RELATIONSHIP BETWEEN THE LEVEL OF MOTHER'S NUTRITIONAL KNOWLEDGE AND THE DIVERSITY OF ANIMAL PROTEIN INTAKE IN TODDLERS AT TERTEK VILLAGE

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ABSTRACT

The importance of nutritional intake in the growth of toddlers has become a crucial matter, especially the intake of animal protein. Animal protein contains various essential amino acids with high bioavailability that contribute to supporting the growth and development processes of toddlers. One of the factors that can influence the diversity of animal protein consumption in toddlers is the level of mother's knowledge. This research was conducted to analyze the relationship between mother's nutritional knowledge level and the diversity of animal protein intake in toddlers aged 24-59 months at the Integrated Health Service Post (Posyandu) in Tertek Village, Pare District, Kediri Regency. The research design was cross-sectional with a total of 99 subjects selected through proportionate stratified random sampling. The data collection was carried out through interviews using questionnaires and Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ) within the last one month. This research was conducted from January to June 2023 in Tertek Village, Pare District, Kediri Regency. Based on the research results, the majority of the mother's nutritional knowledge was categorized as low (39.4%). Meanwhile, the diversity of animal protein intake is still relatively low (60.6%). Statistical analysis results showed a significant relationship (p=0.027) with a low-level relationship (+0.260) between mother's nutritional knowledge and the diversity of animal protein intake in toddlers aged 24-59 months at the Integrated Health Service Post (Posyandu) in Tertek Village, Pare District, Kediri Regency. This indicates that the better the mother's nutritional knowledge, the higher the diversity of animal protein intake in toddlers.

Keywords**:** *Diversity of animal protein intake, Mother's level of nutritional knowledge, Toddlers*

INTRODUCTION

The issue of inadequate nutrition for children aged 24-59 months is still an ongoing problem until now. This influences the growth and development process in toddlerhood which has an impact on emotional development, intelligence, social awareness and creativity which are important foundations for further development (Candra, 2017). Protein Energy Deficiency (PEM) is one of the problems of nutritional insufficiency in toddlers. PEM is a condition of poor nutrition because energy and protein intake is less than daily requirements, making the Recommended Dietary Allowances (RDA) not met as recommended (Sinaga et al., 2021).

The trend of malnutrition problems in the form of stunting, underweight and wasting is increasing among toddlers aged 24-59 months in Indonesia (Sudikno et al., 2019). Toddlers aged 24-59 months are included in a group that is at risk of experiencing nutritional problems due to their relatively rapid growth and the changes in their eating patterns, which begin to follow the family's eating patterns (Azriful et al., 2018). Referring to data from the integration of the Study on the Nutritional Status of Toddlers in Indonesia (SSGBI) and the 2019 National Socio-Economic Survey (Susenas), the prevalence of underweight and stunted toddlers in the 24-59 month age group is higher than in the 0-59 month and 12-23 month age groups (Sudikno et al., 2019). In the 24-59 month age group there are 18.47% of toddlers classified as underweight, while in the 0-59 month age group there are 16.29% and in the 12-23 month age group there are 16.54% of toddlers classified as underweight (Sudikno et al., 2019). This also occurs in the TB/U index, namely that there are 32.8% of stunted toddlers in the 24-59 month age group and 27.7% of stunted toddlers in the 0-59 month age group (Sudikno et al., 2019). The

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prevalence of wasted toddlers based on the 2019 SSGBI and Susesnas integration data only includes data for the 24-59 month age group, namely 7.4% (Sudikno et al., 2019). Referring to SSGBI in 2022, the prevalence of toddlers affected by stunting (21.6%), wasting (7.7%), and underweight (17.1%) (Kementerian Kesehatan Republik Indonesia, 2023).

There are two main factors that influence nutritional problems, namely factors that have a direct and indirect impact. Indirect causal factors are parenting patterns, food security in the household, inadequate health care and environmental sanitation (Afrinis et al., 2021). Direct causes involve aspects such as infection and food intake (Afrinis et al., 2021). Judging from several factors that can influence nutritional problems, the nutritional intake of toddlers is a direct factor that influences the nutritional status of toddlers (Diniyyah & Nindya, 2017). One of the nutrients that affects the nutritional status of toddlers is protein.

