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*Article*

# Factors Related to the Nutritional Status of Toddlers in the Manulai II District of Alak, Kupang City

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**Abstract**

**Background:** The nutritional status of toddlers greatly affects their health, growth, and development, because toddlerhood is a crucial age when growth and development occur rapidly. Therefore, nutritional deficiencies during this period can lead to malnutrition in toddlers. **Objectives:** This study aims to determine the relationship between family food income, basic immunization status, medical history, history of exclusive breastfeeding, food, and nutritional status in toddlers in the working area of Manulai II Village, Alak District, Kupang City. **Methods:** The sample was determined using the Lemeshow formula with a sample size of 80 respondents. Statistical tests used Chi-square analysis with a=0.05. **Result:** The results showed that the variables of Family Food Income (p-value=0.266), Basic Immunization Status (p-value=0.158), Medical History (p-value=0.461), and History of Exclusive Breastfeeding (p-value 0.101) were not related to the nutritional status of toddlers in the working area of Manulai II Village, Alak District, Kupang City. **Conclusions:** It is hoped that mothers of toddlers will pay attention to and increase their family food income, pay attention to the basic immunization status of their toddlers every day, and increase their knowledge about the importance of medical history and exclusive breastfeeding in order to prevent malnutrition in toddlers.

**Keywords:** Family food income, basic immunization status, medical history, history of exclusive breastfeeding.

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## 1. Introduction

Infants are the most important age group because they often experience nutritional problems. Infants experience rapid growth during this period, including physical, psychomotor, mental, and social development[1]. The 2021 Indonesian Health Profile data shows that the prevalence of malnutrition in Indonesia is 1.2% and the prevalence of malnutrition in NTT is 6.1%. According to SSGI data for NTT province in 2021, the prevalence of wasting was 10.1% and the prevalence of underweight was 29.3%[2]. In 2022, the prevalence of wasting increased to 10.7% and the prevalence of underweight decreased to 28.4%[3].

Research conducted by Manafe et. al. states that mothers' knowledge about nutrition, the number of family members, energy adequacy, and protein adequacy levels affect the incidence of malnutrition in toddlers in Kupang City[4]. The results of research by Veranda

et. al. show that toddlers who do not receive exclusive breastfeeding are at risk of growth retardation[5].

Explains that maternal parenting patterns, in this case closeness to the child, feeding, caring for, and providing affection, play a role in shaping the nutritional status of toddlers. This is related to the mother's health (mental and physical), general education, income, knowledge, and ability to care for children. All of these are important and must be addressed in order to improve the nutritional status of toddlers. Based on the issues presented, the researcher felt it necessary to conduct research on "Factors Related to the Nutritional Status of Toddlers in Manulai II Village, Alak District, Kupang City.[6]"

## 2. Materials and Methods

2.1 Study Design and Setting

This study uses an analytical survey method with a cross-sectional approach, which analyzes the dynamics of the relationship between phenomena. The cross-sectional approach emphasizes the measurement or observation of data for the dependent variable of Nutritional Status and the independent variables of Medical History , Immunization Status, Family Food Expenditure, and History of Exclusive Breastfeeding at the same time.

2.2 Population and Sampling

The population is the entire subject of the study[7]. Sugiyono states that the population is the area of generalization consisting of objects or subjects that have certain qualities and characteristics determined by the researcher to be studied and concluded. The population in this study is all toddlers in Manulai II Village, Alak District, Kupang City, totaling 503 toddlers.

The sampling technique used in this study was probability sampling, which is a sampling technique that gives equal opportunity to each element of the population to become a member of the sample. The sampling method used was purposive sampling because the sample members were selected from the population by drawing lots, taking into account the inclusion and exclusion criteria. The sample in this study consisted of 80 toddlers, and the respondents in this study were the mothers of these toddlers. The sample in this study was obtained from calculations using the Lemeshow formula.

2.3 Data Collection

The data collection technique used in this study was an effort to obtain data through interviews using a list of questions for mothers who were respondents determined by the researcher[8].

2.4 Variables and Operational Definitions

In this study, the independent variables were family food income (total expenditure on food and non-food consumption during the previous month), immunization status (completion of at least four basic immunizations for toddlers), and medical history (toddlers who had experienced fever, cough, cold, or diarrhea within the previous three months).History of exclusive breastfeeding (breastfeeding without any additional food or drink before the baby is 6 months old) and the dependent variable Toddler Nutritional Status (nutritional status based on weight/age), where the independent variables will be linked to the dependent variable to see if there is a significant relationship between the independent and dependent variables.

2.5 Data Analysis

The data that has undergone processing is then analyzed using univariate and bivariate analysis procedures.

