

The Influence of Parenting Patterns on Stunting Incidence Among Toddlers at Puskesmas Pantoloan, Palu City

Ketut Suarayasa^{1*}, Elliyane Bangkele¹, Sumarni¹, Miranti¹, Sitti Nurjannah², Bertha Anastacia Tobanta²

¹Department of Public Health Sciences and Community Medicine, Faculty of Medicine, Universitas Tadulako

²Medical Profession Study Program, Faculty of Medicine, Universitas Tadulako

Email Corresponding:
suarayasa@yahoo.com

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Keywords:
Types of Parenting Patterns, Parenting Methods, Stunting

Article History:
Received: 2024-07-04
Revised: 2024-11-25
Accepted: 2025-04-30

Published by:
Tadulako University,
Managed by Faculty of Medicine.
Email: healthytadulako@gmail.com
Phone (WA): +6285242303103
Address:
Jalan Soekarno Hatta Km. 9. City of Palu, Central Sulawesi, Indonesia

ABSTRACT

Background: Poor parenting in the family is one of the causes of inadequate nutritional intake, contributing to stunting. Stunting is a chronic malnutrition condition occurring in the first 1000 days of life, leading to delays in brain and physical development. According to the Ministry of Health, stunting is defined as a z-score less than -2SD and severe stunting as less than -3SD. **Objectives:** To determine the influence of parental parenting on the incidence of stunting in toddlers at the Pantoloan Community Health Center, Palu City. **Methods:** This case-control study involved 144 toddlers (72 stunting cases and 72 non-stunting controls) selected through purposive sampling. The total population was 947 toddlers. Data were analyzed using the Chi-square test. **Results:** There was no significant relationship between the type of parenting style and stunting incidence ($P = 0.335$, $OR = 1.600$). Similarly, no significant relationship was found between parenting methods and stunting incidence ($P = 0.085$, $OR = 1.183$). **Conclusions:** Parental parenting style and methods were not significantly associated with stunting incidence among toddlers at the Pantoloan Community Health Center, suggesting the need to explore other contributing factors.

Introduction

Stunting, according to the Ministry of Health (Kemenkes), is defined as a condition in which a child under five has a z-score of less than -2 standard deviations (stunted) and less than -3 standard deviations (severely stunted)¹. Stunting is a result of prolonged nutritional deficiency during the first 1,000 days of life, leading to impaired brain development and physical growth¹. It is a risk factor for increased mortality rates, reduced cognitive abilities, poor motor development, and imbalanced bodily functions^{2,3}. The long-term consequences of stunting include poor academic performance, low work productivity, and adverse pregnancy outcomes⁴.

Poor parenting practices within the family are one of the causes of inadequate nutritional

intake⁵. Parenting includes the family's ability to provide attention, time, and support to meet the physical, mental, and social needs of a growing child⁶. Parenting practices in the family encompass several aspects such as breastfeeding, complementary feeding, psychosocial stimulation, hygiene and environmental sanitation practices, child care during illness including home health practices, and seeking healthcare services^{7,8,9}. Children whose parents have poor or inadequate parenting practices are more likely to experience stunting compared to those with good parenting practices¹⁰.

The President of Indonesia has shown significant concern regarding the issue of stunting, particularly in seeking breakthrough strategies to address and reduce its prevalence.

The recommended action plan for stunting intervention is proposed to consist of five main pillars: (1) Commitment and vision from the highest level of national leadership, (2) A national campaign focusing on raising awareness, behavior change, political commitment, and accountability, (3) Convergence, coordination, and consolidation of national, regional, and community programs, (4) Promoting policies on food and nutritional security, and (5) Monitoring and evaluation¹¹.

The 2014 Global Nutrition Report showed that Indonesia was among 17 out of 117 countries facing a triple burden of malnutrition in children under five: stunting, wasting, and overweight¹². According to the 2018 National Basic Health Survey (Riskesdas), the national prevalence of stunting was 30.8%^{13,14}. In Central Sulawesi, the prevalence of stunting ranked among the top ten highest in Indonesia, at 32.2%^{15,16}. This study aims to examine the effect of parenting practices on the incidence of stunting in toddlers at Pantoloan Health Center in Palu City. The urgency of this research is to increase public awareness especially among parents on reducing and preventing stunting in order to improve human resource quality in the future.