Protein intake plays an important role in supporting toddler growth, especially in children under five years old because protein has the main function as a body building substance (Ernawati et al., 2016). Lack of protein intake in toddlers aged 0-60 months can increase the risk of stunting by 1,6 times and underweight by 1,8 times (Soumokil, 2017). Sources of protein can be obtained from animal and plant foods. Based on data from the Individual Food Consumption Survey (SKMI) in 2014, majority of protein intake still comes from vegetable protein with the average consumption of nuts reaching 56.7 grams per day, while animal protein only reaches 42.8 grams per day (Siswanto, 2014). Animal protein is a type of protein with better quality proportions and types of amino acids compared to protein from vegetable sources (Ernawati et al., 2016). Animal protein contains a variety of essential amino acids that have high bioavailability (Ernawati et al., 2016).

Nutritional problems in toddlers can cause a decline in cognitive abilities and health status which will have an impact on their quality of life (Singarimbun, 2020). There are several factors that can increase the risk of malnutrition in toddlers, including the mother's occupation, low level of mother's nutritional knowledge, and inadequate intake. Mother's employment status can have an impact on toddler care practices (Elba et al., 2023). Mothers who don't work have a lot of time at home so they can pay more attention to nutritional intake for toddlers (Elba et al., 2023). Apart from that, a low level of knowledge regarding the diversity of food types and ingredients can cause disruption to the growth and development process of toddlers (Nurma Yuneta et al., 2019). Therefore, parents, especially mothers, are expected to pay more attention to the fulfillment of adequate nutrition in toddlers.

Tertek Village is the only village in the Sidorejo Community Health Center area that has become a locus of stunting since 2019. Based on data from Sidorejo Health Center, there was an increase in the prevalence of wasting toddlers in Tertek Village, from 7.95% in 2022 to 8.06% in 2023. Based on this background, this research was conducted to analyze the relationship between the level of mother's nutritional knowledge and the diversity of animal protein intake in toddlers aged 24- 59 months at the Integrated Health Service Post (Posyandu) in Tertek Village.

METHODS

This research is quantitative research with analytical and design observation research types cross-sectional. The instruments used were mother and toddler characteristics questionnaires, nutritional knowledge questionnaire, and the Semi Quantitative Food Frequency Questionnaire (SQ-FFQ) form. The nutritional knowledge questionnaire contains eight questions that have been adapted to the research topic, this questionnaire has also been statistically testes for validity in the research population respondents. The use of the SQ-FFQ form instrument was carried out using the interview method to determine the diversity of animal protein intake in the past month.

The population that is the subject of this research is all toddlers aged 24-59 months who live in Tertek Village, Pare District, Kediri Regency in May 2023 which based on Sidorejo Health Center data were 523 toddlers. The sample in this study consisted of 99 toddlers, which met the minimum number of samples required. Inclusion

criteria in this study are : mothers who have toddler who have a Healthy Growth Monitoring Book (KMS), mother whose toddlers are not sick or under the care of a doctor or other health worker. Respondents in this study were mothers of toddlers who were sampled.

The research location was conducted in Tertek Village, Pare District, Kediri Regency which is included in the working area of the Sidorejo Health Center. The method used for sampling in this research is proportionate stratifies random sampling, there were 11 Integrated Health Service Post (Posyandu) that became the research location in Tertek Village. The research was conducted from January to June 2023, with data collection taking place in May 2023.

The analysis applied in this research is included in inferential statistics, which aims to draw conclusions based on the results of the analysis that have been linked to proving the hypothesis. The data that has been collected is then re-checked to ensure that the data obtained from respondents is complete and valid. Analysis to prove the existence of a relationship between the level of mother's nutritional knowledge and the diversity of toddlers' animal protein intake uses a non- parametric statistical test in the form of the chi-square test.

The research conducted has undergone ethical testing from the Health Research Ethics Commission (KEPK) Airlangga University with ethical certificate number 539/HRECC.FODM/V/2023.

RESULTS AND DISCUSSIONS

Distribution of Mother's Characteristics

In this research, identification was carried out on mother's characteristics such as age, education level and occupation. Data from this identification is presented in the following table.

Mother's age is grouped into three categories, namely 17-25 years which is the late adolescent age group, 26-35 years which is the early adulthood age group, 36-45 years which is the late adulthood age group (Depkes RI, 2009). The average age of mothers of toddlers was 33.82 ± 5.901 years. The youngest age of a toddler's mother is 22 years while the oldest age of a toddler's mother is 45 years.

