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The Relationship Between Stunting Incidents in Toddlers and the Level of Mother's Education and Family Parenting Patterns in Sitinjuau Laut District

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ABSTRACT

A single paragraph of about 250 words maximum. For Stunting is a growth disorder in children where their height is below the standard for their age. Although the prevalence of stunting in Indonesia has decreased, it remains high according to WHO criteria. Stunting has the potential to reduce productivity in adulthood and increase the risk of degenerative diseases. The causes of stunting are complex and varied. This study aims to determine the relationship between maternal education level, nutritional intake, and family parenting on the incidence of stunting in children under five in the working area of Puskesmas Hiang, Kerinci Regency. This research used a quantitative method with a cross-sectional design. Data collection was conducted from March to May 2024. The study population consisted of 837 children under five, with a sample of 94 children selected using proportional random sampling. The independent variables in this study included "maternal education level, nutritional intake, and family parenting," while the dependent variable was "stunting." Data analysis was conducted using the Chi-Square test. The prevalence of stunting in children under five reached 23.4%. A significant relationship was found between maternal education level and nutritional intake (energy, carbohydrates, vitamin A, and fat) with the incidence of stunting in children under five. However, there was no significant relationship between protein intake, zinc intake, and family parenting with stunting incidence. Maternal education level, are related to stunting in children under five in the working area of Puskesmas Hiang, Kerinci Regency.

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1. INTRODUCTION

Toddlerhood is a crucial stage in a child's growth and development, during which physical, motor, social, and emotional development accelerates rapidly. During this period, a child's nutritional status

plays a central role, as nutritional deficiencies can negatively impact not only physical growth but also brain development, which is crucial for future cognitive function. Therefore, meeting appropriate and adequate nutritional needs during toddlerhood is a strategic step in preventing various nutritional problems such as stunting, wasting, and anemia, which remain major health issues in Indonesia (Rahayu et al., 2018; Uce, 2018; Sulistia, 2023).

Stunting is a major nutritional problem experienced by many toddlers, especially in developing countries, including Indonesia. This condition occurs due to chronic, ongoing malnutrition, significantly impairing a child's physical growth and brain development. Some of the main causes of stunting include inadequate nutritional intake, repeated infections, poor sanitation, and limited access to adequate health services (Septariana et al., 2024; Ministry of Health of the Republic of Indonesia, 2020; Fauzi, 2020; Munir, 2022).

The impact of stunting is not only visible in physical aspects, such as shorter height than age-specific standards, but also has implications for children's cognitive abilities. This decline in intellectual capacity then impacts an individual's future productivity and quality of life. Therefore, stunting is a public health issue that requires serious attention because its consequences can last a lifetime (Humphrey, 2019; Martony, 2022).

In Indonesia, the prevalence of stunting remains a major concern for the government and health institutions. The country ranks third in Southeast Asia in terms of stunting rates, after Timor Leste and India (Hatta, 2025). The latest data from the Indonesian Nutritional Status Survey (SSGI) released by the National Population and Family Planning Board (BKKBN) shows a decline in stunting prevalence from 24.4% in 2021 to 21.6% in 2022. However, the national target of reducing stunting to 14% by 2024 still requires intensive and sustained efforts (BKKBN, 2023). This development also presents a challenge for various parties to continue strengthening stunting prevention programs, especially in areas where stunting rates remain high.

Various biological, environmental, and social factors contribute to the risk of stunting in children. Factors such as maternal nutritional status during pregnancy, the quality of the sanitation environment, and the mother's parenting patterns and education level significantly influence a child's nutritional status (Wahyuzan, 2025; Rita et al., 2019; Putri, 2020). Maternal education, in particular, significantly impacts the incidence of stunting. Mothers with low levels of education tend to have inadequate knowledge regarding nutrition and child health, resulting in suboptimal feeding and care practices (Husnaniyah, 2020; Fauzi, 2020; Nurmalasari, 2020). This lack of information and understanding hinders effective stunting prevention efforts. Therefore, increasing education and counseling for mothers is a crucial step in improving parenting and health practices within the family.

Furthermore, family parenting patterns are also a key factor influencing the incidence of stunting. Parenting practices, particularly in terms of providing food, healthcare, and psychosocial stimulation for children, significantly determine the extent to which children's basic needs are met. Good and responsive parenting can support optimal child growth and development, both physically and emotionally (Gunawan et al., 2019; Lolan and Sutriyawan, 2021; Wibowo et al., 2023).

Against this backdrop, research conducted in Sitinjau Laut District, Kerinci, aimed to further explore the relationship between maternal education level and family parenting practices and the incidence of stunting. Based on data from the Hiang Community Health Center in 2022, stunting rates in this area remain relatively high, necessitating an in-depth study to find targeted solutions. This research is expected to provide a clear picture of the main factors contributing to the stunting problem in the region.