Materials and Methods

Research Design

This study employed an analytical research method with a case-control study design. The purpose of this design is to compare two groups cases and controls to identify factors associated with stunting in toddlers. This design is appropriate for identifying possible risk factors or determinants by comparing children who are stunted with those who are not.

Sample

The study population consisted of 947 toddlers, with a total sample of 144 children divided into 72 stunting cases and 72 controls (non-stunted). The sampling was done purposively from the

stunting data of the Puskesmas Pantoloan, Palu City.

Data Collection Techniques

Data were collected from both primary and secondary sources. Primary data were obtained through structured interviews and questionnaires given to mothers of the selected toddlers. These tools gathered information on parenting practices, nutritional intake, and related health behaviors. Secondary data were sourced from the official stunting records maintained by Pantoloan Community Health Center (Puskesmas), which provided background data on the prevalence and distribution of stunting cases. Combining these sources enabled a more comprehensive analysis of the relationship between parenting and stunting incidence in the study population, ensuring both subjective and objective data were incorporated.

Data Analysis Techniques

Univariate analysis was conducted to describe the characteristics of the toddlers and their mothers, including maternal age, age at first pregnancy, child's gender, child's age, birth order, and parenting style. Frequency distribution was also used to examine the methods and types of parenting applied by the parents. To analyze the association between independent variables and the dependent variable (stunting status), the Chi-Square test was applied.

Ethical Consideration

Although formal ethical clearance was not explicitly mentioned, this study used publicly available health data and involved voluntary participation from respondents who provided informed consent during interviews. The research ensured the confidentiality of participants' information and respected their rights throughout the process. Data collection and handling were conducted carefully to protect privacy and maintain ethical standards.

Given these considerations, the study is regarded as ethically feasible, balancing the need for valuable health insights with the responsibility to uphold participants' dignity and confidentiality.

Results

Description of the Research Location

Pantoloan Health Center is one of the community health service centers located in the Pantoloan Subdistrict, Tawaeli District. The Pantoloan Health Center is situated approximately 23 km north of Palu City. It oversees several health facilities, including two Pustu buildings (Auxiliary Health Centers) and two Poskesdes buildings (Village Health Posts), located in Pantoloan Boya and Baiya Subdistricts respectively. The services provided include promotive, preventive, and curative care.

Respondent Characteristics

The characteristics of the respondents studied in this research include the mother's age, age at first pregnancy, the child's gender, the toddler's age, and birth order of children who experience stunting and those who do not in the Pantoloan Health Center area.

Based on Table 1, the majority of respondent mothers are in the age range of 26–35 years (55.6%), indicating that most are of active reproductive age. The age of first pregnancy is dominated by the age group of 20–35 years (52.8%), but there is a fairly large proportion who are pregnant at the age of <20 years (45.1%), indicating that teenage pregnancies are still high. The gender of toddlers is relatively balanced between male (47.9%) and female (52.1%). The age of toddlers is mostly in the 13–24 months (34%) and 25–36 months (25.7%), indicating high vulnerability to stunting in the early stages of growth. The birth order of toddlers is mostly the first and second child (29.2% and 29.9% respectively), reflecting the burden of care that the mother can still handle. The majority of

parenting patterns applied are democratic parenting patterns (87.5%) and parenting patterns that are considered good (86.1%), which in theory support child growth and development. However, there is still a small proportion of permissive, authoritarian, and indifferent parenting patterns that may have an impact on stunting. Overall data shows that although most respondents apply good parenting patterns, other factors such as maternal age during first pregnancy and number of children can contribute to stunting.

