



Determinant Factors that Influence the Nutritional Status of Patients Childhood Pulmonary Tuberculosis in Abepura Hospital in 2016

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Abstract

One of the major health problems are pulmonary tuberculosis among children. About 10% of Indonesia's population suffering from pulmonary tuberculosis and in ranks of second in the World. The purpose of this study was to determine the determinant factors that affect the nutritional status of children under five suffering from pulmonary tuberculosis in hospitals Abepura, Jayapura, Papua. This was an analytic with cross sectional design. A sample of 66 children with tuberculosis and has been undergoing treatment at month 2 and month 6, the analysis used were univariate, bivariate and multivariate analysis. Results indicated that bivariate analysis showed some determinant factors that affect the nutritional status of children under five suffering from pulmonary tuberculosis are: Energy intake and protein intake (p-value = 0.000 <0.05). Knowledge (p-value = 0.006 <0.05). the duration of treatment (p-value = 0.006 <0.05). While education (p-value = 0.740 > 0.05), job p-value = 0.240 > 0.05), earnings (p-value = 0.061 > 0.05), race / ethnicity (p-value = 0.286 > 0, 05), there was no effect on the nutritional status of children under five suffering from pulmonary tuberculosis. The conclusion is no effect between energy and protein intake, knowledge and duration of treatment on the nutritional status of children under five suffering from pulmonary tuberculosis.

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And there is no influence of parental education, mother's occupation, income parents and tribes / ethnic groups on the nutritional status of children under five suffering from pulmonary tuberculosis.

Keywords: determinant factor; pulmonary tuberculosis; children under five.

1. Introduction

Indonesia now ranked second, and the number of cases are India and China. But when seen from the number of tuberculosis (TB Rate) then Indonesia is one country with the highest number of tuberculosis in the world. World Health Organization (WHO) reported [1], Indonesia ranked noted decreased from the third position to fourth by the number of TB patients for 321,000 people. The five countries with the largest number of incident cases in 2012 were India, China, South Africa, Indonesia and Pakistan [1]. In the province of Papua in 2014, has been found as many as 9511 cases of tuberculosis or 302 cases / 100,000 population, Jayapura district alone, discovery of pulmonary tuberculosis patients in the year 2012 as many as 1,161 cases, Case Detection Rate (CDR) of 69.0% (target > 70 %) ranks 10th largest district in Papua [2]. While in the General Hospital of Abepura, Jayapura children pulmonary tuberculosis patients in the top ten which was ranked third after respiratory diseases and malaria, the data in 2015 amounted to 2 316 pediatric patients who come for treatment and was diagnosed as suffering from pulmonary tuberculosis. Average each month reached 193 children coming for treatment and suffering from tuberculosis, where the average patient has nutritional status with less weight, [3,4]. Poor nutritional status is one of the factors that influence the incidence of pulmonary tuberculosis, lack of protein, calories and iron deficiency will increase the risk of pulmonary tuberculosis. In contrast, lung tuberculosis can affect the nutritional status of patients due to the course of the disease that affects the immune system. How measurement can be done by comparing weight and height or body mass index (BMI). In addition, socio-cultural factors also affect the care of infants in families that have an impact on the health status and nutritional status. The socio-cultural factors including education, employment, income, race / ethnicity, tradition / habit and their knowledge of health and nutrition. Where different ethnic backgrounds in the parents will have an impact on the eating habits of toddlers differently. In low-income families have two times greater risk have a toddler nutrition status is less than in high-income families [5].

2. Materials and Methods

This type of research is an analytic study with cross sectional design. That researchers study the dynamics of influence between the determinant factors of the nutritional status of children with a model approach point time, variable determinant factors and variables nutritional status observed while at the same time that each subject was observed once, and the determinant factors of the study population and the effects of the disease is measured according to the circumstances or the current status of research [6].

3. Research Result

3.1. Univariate analysis results

a. The frequency distribution of demographic characteristics toddlers.

