

## Correlation between Mother's Nutritional Knowledge with Nutritional Status (Height for Age and BMI for Age) of Children

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### Abstract

Malnutrition problems usually occur in early childhood. It is pretty concerning because early childhood is a group whose nutritional needs must be considered and are still growing. Lack of maternal nutritional knowledge is one of the causes of nutritional problems in children. This study analyzed the relationship between mothers' nutritional knowledge and children's nutritional status (TB/U and IMT/U) at Raudlatul Ulum, Ambarawa District, Pringsewu Regency. The research design was cross-sectional, with 31 subjects. The research subjects were mothers with children aged >60 months. The type of analysis used is Fisher's Test. The results of the study showed that the number of children with stunting nutritional status (TB/U) was seven people (22.6%), which became a public health problem (stunting prevalence >20%). The number of children with poor nutritional status (IMT/U) is one person (3.2%). Statistical test results showed that there was no significant relationship ( $p > 0.05$ ) between the mother's nutritional knowledge and the toddler's nutritional status (TB/A and IMT/U). Still, there was a significant relationship due to the difference in the proportion of > 20%. In conclusion, a mother's nutrition knowledge is essential in providing nutritious food and can support children's nutritional status.

## INTRODUCTION

The growth and development of children need adequate nutrition so that there are no irregularities in the growth and development of children. The good nutritional status of children significantly impacts the creation of quality human resources in the future (Baculu, 2017). Early childhood nutritional status is also related to intelligence. The formation of intelligence at an early age depends on nutritional intake. The lower the nutritional intake, the worse the nutritional status and health of the child will be (Burhani et al., 2016). Growth and development delays are severe problems for developed and developing countries worldwide. The incidence rate in the United States ranges from 12-16%, Argentina 22%, and Hong Kong 23%. (Rosales et al., 2009; Tang et al., 2008). The 2018 Indonesian Basic Health Research (Riskesdas) results show that data on monitoring the growth and development of toddlers in Indonesia is 57.2% and 45.6% (Kemenkes RI, 2018).

Malnutrition problems usually occur early childhood (Adha & Aprilla, 2020). Lack of nutrition in childhood interferes with physical growth and causes mental development disorders (Cahyanti & Zulaikha, 2020; Leviana et al., 2016). Children who are malnourished into adulthood find it challenging to grow in height and have underdeveloped muscle tissue. Good nutritional status can help the process of optimal child growth and development (Adriani & Wijatmadi, 2016). Based on the results of the 2018 Basic Health Research (Riskesdas), it was found that the prevalence of nutritional status (TB/U) of children aged 5-

12 who were classified as short and very short in Indonesia was 23.6%. Meanwhile, the prevalence of nutritional status (BMI/U) in children aged 5-12 classified as thin and very thin in Indonesia is 9.2%. The majority of nutritional status (TB/U) of children aged 5-12 in Lampung Province, classified as short and very short, is 21.3%. Meanwhile, the prevalence of nutritional status (BMI/U) in children aged 5-12 years classified as thin and very thin in Lampung is 9.4% (Kemenkes RI, 2018).

One thing that affects the nutritional status of children is a factor that comes from the mother (Baculu, 2017; Bertalina & Amelia, 2018). Mothers with good nutrition knowledge will also apply good child nutrition care patterns (Soetjiningsih & Ranuh, 2013). A mother used to preparing food for her family members must have basic knowledge and skills regarding a balanced nutritional diet. A balanced diet is food eaten every day that contains nutrients in the type and amount that meets the needs of the body, applying the principles of food diversity, regular physical activity, and maintaining a clean lifestyle, as well as standard weight control to maintain average body weight to prevent problems. nutrition (Kemenkes RI, 2014).

Kresnomulyo Village is a village in the Ambarawa sub-district, Pringsewu Regency. Based on the profile data of the Pringsewu Regency health office in 2021, the percentage of health services at the age of primary education in Pringsewu Regency is 50.5% (Dinas Kesehatan Kabupaten Pringsewu, 2021). Based on the explanation above, this study aimed to analyze the relationship between maternal nutritional knowledge and nutritional status (TB/U and IMT/U) in Raudlatul Ulum Kindergarten children, Ambarawa District, Pringsewu Regency.

