# FACTORS RELATED TO MALNUTRITION EVENTS IN UNDER-FIVE CHILDREN IN KABUKARUDI VILLAGE, EAST NUSA TENGGARA

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## ABSTRACT

**Background:** Malnutrition has become an urgent global health problem. Millions of people are killed or disabled every year due to insufficient nutrition. Indirectly influenced by upbringing, food availability, socio-economic, cultural, and environmental factors. Based on the regency, the highest percentage is in West Sumba (12.20%). This study aimed to find out the factors related to malnutrition events in under-five children in Kabukarudi village, East Nusa Tenggara.

**Subjects and Method:** This was a cross sectional study conducted in Kabukarudi Village, Lamboya District, West Sumba Regency, East Nusa Tenggara. A sample of 99 was selected by purporsive sampling. The data was analyzed by chi square.

**Results:** Relationship between knowledge level (p = 0.047), type of foodstuff (p <0.001), and infectious diseases (p <0.001) it was statistically significant.

**Conclusion:** Malnutrition events in under-five children is associated with knowledge level about nutrition, type of food consumed and infectious disease.

**Keywords:** malnutrition, knowledge, food variant, infection desease

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## BACKGROUND

Nutritional problems occur in many vulnerable groups, namely children after weaning, pregnant women and nursing mothers. The mortality of children aged 1 to 4 years in developing countries is influenced by nutrition (Suhardjo, 2008). Malnutrition mainly affects children who are growing up, called children under five years of age, the most common diseases are lack of calories and lack of protein or what is known as Lack of Calories and Protein (KKP) (Sediaoetama, 2006).

Malnutrition is a condition of imbalance between body needs and intake of essential nutrients. Malnutrition is often equated with malnutrition caused by lack of consumption, low absorption, or a considerable loss of nutrients or nutrients, but this term includes overnutrition (Gardjito et al., 2009).

The main factor that causes malnutrition is the familys inadequate diet, namely the lack of the familys ability to provide excellent and nutritious food (Minarto, 2007; Cit Tagukoda, 2011). Malnutrition is directly influenced by food consumption and infectious diseases, indirectly controlled by parenting styles, food availability, and socio-economic, cultural and environmental factors. The socio-economic determinant is a lack of

food. If malnutrition continues, it can become an inhibiting factor in national development. Gradually, malnutrition will impact the high mortality rates for mothers, babies and toddlers, and low life expectancy (Arisman, 2004).

Besides, the impact of malnutrition can also be seen in mothers' poor knowledge about nutrition and food insecurity at the household level (Pudiastuti, 2011). West Sumba Regency is one of the districts in NTT Province that faces malnutrition.

The data from the non-governmental organization Sumba Foundation, in the Lamboya District area, the most suffering from malnutrition is toddlers. From June 2008 to October 2011, Ringurara Village contained 88 malnutrition sufferers, Rua Village 67 malnutrition sufferers, Hobawawi 40 patients, Pahola 1 patient. Rajak 1 patient, Lamboya below 126 malnutrition sufferers and Patiala Bawah Village there were 79 malnutrition sufferers and Lamboya Bawah Village from November 2011 to April 2012 there were 75 malnourished toddlers, this location was the initial location for researchers to carry out the research but because the toddlers who were respondents, the researchers were already healthy then the researchers moved to a different location but still in one Lamboya sub-district, namely Kabukarudi Village with the latest data received in May 2012 the number of toddlers suffering from malnutrition was 85 people, with a total of 238 children under five.

The people in the Lamboya District area and especially Kabukarudi Village have a livelihood of farming, are civil servants (PNS), and a small part is fishermen. Farmers can only work or work on their fields and rice fields during the rainy season because there is a lack of water sources in the area, so that during the dry season, some Lamboya people experience a lack of food supply, which can lead to a lack of food intake for the family. This study investigates the factors associated with the incidence of malnutrition in children aged 1 to 5 years in Kabukarudi Village, Lamboya District, West Sumba Regency - NTT.