The frequency distribution of children characteristic samples are as follows:

Table 1: Frequency Distribution Characteristics of Toddlers

Variables		F	%
Toddlers	1-2 year	15	22,7
	2-3 year	13	19,7
	3-4 year	11	16,7
	4-5 year	27	40,9
sex	Male	34	51,5
	Female	32	48,5
	Total	66	100

Based on table 4.1 above it is known that the majority of the study sample toddlers age 4-5 years as many as 27 children, or of (40.9%). Most toddlers sample had sex male child or a total of 34 (51.5%)

b. The frequency distribution of nutritional status and intake of toddlers.

Table 2: Distribution Frequency nutritional status and intake Toddler

Variables	Nutrition Status	F	%
Nutrition status Before treatment	Lack nutrition	34	51,5
	Good nutrition	32	48,5
Nutrition status After treatment	Lack nutrition	17	25,8
	Good nutrition	49	74,2
Energi intake	Lack nutrition	27	43,9
	Good nutrition	37	56,1
Protein Intake	Lack nutrition	20	30,3
	Good nutrition	46	69,7
	Total	66	100%

According to the table 2. note that the majority of children under five sample had previous nutritional status were classified as good, namely (48.5%), then that has nutritional status after treatment were classified as good, namely (74.2%). Most of the study sample had a good energy intake (56.1%). And most of the study sample had a protein intake of the fairly (69.7%)

c. The frequency distribution of sample by old toddler treatment.

Table 3: The frequency distribution of sample by old toddler treatment

		F	%
Curate duration	2-6 month	50	75,8
	>6 month	16	24,2%
	Total	66	100,0

Based on Table 3. The majority of the study sample new toddler undergoing treatment 2-6 months as many as 50 children (75.8%).

d. Toddler Mom demographic frequency distribution sample

Table 4: Frequency Distribution Demographic Mother Toddler Research samples

		F	%
Mother age	< 20 Year	4	6,1
	20-30 Year	22	33,3
	30-40 Year	38	57,6
	> 40 Year	2	3,0
Education	Basic	20	30,3
	Middle	28	42,4
	High	18	27,3
Occupation	Not work	35	53,0
	Work	31	47,0
Knowledge	Low	21	31,8
	Middle	37	56,1
	High	8	12,1
Income	Low	39	59,1
	High	27	40,9
Tribe	Papua	42	63,6
	Non Papua	24	36,4
	Total	66	100,0

According to the table it can be seen that most of the Capital Toddlers aged 30-40 years (57.6%). The majority of the sample Toddlers Mom had secondary education (42.4%) Most Capital Toddlers study sample did not have a job (53.0%). Then the mothers who have knowledge (56.1%). Most mother Toddler sample of low income parents (59.1%). Most mother Toddler sample is indigenous Papuan tribe as many as 42 people (63.6%).

3.2. Bivariate analysis results

a. Energy and protein intake.

Table 5: Against influence between Energy Intake Nutritional Status

Energy intake	Nutrition status				χ^2	p. Value
	Less		Good			
	f	%	f	%		
Less	15	22,7 %	14	21,3 %	18,444a	0,000
Enough	2	3 %	35	53,0 %		
Total	17	25,7%	49	74,3%		

Based on the above table 5, Toddlers study sample had good nutritional status and have sufficient energy intake has the greatest proportion of as many as 35 people or as much (53%). While infants with malnutrition status with intake of less than 15 people or by (22.7%), nutritional status differences between groups toddler turns energy intake differed significantly (p-value = 0.000 <0.05).

b Protein intake.

Table 6: Influence of Protein Intake on Nutritional Status

Protein intake	Nutrition status				χ^2	p. Value
	Less		Good			
	f	%	f	%		
Less	12	18,2 %	5	7,7%	18,444a	0,000
Enough	8	12,1 %	41	62%		
Total	20	30,3%	46	69,7 %		

Based on table 6 above, Toddler sample that are well-nourished and have adequate protein intake has the greatest proportion of as many as 41 children, or of (62.1%). While infants with malnutrition and intake enough to have the smallest proportion of as much as 8 children, or of (12.1%).

Differences between groups nutritional status of infants was different protein intake was significantly (p-value = 0.000 <0.05).

c. Toddler Mom education.