Table 1. Distribution of Age, Education, and Occupation of Mothers of Toddlers in Tertek Village in 2023

Mother's Characteristics	n	%
Age		
17-25 years old	10	10.1
26-35 years old	50	50.5
36-45 years old	39	39.4
Total	**99**	**100**
Level of education		
Not educated	0	0
Finished elementary school	6	6.1
Finished middle school	36	36.4
Finished high school	47	47.4
Graduated from college	10	10.1
Total	**99**	**100**
Occupation		
Doesn't work	75	75.8
Farmers/fishermen	1	1
Laborer	1	1
Trader/entrepreneur	18	18.2
Private employees	1	1
Civil servants	2	2
TNI/Polri	0	0
Other	1	1
Total	**99**	**100**

The last level of education taken by the mother of a toddler reflects the mother's level of education. Table 1 shows that the majority of mothers of toddlers in Tertek Village, amounting to 47.5%, have finished high school or equivalent education. Table 1 also shows that the majority of mothers, 75.8%, do not work.

Distribution of Toddler Characteristics

In this research, identification was carried out on toddler characteristics such as age and gender. Data from this identification is presented in the following table.

The age of the toddler was obtained from the results of interviews using an instrument in the form of a questionnaire which was obtained by calculating the date of birth according to the KMS for toddlers with the appropriate age calculation data collection date is based on calculating the age of the full month. The average age of toddlers

Table 2. Age and Gender Distribution of Toddlers in Tertek Village in 2023

Toddler Characteristics	n	%
Age		
24-35 months	29	29.3
36-47 months	37	37.4
48-59 months	33	33.3
Gender		
Male	58	58.6
Female	41	41.4
Total	**99**	**100**

in the range of 24-59 months in Tertek Village is 41.88 ± 10.046 months. Based on Table 2, it can be observed that the majority of toddlers are aged 36-47 months, amounting to 37.4%. The male gender was 58.6%, while the female gender was 41.4%.

Mother's Nutritional Knowledge Level

The mother's level of knowledge was interpreted into three categories : less, medium, and good. The following is the distribution of knowledge levels of mothers of toddlers in Tertek Village.

Based on table 3, it was concluded that the majority of mothers of toddlers had a low level of knowledge of 39.4%. Only 25.3% of mothers had a high level of knowledge. The types of questions given to respondents include the frequency of toddler attendance at the Integrated Health Service Post (Posyandu), varied foods for toddlers, frequency of feeding for toddlers, high energy food sources, signs of good nutritional status in toddlers, the function of high protein foods for toddlers, the function of high zinc foods for toddlers, and the types of energy-forming nutrients. Most mothers of toddlers do not have nutritional knowledge regarding varied foods for toddlers and the function of high protein foods for toddlers.

Levels of Diversity in Animal Protein Intake

The level of diversity in animal protein intake is interpreted into two categories, which are low and high. The following are the results of the level of diversity in animal protein intake in Tertek Village.

The level of diversity in animal protein intake was analyzed using food consumption score calculations from the SQ-FFQ results, which is one of the research instruments. Food sources of animal protein have a score between 50-0 with criteria score 50 if intake ≥3 times/day, score 25 if intake 1-2 times/day, score 15 if intake 3-6 times/week, score 10 if intake 1-2 times/week, score 5 if intake 2-3 times/month, score 0 if never (Sirajuddin et al., 2018). The food consumption score is obtained by calculating the total score from the consumption column for each food item that has been consumed in the last month and then adding it up. The final score results are interpreted into two categories, namely intake diversity is classified as high if the score is more than the median value and intake diversity is classified as low if the score is equal to or less than the median value (Sari et al., 2022).

The level of diversity in animal protein intake of toddlers in Tertek Village shows that the majority of toddlers have a low level of diversity in animal protein intake (60.6%). Meanwhile, only a small percentage of toddlers have a high level of diversity in protein intake (39.4%). Chicken eggs are a food source high in animal protein that is most frequently consumed with daily consumption rate of 41.4% and weekly consumption rate of 54.4%. Additionally, cow's milk and powdered milk are also high protein animal foods consumed on a daily basis. Meanwhile, chicken meat,

Table 3. Distribution of Mother's Nutritional Knowledge Level in Tertek Village

Mother's Nutritional Knowledge Level	n	%
Low (score <60)	39	39.4
Moderate (score 60-80)	35	35.4
High (score >80)	25	25.2
Total	**99**	**100**

Table 4. Distribution of Variation Levels of Animal Protein Intake for Toddlers in Tertek Village in 2023

Levels of Variability in Toddlers' Animal Protein Intake	n	%
Low (≤median)	60	60.6
High (>median)	39	39.4
Total	**99**	**100**

sausages and meatballs are consumed on a weekly basis. Meanwhile, the three least consumed sources of animal protein are beef liver, mackerel and goat's milk. The average score for the diversity level of toddlers' animal protein intake is 135 with the lowest diversity level score being 65 and the highest diversity level being 330.

