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## **Determinants Affecting Toddler Nutritional Status in Public Health Centre of Yomdori, Biak Numfor**

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### **Abstract**

Toddlers are included in the nutrition community groups vulnerable groups. Nutritional status of children have an enormous influence in creating quality human resources in the future. Direct factor as a cause of nutritional status is nutrition and infectious diseases related to diet, number of family members and social culture. This study aims to determine the effect of diet, family size, family income level, social culture and history of infectious diseases of the status of children in the health center GIZ Yomdori Noemfoor Biak district. This study was an observational study with case control study design. Samples taken as many as 90 people as respondent to control the number of cases 45 and 45. The data was collected from interviews and questionnaires nutrition status of medical records. Data were analyzed by the odds ratio. The results showed that the diet (OR = 4.529; 95% CI: 1.852 to 11.077; p = 0.001), number of family members (OR = 13.054; 95% CI: 2.797- 60.922; p = 0.000), the level of family income (OR = 4.529; 1.852 to 11.077; p = 0.001) and a history of infectious disease (OR = 8.125; 2.868 to 23.019; p = 0.000) affect the nutritional status of children in the health center Yomdori Biak Numfor. While socio-cultural (OR = 42.406; 0.995 to 5.818; p = 0.079) did not affect the nutritional status of children in the health center Yomdori Biak Numfor.

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The dominant factor affecting the status of GIZ toddler is eating, family size and family income level history of infectious diseases. Determinants of the nutritional status of children is diet ( $p = 0.002$ ; OR = 7.992), number of family members ( $p = 0.003$ ; OR = 18.901), the level of family income ( $p = 0.025$ ; OR = 4.863) and a history of infectious disease ( $p = 0.000$ ; OR = 11.957).

**Keywords:** Nutritional Status; Toddler; Socio Cultural.

## **1. Introduction**

Toddlers are included in the nutrition community groups vulnerable groups and, if not addressed very susceptible to various infectious diseases that can lead to increased mortality rate [1]. Factors that cause malnutrition, the nutritional intake due to lower maternal nutritional knowledge and understanding of safe food to eat, infectious disease, the environment, access to health care and parenting [2]. World Health Organisation (WHO) reported 45% of deaths of children under 5 years old in developing countries due to malnutrition and interactive effects on diseases that can be prevented by providing supplementary food (PMT) and immunization (WHO, 2014). The problem of malnutrition in children under five in Indonesia and remains one of the major public health problem. According to the Health Research and the National Basic [3] national prevalence of malnutrition status indicators Weight / age (W / A) in Indonesia is 37.2%, which represented an increase from 2010 of 35.6% of children under five in Indonesia. The prevalence of malnutrition in children under five in Papua in 2013 with the indicator (Weight according to age (W / A) was 23.6%, consisting of 6.3% and 17.3% malnutrition malnutrition (Papua Provincial Health Office, 2014). While in Biak Numfor in 2014 there were 1.10% (malnutrition), 9.988% 85.65% malnutrition and good nutrition, where in 2014 the number of poor nutritional status and less with the highest prevalence in Puskesmas Yomdori ( 14.22%) of the 18 health centers scattered in Biak Numfor.

Nutritional status has a profound influence in creating quality human resources in the future. The nutritional status related to intelligence. Formation of intelligence during early childhood depends on the intake of nutrients received. The lower the intake of nutrients it receives, the lower the nutritional and health status of children. Lack of or poor nutrition in infancy and children, especially in less than 5 years of age can lead to disruption of physical growth and intelligence. Brain cell growth takes place very rapidly and will stop or reach the perfect stage at the age of 4-5 years. Rapid brain development can only be achieved if the child is well-nourished. According to [4], more nutritional problems caused by economic progress in a certain layer with a lack of knowledge about nutrition and health. A decrease in the nutritional status due to lack of the amount of food consumed both in quantity and quality. The quantity and quality of food consumed is influenced by the mother's education level, mother's level of knowledge about nutrition, food availability in the family and family income level. This is confirmed by research studies [5], revealed that the diet, family size, family income levels and a history of infectious diseases affect the nutritional status.

Nutritional problems are influenced by many factors that influence each other in complex ways. Household level, nutritional state is influenced by the ability of households to provide food in sufficient quantity and type as well as parenting is influenced by educational factors, behavior and state of health of the household. One of

the causes of malnutrition in children under five are due to parenting inadequate influenced by socio-cultural [5]. Culture also guides people in how to behave and meet the basic needs of their biology, including diet. Culture also determines when a person can and cannot eat a meal (known as taboo), although not all taboos and good sense in terms of health. Not a few taboos is a good thing if in terms of health, one example is taboo toddler eating fish because it feared would lead to worm infestation. In fact, from the opposite side of the prevailing health, eating fish is very good for infants because it contains a protein that is needed for growth. There are 3 groups of community members who usually have restrictions on certain foods, namely children, pregnant women, and nursing mothers [1].