Table 7: Effect between Education Capital Against Nutritional Status

Mother education	Nutrition status				χ^2	p. Value
	Less		Good			
	F	%	F	%		
Basic	5	7,6%	15	22,7%	1,977a	0,740
Middle	9	13,6%	19	28,8%		
High	3	4,5%	15	22,7%		
Total	17	25,6%	49	74,4%		

Based on the table above, Toddler sample that are well-nourished and his mother a high school education had the greatest proportion of (28.8%), mothers educational differences between groups were not significantly different (p-value = 0.740 > 0.05).

d. Mothers Work.

Table 8: Work Against effect between maternal nutritional status

Occupation	Nutrition status				χ^2	p. Value
	Less		Good			
	F	%	F	%		
Not work	12	18,2%	23	34,8%	2,857a	0,240
Work	5	7,6%	26	39,4%		
	17	25,8%	49	74,2%		

Based on table 8 above, Toddler study sample had good nutritional status and her work has the greatest proportion is (39.4%). Differences between groups nutritional status of mothers work did not differ significantly (p-value = 0.240 > 0.05).

e. Parents income.

Table 9: Influence of Income Families Against Nutritional Status.

Pendapatan	Status Gizi				χ^2	p. Value
	Gizi Kurang		Gizi Baik			
	F	%	f	%		
Rendah	14	21,2%	25	37,9%	5,595a	0,061
Tinggi	3	4,5%	24	36,4%		
	17	25,7%	49	74,3%		

Based on the above table 9, Toddler study sample had good nutrition and family has a low income have the highest proportion (37.9%). The difference between the nutritional status of family income brackets toddler did not differ significantly (p-value = 0.061 > 0.05).

f. Tribes / ethnic groups

Table 10: Influence of Ethnicity / Ethnic Against Nutritional Status

Tribe	Nutrition status				χ^2	p. Value
	Less		Good			
	f	%	f	%		
Papua	3	4,5%	0	0,0%	2,501a	0,286
Non Papua	10	15,2%	4	6,1%		
Total	29	43,9%	20	30,3%		

Based on the above table 10, Toddler study sample had good nutrition and family Papuans have the highest proportion (43.9%). Differences between groups nutritional status of family origin (culture) infants did not differ significantly (p-value = 0.286 > 0.05).

g. Knowledge Capital.

Table 11: Influence of Knowledge Capital Against Nutritional Status

Mother knowledge	Nutrition status				χ^2	p. Value
	Less		Good			
	F	%	F	%		
Los	11	16,1%	10	15,2%	14,556a	0,006
Middle	6	9,1%	31	47%		
High	0	0,0%	8	12,1%		
Total	17	25,2%	49	74,8%		

Based on the table above, Ms. Toddler study sample had good nutritional status and her mother have knowledge relatively high at 15.2%. Differences between groups nutritional status of mothers knowledge turned out to be significantly different (p-value = 0.006 < 0.05).

h. Treatment long.

Based on the above table 11, Toddler study sample had good nutritional status and already went 2 to 6 months has the greatest proportion of as many as 33 people or as much (50%). Differences between groups nutritional status of infants were different duration of treatment was significantly (p-value = 0.026 < 0.05).

Table 11: Effect of Duration Treatment of Nutritional Status

Curative period	Nutrition status				χ^2	p. Value
	Less		Good			
	F	%	F	%		
2-6 month	17	25,7 %	33	50,0%	7,327a	0,026
>6 month	0	0,0%	16	24,3 %		
Total	17	25,7%	49	74,3%		

3.3. Results of Multivariate Analysis

Table 12: Variable Potential In Multivariate Analysis, Independent Variable (X) on the dependent variable (Y)

Variables	Notes	B	Wald	p-value	Remark
X.1.	Asupan Energi	3,495	5,545	,019	Significant
X.2.	Pendidikan	2,322	4,376	,036	Significant
X.3.	Pekerjaan	5,004	7,804	,005	Significant
X.4.	Pendapatan	3,911	4,417	,036	Significant
X.5.	Budaya	-,193	,018	,893	Not Significant
X.6.	Pengetahuan	4,923	6,518	,011	Significant
X.7.	Lama pengobatan	2,940	4,267	,039	Significant
α_0	(constant)	-13,705	8,925	,003	Significant

From the table it can be concluded that the intake (X1), Education (X2), Employment (X3), Revenue (X4), Knowledge (X6) and (X7) Duration of treatment effect on the nutritional status Toddlers (Y).

