

The Relationship between Parental Knowledge, Nutritional Status and Family Income with the Incidence of Stunting in Toddlers in the Pematang Johar Health Center Area

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ABSTRACT

Stunting remains a critical nutritional issue in Indonesia, affecting the growth and development of children. It results from various factors, including physiological, biochemical, and sociocultural elements, with inadequate nutrition being a key contributor. Mothers, as primary caregivers, play a crucial role in ensuring proper nutrition to prevent stunting, and a family's financial situation also influences the type and amount of food consumed. This study aimed to determine the relationship between stunting prevalence in toddlers in the Pematang Johar Health Center area with parental awareness, nutritional status, and household income. Using Slovin's formula, 45 out of 50 participants were sampled. Chi-square and univariate analyses were applied. Results indicated significant associations with parental knowledge ($p = 0.003$), nutritional status ($p = 0.043$), and family income ($p = 0.007$).

INTRODUCTION

In a number of countries, one of which is Indonesia, stunting is considered a nutritional problem. A person's diet can be used to measure their health level, even toddlers. A person's diet is the reason why their physical and mental health are balanced. A person's nutritional status is determined by their nutritional intake at all times, not just at one time. As a result, the following is often seen as a predictor of next-generation competencies. People of all ages, even toddlers, suffer from eating disorders; society, industry, and the government need to consider the following (Mariatun et al., 2024).

Stunting may be caused by child development problems. A number of factors, including biological, medical, and sociocultural factors, may influence stunting. Insufficient consumption of macro and micronutrients is the physiological cause of stunting. Carbohydrates and proteins are very important for the body's functioning. Proteins supply a variety of amino acids that cells use for growth and development, while carbohydrates supply glucose, which is needed to produce cellular energy and maintain physiological function. Naturally, the absence of these two essential nutrients in the body will have a major impact on cell survival and proliferation (Claudia Siregar et al., 2023).

The nutrients a person eats as well as how well the body uses them determine their nutritional status. Many bodily processes, such as energy generation, development, tissue repair, as well as process regulation, depend on the following nutrients. Anthropometric measurements including height, weight, and age are usually used to assess the nutritional status of toddlers. Age is an important consideration when evaluating nutritional status. If age is not accurately assessed, nutritional status can be considered incorrect (Hamani et al., 2023).

One of the other factors that is a significant factor that influences the occurrence of stunting is the level of parental understanding of food. Because of their rapid physical and mental growth, children need full attention and support from parents, which can be served through a healthy diet. In order for parents to provide balanced nutrition to their children, they must have a strong understanding of nutrition. Aghadiati et al. (2023) stated that parents' attitudes and actions in choosing food for children are greatly influenced by their level of nutritional knowledge.

The amount and variety of food consumed is determined by the individual's economic level. Maximizing the amount of money spent to buy fresh food is included in the income effort to influence the quantity and quality of food. Conversely, individuals with low incomes are more likely to be unable to afford to buy nutritious food alternatives (Sahdhina et al., 2024).

Stunting Toddlers Is Inappropriate To reduce the frequency of stunting, nutritional problems in Indonesia must be addressed immediately. Monitoring nutritional status is very important to understand the onset and prevalence pattern of stunting. The following statistics are important to determine the most successful intervention techniques in maximizing community nutrition status and to evaluate the long-term effectiveness of community nutrition initiatives. The reduction in stunting incidence is an important indicator of how well the

community and the government collaborate in tackling the following nutritional problems (Angraini et al., 2020).

Stunting is a developmental and growth disorder in children that can be caused by social and emotional stress, recurrent diseases, or malnutrition, based on WHO. Based on the Ministry of Health of the Republic of Indonesia (2019), toddlers are said to be stunting if their Z-Score is less than or similar to -2 standard deviation (SD) or less than or similar to -3 standard deviation (SD). Babies under two years old do not hold the best IQ (Fitriani & Darmawi, 2022).

