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Factors Related to the Tuberculosis incidence among Toddler in Sentani Public Health Centre in Jayapura District, Papua

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Abstract

The background of the research was tuberculosis (TB) is one of major of health problem in citizen. Number of cases of tuberculosis is about 10% from all cases TB in the world. Indonesia had 2nd. The aim of the research is to find out factors that related to Tuberculosis incidence among toddler in Sentani Public Health Centre in Jayapura District. Method of the research is analytic survey with case control approach. Number of sample are 138 children, that came from toddler with TB are 69 toddler, as cases and toddler with upper respiratory tract infection are 69 toddler, as control. Statistical test with univariat analysis, bivariat analysis with Chi Square and to know the risk we use odd ratio, follow by double logistic regression in multivariat analysis. Result of bivariat analysis shown that factors that related to TB incidence among toddler are contact history (OR=39,33, p=0,00), knowledge (Or=2,83, p=0,06), nutrition status (OR=7,571, p=0,00), diseases related (OR=2,353, p=0,00) and condition of the house (OR=3,53, p=0,01), beside that sex (OR=1,000, p=1,00), socio economic status (OR=1,38,p=0,472) and smoker habits (OR=1,404, p=0,462) was not related with TB in toddler. Result of multivariat analysis shown that contact history (OR=58,009, p=0,00) and nutrition status (OR=6,777, p=0,03). Research conclusion is contact history with adult TB and nutrition status below the rate are factors that related with TB incidence among toddler in Sentani Public Health Centre in Jayapura District.

Keywords: Risk Factors; Tuberculosis; Toddler.

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1. Introduction

In 2012, it is estimated proportion of TB cases of children among all TB cases globally reached 6% (530,000 pediatric patients / year). While the death of a child (with a negative HIV status) who suffer from TB reached 74,000 deaths / year, or about 8% of total infant deaths are caused by TB. Indonesia is the country with the third largest TB cases in the world, after China and India. WHO estimates that in Indonesia every year 539,000 new cases of TB occur with death from TB around 101,000 people [1]. TB is the third largest cause of death after cardiovascular disease and respiratory tract, and is the number one disease in the group's largest infectious disease [2]. TB cases mainly occurred in the productive working age, ie the age group 15 to 49 years who have an impact on human resources, which can disrupt the economy of families, communities and countries.

WHO targets the achievement of numbers of new TB case finding (Case Detection Rate / CDR) by 70%, while the CDR TB in Indonesia in 2010 has reached 74%. These data indicate a high number of TB cases in Indonesia. According to data from the Ministry of Health in 2006 the number of TB cases Basil Hold acid (BTA) were found positive as many as 286 481 cases per year with an average incidence of TB in Indonesia amounted to 107 per 100,000 population [2]. In the 2015 Global Tuberculosis report released by the World Health Organization (WHO) based on the results of the latest survey, the number of new cases of tuberculosis or TB in Indonesia is estimated to reach 1 million cases per year, or more than doubled from the previous estimate. The percentage of the number of cases in Indonesia to 10 percent of all cases in the world. Indonesia's position has jumped to the country with the second highest number of TB cases along with China. India ranks first with 23 percent of the case presentation that exist around the world.

TB among Indonesia children in 2010 was 9.4%, then to 8.5% in 2011 and 8.2% in 2012. The disaggregation of data by province, showing the proportion of variation of 1.8% to 15.9%. This shows the quality of child TB diagnosis still vary widely at provincial level. In Papua in 2014 as many as 5,550 cases of tuberculosis per 100 thousand inhabitants and in 2013 for tuberculosis control program as many as 7,327 cases per 100 thousand inhabitants of the secretary's report PHO Papua, Dr. Silvanus Sumule. While there are still many cases of decline in TB cases in people who do not get access to services. In 2013 the discovery of new cases of tuberculosis recorded figures of 45.4% and a treatment success rate of about 75% compared to 90% nationally. TB remains a problem in Papua and must be done comprehensive and integrated efforts in controlling the disease Tuberculosis.