Family income level greatly affect whether or not fulfilled the needs of primary, secondary, as well as the attention and affection that would be obtained by a child. It is of course closely related to the number of family members and the education of parents. Family income includes social data such as the state of the population of a community, family situation, education, housing circumstances. Economic data include employment, income, wealth, knowledge and food prices are dependent on market and seasonal variations [6]. Based on the above description of the problem, so the authors are interested in doing research titled "Determinants Affecting Toddler Nutritional Status in PHC Yomdori Biak Numfor"

## **2. Materials and Method**

This study was an observational study with case control study design (case-control study). Case-control study was an epidemiological study design to study the relationship between exposure (risk factors) to a disease or health status with cars comparing the case group and control group by exposure status. In a case-control study, the effects (health status) identified in this seat, whereas the risk factors identified in the past (retrospective).

### ***2.1 Time and Location Research***

This research was conducted at the health center Numfora Yomdori Biak. Data collection is done since April-June 2015 by collecting primary data. The reason for choosing this health center for research are:

1. Status nutritional less from year to year increase.

2. Never done research on the nutritional status of children in the health center Yomdori.

### ***2.2 Population and sample***

#### **1. Population**

Population in this research is all children in January - December 2014 the population was 436 infants and toddlers experiencing cases of malnutrition and poor and the control population is children with good nutritional status in Biak Yomdori Health Center West in January - December 2014.

#### **2. Sample**

Observation unit, consisting of cases and controls were described as follows:

- 1) Cases are mothers who have children with malnutrition status in health centre of Yomdori Biak Numfor.
- 2) Controls are mothers who have children with good nutritional status in health centre of Yomdori Biak Numfor.

Based on the calculation of sample size, the sample size of at least a ratio of 1: 1 required was 45 cases and 45 controls.

### **2.3 Data Collection and Processing**

#### **1. Data Collection**

Methods of data collection is done by collecting primary and secondary data obtained through the relevant agencies, namely the District Health Office Biak Noemfoor, medical records Yomdori health center in the district of Biak Noemfoor, then made the recording of the appropriate variables needed and do interview based questionnaire.

#### **2. Data processing**

Data processing was performed using SPSS (Statistical Product and Service Solutions) who advance through several stages, namely:

- a. Editing (editing data). Editing data starts in the field and after the data collected, the questionnaire examined kiteda apparatus in accordance with the sample and if there were incomplete questionnaires, the questionnaire will be equipped back.
- b. Coding (coding data). When all the data has been collected and edited in the field is completed, then it will be done the coding of data based on the code book that has been prepared previously and had been transferred to the format of SPSS program in computer applications.
- c. Entry (data entry). Further data inputted into the SPSS worksheet for each variable. Data input sequence based on the number responder in the questionnaire.
- d. Cleaning (data cleansing). Data cleaning is done on all the worksheets to clear errors that may occur during the process of data input. This process is done through frequency analysis on all the variables. As for the missing data cleared by inputting the correct data.

### **2.4 Data Analysis**

#### **1. The univariate analysis**

Univariate analysis aims to look at the picture of the frequency distribution with a single percentage for each variable related research with the purpose of the study and presented in the form of a frequency distribution

table.

## 2. The bivariate analysis

Bivariate analysis aims to look at the great risk of the dependent variable to the independent variables. Given the design of this study is case control study, the correlation analysis performed using odds ratio calculation is done by using cross-tabulation between variable. Knowledgeable value OR, enabling to predict the relationship of the facts under investigation for neonatal mortality.

## 3. Analysis, multivariate (logistic regression analysis)

Multivariate analysis was conducted to see the relationship and the relationship of independent variables together on the dependent variable. The analysis used is multiple linear regression analysis logistics. The purpose of this analysis is to determine the independent variables which are greater influence on the dependent variable. It is also to determine whether the independent variables associated with the dependent variable influenced by other variables were considered as confounding or interaction between variables.

## 3. Results

### *3.1 Analysis of the results*

#### a. Toddler age group

This analysis is intended to assess the characteristics of age, the data are presented as follows: research shows that most children in the age group 12-23 months as many as 41 people (45.6%) and lowest in the age group 48-59 months as many as 2 (2, 2%).