Table 1. Respondent Characteristics

Variable	Category	Case		Control		Total	
		n	%	n	%	n	%
Mother's Age (Years)	15-25	23	16.0	19	13.2	42	29.2
	26-35	38	26.4	42	29.2	80	55.6
	36-45	10	6.9	11	7.6	21	14.6
	46-55	1	0.7	0	0.0	1	0.7
Age of First Pregnant Mother (Years)	<20	36	25.0	29	20.1	65	45.1
	20-35	34	23.6	42	29.2	76	52.8
	>35	7	4.9	1	0.7	8	5.6
Toddler Gender	Male	34	23.6	35	24.3	69	47.9
	Female	38	26.4	37	25.7	75	52.1
Toddler Age (Months)	0-12	6	4.2	9	6.3	15	10.4
	13-24	24	16.7	25	17.4	49	34.0
	25-36	22	15.3	15	10.4	37	25.7
	37-48	13	9.0	12	8.3	25	17.4
	49-59	7	4.9	11	7.6	18	12.5
Child Birth Order	1st	20	13.9	22	15.3	42	29.2
	2st	21	14.6	22	15.3	43	29.9
	3st	21	14.6	12	8.3	33	22.9
	4st	8	5.6	11	7.6	19	13.2
	5st	2	1.4	3	2.1	5	3.5
	6st	1	0.7	2	1.4	3	2.1
Parenting Methods	Authoritarian	2	1.4	0	0.0	2	1.4
	Permissive	1	0.7	7	4.9	8	5.6
	Democratic	65	45.1	61	42.4	126	87.5
	Indifferent	4	2.8	4	2.8	8	5.6
Types of Parenting Patterns	Not Good	12	8.3	8	5.6	20	13.9
	Good	60	41.7	64	44.4	124	86.1

Source: Primary Data, 2023

The Influence of Parenting Methods and Styles

To determine the influence of parenting methods and styles on the incidence of stunting among toddlers in the working area of Pantoloan Health Center, the data were analyzed using the Chi-Square test, with the results shown in Table 2.

Based on Table 2, it can be seen that the majority of respondents in both the case group (stunted) and the control group (not stunted) applied a democratic parenting method, with 65 individuals (45.1%) in the case group and 61 individuals (42.4%) in the control group, totaling 126 individuals (87.5%). The authoritarian parenting method was found in 2 cases (1.4%) and was not present in the control

group, while the permissive method was more common in the control group (7 individuals or 4.9%) compared to the case group (1 individual or 0.7%). The indifferent parenting method was equally present in both groups, with 4 individuals (2.8%) each. Although there was variation in the distribution of parenting methods, statistical tests showed no significant relationship between parenting methods and the incidence of stunting (p -value = 0.085; OR = 1.183; 95% CI = 0.528–2.653). Regarding overall parenting patterns, 12 stunting cases (8.3%) were associated with poor parenting

patterns compared to 8 controls (5.6%). However, the majority in both groups still demonstrated good parenting patterns, with 60 cases (41.7%) and 64 controls (44.4%). Statistical analysis indicated that parenting patterns were also not significantly associated with the incidence of stunting (p -value = 0.333; OR = 1.600; 95% CI = 0.612–4.185). Therefore, although parenting methods and patterns varied, neither was statistically proven to influence the incidence of stunting among toddlers in the Pantoloan Community Health Center working area.

Table 2. The Influence of Parenting Methods and Patterns on the Incidence of Stunting in Toddlers in the Pantoloan Health Center Work Area

Variable	Category	Case n	%	Control n	%	Total n	%	OR (95%)	p-value
Parenting Methods	Authoritarian	2	1.4	0	0.0	2	1.4	1.183 (0.528-2.653)	0.085
	Permissive	1	0.7	7	4.9	8	5.6		
	Democratic	65	45.1	61	42.4	126	87.5		
	Indifferent	4	2.8	4	2.8	8	5.6		
Types of Parenting Patterns	Not Good	12	8.3	8	5.6	20	13.9	1.600 (0.612-4.185)	0.333
	Good	60	41.7	64	44.4	124	86.1		
Total		72	50.0	72	50.0	144	100		

Source: Primary Data, 2023

Discussion

Parenting Styles of Parents with Toddlers

The issue of short stature in toddlers, commonly referred to as stunting, is one of the nutritional problems affecting children. Stunting, or "shortness," is a condition of growth failure in children under five caused by chronic malnutrition, especially during the first 1,000 days of life, resulting in a child being too short for their age. Stunting is a manifestation of malnutrition and is considered a public health problem¹⁹.