2.5.1 Univariate analysis

Univariate analysis aims to explain or describe the characteristics of each research variable. Univariate analysis will produce frequency distributions and presentations of each variable, namely respondent variables related to toddler nutritional status, maternal knowledge, maternal education, maternal employment,

energy and protein intake, family food expenditure, exclusive breastfeeding, and medical history.

2.5.2 Bivariate analysis

Bivariate analysis aims to determine the relationship between independent variables and dependent variables, whether these variables have a significant relationship. In this analysis, the statistical test used is the chi-square (x2) in the form of a cross tabulation using a computerized system with (0.05), where p> (0.05) then Ho is rejected and it can be said that there is no relationship.

2.6 Ethical Considerations

This study has undergone an ethical feasibility test and has been declared feasible in terms of research ethics by the Research Ethics Committee through an ethical feasibility letter dated March 21, 2025, with the number: 000796/ KEPK FKM UNDANA/2025, based on the 7 standards and guidelines of the WHO 2011, with reference to the fulfillment of the CIOMS 2016 guidelines.

## 3. Results

3.1. Respondent Characteristics

Table 1. Percentage Distribution Based on Respondent Characteristics

| No | Respondent Characteristics | n | % |
|---|---|---|---|
| **A** | **Age** | | |
| | 20-24 years old | 16 | 7,5 |
| | 25-29 years old | 30 | 22,5 |
| | 30-34 years old | 25 | 31,25 |
| | 35-39 years old | 19 | 22,5 |
| | 40-44 years old | 9 | 16,25 |
| **B** | **Education** | | |
| | Elementary school | 12 | 15 |
| | Junior high school | 12 | 15 |
| | Senior high school | 38 | 47,5 |
| | Diploma degree | 2 | 2,5 |
| | Bachelor's degree | 15 | 18,75 |
| | Master's degree | 1 | 1,25 |
| **C** | **Occupation** | | |
| | Housewife | 67 | 83,75 |
| | Farmer | 3 | 3,75 |
| | Entrepreneur | 1 | 1,25 |
| | Teacher | 4 | 5 |
| | Others | 5 | 6,25 |
| **D** | **Age Under Five** | | |
| | 12 – 21 months | 24 | 16,1 |
| | 22 – 31 months | 22 | 13,1 |
| | 32 – 41 months | 17 | 16,1 |
| | 42 – 51 months | 11 | 14,1 |
| | 152 – 59months | 6 | 10,1 |

Table 1. shows that the percentage distribution of respondents based on respondent characteristics indicates that of the 80 respondents, the majority (31.25%) were aged 30-34 years and a small proportion (7.5%) were aged 20-24 years. The percentage distribution based on education shows that most (47.5%) respondents had a high school education and a small number (1.25%) had a master's/doctorate degree. The percentage distribution based on occupation shows that most (83.75%) respondents were housewives and a small number (1.25%) were self-employed. The percentage distribution based on toddler age

shows that most (30%) respondents have toddlers aged 12-21 months and a small portion (7.5%) have toddlers aged 52-59 months. The percentage distribution based on the gender of the toddler shows that most (52.5%) respondents have male toddlers and a small number (47.5%) of respondents have female toddlers

3.2. Univariate Analysis

Table 2. Percentage Distribution of Respondents Based on Univariate Analysis

| No | Univariate Analysis | N | % |
|---|---|---|---|
| A | **Family Food Income** | | |
| | Low | 6 | 7.5 |
| | High | 74 | 92.5 |
| **B** | **Immunization Status** | | |
| | Incomplete | 3 | 3.8 |
| | Complete | 77 | 96.3 |
| **C** | **Medical History** | | |
| | Yes, if you have had an illness for ≤ 3 months | 35 | 43.7 |
| | No, if you have not had an illness for ≤ 3 months | 45 | 56.3 |
| **D** | **History of Exclusive Breastfeeding** | | |
| | No, Exclusive Breastfeeding | 73 | 91,2 |
| | Yes, Exclusive Breastfeeding | 7 | 8,8 |
| **E** | **Nutrition Status** | | |
| | Good Nutrition | 22 | 22 |
| | Poor Nutrition | 56 | 56 |

Table 2. Shows that the percentage distribution of respondents based on univariate analysis of household income over the past month shows that of the 80 respondents, the majority (92.5%) had a higher household income and a small proportion (7.5%) had a lower household income. The percentage distribution of basic immunization status shows that the majority (96.3%) of respondents had complete basic immunization status and a small portion (3.8%) had incomplete basic immunization status. The percentage distribution based on the toddler's illness history in the last 3 months shows that the majority (56.3%) of respondents had toddlers who had never been ill in the last 3 months and a small portion (43.8%) had toddlers who had been ill in the last 3 months.