Jayapura regency per February 2013 based on the Jayapura District Health Office report in 2012 there were as many as 477 cases of tuberculosis, of which 417 cases have been cured, 15 cases died and 45 others are cases of failure (Drop Out). In 2013 as many as 170 cases, in 2014 as many as 296 cases of smear-positive and in 2015 experienced an increase of 313 cases of smear-positive tuberculosis [3]. Health centers health centers as the largest Sentani in Jayapura and as the largest TB care facilities at the district health center Sentani Jayapura that accommodate most patients Tuberculosis in Jayapura. According to the report recaps P2TB unit (Eradication of Tuberculosis). In Health centre Sentani number of patients with Tuberculosis smear positive in the year 2013 there were 104 cases (61% of TB cases in the District Jayapura), in 2014 as many as 156 cases (52% of TB cases in the district of Jayapura) and in 2015 experienced an increase of 166 cases (53% of the total number of

TB cases in the district of Jayapura) while 2016 began in January and August, 104 cases of smear-positive tuberculosis. TB case rate of children has increased every year by 2014 as many as 70 cases, in 2015 as many as 82 cases of tuberculosis of children and in 2016 began in January-August 2016 as many as 69 cases of tuberculosis child [4].

2. Materials and Methods

The aims of the research is to find out the factors that related to Tuberculosis Incidence Among toddler in Sentani Public Health Centre in Jayapura District. Method of the research is analytic survey with case control approach. Number of samples are 138 children, that Came from toddler with TB are 69 toddler, as cases and toddler with upper respiratory tract infection are 69 toddler, as control. Statistics test with univariate analysis, bivariate analysis with Chi Square and to know the risk we use odds ratios, follow by double in a multivariate logistic regression analysis [5-8].

The study was conducted in Sentani health centre Sentani District, Jayapura. datacollection is carried out since August-September 2016. The population in this study were all children under five are undergoing treatment at the health center Sentani Tuberculosis disease from January to August, 2016 amounted to 69 toddlers. These populations are grouped into groups of case and control groups with criteria: a. The case group The exception was the group of children under five (under 5 years) with a diagnosis of pulmonary tuberculosis according to medical record filled by physicians based on clinical history, examination chest / x-rays and treatment in health centers Sentani. The control group in question is young children who do not suffer from pulmonary TB filled based medical records by doctors and clinics for treatment in Sentani.

Sample in this study is the total population of children under five suffering from tuberculosis and is still undergoing Sentani. Number of person cured in health centre are organized into groups of case and control groups with a ratio of 1: 1, with the number of cases as many as 69 samples and controls as much as 69 samples so that the sum of all the sample is 138 samples that meet the criteria for inclusion and exclusion.

3. Results and Discussion

Bivariat Analysis

This study examined the relationship between the sexes, contact history, the knowledge of parents, nutritional status, socioeconomic status, co-morbidities, smoking habits of adults, and housing conditions are associated with the incidence of pulmonary tuberculosis in children under five in Sentani health centre. Statistical data analysis done with chi square test and determine the odds ratio (OR) and significance , with the help of SPSS program as the results are as follows:

1. Gender

Relationship between Sex with pulmonary Tuberculosis incidence in children under five are presented in Table 1 below:

Table 1: Relationship between Sex with Tuberculosis Occurrence on Childhood by cases and controls in Health centre Sentani, Jayapura district 2016.

No	Sex	casus		Control		Total	
		n	%	n	%	n	%
1	Male	32	46,38	32	46,38	64	46,38
2	Female	37	53,62	37	53,62	74	53,62
	Number	69	100,00	69	100,00	138	100,00
BivariatAnalisis		Odds Ratio (OR)				1,000	
		95% Confidence Interval (CI)				0.512- 1,953	
		Contingence Coefficient (CC)				0,000	
		Probability (P Value)				1,00	

Table 1shows, more women are experiencing pulmonary Tuberculosis incidence with 53.62% than male with 46.38%.Chi square test results showed that the value of p = 1.00 (p> 0, 05) means that there is no significant relationship between sex and the incidence of pulmonary tuberculosis in children. The contingence coefficientvalue (CC) 0.000 means there is no relationship between the type sex with the incidence of pulmonary tuberculosis in children under five.Odds Ratio (OR) 1.000 with Confidence Interval (CI) 95%: 0.512 <OR <1.953, indicates that girls have pulmonary tuberculosis risk 1,000 times greater than men.

