmonary Tuberculosis Patients at the Nangkaan Health Center Bondowoso, 2021

Variable Category	Frequency	Percentage
BTA (+)	49	87.5%
BTA (-)	7	12.5%
Total	**56**	**100%**

Based on table 3 of 56 patients with pulmonary tuberculosis at the Nangkaan Bondowoso Public Health Center, the majority with BTA (+) results were 49 respondents (87%).

Table 4 Cross-tabulation distribution between socio-economic and nutritional status with the incidence of pulmonary tuberculosis at the Nangkaan Health Center Bondowoso, 2021

Variable	Category	BTA (+)		BTA (-)		TOTAL		*p Value
		f	%	f	%	f	%	
Socio-Economic	Low	46	82.1	5	8.9	51	91	
	Currently	2	3.6	1	1.8	3	5.4	0.016
	Tall	1	1.8	1	1.8	2	3.6	
Amount		49	87.5	7	12.5	56	100	
Nutritional	Well	0	0	1	1.8	1	1.8	
status	Not enough	7	12.5	4	7.1	11	19.6	0.000
	nutrition	42	75	2	3.4	44	78.6	
Amount		**49**	**87.5**	**7**	**12.5**	**56**	**100**	

*Anova

Based on table 4, the results showed that the majority of patients with pulmonary tuberculosis with BTA (+) who had low socioeconomic status were 46 people (82.1%) with a significance of 0.016 (p=0.016 <0.05). While the majority of patients with pulmonary tuberculosis with AFB (+) who had poor nutritional status were 42 people (75%) with a significance of 0.000 (p = 0.000 <0.05).

Based on the results of the ANOVA test analysis using SPSS Statistics 20.0 for Windows, a significance value of 0.000 was obtained. Because the value of p<0.05 (p=0.000<0.05) it can be stated that the variance of the Y variable can be affected by the X1 and X2 variables together. The statistical results show that there is a significant relationship between socioeconomic status and nutritional status with the incidence of pulmonary tuberculosis at the Nangkaan Public Health Center, Bondowoso.

Discussion

Table 1 shows that the majority of patients with Pulmonary Tuberculosis at the Nangkaan Bondowoso Public Health Center have low socioeconomic status as many as 51 respondents (91%) and a small proportion have high socioeconomic status as many as 2 respondents (4%). This corresponds to(Notoatmodjo, 2012)This socioeconomic level is determined by elements such as education, employment and income, because these things can affect various aspects of life, including the maintenance of health facilities. Poverty (low socioeconomic) is an environment that endangers human health (physical, spiritual and social) because this situation cannot meet the need for healthy eating so that it weakens the body's immune system as a result, it is susceptible to disease.

Socio-economic conditions (income) are closely related to the problem of food sufficiency. Families with good economic conditions will pay more attention to the quality of family food fulfillment than families with sufficient or low socioeconomic status, families with sufficient or low socioeconomic status will be able to meet their food needs according to their limits as well as meeting the needs of other families.

Table 2 shows that the majority of respondents with pulmonary tuberculosis at the Nangkaan Bondowoso Public Health Center have poor nutritional status, 44 people (78%). This corresponds to (Alsagaff, 2009) One of the factors that influence the possibility of a person to become a patient with pulmonary tuberculosis is a low immune system, including poor nutrition according to (Kementerian Kesehatan RI, 2015). The fulfillment of family nutrition also depends on the socio-economic conditions of the family because these cannot be separated from one another. Families whose socioeconomic conditions are good or sufficient in general will pay attention to the fulfillment of nutrition in the family so that it will affect the level of family nutritional status as well.

Table 3 shows the results of respondents with pulmonary tuberculosis at the Nangkaan Bondowoso Public Health Center regarding the Incidence of Pulmonary Tuberculosis, the majority of clinical results were obtained with AFB (+) results, 49 respondents (87%) and 7 (13%). The data above shows that the incidence of pulmonary tuberculosis at the Puskesmas Nangkaan Bondowoso is still increasing and many factors influence the increase in the incidence, including predisposing factors (nutritional status, immunization and education and employment), supporting factors (social economy, environment and facilities and infrastructure). health), driving factors (lifestyle and community behavior) and other factors (age and gender)(Sejati, A & Sofiana, 2015).

Table 4, it is found that the respondents with pulmonary tuberculosis BTA (+) with low socioeconomic status are 46 people, 2 people have sufficient socioeconomic status, and 1 person has good socioeconomic status. Respondents with pulmonary tuberculosis BTA (-) with low socioeconomic status were 5 people, 1 person had sufficient socioeconomic status, and 1 person had good socioeconomic status. In addition, respondents with pulmonary tuberculosis BTA (+) with good nutritional status were 0 people, undernutrition status was 7 people and poor nutritional status was 42

people. Respondents with pulmonary tuberculosis BTA (-) with good nutritional status were 1 person, undernutrition status was 4 people and poor nutritional status was 2 people, according to (Yuniar, I & Lestari, 2017) there is a relationship between nutritional status and income (socio-economic) with the incidence of pulmonary tuberculosis because most patients with pulmonary tuberculosis with positive BTA have a low socio-economic condition so that it can cause socio-economic problems, including problems with food fulfillment in the family and also problems in the social environment (place of residence). Dense residences (ITR>120%) have the potential to spread and the prevalence is usually always high. The residence or house also plays a role as a risk factor for transmission, namely a house that lacks ventilation (no windows in each room, so that air flow is not good and lack of sunlight causes the risk of transmission of Pulmonary Tuberculosis.

Nutritional status is still very influential on a person's health, poor or poor nutritional status can make a person's body vulnerable to infectious diseases and one of them is Pulmonary Tuberculosis because one of the factors that affect a person's likelihood of becoming a Pulmonary Tuberculosis sufferer is low body resistance, including poor nutrition (Agustin, 2018).

Conclusion

Based on the results of the ANOVA statistical test and the discussion above, there is a significant relationship between socioeconomic level and nutritional status with the incidence of pulmonary tuberculosis, especially in low socioeconomic status which will affect the low nutritional status of pulmonary tuberculosis patients and can worsen body immunity which has an impact on increasing the risk of transmission. Pulmonary Tuberculosis.

Suggestion

Related institutions, namely the Nangkaan Bondowoso Public Health Center, are expected to provide knowledge about pulmonary tuberculosis to avoid behaviors that can worsen the condition of pulmonary tuberculosis patients so as to prevent disease recurrence and reduce the incidence of pulmonary tuberculosis. In addition, further research is expected to be able to conduct further research to determine other variables

such as knowledge about disease or nutrition, environmental hygiene and health care facilities that are thought to affect the incidence of pulmonary tuberculosis patients.

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