Research Article

The Relationship Between Contact History, Clean And Healthy Living Behavior, Smoking Behavior And Pulmonary Tuberculosis In Youth At The Outpatient Pulmonary Polyclinic In Regional General Hospital In Kendari

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ABSTRACT

Background: Tuberculosis (TB) is an infectious disease caused by the bacterium Mycobacterium tuberculosis transmitted through human droplets which have been infected with the bacterium. There are many risk factors led to an increased the incidence of TB. The risk factors that had a role on the incidence of TB were internal factors and external factors. The purpose of this study was to determine the risk factors for the incidence of pulmonary tuberculosis in adolescents at the outpatient pulmonary clinic at Regional General Hospital of Kendari in 2022.

Methods: This type of research was a quantitative with an analytic observational using a case-control approach. The sampling technique in this study was purposive, with a sample size of 70 people consisting of 35 case samples and 35 control samples.

Results: This study found a significant effect of contact history on the incidence of pulmonary TB in the youth group (p <0.05; OR=2.300; 95% CI = 0.130-40.545). There is a significant effect of PHBS on the incidence of pulmonary tuberculosis in the youth group (p <0.05; OR=1.364; 95% CI = 1.005-1.850). Smoking behavior has a significant effect on the incidence of pulmonary TB in adolescents (p <0.05; OR = 10.083; 95% CI = 1.112-91.417).

Conclusions: This study concluded that the variable of contact history, PHBS, and smoking behavior influence the incidence of pulmonary TB to the youth group at the outpatient pulmonary polyclinic in regional general hospital of Kendari in 2022.

Keyword : Tuberculosis, Youth, History, Smoking, Behavior.

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by the bacterium Mycobacterium tuberculosis which is transmitted through human droplets that have been infected with the bacterium. In addition to internal factors consisting of the characteristics of the respondents (age, gender, nutritional status, education, income and employment), pulmonary TB is also influenced by external factors consisting of patient contact, environment and infrastructure.(1).

Based on *the Global Tuberculosis Report* in 2018 the incidence rate of TB in the world is 132 per 100,000 population with a death rate of 36 per 100,000 population. In 2019 the TB incidence rate is 130 per 100,000 population with a death rate of 34 per 100,000 population. Whereas in 2020 the TB incidence rate is 127 per 100,000 population with a mortality rate of 85% .*Mycobacterium tuberculosis* infect almost quarter world population , about 89% of TB occurs in adults and about 11 % occurs in children (2) .

Based on the 2018 Indonesia Health Profile, the incidence rate of TB in Indonesia is known to be 214 per 100,000 population with a death rate of 40 per 100,000 population and a treatment success rate of 84.6%. In 2019 the incidence of TB is known to be 210 per 100,000 population with a death rate of 34 per 100,000 population with a treatment success rate of 82.9%. In 2020 the incidence of TB cases is 130 per 100,000 population with a death rate of 34 per 100,000 population and a treatment success rate of 82.7%. Indonesia is ranked 3rd with the highest TB sufferers in the world after India and China (3,4,5).

Based on the Health Profile of Southeast Sulawesi in 2018 it is known that the incidence rate of TB cases is 150 per 100,000 population with a death rate of 89 cases (2.24%) and a treatment success rate of 82.7%. When compared to the previous year, in 2019 the incidence of TB cases increased to 168 per 100,000 population with 127 cases of death (2.75%) with a treatment success rate of 83.60%. In 2020 the TB incidence rate is 101 per 100,000 population with a mortality rate of 102 cases (2.50%) and a treatment success rate of 67.03% (6,7,8).

Based on data from Health Office of Kendari in 2018, the prevalence of TB is 47% with a death rate of 2.66% and a treatment success rate of 95.5%. When compared to 2019 the prevalence of TB is 34% with a death rate of 2.59% and a treatment success rate of 92.37%. In 2020 the prevalence of TB is 44% with a death rate of 2.10% and a treatment success rate of 64.52%. Based on secondary data taken at Regional General Hospital (RSUD) of Kendari, it is known that 285 patients with pulmonary TB for outpatient care in 2019 are found. In 2020, 174 patients are found and in 2021 it increased by 323 sufferers and in 2022 (January 1-July 31) it has reached 234 sufferers. Pulmonary TB disease is always included in the monthly report of the top 10 outpatient diseases at Regional General Hospital (RSUD) of Kendari. In 2022 the highest number of cases is in January with 84 sufferers then in April with 82 sufferers. As for the number of pulmonary TB sufferers for adolescents with an age range of 12-25 years, there are 58 sufferers (1 January - 31 October 2022) (9,10,11) .