A study in 2020 found that around 149 million children, or 22.0% of the child population, suffer from stunting (Nahalomo et al., 2022). Based on statistics from JME and the World Bank UNICEF on stunting, Indonesia ranks 115 out of 151 countries worldwide with a proportion of 30%, still larger than neighboring countries such as Thailand (10.5%) and Malaysia (20.7%). In 2019, around 6.6 million children were stunted, and the COVID-19 pandemic is expected to maximize this number to 7 million (15.0%) in 2020 (Amalia et al., 2023).

The stunting rate in North Sumatra province decreased by only 2.2%, from 21.1% in 2022 to 18.9% in 2023, based on SKI statistics. Nine cities and districts experienced an increase in underdevelopment rates, one district did not change, and six other districts experienced a decrease. The target prevalence of stunting among toddlers in North Sumatra Province in 2023 has not been met because the prevalence is still 18.55% in 2022. One of the districts with the highest stunting rate, at 19.90%, is Deli Serdang Regency (Pokhrel, 2024).

A total of 25 mothers under five from the Pematang Johar Health Center service area participated in the initial survey that became the basis for the study's findings. When it was known that only five mothers in Deli Serdang had received information about stunting from twenty people, the researcher was interested in carrying out further research. "The relationship between parental knowledge, nutritional status and family income with the incidence of stunting in toddlers in the working area of the Pematang Johar Health Center".

LITERATURE REVIEW

Stunting is a health problem that is still a big challenge in Indonesia, especially in the group of toddlers. Various studies show that stunting is not only caused by poor nutritional intake, but is also influenced by various factors such as socioeconomic conditions, parental knowledge, and parenting. The intake of macro and micronutrients such as proteins and carbohydrates is very important in the growth and development process of children. Imbalances or nutritional deficiencies can interfere with the body's metabolic processes, slow down physical development, and even have an impact on children's intelligence (Claudia Siregar et al., 2023). In addition, anthropometric methods such as weight and height measurements are often used to accurately assess the nutritional status of toddlers (Hamani et al., 2023).

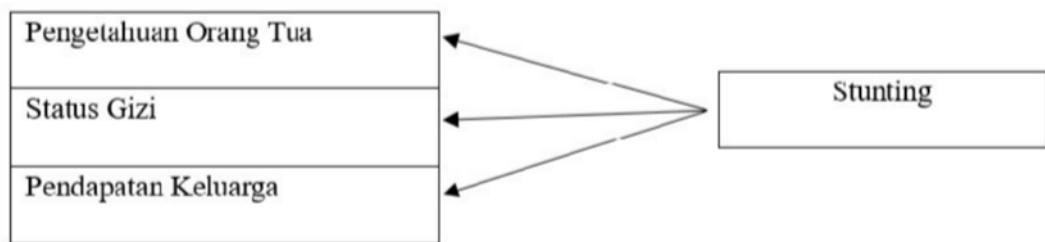
Parents' knowledge, especially mothers, about nutrition plays an important role in efforts to prevent stunting. Parents who understand the importance of balanced nutrition tend to be able to provide better quality food for their children. Income level is also a significant factor because it affects the

ability of families to provide nutritious and quality food (Sahdhina et al., 2024). National data shows that the stunting rate in Indonesia is still high, even compared to neighboring countries. In North Sumatra, the prevalence of stunting has not met the reduction target, and Deli Serdang Regency is among the areas with the highest number (Pokhrel, 2024). These findings encourage the need for further research on the relationship between parental knowledge, nutritional status, and family income to stunting incidence, such as those conducted in the Pematang Johar Health Center work area.

METHODOLOGY

Type and Design Studies

The following research uses a cross-sectional and quantitative research methodology. A research technique that relies on data analysis at once is cross-sectional research (Herdiani, 2021). The following study examines the relationship between family income, nutritional status, and knowledge by obtaining information about the number of stunted children in the Pematang Johar Health Center service area in 2024.



Research Place

Researchers can carry out research in the Johar Health Center area because the total population is relatively large and the total sample is representative. The following sample criteria for research are described as follows:

1. Parents
2. Age of the child

Time Study

In November 2024, research will begin, and end in December 2024.

Research Population

The researcher chooses objects or individuals with certain characteristics and qualities to draw conclusions from a study; The following groups are referred to as populations (Suriani et al., 2023). The following 50 study participants were all mothers whose children suffered from stunting.

