

The Relationship Between Dietary Patterns and the Incidence of Stunting in Children Aged 24-60 Months in the Sidomulyo Community Health Center Work Area

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ABSTRACT

Stunting remains a major global health issue, with 148.1 million children under five affected worldwide (WHO, 2022). Indonesia ranks 21st globally and 4th in Asia, with a national prevalence of 21.5% in 2023 and 13.6% in Riau Province. This condition highlights the importance of examining dietary patterns as a key factor associated with stunting. Objective: To analyze the relationship between dietary patterns and stunting among children aged 24–60 months in the working area of Sidomulyo Public Health Center. Methods: This quantitative study used a cross-sectional design. The population included all children aged 24–60 months, with 57 respondents selected through total sampling from June 24 to July 12, 2025. Data were collected using a validated and reliable questionnaire, and analyzed using Chi-Square tests. Results: The analysis showed a significant association between dietary patterns and stunting ($p=0.000$; $OR=19.200$). Children with good dietary patterns were 19 times more likely to achieve normal nutritional status compared to those with poor dietary patterns. Conclusion: Dietary patterns have a significant relationship with stunting among children aged 24–60 months in Sidomulyo, emphasizing the importance of balanced nutrition to prevent stunting.

Keywords: *Dietary patterns, stunting, Children*

INTRODUCTION

Stunting is a growth disorder in children caused by chronic, long-term malnutrition. This condition is caused by inadequate nutrition, which can lead to growth in height or length that is inappropriate for age (Nurjayanti et al., 2024).

According to World Health Organization (WHO) data in 2022, approximately 148.1 million children under five worldwide experienced stunting, equivalent to 31%. Indonesia ranks 21st out of 304 countries with high stunting rates. Several countries with higher stunting prevalence include Vanuatu (31.4%), India (31.7%),

Malawi (34.0%), Sudan (36.0%), and Mozambique (36.4%). In Asia, Indonesia ranks fourth, after India (31.7%), Afghanistan (33.1%), and Pakistan (34.0%), in terms of stunting prevalence in children under five. These data indicate that stunting remains a serious problem globally and regionally, including in Indonesia (WHO, 2023).

In Indonesia, the stunting incidence rate increased from 24.4% in 2021 to 21.6% in 2022, and to 21.5% in 2023 (Ministry of Health, 2024). According to the latest data released by the Ministry of Health, the stunting prevalence rate in Riau Province in 2022, specifically in Pekanbaru City, was 16.8%, and in 2023 it was 13.6% (Ministry of Health, 2023). A preliminary survey conducted by researchers obtained data from the Pekanbaru City Health Office in 2023, indicating that Tuah Madani District recorded 34 cases of stunting in toddlers (Ministry of Health, 2023). Stunting impacts children's health, including cognitive impairment, psychomotor retardation, and reduced cognitive and intellectual abilities. Stunting not only impacts intellectual development but can also make children susceptible to disease (Cindy et al., 2023).

Therefore, to prevent stunting, parents need to cultivate healthy eating habits from an early age by providing nutritious foods and maintaining regular meal times. Children who are not accustomed to healthy eating from an early age are at greater risk of stunting than children who regularly consume nutritious foods (Aisyah, 2024).

Several studies have shown a link between dietary habits and stunting. Research conducted by Amanda et al. (2023) demonstrated a relationship between dietary habits and stunting in toddlers aged 24-60 months at the Botania Community Health Center. The results of a statistical test using Chi-Square showed a p-value of 0.001 ($P < 0.05$). Another study conducted by (Lailiyah, 2021) also showed a relationship between dietary patterns and stunting in toddlers aged 2-5 years at the Dapet Balong Panggang Community Health Center. Based on the Spearman Rank correlation test, a significant value (p value) was obtained, with a p value of 0.013, as the p value $< \alpha$ (0.05).

A preliminary study conducted by researchers at the Sidomulyo Community Health Center on March 8, 2025, using interviews with 10 respondents found that a lack of

variety in food choices and portions that are not tailored to the nutritional needs of toddlers can contribute to stunting. This suggests that suboptimal eating patterns can be a risk factor for toddler growth and development.

Based on the description above, several factors influence stunting, one of which is eating patterns. Therefore, the researchers were interested in conducting a study on "The Relationship Between Dietary Patterns and the Occurrence of Stunting in Children Aged 24-60 Months in the Sidomulyo Community Health Center, Pekanbaru City."