#### b. Group Sex toddler

This analysis is intended to assess the characteristics of the sex of infants, the data are presented as follows: demonstrate gender infants studied in the group of men - men as much as 46 (51.1%) women and with 44 people (48.9%) people.

### *3.2 Risk Analysis Determinant Factors Nutritional Status Toddlers*

At this stage, cross tabulation analysis between respondent characteristics and variables included into the determinant factor of nutritional status of children, the data are presented as follows:

#### a. Dietary habit

Here is a cross-tabulation influence of diet on the nutritional status of children who showed that the proportion of under nutrition by eating less as many as 28 people (62.2%) and a good diet were 17 (37.8%). Chi-square test results obtained by value  $p = 0,001 < 0.05$ , so the hypothesis  $\alpha$  is accepted that stated no dietary influence on

nutritional status of children. The result of the analysis of the relationship indicates the value Odds Ratio (OR) = 4.529, meaning that respondents with diet less risk of malnutrition status of 4.529 times compared to respondents with a good diet.

b. Number of family members

Here is a cross-tabulation influence of the number of family members on the nutritional status of children under five who showed that the proportion of malnutrition status by the number of family members many as 17 people (37.8%) and the number of family members a little as many as 28 people (62.2%). Chi-square test results obtained by value  $p = 0,000 < 0.05$ , so the hypothesis  $\alpha$  is accepted that otherwise there is the influence of families on the nutritional status of children. The result of the analysis of the relationship indicates the value Odds Ratio (OR) = 13.054, which means that the number of respondents with many family members at risk of malnutrition status of 4.529 times compared with the number of respondents with family members a little.

c. Family income level

Here is a cross tabulation of family income level influence on nutritional status of children who showed that the proportion of malnutrition status with family income level of less than 20 persons (44.4%) and family income level quite as many as 25 people (55.6%). Chi-square test results obtained by value  $p = 0,001 < 0.05$ , so the hypothesis  $\alpha$  is accepted that otherwise there is the influence of family income level of the nutritional status of children. The result of the analysis of the relationship indicates the value Odds Ratio (OR) = 6.400, meaning that respondents with a family income level is less at risk of malnutrition status of 6,400 times compared to respondents with a family income sufficient.

d. Socio-cultural

Here is a cross-tabulation of socio-cultural influences on the nutritional status of children who showed that the proportion of malnutrition status with negative socio-cultural as many as 21 people (46.7%) and socio-cultural positive in 24 (53.3%). Results obtained by chi square test  $p = 0.079 > \alpha$ , so the hypothesis  $\alpha 0.05$  rejected, which expressed no socio-cultural influences on the nutritional status of children. The result of the analysis of the relationship indicates the value Odds Ratio (OR) = 2.406 with a lower value  $< 1$ , so that the socio-cultural is not a risk factor.

e. History Infectious Diseases

Here is a cross-tabulation influence infectious disease history of the nutritional status of children who showed that the proportion of malnutrition status with no history of infectious disease as many as 25 people (55.6%) and no history of infectious disease as many as 20 people (44.4%). Chi-square test results obtained by value  $p = 0,000 < 0.05$ , so the hypothesis  $\alpha$  is accepted that revealed no influence infectious disease history of the nutritional status of children. The result of the analysis of the relationship indicates the value Odds Ratio (OR) = 8.125, meaning that respondents with no history of infectious disease at risk of malnutrition status of 8,125 times compared with respondents who no history of infectious diseases.

The risk analysis determinant resumes nutritional status of children in the health center Noemfoor Yomdori Biak district, as presented in the table as follow;

**Table 1:** Results of the analysis of the determinants of the risk of nutritional status in Biak district Puskesmas Yomdori Noemfoor 2014

No	Variables	P	OR (95% CI)
1	Eating term	0,001	4,529 (1,852-11,077)
2	Number of family member	0,000	13,054 (2,797- 60,922)
3	Family income	0,001	6,400 (2,130 - 19,227)
4	Social cultural	0,079	2,406 (0,995 – 5,818)
5	Infectious illness history	0,000	8,125 (2,868 – 23,019)

Bivariate test results for all variables showed a p-value <0.25, so that all the variables included in the multivariate analysis. Study show relate to terms a variable included in the multivariate testing is that variable has a value of p <0.25.

### 3.3 The multiple logistic regression analysis of the determinants of nutritional status of children

Multivariate analysis used in this research is the logistic regression analysis as the dependent variable was dichotomous variables with the aim to see the risk of each independent variable and the dependent variable. The purpose of this analysis is to determine the amount of pure OR of the independent variable, after taking into account other variables. The method used in this analysis is a method of "backward LR". Results of the analysis as presented in the following table.