## SUBJECTS AND METHOD

### 1. Study Design
This was a cross-sectional study conducted in Kabukarudi Village, Lamboya District, West Sumba Regency, and East Nusa Tenggara.

### 2. Population and Sample
This study's population was all mothers who had children aged 1-5 years in Kabukarudi Village, Lamboya District, and West Sumba Regency - NTT.

The number of children under five is 238 inhabitants. The total sample of 99 people was taken by purposive sampling with the criteria of mothers who have toddlers aged 1 to 5 years. Data were collected during the implementation of the public health center in each region.

### 3. Study Variable
Inclusion Criteria In this study, mothers who have toddlers aged 1-5 years who live in Kabukarudi Village, Lamboya District, West Sumba Regency - NTT, are willing to be respondents to attend the research.

### 4. Variable Operational Definition
**The level of knowledge** is the mother's understanding of nutritional problems, which is measured based on the value of the answer with the sound, adequate, and insufficient categories of foodstuffs consumed is information about various food ingredients consumed by toddlers in a day consisting of staple food, side dishes, animal and vegetable) vegetables and fruits are obtained by identifying the type of foodstuff

at mealtimes (morning, afternoon, evening), which are then categorized as complete and incomplete.

**Infectious Diseases Infectious** are diseases that children under five have suffered or experienced within the last 3 (three) months up to the time of the study. It is said that there is an infectious disease if you have had a disease (diarrhea, ISPA, tuberculosis, measles, worms and malaria) by looking at the results of the diagnosis of malnutrition management officers from the Sumba Foundation Non-Governmental Organization in the category of sick and not sick.

**Malnutrition** is a condition in which a person is declared malnourished, or in other words, his nutritional status is below the average standard by looking at the diagnosis results of the malnutrition program implementer from the Sumba Foundation Non-Governmental Organization which uses the Z-score calculation with the BB / U indicator with the category of malnutrition and not malnutrition.

**5. Data Analysis**

Data were analyzed using chi- square

## RESULTS

**1. Characteristics of research subjects**

Characteristics of research respondents, which include the sex of children under five, age, education level and maternal occupation, are shown in the following table:

**Table 1. Characteristics of respondents**

| Characteristics | Category | Frequency | Percentage |
|---|---|---|---|
| **Gender** | Boys | 45 | 45.5% |
| | Female | 54 | 54.5% |
| **Maternal age** | 18 -27 years | 43 | 43.4% |
| | 28-37 years | 39 | 39.4% |
| | 38-46 years | 17 | 17.2% |
| **Capital Education** | not completed primary school | 26 | 26.3% |
| | completed elementary school | 45 | 45.5% |
| | Junior High School graduate | 14 | 14.1.0% |
| | High School graduate | 14 | 14.1% |
| **Capital Works** | Farmers | 94 | 94.9% |
| | Entrepreneur | 5 | 5.1% |

Most respondents based on the mothers age range 18-27 years (43.4%). This period is considered as a period of adjustment to the new social. The age of 18 years is a period of dependence, which in fact, some of them are still dependent on others for a certain period (Pieter and Lubis, 2010). It can be said that the high age of early adulthood having a family can affect the level of children's health, especially for nutritional status, because this period is an adjustment period that still requires guidance from other people or parents.

Increasing a person's age has an impact on changes in physical and psychological aspects. Physical growth, such as changes in

size, proportion, loss of old characteristics, and new traits. A person's level of thinking is more mature and mature (Wawan and Dewi, 2010).

The mothers' education level was mostly elementary school graduates (45.5%), which means it was in a low category. Education is needed to obtain information such as things that support health to improve life quality (Wawan and Dewi, 2010). The higher a person's education, the easier it is to receive information. A person's educational background is one of the important elements that can affect the state of nutrition because with a higher level of education it is expected that knowledge or information about nutrition will be better, nutritional problems often arise because of ignorance or lack of information about adequate nutrition (Berg Cit Simarmata, 2008). Health education is a health promotion component that will raise public awareness about health loss aspects if health knowledge is not implemented (Syafiq Cit Nurasmah, 2010).