METHOD

The type of research used in this study is quantitative. This study used a cross-sectional design. Cross-sectional research is research in which data collection is conducted at a single point in time. The population in this study was all toddlers aged 24-60 months, totaling 57 toddlers. The sample for this study was collected using a total sampling technique.

RESULTS

Univariate Analysis

Univariate analysis is performed to obtain an overview of the variables studied, both dependent and independent, and then display them in the form of a frequency distribution. The univariate analysis conducted in this study analyzed the relationship between dietary patterns and stunting in children aged 24-60 months.

Table 4.1 Frequency Distribution of Respondent Characteristics in the Sidomulyo Community Health Center Work Area

Variables	N	%
Toddler Age		
24-47 months	46	80.7
48-60 months	11	19.3
Total	57	100
Gender		
Man	39	68.4
Woman	18	31.6

Total	57	100
What order are you in the family		
Child < 3	31	54.4
Children ≥ 3	26	45.6
Total	57	100
Mother's Age		
20-35 years	32	56.1
>35 years	25	43.9
Total	57	100
Mother's Job		
Housewife	48	84.2
Private sector employee	7	12.3
civil servant	2	3.5
Total	57	100
Mother's Education		
Low (elementary-middle school)	8	14.0
High (High School-S1)	49	86.0
Total	57	100
Father's Age		
20-35 years	22	38.6
>35 years	35	61.4
Total	57	100
Father's occupation		
Self-employed	19	33.3
Private sector employee	37	64.9

civil servant	1	1.8
Total	57	100
Father's		
Education		
Low (elementary-middle school)	8	14.0
High (High School-S1)	49	86.0
Total	57	100
Dietary habit		
Good	37	64.9
Not good	20	35.1
Total	57	100
Stunting Incident		
Normal	37	64.9
Stunting	20	35.1
Total	57	100

Based on table 4.1, the data obtained shows that the majority of respondents in this study were toddlers aged 24-47 months, namely 46 respondents (80.7%), male gender as many as 39 (68.4%), and were the <3rd child as many as 31 respondents (54.4%). The majority of mothers of toddlers were aged 20-35 years, namely 32 respondents (56.1%), as many housewives as 48 respondents (84.2%), and had a high level of education (high school-bachelor's degree) as many as 49 respondents (86.0%). The majority of the toddlers' fathers were aged >35 years, namely 35 respondents (61.4%), worked as private employees as many as 37 respondents (64.9%), and had a high level of education (high school-bachelor's degree) as many as 49 respondents (86.0%). The majority of respondents had good eating patterns in toddlers, namely 37 respondents (64.9%). The majority of respondents were normal, 37 respondents (64.9%).

Bivariate Analysis

Bivariate analysis was conducted to determine the relationship between the independent and dependent variables. Statistical testing used the Chi-Square test using SPSS 25 with a significance level (α) of 0.05. If the p-value is <0.05 , H_a is accepted, indicating a relationship between dietary patterns and stunting in children aged 24-60 months.

Table 4.2. Relationship between Dietary Patterns and Stunting in Children Aged 24-60 Months in the Sidomulyo Community Health Center Work Area

Dietary habit	Stunting Incident				P Value		OR
	Normal		Stuntin g		Total		
	f	%	f	%	f	%	
Good	32	86.5	5	13.5	37	100	0,000 (4,816- 76,548)
Not good	5	25.0	15	75.0	20	100	
Total	37	64.9	20	35.1	57	100	

Based on the table above, the data shows that the majority of good eating patterns are found in normal toddlers as many as 32 respondents (86.5%), the minority of good eating patterns are found in stunted toddlers as many as 5 respondents (13.5%) and the majority of bad eating patterns are found in stunted toddlers 15 respondents (75.0%), the minority of bad eating patterns are found in normal toddlers 5 respondents (25.0%). Based on the results of the Chi-Square test, the p value = 0.000 is known that $p < 0.05$ which indicates that there is a relationship between eating patterns and the incidence of stunting in children aged 24 - 60 months in the Sidomulyo Health Center work area. From the results of the Odds Ratio (OR) = 19,200 (CI 95%: 4,816-76,548), which shows that good eating patterns have a 19 times greater chance of experiencing normal nutritional status compared to children who have bad eating patterns

DISCUSSION

Eating Patterns in Children Aged 24-60 Months

The results of the study indicate that the majority of respondents (37 respondents) (64.9%) reported good eating patterns in children aged 24-60 months, while the minority (20 respondents) reported poor eating patterns. These results indicate that the majority of children aged 24-60 months in the Sidomulyo Community Health Center area have an appropriate eating pattern in terms of food variety, portion sizes, and meal frequency.