2. History of Contacts

The relationship between a history of contact with pulmonary Tuberculosis incidence in children under five at present in the table 2, the following:

According to the table above, toddlers who no history of contact more experienced pulmonary Tuberculosis incidence of 85.51% of children under five who no history of contact by 14.49%, Statistics Chi square test results showed that the value of p = 0.00 (p <0, 05) means that there is a significant relationship between a history of contact with pulmonary Tuberculosis incidence in children under five. The contingence coefficient value (CC) 0.725 means that there is a strong relationship (there is a close relationship) between a history of contact with pulmonary Tuberculosis incidence in children under five. Odds Ratio (OR) 39.33 with Confidence Interval (CI) 95%: 14.917 <OR <103.717, shows that toddlers who no history of contact with adult patients with pulmonary tuberculosis have pulmonary tuberculosis risk 39.33 times greater than children toddler that has no history of contact with adult patients with pulmonary tuberculosis.

Table 2: The relationship between history Contact with Tuberculosis Occurrence in Childhood by cases and controls in Sentani health centre, Jayapura District 2016

No	Contact history	Casus		Control		Total	
		n	%	n	%	n	%
1	Yes, Contact history	59	85,51	9	13,04	68	49,28
2	No, Contact history	10	14,49	60	86,96	70	50,72
		69	100,00	69	100,00	138	100,00
Analisis Bivariat		Odds Ratio (Or)				39,33	
		95% Confidence Interval (Ci)				14.917-103.717	
		ContingenceCoefficient (Cc)				0,725	
		Probability (P Value)				0,00	

3. Knowledge

The relationship between the knowledge of parents with pulmonary Tuberculosis incidence in children under five at present in the table 3, the following:

Table 3: The relationship between knowledge of Parents with Tuberculosis Occurrence on Childhood by cases and controls in Sentani health centre, Jayapura district 2016.

No	Knowledge of parents	Casus		Control		Total	
		n	%	n	%	n	%
1	Less	37	53,62	20	28,99	57	41,30
2	Good	32	46,38	49	71,01	81	58,70
		69	100,00	69	100,00	138	100,00
Analisis Bivariat		Odds Ratio (Or)				2,83	
		95% Confidence Interval (Ci)				1,402- 5722	
		contingence coefficient (Cc)				0,250	
		Probability (P Value)				0,06	

According to the table 3 above, toddlers with parents who have less knowledge of more experienced pulmonary Tuberculosis incidence of 53.62% of children under five with parents who have a good knowledge of 46.38%. Statistics Chi square test results showed that the value of p = 0.06 (p <0, 05) means that there is a significant correlation between the knowledge of parents with pulmonary Tuberculosis incidence in children under five. Contingence coefficientvalue (CC) 0.250 means that there is a weak correlation between knowledge of the incidence of pulmonary tuberculosis in children under five.Odds Ratio (OR) of 2.83 with a confidence interval

(CI) 95%: 1.402 <OR <5.722, indicates that toddlers with parents who have less knowledge about the disease tuberculosis have pulmonary tuberculosis risk was 2.83 times greater than the toddlers with parents who have a good knowledge about the disease Pulmonary Tuberculosis.

4. The nutritional status

The relationship between nutritional status and the incidence of pulmonary tuberculosis in children under five at 4:13 presented in the table below:

Table 4: Relationship between the Nutritional Status in Children with Tuberculosis Occurrence among Toddlers based cases and controls in Health centre Sentani, Jayapura District 2016

No	Status Gizi	Kasus		Kontrol		Total	
		n	%	n	%	n	%
1	Kurang	48	69,57	16	23,19	64	46,38
2	Baik	21	30,43	53	76,81	74	53,62
Total		69	100,00	69	100,00	138	100,00
Analisis Bivariat		Odds Ratio (Or)				7,571	
		95% Confidence Interval (Ci)				3,546- 16,168	
		contingence coefficient (Cc)				0,465	
		Probability (P Value)				0,00	