**2. The relationship between the level of maternal knowledge about nutrition and the incidence of malnutrition**

The variable knowledge of mothers about nutrition is divided into two by comparing mothers' experience with sufficient understanding of mothers and good knowledge of mothers with less knowledge of mothers, where mothers' knowledge is good is a referent group (comparison).

Table 2 lists the results of the latest Chi-square survey and the relationship between the nutritional knowledge level of good mothers and the incidence of malnutrition among children aged 1-5 in Kabukarudi village in Lamboa. The statistical calculation result of the relationship. West Sumba-NTT, p-value = 0.047 OR = 2.159, which means that compared with nutrition knowledge, respondents with sufficient nutrition knowledge have a 2.159 times higher risk of infant malnutrition. It can be seen between sig (p value) and α, where sig is 0.047 <0.05, which means it is statistically significant, so it supports the hypothesis that the mother's nutritional knowledge about malnutrition of 1-year-old children is between There is associated NTT, and he has worked in Kabukarudi Village, Lamboya District, West Samba for 5 years.

The results of table 3 and statistical calculation of the relationship between the level of knowledge of good mothers about nutrition compared with mothers lacking knowledge on the incidence of malnutrition toddlers 1 to 5 years old in Kabukarudi Village, Lamboya District, West Sumba-NTT, obtained p-value of 0.000 for the p-value in the 2x2 table seen in the Fishers Exact Test because there are less than 5 cells and the OR = 3.31 which means that the respondent is mother those whose knowledge was lacking about nutrition had a risk of their children suffering from malnutrition 3.31 times greater than that of respondents who have good nutrition knowledge. The statistical test results can be seen between sig (p-value) and α where sig 0.000<0.05 which means statistically significant so that it supports the hypothesis that there is a relationship between the level of maternal knowledge about nutrition on the incidence of malnutrition in children aged 1 to 5 years in Kabukarudi Village, District Lamboya, West Sumba - NTT.

**Table 2. The relationship between good mothers' level of knowledge about nutrition and the sufficient mother knowledge on malnutrition incidence in infants 1-5 years.**

| Variable | Health Status | | | | OR | p |
|---|---|---|---|---|---|---|
| | Malnutrition | | Not Malnutrition | | | |
| | n | % | n | % | | |
| Level of knowledge of mothers about nutrition | | | | | | |
| Enough | 0.05 | 57 | 14 | 43 | 2.16 | 19 |
| Good | 4 | 8.3 | 11 | 22.9 | | |

**Table 3. The relationship between mothers' level of adequate knowledge about nutrition with low experience of mothers on the incidence of malnutrition in children aged 1-5 years in Kabukarudi Village, Lamboya District, West Sumba – NTT.**

| Variable | Health Status | | | | OR | p |
|---|---|---|---|---|---|---|
| | Malnutrition | | Not Malnutrition | | | |
| | n | % | n | % | | |
| Mother Knowledge Level nutrition | | | | | | |
| Less | 45 | 68.1 | 6 | 9.1 | 3.31 | <0001 |
| good | 4 | 6.1 | 11 | 16.7 | | |

Tables 2 and 3 show that the most dominant are mothers with less knowledge with an OR= 3.309, which means that mothers with less experience have a risk of their toddlers suffering from malnutrition 3.309 times greater than those with good knowledge. This is in line with Fatimah et al. (2008) research, which shows a contributing factor, namely the level of maternal knowledge that is less supportive of children's nutritional status under five. The results of Chi-Square these two variables were statistically significant or significant, thus supporting the hypothesis that there was a relationship between the level of maternal knowledge about nutrition and the incidence of malnutrition among children 1-5 years in Kabukarudi Village, Lamboya District, West Sumba - NTT. This study is in line with Simarmata's research (2008), regarding nutritional knowledge as seen from sig (p-value) and α where sig 0.000 <0.05, which means that there is a significant relationship.