However, 35.1% of children still have poor eating patterns. This condition can be caused by several factors, such as a lack of food variety, irregular meal schedules, or meal portions that do not meet daily energy needs. If this persists over the long term, children are at risk of nutritional problems, including stunting.

This study is similar to that of (M Thonthowijauhari, 2023), which found that 59% had good eating patterns and 41% had poor eating patterns. The results show that 59% of toddlers in Sukaraja Village practice good eating habits.

Eating patterns are a person's dietary habits that contribute to their nutritional status. These patterns reflect an individual's efforts to meet nutritional needs through a variety of food types, meal times, meal frequency, and daily eating habits. When food is consumed in adequate quantities, of good quality, and with a diverse and balanced variety, the body's nutritional needs are met, thus achieving optimal nutritional status (Putri and Rachman, 2023).

Stunting Incidence in Children Aged 24-60 Months

The results of the study conducted by the researchers showed that the majority of children aged 24-60 months were normal (37 respondents (64.9%)), and a minority of children were stunted (20 respondents (35.1%)).

This study aligns with research by Muthia et al., 2025, which found that the majority of children aged 24-60 months were normal (37 respondents (62.7%)), and a minority of children were stunted (22 respondents (37.3%)). It can be concluded that less than half (37.3%) of respondents at the Muara Labuh Community Health Center experienced stunting in toddlers aged 24-60 months.

Stunting itself is a condition of growth failure in toddlers due to chronic malnutrition. It can occur during pregnancy and early after birth, but only becomes apparent after the child is 2 years old. The nutritional status of the mother and child is a crucial factor in child growth (Anjani, 2024).

Factors influencing stunting are divided into two categories: direct and indirect. Direct factors include dietary habits. Indirect factors include family habits, hygiene, access to health services, the toddler's age, gender, number of children, maternal age, maternal occupation, maternal education, paternal age, paternal occupation, and paternal education (Arbain and Saleh, 2022).

Previous research also shows that stunting is more common in toddlers, generally occurring in children over 24 months of age. Children over 2 years of age are at greater risk of stunting than children under 2 years of age. This is because children are no longer breastfed and are exposed to unhealthy environmental conditions outside the home, which may result in inadequate nutrition (Yuliastini and Sudiarti, 2020). The study found that stunting was 47.2% for children aged 6-23 months, while 52.8% for children ≥ 24 -60 months.

In addition to age, gender also influences nutritional needs due to differences in body composition between males and females. Men generally have more muscle tissue, while women have more fat tissue. Metabolically active muscle requires more energy than fat, so even with the same height, weight, and age, men typically require more energy than women (Arbain and Saleh, 2022).

This is supported by research conducted by Eliati et al., 2021, which found that 63.2% of females experienced stunting, while 36.8% of males experienced stunting. Statistical tests showed a p-value of 0.001, indicating a relationship between gender and stunting.

Recommended foods for toddlers should be varied and nutrient-rich, containing carbohydrates, protein, fat, vitamins, and minerals. A meal schedule refers to the frequency of food consumption throughout the day, including main meals and snacks. A typical meal frequency consists of three main meals: breakfast, lunch, and dinner. Meal quantity refers to the portion of food consumed by each person, usually measured in calories based on energy needs (Siallagan et al., 2023).

Based on the findings of this study, the researchers assume that selecting the right types of food, appropriate portion sizes, and a regular meal schedule can contribute to a child's good nutritional status. The better the diet, the more optimally a child's daily energy and nutrient needs will be met. These habits are crucial for optimal growth and development.

The number of children in a family also influences nutritional status. The first child's needs are usually better met because the parents' burden is still lighter. Parents can still give their first child their full attention and meet their child's needs. Furthermore, parents are usually relatively young when having one child, thus maintaining their stamina. However, for children >3 and beyond, parents are usually older and their stamina declines (Fauziyah and Africia, 2023).

Research results (Fauziyah, 2023) found that for children under 3, the prevalence was 53.3%, while for children >3, the prevalence was 46.7%. A p-value of 0.049 was obtained, indicating a relationship between the number of children and the incidence of stunting.