Relationship between Mother's Level of Nutritional Knowledge and Variability in Animal Protein Intake

Data compiled in the form of a cross tabulation between the level of mother's nutritional knowledge and the diversity of animal protein intake among toddlers aged 24-59 months in Tertek Village, is presented in the following table.

From the results of the analysis of the relationship between the mother's level of nutritional knowledge and the diversity of animal protein intake using the chi-square correlation test, a p value of 0.027 ($p<0.05$) was obtained. These results identify that there is a significant relationship between the level of mother's nutritional knowledge and the diversity of animal protein intake.

Protein has an important role in the formation of antibodies, building body structures, and growth. Animal protein is a more complete source of essential amino acids and micronutrients and has higher bioavailability than vegetable protein (Sari et al., 2022). Research that has been conducted shows that the majority of toddlers have a low level of diversity in animal protein intake (60.6%). Meanwhile, there is only a small percentage of toddlers who have a high level of diversity in protein intake (39.4%). Based on the results of research Sari et al (2022), the diversity of animal protein intake has a significant relationship with the incidence of stunting, if the diversity of animal protein intake is higher, the nutritional status of children under five will increase so that they will avoid stunting.

Table 5. Cross tabulation between mother's nutritional knowledge level and diversity of animal protein intake

Mother's Knowledge	Diversity of Animal Protein Intake						p-value
	Low		High		Total		
	n	%	n	%	N	%	
Low	24	61.5	15	38.5	39	100.0	0.027
Moderate	16	45.7	19	54.3	35	100.0	
High	20	80	5	20	25	100.0	

Consumption of various animal proteins is associated with increased growth in toddlers (Sari et al., 2022). This is because a lack of diversity in animal protein intake can result in the body lacking certain essential amino acids. The lack of diversity in animal protein intake can be influenced by the mother's level of knowledge. Knowledge is the result of human sensing of a specific object (Pramesthi et al., 2023). The results of the research that has been conducted show that many mothers of toddlers have a low level of knowledge (39.4%), while mothers of toddlers who have a high level of knowledge are only 25.3%. Based on previous research findings by Lailatul & Ni'mah (2015) regarding the relationship between the level of knowledge and wasting, it showed that most mothers of toddlers had a low level of knowledge (Lailatul & Ni'mah., 2015). This is also in line with research conducted by Nindyna Puspasari & Merryana Andriani (2017) who stated in their research results that mother's knowledge and food intake influence the nutritional status of toddlers. One of the fundamental factors that directly influences the nutritional status of toddlers is the mother's level of knowledge. This is because mother's nutritional knowledge can determine the mother's attitude or behavior in choosing food to be consumed by toddlers, as well as eating habits in terms of quantity, type and frequency (Auliany & Purnamawati, 2023). There are various factors that can influence a mother's level of knowledge, one of which is the level of education. Mother's education is basic for achieving good toddler nutrition (Rizcewaty et al., 2022). The mother's education level is related to the mother's ease in receiving information about nutrition and health from outside (Rizcewaty et al., 2022). The level of mother's nutritional knowledge is related to the diversity of animal protein intake in toddlers aged 24- 59 months ($p=0.27$) with a relatively low level of relationship (+0.260). Therefore, the level of mother's nutritional knowledge can influence the diversity of animal protein intake in children under five in Tertek Village. This means that if the

mother's level of nutritional knowledge is high, the toddler will have a high level of diversity in protein intake and conversely, if the mother's level of nutritional knowledge is low, the toddler's level of diversity in protein intake will likely be low.

Mothers' lack of understanding of nutritional knowledge can result in a decrease in the practice of processing and consuming nutritious food among toddlers, which can increase the risk of malnutrition (Doutel et al., 2019). Mothers with good nutritional knowledge can realize the importance of toddler health (Adelina et al., 2018). A mother who has good nutritional knowledge can often provide different types of animal protein foods. The nutritional needs of toddlers will be met if mothers apply their nutritional knowledge to make wise food choices and preparation (Doutel et al., 2019).

CONCLUSION

In this study, there was a significant relationship between the level of mother's nutritional knowledge and the level of diversity in animal protein intake for toddlers aged 24-59 months. The mother's role in providing a variety of animal protein intake to toddlers is very important. This is expected to be able to support children's growth and development optimally. With the results of this study, it is hoped that mothers of toddlers can increase the diversity of animal protein intake to support growth.

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