**3. The relationship between type of food consumed and incidence of malnutrition.**

The type of food consumed is one of the factors suspected of triggering malnutrition. This is as shown in Table 4 below:

Results Table 4 obtained a sig value of 0.000 <0.05. This shows a significant relationship between the type of food consumed and malnutrition among children 1 to 5 years old in Kabukarudi Village, Lamboya District, West Sumba - NTT. The statistical test also obtained OR = 2.23, which means that children under five who

consume incomplete food types have a 2.229 times greater risk of suffering from malnutrition than children under five who consume complete types of food ingredients.

**Table 4 Relationship between the type of food consumed and malnutrition among children 1 to 5 years old in Kabukarudi Village, West Sumba - NTT.**

| Variable | Health Status | | | | OR | p |
|---|---|---|---|---|---|---|
| | Malnutrition | | Not Malnutrition | | | |
| | n | % | n | % | | |
| **Types of ingredients Food consumed** | | | | | | |
| Incomplete | 56 | 56.6 | 11 | 11.4 | 2.23 | <0.001 |
| Complete | 12 | 12.1 | 20 | 20.4 | | |

**4. The relationship between infectious diseases and the incidence of malnutrition.**

Infectious diseases that have been suffered by toddlers, especially during the last three months, are a factor in malnutrition. Table 5 presents data on the contribution of infectious diseases to the incidence of malnutrition:

**Table 5 The relationship between infectious diseases and the incidence of malnutrition in children aged 1-5 years in Kabukarudi Village, Lamboya District, West Sumba - NTT**

| Variable | Health Status | | | | OR | p |
|---|---|---|---|---|---|---|
| | Malnutrition | | Not Malnutrition | | | |
| | n | % | n | % | | |
| **Infectious diseases** | | | | | | |
| Sick | 57 | 57.6 | 14 | 14.1 | 2.04 | <0.001 |
| Not sick | 11 | 11.1 | 17 | 17.2 | | |
| **Total** | 68 | 68.7 | 31 | 31.3 | | |

The results of Chi-Square and the calculation obtained OR= 2.044 indicate that toddlers who experience an infectious or sick disease can cause toddlers to have a risk of suffering from malnutrition 2.004 times greater than those who do not experience infectious diseases or are not sick. And statistically it can be compared between sig (p value) and α where sig 0.000 <0.05 because it is statistically significant. So there is a relationship between infectious diseases and the incidence of malnutrition in children aged 1-5 years in Kabukarudi Village, Lamboya District, West Sumba – NTT.

When collecting research data, most of the respondents said that their toddlers had infectious diseases such as diarrhea, worms and malaria, which are basically malaria endemic areas. This is supported by the opinion of Hadi, (2005) that in most areas of Indonesia, infectious diseases such as Acute Respiratory Infection (ARI), diarrhea, and measles are still the ten main diseases and are still the main causes of illness and death. The high morbidity and mortality rates for

mothers and children under five in Indonesia are closely related to poor nutritional status. Every year nearly 11 million children under five worldwide die from infectious diseases such as ARI, diarrhea, malaria, measles and worms, 54% of these deaths are related to malnutrition. Nutritional deficiencies in children under five include lack of protein energy.

## DISCUSSION

Lack of knowledge and misconceptions about the need for nutrition and about the ability to apply information about nutrition in daily life are important factors in malnutrition (Suhardjo et al, 2000). People with low levels of education and knowledge of nutrition, often encounter cases of malnutrition. On the other hand, in a society with a fairly high level of education and knowledge of nutrition, cases of under-nutrition children tend to be low (Abunain Cit Inadiar, 2010). The data obtained at the time of conducting the research the majority of respondents had an elementary school education (SD). This is one of the factors that affect the mother's low knowledge of nutrition where education greatly influences someone to get information.