Adolescence is a period of increased susceptibility to tuberculosis. The reasons for this increase in disease are not fully understood. Sex hormones, changes in patterns of social contact, and changes in

immunology are thought to have a role. Therefore, there is a major need for high-quality tuberculosis services that are accessible and acceptable to adolescents, both to facilitate timely diagnosis and support treatment adherence and treatment completion (12) .

The purpose of this study was to identfy the relationship between contact history, clean and healthy living behavior (PHBS), and smoking behavior on the incidence of pulmonary tuberculosis to the youth at the outpatient pulmonary polyclinic in regional general hospital (RSUD) of Kendari in 2022.

METHOD

The study conducted was a quantitative research with analytic observational type using a case control design. The population in this study were all outpatients who were included in the youth group (12-24 years) at Regional General Hospital (RSUD) of Kendari. The sample sizes for the case and control groups in this study are 1:1, where the sample consisted of 35 respondents as the case group and 35 respondents as the control group so that the minimum total sample size is 70 samples. Data collection isconducted by giving questionnaires directly to respondents, and data analysis isconducted using the McNemar test.

RESULTS

Respondent Characteristics

Table 1. Distribution of Respondent Characteristics

Variable	Case		Control		Total	
	n	%	n	%		
Age Category						
Early youth	0	0	1	2,9	1	1,4
Middle youth	4	11,4	3	8,6	7	10
Late youth	31	88.6	3 1	88.6	62	88.6
Gender						
male	24	68,6	24	68,6	48	68,6
female	11	31,4	11	31,4	22	31,4
Level of education						
Junior High School	1	2,9	2	5,7	3	4,3
Senior High School	20	57,1	23	65,7	43	61,4
College	14	40	10	28,6	24	34,3
Respondent's Occupation						
Student / Colleger	14	40	13	37,1	27	38,6
Private employees	15	42,9	13	37,1	28	40
Trader	2	5,7	1	2,9	3	4,3
Others	4	11,4	8	22,9	12	17,1
Smoking Intensity						
Light Smoker	11	47,8	10	83.3	21	60
Heavy Smoker	12	52,2	2	16,7	14	40

Source : Primary Data 2023

Based on the age category, the most respondents were in the case and control groups, namely the late youth category with a total of 31 people (88.6%). Based on gender, the majority of respondents in the case and control groups were male with a total of 48 people (68.6%). Based on the level of education in the case group, most respondents had a high school education level with a total of 20 people (57.1%), in the control group most respondents with a high school education level with a total of 23 people (65.7%). When viewed from the type of occupation, in the case group most respondents worked as private employees with a total of 15 people (42.9%).

Meanwhile, in the control group, there were mostly students and private employees with a total of 13 people (37.1%) each.

The Relationship between Contact History and the Incidence of Pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari in 2022

The results of the analysis of the relationship between contact history and the incidence of pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari can be seen in table 2:

Table 2. The Relationship between Contact History and Pulmonary TB Incidence to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari in 2022

		Control		Total	P Value	OR	95% CI
		With a History	Without a History				
Case	With a history	1	10	11	0.012	2,300	0.130-40.545
	Without a history	1	23	24			
	Total	2	33	35			

Source: Primary Data 2023

Based on table 1, it can be seen that of the 35 respondent pairs (100%), the largest percentage was in couples where the case group and the control group both had no contact history with a total of 23 people and the smallest percentage was in couples where the case group was both had a history of contact and partners where in the control group did not have a history of contact while in the case group had a history of contact with the number of 1 person each.

The results of statistical analysis obtained a *p value* of 0.012 <0.05, mean that

there was a relationship between contact history and the incidence of pulmonary tuberculosis to the youth at the outpatient pulmonary polyclinic in regional general hospital (RSUD) of Kendari. The results of the analysis related to the risk factors for the history of contact with the incidence of pulmonary tuberculosis to the youth group obtained an *Odds Ratio* (OR) value of 2.300 with a *Confidence Interval* (CI) of 95% at *a Lower Limit* of 0.130 and an Upper *Limit* of 40.545 . The OR values obtained indicated that contact history was a risk factor for the

incidence of pulmonary TB to the youth group.

The Relationship between PHBS and Tuberculosis with the Incidence of Pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari in 2022

The results of the analysis about the relationship between clean and healthy living behavior (PHBS) and tuberculosis with the incidence of pulmonary TB to the youth at the outpatient pulmonary polyclinic in regional general hospital (RSUD) of Kendari, it can be seen in table 3:

Table 3. The Relationship between PHBS and TB with the Incidence of Pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari in 2022

		Control		Total	P Value	OR	95% CI
		Less	Good				
Case	Less	0	20	20			1.005-1.850
	Good	4	11	15	0.002	1,364	
Total		4	31	35			

Source: Primary Data 2023

Based on table 3, it can be seen that of the 35 pairs of respondents (100%) the largest percentage was in pairs where the case group had less PHBS while the control group had good PHBS with a total of 20 pairs of respondents and the smallest percentage was in pairs where the case and control groups were both had less PHBS with 0 pairs of respondents.