Based on Table 4 above, children under five with malnutrition status more experienced pulmonary Tuberculosis incidence of 69.57% of children under five with good nutritional status amounted to 30.43%.Statistics Chi square test results showed that the value of p = 0.00 (p <0, 05) means that there is a significant relationship between nutritional status and the incidence of pulmonary tuberculosis in children under five. Contingence coefficient value (CC) 0.465 means that there is a strong relationship between nutritional status and the incidence of pulmonary tuberculosis in children under five. Odds Ratio (OR) 7.571 with Confidence Interval (CI) 95%: 3.546 <OR <16.168 indicates that the nutritional status of children under five with less risk of 7.571 times greater risk of pulmonary tuberculosis compared with young children with good nutritional status.

5. Socio-Economic Status

The relationship between socio-economic status with the incidence of pulmonary tuberculosis in children served on table 5, the following:

Table 5: Relationship between Socio-Economic Status in Children with Tuberculosis Occurrence Toddlers based cases and controls in Health centre Sentani, Jayapura District 2016

No	Socioeconomic status	Casus		Control		Total	
		n	%	n	%	n	%
1	Under poor line	48	69,57	43	62,32	91	65,94
2	Upper poor line	21	30,43	26	37,68	47	34,06
Total		69	100,00	69	100,00	138	100,00
Analisis Bivariat		Odds Ratio (Or)				1,38	
		95% Confidence Interval (Ci)				0,681- 2,803	
		Contingence Coefficient (Cc)				0,076	
		Probability (P Value)				0,472	

According to the table 5 above, toddlers with parents who have a socio-economic status below the poverty line experience more occurrences of pulmonary tuberculosis at 69.57% of children under five with socioeconomic status above the poor line with 30.43%. Statistics Chi square test results showed that the value of p = 0.472 (p> 0, 05) means there is no significant relationship between socioeconomic status with the incidence of pulmonary tuberculosis in children under five. Contingence coefficient value (CC) 0.076 means that there is a weak correlation between socioeconomic status with the incidence of pulmonary tuberculosis in children under five. Odds Ratio (OR) 1.38 with a confidence interval (CI) 95%: 0.681 <OR <2.803 indicates that toddlers with parents who have socioeconomic status below the poverty line of 1.38 times greater risk affected by pulmonary tuberculosis compared with children toddlers with parents who have a socio-economic status above the poverty line.

6. Disease accompanying

The relationship between co-morbidities in children with pulmonary Tuberculosis incidence in children under five at present in table 6 below:

Table 6: Relationship between accompanying Disease In Children with Tuberculosis Occurrence on Childhood by cases and controls in Health centre Sentani, Jayapura District 2016

No	accompanying Disease	Cases		Control		Total	
		n	%	n	%	n	%
1	Any disease	18	26,09	0	0,00	18	13,04
2	No disease	51	73,91	69	100,00	120	86,96
		69	100,00	69	100,00	138	100,00
Analisis Bivariat		Odds Ratio (Or)				2,353	
		95% Confidence Interval (Ci)				1,911- 2,897	
		Contingence Coefficient (Cc)				0,387	
		Probability (P Value)				0,00	

According to the table above, toddlers existing co-morbidities experienced pulmonary Tuberculosis incidence amounted to 26.09% of the children under five are no accompanying diseases of 73.91%.Statistics Chi square test results showed that the value of p = 0.00 (p <0.05) means that there is a significant relationship between co-morbidities in children with pulmonary Tuberculosis incidence in children under five. Contingence coefficientvalue (CC) 0.387 means that there is a weak relationship between co-morbidities in children with pulmonary Tuberculosis incidence in children under five.

Odds Ratio (OR) 2.353 with Confidence Interval (CI) 95%: 0,1,911<OR <2.877 showed that toddlers who no concomitant disease risk 2,353 times greater than the pulmonary tuberculosis with young children who do not have co-morbidities.