Sample

Cahyadi (2022) emphasized that samples are a large component of the population and its composition. 44 parents and infants were used as research samples, which were calculated using the Slovin formula.

$$\frac{N}{1+(e)^{\frac{1}{2}}}$$

$$n = \frac{50}{1+50(0.05)^{\frac{1}{2}}}$$

$$n = \frac{50}{1+50(0.0025)}$$

$$n = \frac{50}{1+0.125}$$

$$n = \frac{50}{1,125}$$

$n = 44.44$ rounded to 44

Thus, the researchers selected a sample of forty-four participants for their study. The sampling procedure uses the purposive sampling technique.

Data Collection Methods

The data for the following research came from primary and secondary sources. Primary data was obtained directly from the subjects themselves, for example, the researcher sent a questionnaire to all participants without prior parental agreement and asked them to sign a consent letter. Secondary data was obtained from the Pematang Johar Health Center.

Aspect Measurement

Variabel	Definition	Gauges	Scale	Result
Independent variables Parental knowledge	Mothers presenting the wrong dietary advice is one of the elements that significantly lowers the incidence figure	Questionnaire	Ordinal	Good. Enough. Not enough.

Nutritional Status	A person's nutritional status is determined by the amount of food they eat and the nutrients they utilize. Nutrients are needed by the body to produce energy, develop, and maintain its infrastructure. technique Body Setting	Anthropometers	Ordinal	Good Nutrition Insufficient Nutrition Poor Nutrition Risky more nutrients Further nutrition Obesity
Family income	The amount of money a person makes has a huge influence on how much and what kind of food they consume	Questionnaire	Ordinal	High (> Rp. 2,500,000 or more than two million five hundred thousand rupiah) Currently (Rp. 2,000,000 or two million rupiah) Low (< IDR 1,000,000 or less than one million)
Stunting Dependent Variable	If a child's growth and development is disrupted, stunting occurs.	Questionnaire	Ordinal	Yes No

Data Processing Techniques

Data processing is the extraction of information from each variable. Investigations that are ready to be examined. Data preparation includes production, editing, and tabulation, which provides assistance in collecting comprehensive information from each facility and the variables conducted by the research (Pokhrel, 2024).

1. Editing The researcher will review the information collected and make any changes needed to the form or question at the following stage to ensure that the questionnaire has been filled out correctly.

2. 2.Coding In the following stages, you can implement changes to the questionnaire. The data must then be coded, which means converting textual data into numerical data.
3. Scoring The researcher presents the maximum and lowest score on each question, and after all the questionnaires have been filled out correctly, they will check the examination data of 44 people.
4. Tabulating After that, the data is entered into a table to make it easier to process and read.

Data Analysis

Bivariate and univariate techniques were used to test the research data. (Endarto, 2020).

a. **Univariate Analysis**

Although univariate summaries only look at one variable at a time, the following study attempts to describe the characteristics of each element studied.

b. **Bivariate Analysis**

The findings of the univariate analysis will highlight the characteristics of each factor. The bivariate analysis phase then begins. The following research will look at two elements that are suspected to be related or related. Bivariate evaluation evaluated data from two components transversely to identify relationships through dependent and independent factors using a chi-square (χ^2) test with a significance threshold of 95% ($\alpha=0.05$).

RESEARCH RESULTS

Univariate Analysis

General Characteristics Data of Participants

Table 3.1 Characteristics of mothers based on work and education in the Pematang Johar Health Center area in November 2024.

Pendidikan	Frekuensi (f)	Persentase (%)
SD	10	22.7
Sekolah Menengah Pertama	6	13.6
Sekolah Menengah Atas	23	52.3
Sarjana	5	11.4
Total (n)	44	100.0
Pekerjaan	Frekuensi (f)	Persentase (%)
Pekerjaan	36	81.8
Tidak ada pekerjaan	8	18.2
Total (n)	44	100.0

Of the 44 participants, 10 individuals had an elementary education, 6 individuals had a junior high school education, 52.3% had a high school education, and 11.4% had a bachelor's education, based on statistics in table 3.1. The majority of the 44 participants were unemployed (eight people, or 18.2% of the total) or employed (36 people, or 81.8% of the total).