Tables 2 and 3 present interesting data, namely that there are respondents who have sufficient and inadequate knowledge, but their children do not suffer from mal-nutrition. This shows that knowledge is not the main factor affecting the occurrence of malnutrition in children under five, but there are other factors that influence the occurrence of malnutrition in children under five.

The results of this study are in line with the research of Emiralda (2007) which states that there is an influence between the type of food consumed and the incidence of malnutrition in children under five. This is in accordance with the reality that occurs in the Kabukarudi Village community where almost 94.9% of farmers and only earn staple food while according to Proverawati et al. (2011), in a period of growth and development, toddlers need six main nutrients, namely; carbohydrates, proteins, fats, vitamins, minerals and water substances that can be obtained from food consumed daily.

The impact of inadequate food consumption on toddlers will cause decreas-ed immunity, susceptible to infectious diseases and will cause disruption of utility and absorption of nutrients which will aggravate state of under-five malnutrition (Sediaoetama, 2006). Types of food are food ingredients that contain staple foods, side dishes and processed ingredients. Besides that, the amount of food consumed also guarantees the fulfillment of the nutritional needs needed by the body. Nutritious food is food that contains all the essential nutrients in sufficient quantities to meet the body's needs (Gardjito, 2009).

In Table 4, there are respondents who consume food incompletely but their children do not suffer from malnutrition, this shows that the type of food consumed is not the main factor affecting the occurrence of malnutrition in children under five, but there may be other factors that influence the occurrence of malnutrition in children under five.

The provision of food in the wrong amount, type and composition, method and process of cooking can result in malnutrition, both lack of calories, protein and other nutrients. The purpose of giving food to children is not just to make them full, but to meet nutrient needs adequately for

the needs of life and to educate children to foster a healthy appetite (Ratnawati, 2001).

Malnutrition mainly affects children who are growing called children under five years of age, the most common diseases are lack of calories and lack of protein or what is known as Lack of Calories and Protein (KKP). The foreign name is Protein Calorie Malnutrition (PCM) or recently called Protein Energy Malnutrition (PEM) (Sediaoetama, 2006). This is in line with Simarmata's research (2008), and in that study the results showed that the sig = 0.040 ($\alpha$ = 0.05). This shows that there is a significant relationship with infectious diseases. This study obtained the OR = 2.364, which means that respondents who have an infectious disease will have a chance of 2.364 suffering from a lack of protein energy compared to respondents who have never suffered from an infectious disease. This happens because infectious diseases and malnutrition are two factors that influence the emergence of a health problem, especially for the nutritional status of children under five, infectious diseases can affect malnutrition and vice versa. Infection can affect malnutrition and vice versa malnutrition will affect a person susceptible to infectious diseases. The mechanism of infection and malnutrition can vary, either simultaneously or independently, such as decreased intake of nutrients and lack of appetite when sick, resulting in loss of fluids and the need for nutrients increases (Supariasa, 2002). The relationship between infectious diseases and malnutrition is a synergistic relationship, severe infections can worsen the nutritional condition through disturbance of food intake and increase the loss of essential body nutrients on the other hand, malnutrition, although mild, has a negative effect on the body's resistance to infection (Pudjiadi, 2005).

Low nutritional health causes the immune system to decrease, so that various diseases can arise easily. A healthy child will not be susceptible to various types of diseases, including infectious diseases, because they have a strong immune system, and vice versa, if their nutritional health conditions are low, they will be susceptible to various types of diseases including infectious diseases (Sediaoetama, 2000). The results of this study indicate that there is a relationship between the level of knowledge, the type of food consumed and infectious diseases with the incidence of malnutrition in children under five in Kabukarudi Village, Lamboya District,West Sumba - NTT.

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