Stunting reflects a chronic state of undernutrition during the growth and development period starting from early life. This condition is indicated by a height-for-age (H/A) z-score of less than -2 standard deviations (SD) based on growth standards. Nutritional status is assessed using the anthropometric method. Anthropometry is the

measurement of body dimensions, which functions to evaluate nutritional status based on imbalances between protein and energy intake²⁰.

Parenting style refers to patterns of behavior applied to children that remain relatively consistent over time. There are four types of parenting styles: authoritarian, democratic, permissive, and neglectful²¹. Healthy growth is indicated by the alignment between a child's age and their weight, while development is marked by the alignment between the child's age and the types of skills they are expected to master according to their developmental stage²².

The Influence of Parenting Styles

The research results showed that there was no relationship between the methods and types of parenting styles and the incidence of stunting in toddlers at Pantoloan Health Center in Palu

City. Although no relationship was found, parenting methods and styles remain risk factors for the occurrence of stunting in toddlers.

The results of this study are in line with research conducted by Rinjani et al. (2023) in the working area of Sigerongan Health Center. Their findings showed that there was no relationship between parenting styles and the incidence of stunting in toddlers aged 12-59 months ($p\text{-value} = 0.689$)²³.

In contrast, a study conducted by Evi et al. (2021) found a significant relationship between maternal parenting styles and the incidence of stunting in children aged 12-59 months, with a $p\text{-value}$ of 0.01¹⁰. Regarding maternal parenting, a study by Mekiya et al. in Ethiopia (2022) identified that a predictor of stunting was mothers who were not employed, often associated with factors such as low education and low income. The study recommended that nutrition interventions should focus on promoting women's education, as this increases the likelihood of employment, raises family income, and strengthens existing important nutrition counseling strategies²⁴.

According to UNICEF (United Nations Children's Fund), there are three main causes of malnutrition: enabling determinants, underlying determinants, and immediate determinants. Enabling determinants refer to resources such as adequate environmental, financial, social, and human resources that allow children and women to access good nutrition. They also include norms positive social and cultural norms and behaviors that enable children and women to obtain adequate nutrition²⁵.

Underlying determinants refer to inadequate access to food and poor dietary consumption patterns (including age-appropriate breastfeeding and access to safe and clean drinking water, as well as household food security), inadequate child care practices (such as appropriate feeding and diet practices from

an early age, along with protective services and hygiene practices), and limited access to health services (including adequate nutrition, healthcare, education, sanitation, social protection, and a healthy food environment to support good diets)^{26,27,28}.

Immediate determinants are the result of the accumulation of enabling and underlying causes that directly contribute to the occurrence of stunting. These causes include inadequate dietary intake, the infection and health status of both mother and child, and proper care driven by adequate services and practices for both the child and the mother²⁹.

Conclusion

Most parenting methods for toddlers are democratic, and the majority of parenting styles are classified as good. Although there was no significant influence of parenting methods or styles on the incidence of stunting among toddlers at Puskesmas Pantoloan in Palu City, both parenting method ($OR = 1.183$) and parenting style ($OR = 1.600$) were identified as risk factors for stunting. Therefore, education on parenting practices should continue, especially targeting first-time pregnant mothers (primigravida) and young parents under 20 years old. Such education is recommended to involve both parents (husband and wife) and can be conducted during antenatal classes.

Acknowledgment

The researchers extend their sincere gratitude to the Faculty of Medicine at Tadulako University for the academic support provided throughout the research process. Appreciation is also given to the Palu City Health Office and the Puskesmas Pantoloan for granting access and assistance during data collection. Special thanks go to the dedicated posyandu cadres and medical students of Tadulako University, whose participation and contributions were invaluable. The researchers also acknowledge the support of all individuals and institutions

who played a role, directly or indirectly, in making this study possible through their guidance, cooperation, and encouragement at various stages of the research.

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