7. Smoking Habit (Adults)

The relationship between the Smoking Habit among Adults with pulmonary Tuberculosis incidence in children under five at present in table 7 below:

Table 7: Relationship between Smoking Habits of Adults with Tuberculosis Occurrence on Childhood by cases and controls in Health centreSentani, Jayapura District 2016

No	Adult smoking habit	Cases		Control		Total	
		n	%	N	%	n	%
1	Yes	50	72,46	45	65,22	95	68,84
2	None	19	27,54	24	34,78	43	31,16
		69	100,00	69	100,00	138	100,00
Analisis Bivariat		Odds Ratio (Or)				1,404	
		95% Confidence Interval (Ci)				0,680- 2,895	
		Contingence Coefficient (Cc)				0,78	
		Probability (P Value)				0,462	

According to the table above, toddlers with parents who have a habit of smoking more experienced pulmonary Tuberculosis incidence of 72.46% of children under five with parents who do not have the habit of 27.54%. Statistics Chi square test results showed that the value of p = 0.462 (p> 0.05) means that there is no significant relationship between smoking habits of adults with pulmonary Tuberculosis incidence in children under five. Value coefficientcontingence (CC) 0.078 means that there is a weak relationship between smoking habits of adults with pulmonary Tuberculosis incidence in children under five.

Odds Ratio (OR) 1.404 with Confidence Interval (CI) 95%: 0.680 <OR <2.895 indicates that toddlers with parents who has smoking risk 1,404 times greater risk of tuberculosis lung compared with toddlers with parents who do not have a habit smoke. Environmental factor play important role to the habits [9-11].

8. Conditions Home

The relationship between the Home Condition with pulmonary Tuberculosis incidence in children under five at present in table 8 below:

Table 8: Relationship between Pulmonary Conditions with Tuberculosis Occurrence at Home With Toddlers based cases and controls in Health centreSentani, Jayapura District 2016

No	House Condition	Cases		Control		Total	
		n	%	n	%	n	%
1	Less	47	68,12	26	37,68	73	52,90
2	Good	22	31,88	43	62,32	65	47,10
		69	100,00	69	100,00	138	100,00
Analisis Bivariat		Odds Ratio (Or)				3,53	
		95% Confidence Interval (Ci)				1,750- 7.132	
		Contingence Coefficient (Cc)				0,305	
		Probability (P Value)				0,01	

According to the table above, toddlers who have home conditions are not good (not eligible) more experienced pulmonary Tuberculosis incidence of 68.12% of children under five with good housing conditions (qualified) of 31.88%. Statistics Chi square test results showed that the value of p = 0.01 (p <0.05) means that there is a significant correlation between the condition of the house with the incidence of pulmonary tuberculosis in children under five. Value coefficient contingence (CC) 0.305 means that there is a strong relationship between the condition of the house with the incidence of pulmonary tuberculosis in children under five.Odds Ratio (OR) 3.53 with a confidence interval (CI) 95%: 1.750 <OR <7.132 indicates that toddlers to home conditions are not good (not eligible) risk 3.53 times greater than children Pulmonary Tuberculosis toddler with better housing conditions (eligible).

9. Conclusion

1. There is no relationship between the sexes toddlers with pulmonary TB incidence in children under five in Health centre Sentani (OR = 1.000, p = 1.00).

2. There is a relationship between a history of contact with pulmonary TB incidence in children under five in Health centre Sentani (OR = 39.33, p = 0.00).

3. There is a relationship between the knowledge of parents with pulmonary TB incidence in children under five in Health centre Sentani (OR = 2.83, p = 0.06).

4. There is a relationship between nutritional status and the incidence of pulmonary tuberculosis in children

under five in Health centre Sentani (OR = 7.571, p = 0.00).

5. There is no relationship between socioeconomic status with pulmonary TB incidence in children under five in Health centre Sentani (OR = 1.38, p = 0.472).

6. There is a relationship between comorbidities in children with pulmonary TB incidence in children under five in Health centre Sentani (OR = 2.353, p = 0.00).

7. There is no relationship between smoking habits of adults in the house with the occurrence of pulmonary tuberculosis in children under five in Health centreSentani (OR = 1.404, p = 0.462).

8. There is a relationship between housing conditions (density of residents and ventilate the house) and the incidence of pulmonary tuberculosis in children under five in Health centreSentani (OR = 3.53, p = 0.01).

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