The results of the statistical analysis obtained a *p-value* of 0.002 <0.05, mean that there was a relationship between clean and healthy living behavior and the incidence of pulmonary tuberculosis to the youth group at the Outpatient Pulmonary polyclinic, Regional general hospital (RSUD) of Kendari. The results of the analysis related to the risk factors for clean and healthy living behavior on the incidence of Pulmonary Tuberculosis to the youth group obtained an *Odds Ratio* (OR) value of 1.364 with a *Confidence Interval* (CI) of 95% at *a Lower Limit* of 1.005 and an *Upper* Limit of) of

1.850. The OR values obtained indicated that clean and healthy living behavior wasa risk factor for the incidence of pulmonary tuberculosis to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari.

The Relationship between Smoking Behavior and Pulmonary TB in Young Age Groups at the Outpatient Pulmonary Clinic of Regional general hospital (RSUD) of kendari in 2022

The results of the analysis of the relationship between behavior smoking with the incidence of pulmonary TB to the youth at the outpatient pulmonary polyclinic in regional general hospital (RSUD) of Kendari can be seen in table 4:

Table 4. The Relationship between Smoking Behavior and the Incidence of Pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari in 2022

		Control		Total	P Value	OR	95% CI
		Yes	No				
Case	Yes	11	12	23	0.003	10,083	1.112-91.417
	No	1	11	12			
Total		12	23	35			

Source: Primary Data 2023

Based on table 4, it can be seen that of the 35 pairs of respondents (100%) the largest percentage was in pairs where the case group had smoking behavior while in the control group did not have smoking behavior with a total of 12 pairs of respondents and the smallest percentage was in couples where the control group had smoking behavior whereas in the case group did not have smoking behavior with a total of 1 pair of respondents.

The results of statistical analysis obtained a *p value* of 0.003 <0.05 mean that there was a relationship between smoking behavior and the incidence of pulmonary tuberculosis in the outpatient pulmonary polyclinic at regional general hospital (RSUD) of kendari. The results of the analysis related to the risk factors for smoking behavior on the incidence of pulmonary tuberculosis to the youth group obtained an *Odds Ratio* (OR) value of 10.083 with a *Confidence Interval* (CI) of 95% at *a Lower Limit* of 1.112 and an Upper *Limit* of 91.417 . The OR values obtained indicated that smoking behavior is a risk factor for the incidence of pulmonary tuberculosis to the youth at the outpatient pulmonary polyclinic in regional general hospital (RSUD) of Kendari.

DISCUSSION

The Relationship between Contact History and The Incidence of Pulmonary TB to the Youth Group at the Outpatient Pulmonary polyclinic in Regional General Hospital (Rsud) Of Kendari

Contact history is the relationship between physical and non-physical contact with sufferers. This case can transmit pulmonary TB disease through coughing, sneezing and having conversation with sputum splashes. The more often and the longer the contact, the greater the possibility of transmission where the concentration of droplets is high, the more germs that enter the lung tissue, if the body's condition is good, it will form dormant in the lung tissue which can last for several months to years and will melt if the condition of the body decreases so that it becomes sick (13,14) .

The results showed that there was a relationship between contact history and the incidence of pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari. The results of this study indicate that some respondents have family members who suffer from pulmonary TB so they have a history of contact and it is possible for

continuous interaction to cause transmission. Based on gender, it is known that more male suffer from pulmonary TB than female. This can be due to their higher mobility and activity than female. Based on the results of the risk factor statistical test, it is known that the contact history variable is a risk factor with an OR value of 2,300 mean that respondents who have a history of contact have a risk of suffering from pulmonary TB 2,300 times compared to respondents who do not have a history of contact.

This study is in line with a study conducted by Teguh Akbar et al (2022) using a *case control design* state that there is a relationship between contact history and the incidence of pulmonary TB which can be seen from *the p value* 0.0001 <0.05 and the OR value = 7.955 with CI 95 % = 2.760-22.924 mean that respondents who have a history of contact have a risk of developing pulmonary tuberculosis 7.955 times compared to respondents who do not have a history of contact (15) .