Table 3.2 Distribution of children based on age and gender around Pematang Johar Health Center in November 2024

Usia Balita	Frekuensi (f)	Persentase (%)
0-24 Bulan	18	40.9
25-60 Bulan	26	59.1
Total (n)	44	100.0
Jenis Kelamin	Frekuensi (f)	Persentase (%)
Wanita	20	45.5
Pria	24	54.5
Total (n)	44	100.0

A total of 20 girls (45.5%) and 20 boys (54.5%) were the total participants, while 18 toddlers (40.9%) and 26 toddlers (50.1%) each aged between 0 and 24 months and 25 and 60 months, based on Table 3.2.

Distribution of Frequency of Participants with Stunting Incidence

Table 3.3 Participants were distributed in November 2024 based on parents' reports regarding the incidence of stunting toddlers in the work area of the Pematang Johar Health Center.

Pengetahuan	Frekuensi (f)	Persentase (%)
Bagus.	20	45.5
Cukup.	16	36.4
Tidak cukup.	8	18.2
Total (n)	44	100.0

Table 3.3 reveals that out of 44 participants, 20 people held information either about stunting or 45.5%; 36.4% hold sufficient knowledge; and 18.2% hold a poor understanding.

Table 3.4 Children in the Working Area of Pematang Johar Health Center in November 2024: Participant Concentration Based on Stunting Incidence and Nutritional Status

Status gizi	Frekuensi (f)	Persentase (%)
Nutrisi Baik	19	43.2
Nutrisi tidak cukup	12	27.3
Nutrisi buruk	1	2.3
Nutrisi Berisiko Lebih lanjut	6	13.6
Nutrisi lebih lanjut	1	2.3
Obesitas	5	11.4
Total (n)	44	100.0

A small percentage (n = 12; 27.3% of the total) of the 44 toddlers examined held a low nutritional status, while the majority (n = 19; 43.2% of the total) held an adequate nutritional status (Table 3.4). One child had a nutritional status of 2.3%, six toddlers (13.6%) were overweight, five toddlers (11.4%) were overweight, and >1 toddler (2.3%) was obese.

Table 3.5 November 2024: Incidence of Stunting in Children in the Working Area of the Pematang Johar Health Center: Distribution of Participants Based on Parental Income.

Pendapatan	Frekuensi (f)	Persentase (%)
Tinggi	15	34.1
Sedang	22	50.1
Rendah	7	15.9
Total (n)	44	100.0

Of those who participated, 15 people (34.1%) came from high-income households, 22 people (50.1%) came from middle-income families, and 7 people (15.9%) came from low-income families, based on Table 3.5.

Table 3.6 Statistics of Child Stunting Incidence in Pematang Johar Health Center Environment November 2024

Stunting	Frekuensi (f)	Persentase (%)
Ya.	29	65.9
Tidak.	15	34.1
Total (n)	44	100.0

Table 3.6 shows that out of 44 children under five, 29 (or 65.9%) were in the "Yes" group and 15 (34.1%) were in the "No" group.

Bivariate Analysis

The following study examined the prevalence of stunting in infants in the Pematang Johar Health Center area and its correlation with family income, nutritional status, parental knowledge, and other factors based on data collected from 44 participants. The findings show:

Table 3.7 Stunting Incidence of Toddlers at Pematang Johar Health Center November 2024 and Its Relation to Parental Awareness.

No.	Pengetahuan	Stunting		Total (n)	P (Nilai)	
		Ya.	Tidak.			
		N	%	N	%	
1.	Bagus.	18	90.0	2	10.020	100.0 0.003
2.	Cukup.	9	56.3	7	43.816	100.0
3.	Tidak cukup.	2	25.0	6	75.08	100.0

Data from 20 participants in table 3.7 show that 18 parents answered "yes" (90%) and 2 parents answered "no" (10%), showing that parents have a fairly high level of knowledge. Of the 16 participants, 9 parents (56.3% of the total) answered "yes", and 7 parents (43.8% of the total) gave "yes"

The answer is "no". Of the 8 participants who held parental knowledge, only 2 parents (or 25.0% of the total) presented yes or no answers (75.0% of the total).