## METHODS

This study used a cross-sectional study design. The research was conducted in December 2022 to January 2023. The study population was mothers with children aged pf more than 60 months who attended Kindergarten Raudlatul Ulum, Kresnomulyo Village, Ambarawa District, Pringsewu Regency. Respondents were taken by total sampling method, amounting to 31 people. Research data was retrieved directly using anthropometric measurements to measure the nutritional status of children and interviews using a questionnaire to measure mothers' knowledge.

The dependent variable in this study is the nutritional status which is expressed based on height for age (TB/U) and body mass index for age (IMT/U) (PMK No. 2 of 2020 concerning Children's Anthropometric Standards). The nutritional status of TB/Age was classified as very short (Z-score  $<-3$ ), short (Z-score  $\geq-3$  to  $<-2$ ), and normal (Z-score  $\geq-2$ ). IMT/U nutritional status was classified as: very underweight (Z-score  $<-3$ ), thin (Z-score  $\geq-3$  s/d  $<-2$ ), normal (Z-score  $\geq-2$  s/d  $\leq 1$ ), obesity (Z-score  $>1$  to  $\leq 2$ ), and obesity (Z-score  $>2$ ). The tools used to weigh children's weights are digital scales with an accuracy of 0.1 kg. The instrument used to measure a child's height is a microtoise with an accuracy of 0.1 cm. The independent variable is the mother's nutritional knowledge, and the data is collected using a questionnaire. In addition, data on the characteristics of the respondents were also taken, which included the mother's age, level of education, type of work, age, and sex of the child.

Knowledge measurement was carried out using a multiple-choice questionnaire consisting of four choices. Score zero if the respondent answers incorrectly and score one if the answer is correct. The respondent's score is calculated by comparing the correct answers with the total score multiplied by 100. The maternal nutrition knowledge level will be divided into good, adequate, and poor. Good category if the knowledge score is  $\geq 76$ , sufficient if the knowledge score is 56-75, and less if the knowledge score is  $< 56$  (Arikunto, 2013; Notoadmodjo, 2012).

Research data were analyzed descriptively and statistically. Furthermore, the data was processed and analyzed using the Microsoft Excel computer program and SPSS version 21. The type of analysis used was Fisher's test to examine the relationship between maternal nutritional knowledge and children's nutritional status (TB/U and IMT/U). This study hypothesizes a significant relationship between maternal nutritional understanding and children's nutritional status (TB/U and IMT/U) in Raudlatul Ulum Kindergarten, Ambarawa District, Pringsewu Regency.

## RESULTS AND DISCUSSION

### A. Result

Mother characteristics in the form of age, education level, and mother's occupation, as well as child characteristics in the form of age and sex, can be seen in Table 1.

**Table 1.** Characteristics of Respondents

Variable	Frequency (n=31)	Percent (%)
Mother		
Age (Years)		
20-30	8	25.8
31-40	14	45.2
> 40	9	29.0
Mother's Education		
Elementary school graduate	10	32.3
Middle school graduate	12	38.7
High school graduate	8	25.8
Graduated	1	3.2
Mother's job		
Doesn't work	28	90.3
Work	3	9.7
Mother Knowledge		
Not enough	19	61.3
Fine + Enough	12	38.7

Child		
Age (months)		
61-72	18	58.1
> 72	13	41.9
Gender		
Male	13	41.9
Female	18	58.1
Nutritional Status (TB/U)		
Stunting	7	22.6
Normal	24	77.4
Nutritional status (IMT/U)		
Not enough	1	3.2
Normal	30	96.8

Based on Table 1, it can be seen that the age of mothers is 31-40 years, as many as 14 people (45.2%). The highest level of education of mothers is junior high school graduates, as many as 12 people (38.7%), and most mothers do not work, namely 28 people (90.3%). The results of the descriptive test showed that the number of mothers with poor nutritional knowledge was 19 people (61.3%), and the number of mothers with excellent and sufficient nutritional knowledge was 12 people (38.7%).

The characteristics of Raudlatul Ulum Kindergarten students in Kresnomulyo Village are that most children aged 61-72 months are 18 people (58.1%), and most children are girls. The number of children with stunted nutritional status (TB/U) was seven people (22.6%), and the number of children with normal nutritional status (TB/U) was 24 people (77.4%). While the number of children with poor nutritional quality (IMT/U) is one person (3.2%), and the number of children with normal nutritional status (IMT/U) is 30 people (96.8%).