The Relationship between PHBS and Tuberculosis with the Incidence of Pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari

Clean and Healthy Living Behavior (PHBS) is a set of behaviors that are practiced on the basis of awareness as learning outcomes, which make a family, group or community able to help themselves (independently) in the health sector and play an active role in realizing public health. According to the Ministry of Health (2016), PHBS is one of the main pillars of Healthy Indonesia and is one of the strategies to reduce the burden on the state and society on health financing (16) .

The results showed that there was a relationship between PHBS and Tuberculosis with the incidence of pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari. The results of this study showed that many respondents paid little attention to PHBS, such as not disposing of phlegm in a special place, rarely opening the windows of the house, not covering their mouths using a tissue/handkerchief when coughing or sneezing, often using shared cutlery, and not drying out sleeping utensils regularly. Based on the results of the risk factor statistical test, it was found that the PHBS variable is a risk factor with an OR value of 1.364, mean that respondents who had less PHBS had a risk of suffering from pulmonary TB 2.256 times greater than respondents who have good PHBS.

When viewed from the education level of the respondents, most of them have a high school education level (high school) where this can affect the level of respondents' knowledge about PHBS on the incidence of Tuberculosis. Based on *L. Green's* theory, the level of education is a facilitating factor that form the behavior. Education is one of the efforts in community organizing to increase knowledge including health knowledge. The better the level of education, the more mature health knowledge will be, including the application of PHBS principles.

This study is in line with a study conducted by SyarifatulHidayati (2022) using a *case control design* that the results of *the chi square test* used to analyze the relationship between clean and healthy living behavior (PHBS) and the incidence of pulmonary TB show a *p value* = 0.001 <0.05 so that it can be concluded that there is a relationship between clean and healthy living

behavior (PHBS) with the incidence of pulmonary TB with an *Odd Ratio value =* 8.143 with a 95% CI = 2.294-28.091 mean that respondents who have PHBS have less risk of developing pulmonary tuberculosis 8.143 times compared to respondents who have good PHBS (17) .

Correlation between smoking behavior and the incidence of pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari

Smoking behavior is a risk factor for increasing pulmonary tuberculosis. Smoking can weaken the lungs so that they are more easily infected with tuberculosis germs. Smoking means inhaling poison which can damage health so that it is easy to be infected with various diseases including tuberculosis bacteria. The harmful chemicals in cigarettes are CO_2, nicotine and tar. From a clinical point of view, it is known that smoking for a long time poses a risk for the entry of *Mycobacterium tuberculosis* because chronic exposure to cigarette smoke can damage alveolar macrophages of the lungs thereby affecting the immunity of T cells (lymphocytes) which function to distinguish types of pathogens and to increase immunity whenever the body is exposed to pathogens, by the habit of smoking will make it easier for pulmonary TB infection to occur (18,19) .

The results of the study showed that there was a relationship between smoking behavior and the incidence of pulmonary TB to the Youth at the Outpatient Pulmonary Polyclinic in Regional General Hospital (RSUD) of Kendari. The results of this study indicate that more respondents who have smoking behavior suffer from pulmonary TB

than respondents who do not smoke. Most respondents with TB were heavy smokers who consumed >10 cigarettes a day with a total of 12 people (52.2%) and there were some respondents including light smokers who consumed <10 cigarettes a day with a total of 11 people (47.8%). Based on the results of the risk factor statistical test, the OR value was 10.083, mean that respondents who have smoking behavior have a risk of suffering from pulmonary TB 10.083 greater than respondents who do not smoke.

Based on gender, most of the respondents who suffered from pulmonary TB were male. This can be influenced by smoking habits which are generally consumed by male. Likewise with the type of occupation of the respondents where most of the respondents who have smoking behavior havetypes of occupation as students and private employees. This can be caused by the environment or the influence of social interaction that allows for a stimulus to smoke.

This study is in line with a study conducted by Ilham Raka Kurniawan et al (2021) using a *case control design* that the results of *the chi square test* used to analyze the relationship between smoking behavior and the incidence of pulmonary TB show a *p value* = 0.003 <0.05 and *Odds ratio* = 2.035 so it can be concluded that there is a relationship between smoking behavior and the incidence of pulmonary TB (20) .

CONCLUSION

The conclusions in this study arethere is a relationship between contact history and the incidence of pulmonary tuberculosis to the youth at the outpatient pulmonary polyclinic in regional general hospital (RSUD) of Kendari in 2022, There is a

relationship between PHBS and tuberculosis with the incidence of pulmonary tuberculosis to the youth at the outpatient pulmonary polyclinic in regional general hospital (RSUD) of Kendari in 2022, There is a relationship between smoking behavior and the incidence of pulmonary tuberculosis to the youth at the outpatient pulmonary polyclinic in regional general hospital (RSUD) of Kendari in 2022.

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