The percentage distribution of respondents based on exclusive breastfeeding history shows that the majority (91.2%) of respondents had toddlers who were not exclusively breastfed for 6 months and a small proportion (8.8%) had toddlers who were exclusively breastfed. The distribution of respondents based on toddler nutritional status shows that the majority (70.0%) of respondents had toddlers with good nutritional status and a small proportion (30.0%) had toddlers with poor nutritional status

3.3 Bivariate Analysis

Table 3. Percentage Distribution of Respondents Based on Bivariate Analysis

| Indicator | Nutritional status | | | | Number | | *P-Value* |
|---|---|---|---|---|---|---|---|
| | Good | | Poor | | | | |
| | n | % | n | % | n | % | |
| A. Family Food Income | | | | | | | |
| Low | 3 | 50,0 | 3 | 50,0 | 6 | 100 | |
| High | 53 | 71,6 | 21 | 28,4 | 74 | 100 | 0,266 |
| B. Immunization Status Incomplete | | | | | | | |
| Complete | 1 | 33,3 | 2 | 66,7 | 3 | 100 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Immunization Status | 55 | 71,4 | 22 | 28,6 | 77 | 100 | 0,158 |
| C. Medical History | | | | | | | |
| Sick | 23 | 65,7 | 12 | 34,3 | 35 | 100 | |
| Not Sick | 33 | 73,3 | 12 | 26,7 | 45 | 100 | 0,461 |
| D. History of Exclusive Breastfeeding | | | | | | | |
| Exclusive breastfeeding | 4 | 42,9 | 20 | 57,1 | 7 | 100 | |
| Not exclusively breastfeeding | 20 | 72,6 | 4 | 27,4 | 73 | 100 | 0,101 |

Table 3 shows that the distribution of the percentage of the relationship between family food income one month ago and nutritional status indicates that most (71.6%) of the high family food income of toddlers one month ago had good nutritional status compared to toddlers who had low family food income one month ago. The analysis results show that family food income one month ago is not related to nutritional status (p-value 0.266 > 0.05) in the working area of Manulai II Village, Alak District, Kupang City.

That the distribution of the percentage of the relationship between basic immunization status and nutritional status shows that most (71.4%) of those with complete basic immunization had good nutritional status compared to those with incomplete basic immunization who had poor nutritional status. The analysis results show that basic immunization status is not related to nutritional status (p-value 0.158 > 0.05) in the working area of Manulai II Village, Alak District, Kupang City. That the percentage distribution of the relationship between medical history and nutritional status indicates that most (73.3%) healthy toddlers have good nutritional status compared to toddlers with poor health. The results of the analysis show that medical history is not related to nutritional status (p-value 0.461 > 0.05) in the working area of Manulai II Village, Alak District, Kupang City.

That the percentage distribution of the relationship between exclusive breastfeeding history and nutritional status indicates that most (72.6%) of the infants who were exclusively breastfed had good nutritional status compared to infants who were not exclusively breastfed, who had poor nutritional status. The results of the analysis show that a history of exclusive breastfeeding is not related to the nutritional status of toddlers (p-value 0.101 > 0.05) in the working area of Manulai II Village, Alak District, Kupang City (Table 3).

**4. Discussion**

**4.1 Relationship between Family Food Income and Nutritional Status**

Income level is the total amount of income of all family members, including all types of income received by the family in the form of money, proceeds from selling goods, loans, and others[9]. Family income determines the purchasing power of the family, including food, thereby affecting the quality and quantity of food available in the household and ultimately affecting nutritional intake[10]. The results of this study show that there is no relationship between family income level and the nutritional status of toddlers.

These results are in line with research conducted by Narisma, which found no significant relationship between economic income and the nutritional status of children[11]. Research conducted by Adelya also stated that there was no relationship between family income and the nutritional status of children at SD Negeri 120 in North Bengkulu Regency[12]. Research conducted by Mandiangan states that there is no relationship between family income and the nutritional status of toddlers aged 24-59 months in Lesabe and Lesabe 1 Villages, South Tabukan District[13]. Research conducted by Rumende, et. al. also states that there is no relationship between weight-for-age and height-for-age nutritional status in toddlers in Tombatu Uatara District, Southeast Minahasa Regency[14]. Research conducted by Sumarlan, et. al. found no relationship between family income and the nutritional status of toddlers aged 12-59 months in the Wara Barat Health Center area, Polo City[15].