Table 13: Results Multivariate Analysis Logistic Regression Coefficients

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Asupan Energi	3,495	1,484	5,545	1	,019	32,952
	Pendidikan	2,322	1,110	4,376	1	,036	10,196
	Pekerjaan	5,004	1,791	7,804	1	,005	,007
	Pendapatan	3,911	1,861	4,417	1	,036	49,963
	Budaya	4,923	1,928	6,518	1	,011	137,397
	Pengetahuan	-,193	1,434	,018	1	,893	,825
	Lama pengobatan	2,940	1,424	4,267	1	,039	18,924
	Constant	-13,705	4,588	8,925	1	,003	,000

a. Variable(s) entered on step 1: Energi, Pendidikan, Pekerjaan, Pendapatan, Budaya, Pengetahuan dan lama pengobatan.

From the test results, we can conclude that all independent variables simultaneously influence the dependent variable. It can be seen from the figures significance of less than 0.05 ($0.000 < 0.05$), so the variable intake, Education, Employment, Income, Culture, and Science jointly influence the nutritional status of toddlers.

3. Research Results

3.1. Toddler nutritional status

Distribution Based on the nutritional status of children under standard B / U, Toddler in Abepura Hospital suffering from pulmonary tuberculosis before curative have a Good Nutritional status 48.8%, Toddler nourished less by 51.5%. Based on the above analysis that the treatment can improve the nutritional status of toddlers. The cause is directly itself and the intake, and intake indirectly affected by family income affect the availability food in the family because the income is a factor that most determines the quality and quantity of food [5].

3.2. Substance Intake Nutrition (Energy and Protein)

Nutrient intake according to UNICEF, a cause that directly affects the nutritional status of a person. Research using the form food recall 1x24 hours to determine the daily energy and protein intake for infants suffering from pulmonary tuberculosis in Abepura Hospital. For most of the energy intake of children under five are still less was 43.9% and sufficient energy intake of 56.1%. While protein intake is less by 30.3%, In accordance with the results of a 24-hour food recall interviews conducted by the researchers, that most toddlers have been given a hawker outside, making it difficult to measure the intake of the infants who had consumed.

3.3. Effect of Energy and Protein Intake on Nutritional Status Toddler

Based on the research of inter-group differences in the nutritional status of children under five turns energy intake differed significantly ($p\text{-value} = 0.000 < 0.05$), meaning that there is influence between the intake of the nutritional status of children under five. This is in line with less research done by Jahari, and his colleagues [7] which states that there is a relationship between energy intake with nutritional status of children. From the results of the bivariate analysis showed that there was a relationship between Energy intake and nutritional status based index BB / U. According to the assumptions of researchers, the presence of tuberculosis disease can cause infants become malnourished because of a decrease in appetite, and changes in the metabolism of the body. Dan and one that can prevent the disease tuberculosis is the nutritional status of children under five is good.

3.4. Effect of Education on Nutritional Status Toddler Mom

Maternal education has no relation to nutritional status ($p = 0.740 > 0.05$). This happens because basically women who contribute directly in parenting in the family .Education is a process of learning in a person to make a change [8].

3.5. Effect of Capital Works on Nutritional Status Toddler

Differences between groups nutritional status of mothers work did not differ significantly ($p\text{-value} = 0.240 > 0.05$). This means that working mothers do not affect the nutritional status of a toddler. Based on bivariate analysis, it can be concluded that there is no relationship between the nutritional status of children significant the status of working mothers in the index BB / U. This study is in line with research conducted by [9] which states that no significant relationship between the nutritional status of children with the status of working mothers [10-11].

3.6. Effect of income parents with Toddler Nutritional Status

From the results of statistical tests, it turns out the family income does not affect the nutritional status of children under five categories in which ($p\text{-value} = 0.061 > 0.05$). The amount to be fed will be more, while revenues are insufficient. Insufficient income more spent on food, Soekirman [12]. In this study showed a relationship between family income significant the nutritional status of children. Researchers assume this is because more acute impact on the nutritional status that is only BB / U.