The correlation between parental awareness and the incidence of stunting in toddlers is evidenced by the results of a chi-square test on the relationship between parental education and stunting scores in toddlers around the Pematang Johar Health Center. A p-value of 0.003 shows that Ho is rejected and Ha is accepted.

Table 3.8 The Relationship between Stunting Rates and Nutritional Status at Pematang Johar Health Center in November 2024

No.	Status gizi	Stunting				Total (n)	P (Nilai)
		Ya.		Tidak.			
		N	%	N	%	N	%
1.	Nutrisi Baik	13	68.4	6	31.6	19.	100.0
2.	Nutrisi Tidak cukup	6	50.0	6	50.0	12	100.0
3.	Gizi Buruk	0	0.0	1	100.0	1	100.0 0.043
4.	Nutrisi Berisiko Lebih lanjut	5	83.3	1	16.7	6	100.0
5.	Nutrisi Lebih Lanjut	1	100.0	0	0.0	1	100.0
6.	Obesitas	4	80.0	1	20.0	5	100.0

Table 3.8 lists the recognized nutritional classifications, including toddlers. Of the nineteen toddlers who attended, twelve (68.4%) answered "Good Nutrition", six (31.6%) answered "No", and six (50.0%) answered "Poor Nutrition". More precisely, one child (100.0%) was classified as undernourished, one (16.7%) classified as "overnutrition", five (83.3%) classified as "at risk of overnutrition", one (100.0%) classified as "malnourished", and five (20.0%) classified as "obese".

The chi-square test which was carried out in November 2024 supports research findings that show a relationship between child stunting and nutritional status at the Pematang Johar Health Center. With a p-value of 0.05, the alternative hypothesis (Ha) is accepted and the null hypothesis (Ho) is rejected.

Table 3.9 Prevalence of Stunting at Pematang Johar Health Center on Family Income

No.	Pendapatan <u>Keluarga</u>	<u>Stunting</u>				Total (n)	P (Nilai)
		Ya.		Tidak.			
		N	%	N	%	N	%
1.	Tinggi	11	73.3	4	26.7	15	100.0
2.	Saat ini	17	77.3	5	22.7	22	100.0 0.007
3.	Rendah	1	14.3	6	85.7	7	100.0

Of the 15 high-income households, 11 (73.3%) are classified as high in the high category yes, and 4 (26.7%) are classified as no, based on the statistics in table 3.9. Seven of the 22 participants came from low-income households, one person was in the Low-Ya group (14.3%), six people were in the No group (85.7%), and 17 people were in the Moderate-Ya group (77.3%). Five of them were in the No category (22.7%).

Based on the findings of the chi-square test in November 2024, there is a relationship between household income and the degree of stunting in children at the Pematang Johar Health Center. With a p-value of 0.05, the alternative hypothesis (H_a) is accepted and the null hypothesis (H_0) is rejected.

DISCUSSION

Data collected from 44 people in the Pematang Johar Health Center area in November 2024 on the relationship between the prevalence of stunting toddlers and variables such as family income, nutritional status, and parental knowledge became the basis for this conclusion.

From the characteristics of mothers based on their education and last profession, it can be seen from the data of 44 participants, 10 people only graduated from elementary school, 6 people graduated from junior high school, 52.3% graduated from high school, and 11.4% had a bachelor's education. The results of the study showed that out of 44 people, 8 people (18.2%) were unemployed and 36 people (81.8%) were in the labor force. Based on the data, there were 18 humans (or 40.9% of the total) in the age range of toddlers 0–24 months, and 26 humans (or 59.1% of the total) were in the age group of toddlers 25–60 months. Twenty (45.5%) of the 44 participants were female, while twenty-four (54.5%) were male.

Based on the data collected on nutritional status, most of the 44 children under five were classified as the following criteria: good nutritional status ($n=19$ or 43.2%), poor nutrition status (12 or 27.3%), malnutrition status (2 or 2.3%), nutritional status at risk (6 or 13.6%), overnutrition status (2 or 2.3%), or over-nutrition status (5 or 11.4%). Overall, 20 (or 45.5% of the total) scored well on the Parental Knowledge scale, while 16 (or 36.4% of the total) scored moderate and 8 (18.2%) scored poorly.