It is hoped that the results of this study will make a significant contribution to stunting prevention and management efforts, particularly through a community-based approach and increased public understanding of the importance of nutrition and good parenting. This approach is expected to improve the quality of life for children in the region and support the achievement of the national target of reducing stunting prevalence in the coming years. Thus, this research is not only academically valuable but also offers practical implications for public health policies and programs.

2. METHODS

This study used a quantitative approach with a cross-sectional design. This study was conducted in the Sitinjau Laut sub-district, Kerinci Regency, within the working area of the Hiang Community Health Center. From March to May 2024, the study population was 837 toddlers and the study sample was 94 toddlers. Data collection techniques used questionnaires and height measurements. Data analysis used the Chi-square statistical test to test the significance between variables. The level of significance of the test results was $p < 0.05$.

3. FINDINGS AND DISCUSSION

This study was conducted from March to May 2024 in the Sitinjau Laut sub-district within the Hiang Community Health Center (Puskesmas) working area. The population was 837 toddlers, with a sample size of 94. Seventy-two toddlers (76.6%) were normal, and 22 toddlers (23.4%) were stunted.

Table 1. Distribution of Respondents Based on Sociodemographic Characteristics in Sitinjau Laut District

Characteristics	Number (n)	Percentage (%)
Toddler's Sex		
Male	54	57.4
Female	40	42.6
Toddler's Age		
24–35 Months	33	35.1
36–47 Months	28	29.8
48–59 Months	33	35.1
Mother's Age		
17–25 Years	47	50.0
26–35 Years	36	38.3
36–45 Years	11	11.7
Mother's Education		
Elementary School	8	8.5
Junior High School	20	21.3
Senior High School	28	29.7
Diploma/Bachelor's	33	35.1
Master's/Doctorate	5	5.3
Mother's Occupation		
Employed	46	48.9
Unemployed	48	51.1
Total	94	100

Source: Processed Primary Data, 2024

Based on Table 1, it can be seen that in this study, based on the gender of the toddlers, more than half were male, namely 54 people (57.4%), while the number of toddlers with the female gender was 40 people (42.6%). Based on age, the most common age of toddlers was 24-35 months, as many as 33 people (35.1%), and 48-59 months also as many as 33 people (35.1%), then the age of 36-47 months as many as 28 people (29.8%). For the age of the mothers, the most respondents were found to be 17-25 years old, namely 50%. For maternal education, more mothers had a diploma/S1 education, namely 35.1%. As for maternal occupation, many mothers were unemployed, namely 51.1% in the Hiang Health Center work area.

Table 2. Distribution of Respondents Based on Research Variables in Sitinjau Laut District

Variable	Number (n)	Percentage (%)
Mother's Education		
High	38	40.4
Low	56	59.6
Parenting Pattern		
Good	55	58.5
Less Good	39	41.5
Total	94	100

Based on the results of the study involving 94 respondents, it was found that the majority of mothers had a low level of education, namely 56 people (59.6%), while mothers with higher education numbered 38 people (40.4%). In terms of family parenting patterns, the majority of respondents applied good parenting patterns, namely 55 people (58.5%), while the other 39 people (41.5%) showed poor parenting patterns. These findings provide an initial overview of the distribution of maternal education characteristics and family parenting patterns in the context of stunting cases in the study area.

Table shows that of the 56 toddlers from families with mothers with low education, 18 (32.1%) experienced stunting and 38 (67.9%) did not. Meanwhile, of the 38 toddlers from families with high education, 4 (10.5%) experienced stunting and 34 (89.5%) did not. This indicates that many toddlers experiencing stunting come from families with mothers with low education.

The chi-square statistical test results at a 95% confidence interval (CI) yielded a p-value of 0.029, indicating a relationship between maternal education and stunting among toddlers in the Hiang Community Health Center (Puskesmas) area in Kerinci Regency. Toddlers with low maternal education had a 1.319 times greater risk of experiencing stunting.

The proportion of stunting among toddlers in the Hiang Community Health Center area in Kerinci Regency, based on this study, was 23.4%. This study found that 32.1% of stunting cases occurred in families with mothers with low education, and 30.8% experienced poor parenting patterns.

The findings of this study indicate that when comparing stunted toddlers with mothers with low education and those with mothers with high education, a higher proportion of stunted toddlers came from families with low-educated mothers. The average maternal education level in the Hiang Community Health Center (Puskesmas) area in this study was high school graduate. The majority of mothers were unemployed (51.1%), suggesting mothers are more likely to pay attention to childcare than employed mothers.

Bivariate analysis results showed a significant association between maternal education and stunting in toddlers in the Hiang Community Health Center area (p-value = 0.029 (95% CI: 1.068 – 1.628). The proportion of stunting cases in toddlers from families with low-educated mothers was 32.1%, compared to 10.5% from families with highly educated mothers.