3.7. Effect of tribe / ethnic group against Toddler Nutritional Status

Tribes / ethnic groups have no significant influence on the nutritional status of children under five, where the value of $p = 0.286$, the study was conducted in urban areas that have tribal / ethnic assortment so that in general the urban community or communities who have lived in the same area have custom and the same habits as well.

3.8. Effect of Knowledge Capital of the Nutritional Status Toddler

Knowledge Capital had a significant association with the nutritional status of children, where the value of $p = .0006$ or $p < 0.05$. This situation is in line with research, in which the mother's knowledge related to nutritional status in which the value of $p = 0.026$. Knowledge can influence the behavior of someone, where the understanding of the object is known. In this study the mothers' knowledge of health and nutrition has given understanding to act. Although for most mothers have only moderate levels of knowledge (47%). [8, 13]

3.9. Effect of Duration Treatment of Nutritional Status Toddler

Based on the research results indicate that there is a relationship between a history of taking the medication with nutritional status of children. These results are based on a chi-square test were obtained $p = 0.026$ ($p < \alpha 0.05$). Based on this study, respondents who underwent treatment after the 2nd month and after month 6, differ significantly. The results are consistent with the theory that the treatment of tuberculosis associated with nutritional status of tuberculosis patients. Treatment can improve the body's defense mechanism to reduce the number of good bacteria in the body's defense mechanisms. In addition, then nutrients to replace the destruction of body tissue for the formation of proteins or enzymes can be suppressed so that the nutritional status increases. Research conducted on children aged less than 5 years showed that treatment success is one factor contributing to the improvement of nutritional status. In this research still has limitations, namely the medical records contained no height patient and treatment data is still incomplete.

4. Conclusions

Based on the results of the discussion, we can conclude the following matters: There is the influence of energy intake, protein old mother's knowledge and treatment of the nutritional status of children under five suffering from pulmonary tuberculosis.

References

- [1] WHO, 2012. Global Tuberculosis Control : Surveillance, Planing, Financing, Gene.
- [2] Dinas Kesehatan Propinsi Papua, 2012, Profil Kesehatan Dinas Kesehatan. Propinsi Papua Tahun 2012.
- [3] DepKes RI, 2006. Pedoman Nasional penanggulangan Tuberkulosis. Jakarta: Departemen Kesehatan RI.
- [4] DepKes RI, 2008. Pedoman Nasional Penanggulangan Tuberkuosis Edisi 2. Jakarta : Departemen Kesehatan RI.
- [5] Berg. Alan. 1989. Peranan Gizi Dalam Pembangunan nasional. Jakarta : Penerbit CV Rajawali.
- [6] Praktiknya, Ahmad Watik, 2007. Dasar-dasar Metodologi Penelitian Kedokteran dan kesehatan. Jakarta : P.T Raja Grafindo Persada, 2007.
- [7] Jahari AB (2002). Penilaian Status Gizi dengan Antropometri. Konas Persagi hal.33-54.
- [8] Notoatmodjo, Soekidjo. 2003. Ilmu Kesehatan Masyarakat Prinsip-Prinsip Dasar Jakarta : PT Rineka Cipta.
- [9] Misnadiarly, 2006. Mengenal, mencegah, menanggulangi TBC Paru, Ekstra Paru, anak dan pada Kehamilan. Jakarta : Pustaka Populer Obor.
- [10] Departemen Kesehatan. 2002. Keputusan Menteri kesehatan RI Nomor 920/Menkes/SK/2002 tentang Klasifikasi Status Gizi Anak Bawah Lima Tahun Tanggal 1 Agustus 2001. Widyakarya Nasional Pangan dan Gizi VI. Jakarta : Lembaga Ilmu Pengetahuan Indonesia.
- [11] Badan Badan Perencanaan Pembangunan Nasional, 2007. Rencana Aksi Nasional Pangan dan Gizi 2006-2010. Perencanaan Pembangunan Nasional. Jakarta.
- [12] Soekirman, 2000. Ilmu Gizi dan aplikasinya Untuk keluarga dan masyarakat. Jakarta : Direktorat jendral Pendidikan Tinggi Departemen Pendidikan Nasional.
- [13] Rahardjoe NN, dkk, 2005. Pedoman Nasional Tuberkulosis Paru Anak. Jakarta : UKK Pulmonologi PP IDAL.