Of the 44 participants, 15 (34.1%) were from high-income families, 22 (50.1%) were from middle-income families, and 7 (15.9%) were from low-income families. Based on data on stunting in toddlers, 29 (20.9%) of 44 toddlers answered "yes", while 15 (34.1%) answered "no".

The Relationship between Parental Knowledge and the Incidence of Stunting in Toddlers

The results of the study that looked at the relationship between parental awareness and the occurrence of stunting are presented in Table 3.7. The p-value of the chi-square test is 0.003 (>0.05). In other words, there is no statistically significant correlation between parental awareness and stunting prevalence. The results of the following study are in line with Fathul Jannah's research in South Jakarta which showed that there was no statistically significant correlation between the level of parental awareness and stunting prevalence. Based on research findings, the prevalence of stunting will decrease as more parents get information about the condition. Given that education and knowledge are two things that cannot be separated, a person's level of education is directly correlated with his level of knowledge. Based on Jannah (2021), this did happen. Because education and knowledge go hand in hand, a person's level of education can be a good indicator of a person's level of knowledge.

Twenty people, or 45.5% of the 44 study participants, held good knowledge. The most important thing in order to provide children with balanced nutrition that can support their growth and development, parents must have a good understanding of nutrition.

The findings of the study show that there is no relationship between the prevalence of stunting and parental awareness. Stunting can be prevented because parents who hold a better level of education will be more aware of their responsibility for children's health and nutrition. Maternal education is very important when it comes to feeding children.

The Relationship between Nutritional Status and Stunting Incidence in Toddlers

The researcher found that the food intake of toddlers is very important to maintain their nutritional status (WW/A) and prevent growth faltering which can lead to stunting, so that it grows in line with the growth chart (Table 3.8). The chi-square test obtained a p-value of 0.043 (<0.05) which showed that there was a very significant correlation between the two variables. Sri Olfi Madiko from the East agrees with the findings of the following research. The nutritional condition of toddlers is one of the best indicators of a person's health. The nutritional status of toddlers must be closely monitored to prevent stunting. Toddlers are required to eat healthy food so that their bodies can grow and develop normally and prevent stunting. (Sri Olfi Madiko et al., 2023).

The following results prove that the nutritional condition of toddlers plays an important role in their health growth. By ingesting and using nutrients for things like energy generation, tissue growth and repair, and the regulation of internal processes, the body regulates its own operations in the following situations.

The Relationship between Family Income and Stunting Incidence in Toddlers

The results of the chi-square test obtained a p value of 0.007 (<0.05) which shows a very real correlation between the two variables, based on the data in table 3.9 which shows the relationship between family income and stunting rates. Zurhayati's allegations in the city of Pekanbaru were confirmed through the analysis. Based on research, mothers with low education often have a greater influence on their family's financial situation. The majority of them take care of their family finances by staying at home, which has an impact on things like buying food and ensuring that children get a balanced diet to prevent stunting (Zurhayati & Hidayah, 2022).

According to the following research, the economic level of the community has an impact on the quantity and quality of the food they consume. One way

Income affects the quantity and quality of food by maximizing the amount of expenditure on fresh food. Low income prevents people from holding resources to eat healthy.

CONCLUSION

Based on research using the Parent Information indicator Research Results, the research carried out in the Pematang Johar Health Center area in 2024

shows that there is a relationship between parental information and the prevalence of stunting in toddlers. The incidence of stunting of toddlers in the Pematang Johar Health Center area in 2024 was found to be related to nutritional status, based on research using nutritional status measurements. The results of the study show that the degree of malnutrition in toddlers around the Pematang Johar Health Center is related to household income.

RECOMMENDATION

The results of the following study are intended to help families better understand how the relationship between parenting ability, family income, and nutritional status with the occurrence of mental retardation.

ADVANCED RESEARCH

Furthermore, the results of the following research are expected to be used as a basis for further research, so as to allow the use of more samples and require a wider scope of research.

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