This study shows that maternal education significantly influences children's nutritional status, particularly in preventing stunting. This is in line with Salimar's findings in Anindita (2012), where mothers with higher education (higher than high school) are 1.405 times more likely to have children under five with normal nutrition than mothers with lower education. An analysis of five regions in Indonesia found that in four regions, maternal education was a significant predictive factor in preventing stunting ($p<0.05$). A similar finding was reported by Rahayu et al. (2018), who identified a positive association between maternal education and stunting incidence, with children of mothers with lower education being at higher risk of stunting.

However, these results are inconsistent with Anindita's (2012) study, which found no significant association between maternal education and stunting in toddlers ($p=0.646$). However, low maternal education is often considered a major factor influencing the risk of stunting, as more educated mothers tend to have better knowledge of child health and nutrition, including practices such as exclusive breastfeeding, immunization, and healthy diets (Wahed et al., 2017).

The prevalence of stunting increases with lower maternal education, which limits access to nutritious food for the family. Maternal education also influences their ability to receive information about their child's health. Educated mothers tend to be more proactive in seeking health services, including regular checkups and information related to child nutrition. This is important because early intervention can prevent the worsening of conditions in children at risk of stunting. Additionally, more educated mothers have better employment opportunities, which impacts family economic stability.

Maternal education plays a crucial role in reducing the risk of stunting in children under five. Improving maternal nutritional knowledge can mitigate the impact of low education, and strategies such as utilizing local resources (e.g., growing vegetables or raising livestock) can also help increase family dietary diversity.

Table 3. Relationship between Family Parenting Patterns and Stunting among Toddlers in Sitinjau Laut District

Variable	Nutritional Status	Total	PR	CI (95%)	P-Value
	Stunting	Normal			
	N	%	N	%	N
Family Parenting Patterns					
Good	10	18.2	45	81.8	55
Poor	12	30.8	27	69.2	39

Source: Processed Primary Data, 2024

From Table 5 for the family parenting factor, it was found that of the 39 toddlers with poor parenting patterns, 12 toddlers (30.8%) experienced stunting and 27 toddlers (69.2%) did not experience stunting. Meanwhile, of the 55 toddlers with good family parenting patterns, 10 toddlers (18.2%) experienced stunting and 45 toddlers (81.8%) did not experience stunting. The results of the chi-square statistical test at a 95% confidence level (CI) obtained a p-value of 0.241, indicating there is no relationship between family parenting patterns and the incidence of stunting in toddlers in the Hiang Community Health Center work area, Kerinci Regency. However, toddlers with poor family parenting patterns have a 1.182 times greater risk of experiencing stunting compared to toddlers with good family parenting patterns.

The findings of this study indicate no association between family parenting patterns and stunting in toddlers in the Hiang Community Health Center work area. The p-value obtained was 0.241 (95% CI: 0.926 – 1.508). The proportion of stunted toddlers with poor family parenting patterns was 30.2%, while those with good family parenting patterns were 18.2%.

This study found no significant association between maternal parenting patterns and stunting in toddlers in the Hiang Community Health Center work area, Kerinci Regency. This aligns with research by Kawulusan et al. (2019) which found a p-value of 0.492 and research by Syabandini et al. (2018) with a p-value of 0.193. However, this study showed that mothers with poor parenting patterns had a 1.182-fold higher risk of stunting in children. These results contradict research by Aramico et al. (2016) linked poor parenting with an 8.07-fold higher risk of stunting.

Maternal parenting is a parenting behavior influenced by attitudes and knowledge. Mothers with good parenting generally tend to have children with good nutritional status compared to mothers with poor parenting, which can negatively impact children's brain development. However, in this study, the majority of mothers had good parenting and higher levels of education (52.1% had diplomas or bachelor's degrees) and were unemployed, allowing them to devote more attention to their children.

The lack of a relationship between parenting and stunting could also be due to other factors such as low family income, which limits access to nutritious food. Optimal childcare depends not only on parenting but also on adequate nutrition, resource utilization, and emotional care. In low-income families, mothers need to play an active role in utilizing local resources, increasing knowledge about nutrition, and providing sufficient affection to support optimal child growth (Barus, 2003 in Rusilanti, 2015).

4. CONCLUSION

Based on the research results, it was concluded that the distribution of stunting incidents in 94 respondents was 22 people (23.4%) experienced stunting and 72 people (76.6%) did not experience stunting. The frequency distribution of maternal education levels was more than half with low education, as many as 56 people (59.6%) and 38 people (40.4%) with high education. For family parenting patterns, most were in the good category (58.5%). There was a relationship between maternal education and the incidence of stunting (p-value = 0.029). There was no relationship between family parenting patterns and the incidence of stunting in toddlers in Sitinjau Laut District (p-value obtained was 0.241).

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