**4.2 Relationship between Basic Immunization Status and Nutritional Status**

Immunization status is an indicator of contact with health services. Basic immunizations are given to reduce the risk of disease and death in children. According to theory, immunization can provide immunity to the body so that infants can avoid dangerous infectious diseases. Complete basic immunization is expected to improve nutritional problems and have a long-term positive effect on nutritional status. Children under five who have received complete immunization according to their age automatically have immunity to certain diseases, so that if germs enter their bodies, the body will immediately form antibodies against those germs[16]. The results of this study show that there is no relationship between immunization history and the nutritional status of children aged 12-59 months.

These results are in line with research conducted by Putri, which stated that there was no relationship between immunization status and nutritional status in the Punggawan sub-district of Banjarmasin Surakarta[17]. Research conducted by Kumayas also stated that there was no relationship between immunization status and the nutritional status of toddlers aged 24-59 months in Tateli Dua Village, Mandolang Sub-district[18]. Research conducted by Pusung also states that there is no relationship between immunization history and nutritional status (weight-for-age, height-for-age, weight-for-height) in toddlers aged 24-59 months in the Touluaan Community Health Center working area[19]. Research conducted by Hayyudini, et. al. also states that there is no relationship between immunization status and the status of children aged 12-24 months in the working area of the Kedungmundu Community Health Center in Semarang City[20].

**4.3 Relationship between Exclusive Breastfeeding History and Nutritional Status**

Infectious diseases can cause a decrease in appetite and limitations in food consumption. Toddlers who suffer from infectious diseases tend to experience weight loss. This is due to an increase in metabolism in the toddler's body and is usually accompanied by a decrease in appetite[21]. Infectious diarrhea is the number one cause of death among toddlers worldwide. In Indonesia, diarrhea is the second leading cause of death among toddlers after respiratory tract infections. In addition, low rates of exclusive breastfeeding and colostrum feeding to infants in families are one of the triggers for low nutritional status in infants[22]. The results of this study show that there is no significant correlation between a history of infectious disease and nutritional status. Although there is no correlation, preventive measures are needed to ensure that children do not contract infectious diseases. The study found that, in the last three months, many infants did not experience illness (73.3%) with the diseases suffered being diarrhea and ARI or experiencing diarrhea and ARI simultaneously in the last three months.

These results are in line with research conducted by Pety, which states that there is no relationship between a history of infectious diseases and the nutritional status of toddlers[23]. Therefore, it can be concluded that toddlers with a history of infectious diseases can still have good nutritional status with proper treatment, such as treatment of the disease and optimal nutrition during and after illness. Thus, toddlers will continue to have good nutritional status. Research conducted by Putri also states that there is no relationship between infectious diseases and nutritional status[24].

**4.4 The Relationship between a History of Exclusive Breastfeeding and Nutritional Status**

Nutritional status is an expression of the state of balance in the form of certain variables or the manifestation of nutrition in a certain form[25]. Nutritional status is the condition of the body as a result of food consumption and the use of nutrients, which is differentiated between poor, deficient, good, and better nutritional status[26].

Exclusive breastfeeding is feeding a baby breast milk without any other liquids such as formula, orange juice, honey, tea, water, and without any solid foods such as bananas, papaya, milk porridge, biscuits, milk porridge, and rice porridge, for 6 months[27].

However, there are exceptions; infants are permitted to consume medications, vitamins, and mineral drops as advised by a doctor. During the first 6 months of exclusive breastfeeding, infants are not given other foods and drinks (formula milk, orange juice, honey, water, tea, and solid foods such as bananas, papayas, milk porridge, rice porridge, biscuits), while breastfeeding predominates, but a small amount of water or water-based drinks such as tea may be given as pre-lactation food or drink before breast milk comes out. Babies who are 6 months old have increased nutritional needs, so they require additional food that cannot be fully met by breast milk alone[28]. The results of this study show that there is no relationship between breastfeeding and the nutritional status of toddlers.

This is in line with Janita research, which shows that there is no relationship between exclusive breastfeeding and nutritional status[29]. Research conducted by Tita, et. al. also states that there is no significant relationship between exclusive breastfeeding and nutritional status according to the weight-for-age index in Pasan District, Southeast Minahasa Regency[30].

**5. Conclusion**

Conclusions from the results of research on Factors Related to the Nutritional Status of Toddlers in the Working Area of Manulai II Village, Alak District, Kupang City are as follows:

1. Family food income has no relationship with the nutritional status of toddlers in the working area of Manulai II Village, Alak District, Kupang City.
2. Basic immunization status is not related to the nutritional status of toddlers in the working area of Manulai II Village, Alak District, Kupang City.
3. Medical history is not related to the nutritional status of toddlers in the working area of Manulai II Village, Alak District, Kupang City.
4. History of exclusive breastfeeding is not related to the nutritional status of toddlers in the working area of Manulai II Village, Alak District, Kupang City.

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