**Table 2.** Relationship between Mother's Knowledge Level and Children's Nutritional Status (TB/U).

Maternal Nutrition Knowledge	Nutritional status (TB/U)				Total	p-value
	Stunting		Normal			
	N	%	N	%	n	%
Not enough	6	31.6	13	68.4	19	100
Fine+Enough	1	8.3	11	91.7	12	100
Amount	7	22.6	24	77.4	31	100

Based on Table 2, the results of the bivariate test between the mother's nutritional knowledge and children's nutritional status (TB/U) at Raudlatul Ulum Kindergarten showed that six children (31.6%) had poor nutritional knowledge and stunted children's

nutritional status. In contrast, mother's knowledge of the average child's nutritional status is deficient in as many as 13 people (68.4%). Fisher's test showed a p-value of 0.14 ( $p > 0.05$ ). This value indicates that clinically there is a significant relationship (difference in proportion  $> 20\%$ ) between the mother's nutritional knowledge and the children's nutritional status (TB/U). Statistically, not substantial due to a lack of research power. The lack of research power is caused by the smaller number of research respondents being studied.

**Table 3.** Relationship between Mother's Knowledge Level and Children's Nutritional Status (IMT/U).

Maternal Nutrition Knowledge	Nutritional status (IMT/U)				Total	p-value
	Not enough		Normal			
	n	%	n	%	n	%
Not enough	1	5.3	18	94.7	19	100.0
Fine + Enough	0	0.0	13	100.0	12	100.0
Amount	1	3.2	30	96.8	31	100.0

Table 3 depicts the results of the bivariate test between the mother's nutritional knowledge and the child's nutritional status (IMT/U) at Raudlatul Ulum Kindergarten. The results showed that the mother's nutritional knowledge was lacking with less child nutritional status by one child (5.3%), while the mother's knowledge of 18 people (94.7%) who were deficient with normal child nutritional status. Fisher's test shows a p-value of 0.61 ( $p > 0.05$ ). This value shows no significant relationship between maternal nutritional knowledge and toddler nutritional status (IMT/U).

## B. Discussion

Based on the results of the descriptive analysis, it is known that 22.6% of the respondents have a nutritional status of height/age in the stunting category. According to the Decree of the Minister of Health of the Republic of Indonesia Number Hk.01.07/Menkes/1928/2022 concerning National Guidelines for Medical Services for Stunting, it is stated that stunting becomes a public health problem if the prevalence is above 20%. (Kemenkes RI, 2022). This value shows that there are still stunting problems in the area that need attention.

Parental education, especially the mother's education, is one of the determinants that underlie the incidence of stunting in children. A higher level of parental education can strongly predict better child growth (Vaivada et al., 2020). The results of a systematic review conducted in 2020 also show that one of the most consistent factors in the incidence of stunting in children is the mother's low education. (Tahangnacca et al., 2020). This finding is contrary to the results of research that has been done. The data shows that most mothers have a low level of education (elementary and junior high

school), namely 71%. This factor is considered one of the factors for the high stunting rate at the school.

Parents' education level also determines children's nutritional status because education greatly influences a person's ability to understand and receive nutrition information. Parents with higher education are more oriented towards preventive action, know more about health problems, and have better health status. The higher the mother's education, it is hoped that the mother will have better knowledge in caring for children. Of this phenomenon, many mothers still graduate from junior high school. Hence, mothers who know can educate and provide good parenting and good nutrition to children so that children develop optimally. Highly educated parents generally know the level of child development and proper parenting methods (Soetjningsih & Ranuh, 2013). High parental education will generally teach good things, including diet. Parental education is very important in child development because good parenting is obtained when they can receive information and apply it (Cahyanti & Zulaikha, 2020).

Judging from the mother's occupation, most mothers did not work or were housewives, as much as 90.3%. The results of previous studies indicate that the mother's occupation has a significant relationship with the incidence of stunting. Housewives have a three times higher chance of having stunted children than working mothers (Taufiqoh et al., 2018). This projection is thought to correlate with a low level of education. Housewives with low levels of education can form poor parenting patterns. This results in a high incidence of stunting in children even though mothers have much free time with them.

Most of the respondents are housewives describing that their daily needs depend on their father, who works as a farmer. From this phenomenon, most parents do not work, so they are less able to facilitate children in obtaining optimal development. Research (Argianti, 2017) shows that most respondents have the status of housewives (IRT), as much as 69%. Parents' work is a source of family income that can meet physical, psychological, and spiritual needs. A well-established parent's job can improve family welfare, and the role of caregiver will also go well. Parents who work but can share their time with their children will provide the best facilities to encourage their children to develop optimally according to their age.