**Table 2:** Results of multivariate analysis of the determinants of nutritional status of children in Puskesmas Yomdori Biak Numfor 2014

Variable Name	B	S.E.	Wald	Df	P	OR	OR (95% CI)	
							Lower	Upper
Eating term	2,070	,656	9,949	1	,002	7,922	2,189	28,665
Family member number	2,939	,972	9,139	1	,003	18,901	2,811	127,080
Family income	1,582	,704	5,046	1	,025	4,863	1,223	19,332
Infectious illness history	2,481	,696	12,712	1	,000	11,957	3,057	46,776

From the above table shows, there are 4 variables that are determinant purely on nutritional status of children in the health center Yomdori Biak Numfor 2015, the place of the variable is a variable diet (P = 0.002; OR = 7.922), number of family members (P = 0.003; OR = 18.901), household income (P = 0.025; OR = 4.863) and a

history of infectious disease ( $P = 0.000$ ;  $OR = 11.957$ ).

#### **4. Conclusion**

From the results of research conducted data analysis, eventually be concluded as follows:

1. A diet is a risk factor for infant nutritional status ( $OR = 4.529$ ; 95% CI: 1.852 to 11.077;  $p = 0.001$ ).
2. The number of family members provide risk factors for nutritional status ( $OR = 13.054$ ; 95% CI: 22,797-60.922;  $p = 0.000$ ).
3. The level of family income provide risk factors for nutritional status ( $OR = 4.529$ ; 1.852 to 11.077;  $p = 0.001$ ).
4. Social culture does not affect the nutritional status of children and is not a risk factor for infant nutritional status ( $OR = 42.406$ ; 0.995 to 5.818;  $p = 0.079$ ).
5. History of infectious disease is a risk factor for infant nutritional status ( $OR = 8.125$ ; 2.868 to 23.019;  $P = 0.000$ ).
6. determinant factor on the nutritional status of children is diet ( $p = 0.002$ ;  $OR = 7.992$ ), number of family members ( $p = 0.003$ ;  $OR = 18.901$ ), family income level ( $p = 0.025$ ;  $OR = 4.863$ ) and a history of infectious diseases ( $p = 0.000$ ;  $OR = 11.957$ ).

#### **5. Suggestion**

- 1) There is a need intensive counseling on infant nutrition with the fulfillment of diverse foods, makaanna materials are cheap and healthy and counseling about the importance of utilization of the yard to feed the family.
- 2) It is necessary that appropriate measures of health workers and cadres in improving the nutritional status of the family, especially the changing paradigm of the community in fulfilling the nutritional intake of the family.
- 3) Need to increase the quality of care in infants with increased Posyandu services, sehing status of malnutrition among children under five could be prevented.
- 4) For the mother of a toddler, over regularly to posyandu to do a child's weight in order to determine the nutritional status of children, so that mothers can provide adequate nutrition to children.
- 5) For the next researcher can use environment variables of social, hygienic behavior and environmental sanitation to infant nutritional status.

#### **References**

- [1] Sulistyoningih, 2011. *Gizi Untuk Kesehatan Ibu dan Anak*. Graha Ilmu, Yogyakarta.
- [2] Istiono, W., Suryadi, H., Haris, M., Irnizarifka., Tahitoe, A.D., Hasdianda, M.A., Fitria, T., & Sidabutar, T.I.R. (2009). Analisis Faktor-Faktor Yang Mempengaruhi Status Gizi Balita. *Berita Kedokteran Masyarakat*



Vol. 25, No. 3, September.

[3] Departemen Gizi dan Kesehatan Masyarakat, 2013. Gizi dan Kesehatan Masyarakat. Departemen Gizi dan Kesehatan Masyarakat Universitas Indonesia, Jakarta : Rajagrafindo.

[4] Marmi dan Rahardjo K, 2012. Asuhan Neonatus Bayi, balita dan Anak Praskeolah. Pustaka Pelajar, Jakarta.

[5] Soekirman. 2005. Ilmu Gizi dan Aplikasinya untuk Keluarga dan Masyarakat. Yogyakarta: Direktorat Jenderal Pendidikan Tinggi Departemen Pendidikan Nasional.

[6] Ambarwati R dan Nasution N, 2011. Buku Pintar Asuhan Keperawatan Bayi dan Balita. Cakrawala Ilmu, Yogyakarta.