Parental age is also a determining factor. Children born to parents both aged >35 are 2.37 times more likely to be stunted at birth than their peers. The 20-35 age range is the optimal time for couples to have children to reduce the risk of having a stunted child at birth. And based on the results of the study, the mothers aged 20-35 years were (8.5%), while the fathers were >35 years old (12.8%) (Sari and Sartika, 2021). Furthermore, parental employment also impacts a family's purchasing power to meet nutritional needs. Low income increases the risk of inadequate food quality and quantity, while adequate income supports children's growth and development (Lemaking et al., 2022). Research (Ludwina et al., 2025) found that 39 respondents (68.5%) employed fathers and 16 (28%) self-employed fathers. Meanwhile, 35 (61.4%) were unemployed mothers, and 22 (38.6%) were employed mothers.

Parental education also influences the child-rearing process, which impacts child growth and development. This study showed that 50% of toddlers' fathers had a high level of education, while 50% had a low level of education. Furthermore, 57% of mothers had a high level of education, while 43% had a low level of education (Maryati and Annisa, 2023).

The impact of stunting can affect a child's growth and development. Growth in weight, height, cognitive development, social skills, speech, and emotional development will be slowed and suboptimal if the child is stunted (Laily and Indarjo, 2023).

Therefore, it can be assumed that the incidence of stunting in children aged 24-60 months is influenced by both direct and indirect factors. Direct factors include dietary habits, while indirect factors include family habits, hygiene behaviors, access to health services, the toddler's age, gender, number of children, maternal age, maternal occupation, maternal education, paternal age, paternal occupation, and paternal education.

Relationship between Dietary Patterns and Stunting in Children Aged 24-60 Months in the Sidomulyo Community Health Center Work Area

Based on the Chi-Square test, the p-value was 0.000, which is known as $p < 0.05$, indicating a relationship between dietary patterns and stunting in children aged 24-60 months in the Sidomulyo Community Health Center work area. The Odds Ratio (OR) results indicate that children with a good diet are 19 times more likely to experience normal nutritional status compared to children with poor diets.

A good and nutritionally balanced diet is one that considers its main components. These components include staple foods, plant and animal side dishes, vegetables, and fruits. The daily meal frequency consists of three meals: breakfast, lunch, and dinner. The daily meal schedule is divided into three meals: breakfast (before 9:00 AM), lunch (12:00 PM-1:00 PM), and dinner (6:00 PM-7:00 PM). Furthermore, food consumed should be portioned according to the body's needs (Azizah and Rizana, 2023).

Implementing a diet that aligns with these components is crucial, as it directly impacts a child's nutritional status. Nutritional status reflects the body's condition based on nutrient intake and utilization. Assessment can be conducted directly or indirectly (Putri and Rachman, 2023).

If nutritional intake is inadequate over the long term, this can have serious impacts on a child's growth, such as stunting. Stunting reflects chronic malnutrition due to

an inadequate diet and impacts a child's growth and development (Abd Arafat et al., 2022).

These results align with research (Carolina et al., 2024), which found that the majority of non-stunted toddlers (60%) had good dietary patterns, while the minority (40%) had poor dietary patterns. The prevalence of stunted toddlers (100%) has poor dietary patterns. The chi-square test yielded a p-value of 0.018 ($p < 0.05$), indicating a relationship between dietary patterns and stunting.

Researchers assume that an unbalanced diet, in terms of type, quantity, and frequency, contributes significantly to the increased risk of stunting in toddlers. Dietary patterns reflect daily eating habits, so meeting appropriate nutritional needs is a key factor in preventing stunting.

CONCLUSION

Based on the research results and discussion, the following conclusions can be drawn:

1. The majority of respondents (37 respondents) reported good dietary habits among toddlers aged 24-60 months, while a minority (20 respondents) reported poor nutritional status.
2. The incidence of stunting among children aged 24-60 months was normal, with a majority of respondents (64.9%) reporting normal nutritional status, and a minority (20 respondents) reporting stunting.
3. There was a relationship between dietary habits and stunting among children aged 24-60 months in the Sidomulyo Community Health Center (Puskesmas) work area with a p-value of 0.000 ($p < 0.05$). The Odds Ratio (OR) results indicated that children with a good dietary pattern were 19 times more likely to experience normal nutritional status compared to children with a poor dietary pattern.

LIMITATIONS

Based on the experience during the research process, the researcher identified several limitations that need to be considered and can be used as a consideration for future researchers. The limitations of this research were conducted at several

integrated health posts (Posyandu) during questionnaire distribution, with respondents only having a short time to complete the questionnaires, so they were only read aloud. Furthermore, the method used was door-to-door visits to respondents' homes. However, during implementation, the researcher encountered several obstacles, including sometimes respondents were not at home, and respondents were reluctant to open the door. Furthermore, the researcher also experienced difficulty finding each respondent's address, which resulted in a long data collection period.

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