The nutritional status of toddlers from farming families as measured anthropometrically found one toddler with underweight nutritional status, 30 toddlers with normal nutritional status, and no toddlers with very thin, fat, or obese nutrition. Even though it is categorized as normal, this normal nutritional status is in the lower limit group. In other studies, the mother's age, mother's occupation, and age of marriage also affect the nutritional status of toddlers. Age can also affect the level of knowledge (Giglia, 2012). Research result (Burhani et al. 2016) shows that the distribution of respondents based on age characteristics is the most, namely the age of 26-30 years (38.1%). This data illustrates that mothers are generally in the reproductive period and the early days of marriage or the time of having new children. It was found that 15 mothers (71.4%) had  $\leq 2$  children. In this situation, mothers tend to pay more attention to

their children. There are 90.5% of mothers who do not work. It means the mother's time is spent managing and caring for their children at home.

Knowledge is the result of knowing and occurs after people sense objects. Most of human knowledge is obtained through the eyes and ears. Knowledge is dominant in shaping one's actions (Notoadmodjo, 2012). Knowledge is not only obtained from the school but also from daily life experiences, especially the mother's knowledge about nutrition. The more nutritional knowledge, the more the type and amount of food chosen for consumption is considered. Mothers who do not have sufficient knowledge of nutrition will choose foods that are most appealing to the senses and not make choices based on choices based on the nutritional value of the food.

Conversely, people with more nutritional knowledge use more rational judgment and knowledge about the nutritional value of these foods. The mother's level of nutritional knowledge does not always result in a child's energy intake following the recommended adequacy rate. Mothers cannot provide sufficiently diverse food according to each family member's needs. Other causes include the mother's attitude and behavior towards nutrition that is not in line with her nutritional knowledge (Linda, 2012).

The analysis results showed no significant relationship ( $p > 0.05$ ) between the level of maternal nutritional knowledge and the nutritional status of height/age and BMI/age. Previous research showed that maternal nutritional knowledge had a significant and positive relationship with the nutritional status of height/age and IMT/U. However, when the analysis involved the interaction between the mother's nutritional knowledge and the mother's education level, the nutritional knowledge of mothers with low education levels was insignificant with the nutritional status of height/age and IMT/U. The nutritional status of TB/U children in mothers with secondary and high education levels has higher points than mothers with low or no education. The level of the mother's education plays an important role in improving the nutritional status of height/age and IMT/U (Fadare et al., 2019).

This study's results align with research (Burhani et al., 2016), which shows no relationship between the level of mother's knowledge and the nutritional status of toddlers in fishermen's families in Air Tawar Barat Village, Padang City. The results of another study conducted by (Sukandar 2020) on toddlers in Gumpang Village, Kartasura District, also show no significant relationship between the level of mother's knowledge of the nutritional status of toddlers. Many things can affect toddler nutrition, such as food availability, consumption patterns, infectious diseases, the role of community leaders, and mother's activities. Based on the analysis of the relationship between maternal nutritional knowledge and the nutritional status of children with TB/U, it shows no significant relationship due to the limited coverage of respondents.

The finding of this research is different from research (Rinowanda & Pristya 2019) on kindergarten children in South Tangerang City, which shows a relationship between maternal nutritional knowledge and children's nutritional status. Research results by (Leviana et al. 2016) also showed a significant relationship between the level of knowledge of mothers about nutrition and the nutritional status of infants in Soneyan Village, Margoyoso District, Pati Regency. The limitation of this research is the limited



area coverage, which is still being carried out in the sub-district scope. In addition, the number of respondents in this study also needs to be increased to strengthen the significance of the research analysis results. It is also necessary to add several research parameters, such as income levels, parity, and types of infectious diseases, to see other factors influencing the incidence of stunting.

## CONCLUSIONS

The nutritional status of early childhood is strongly influenced by the role of parents, especially mothers, as people who have high interaction and closeness with children. A mother's knowledge about nutrition is an important factor in providing nutritious food and can support the nutritional status of children. A mother's education level plays an important role in increasing the mother's knowledge about nutrition, which contributes to maintaining good nutritional status. Further data collection and expansion of the coverage area are needed to strengthen the significance of the research results.

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