

Risk Factors for Stunting in Toddlers in Gowa Regency

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ABSTRACT

Stunting is a nutritional problem faced in various parts of the world, especially in poor countries and developing countries. Prevalence of Stunting in Indonesia based on the results of the Indonesian Nutrition Status Study (SSGI) in 2019 was 27.7% and in 2021 it was 24.4%. In South Sulawesi, the prevalence of Stunting based on SSGI results in 2021 is 27% while the prevalence of Stunting in Gowa Regency is 33%. The Objectives of this study to Investigating the correlation between stunting and parenting, nutrient intake, infectious diseases, and environmental sanitation. This research method is observational and analytical with a case-control research design. The number of samples was 38 consisting of 19 working toddler mothers who had Stunting toddlers as a case group and 19 working toddler mothers who had non-Stunting toddlers as a control group. Research results show a foster-pattern connection with Stunting ($p=0,012$), there is a connection between protein nutrient intake and stunting ($p=0,020$), there is a connection between fat nutrient intake and stunting ($p=0,017$), there is a connection between carbohydrate nutrient intake and stunting ($p=0,007$). It was concluded that the Stunting incident in toddlers aged 24 to 59 months was related to foster patterns and nutritional substance intake but was not related to infectious diseases and environmental sanitation.

Keywords: Environmental Sanitation, Infectious Diseases, Nutritional Intake, Stunting.

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INTRODUCTION

Stunting is a nutritional problem faced in various parts of the world, especially in poor countries and developing countries¹. Indonesia is ranked the fifth largest in the world for *stunting* prevalence². The prevalence of *stunting* from year to year is still high because it is still far above the threshold set by WHO which is 20%³. Prevalence of *Stunting* in Indonesia based on the results of the Indonesian Nutrition Status Study (SSGI) in 2019 was 27.7% and in 2021 was 24.4%. In South Sulawesi, the prevalence of *Stunting* based on SSGI results in 2021 is 27% while the prevalence of *Stunting* in Gowa

Regency is 33%⁴.

According to WHO, the short-term impact of *stunting* can lead to an increased incidence of pain and *death*, not optimal cognitive or intelligence, motor, and verbal development, and increased health costs⁵. The long-term impact of *stunting* is non-optimal posture as an adult, increased risk of degenerative diseases, decreased reproductive health, not optimal learning capacity and performance during the school period, and not maximal productivity and working capacity^{6,7}.

One factor associated with the Stunting incident is the parenting, where good parenting will have an effect on the child's growth process

associated with normal nutritional status, and vice versa if the parenting is bad, the toddler will be at risk of developing Stunting⁸. Nutrition intake is one of the direct causes that can affect the nutritional status of toddlers. Nutrition intake is closely related to the Stunting incident because when intake of nutrients is insufficient, it can lead to an imbalance in intake, so it can persistently lead to Stunting nutritional problems⁹. Toddlers who have a history of infectious disease have a bigger chance of experiencing Stunting than children who have no history of infection disease because it can cause a long-term effect of height growth deficit. Bad environmental sanitation can lead to Stunting, if the child's living environment is not optimal, which blocks housing, contractions, garbage disposal, water supply, and others, then the child's health condition will be impaired, as well as the growth of toddlers¹⁰.

Handling Stunting through specific interventions such as actions for the first one thousand days and short-term in the health sector such as immunization, supplementary feeding for pregnant women and toddlers, monitoring the growth of toddlers at health pos, iron-folate tablet supplements for pregnant women, promotion of exclusive breastfeeding¹¹, complementary feeding. While sensitive interventions aimed at the general public such as clean water supply, sanitation facilities, various poverty reduction, food security and nutrition, food fortification, education of nutrition, gender equality^{12,13, 14}.

A working mother is a woman who is married and has children and has the task of being a housewife and working outside the home for ≤ 8 hours/day¹⁵. 96% of working mothers said they did not get enough time to be with their children. Working mothers when returning from the office, the majority of 94% was not to be close to their children for various reasons such as being tired of having worked, wanting to do a task, and having limited time. Working mothers are aware of the fact that the child is not getting the mother's attention properly¹⁶ Objectives of this study to Investigating the correlation between stunting and parenting, nutrient intake, infectious diseases, and environmental

sanitation.

METHOD

This type of research is observational analytics with a *case-control* research design using Odds Ratio (OR). The research was conducted in the working area of Pallangga Health Center, Gowa Regency. The causative variables are parenting patterns, nutrient intake, infectious diseases, and environmental sanitation of working toddler's mother and the result variable is Stunting, which aims to compare the case group, namely stunted toddlers with the control group and toddlers who are not stunted. Cases and controls were *matched* against the work of the mother (working mother) and the same age range of toddlers (24-59 months). The samples in the study were working toddler mothers, who had *stunting toddlers* as a case group and working toddler mothers who had *non-stunting* (normal) toddlers as a control group. Usia toddlers 24 - 59 months (Age criteria have been matching). The sample size is calculated using formulas for *case-control* research. The number of samples was 38 people, consisting of 19 working mothers with stunting toddlers as the case group and 19 working mothers with non-stunting toddlers as the control group. Determination of the sample using the *purposive sampling* technique. The collection of data on parenting, infectious diseases, and environmental sanitation was done by interviews using a questionnaire, and data on the nutrient intake was obtained using the 24-hour food recall method. Retrieval of data about stunting is done by the method of measuring anthropometry using height index/age. Measurement of height using Microtoise and weight using Digital Scales. Statistical analysis using *chi-square* test with 95% confidence degree ($\alpha = 0,05$). To find out the degree of connection using the *odds ratio* (OR), where *the Odds Ratio* (OR) compares *the Odds* in the case group with the control group. This study was approved by the Research Ethics Commission of Makassar Health Polytechnic, No: 0227/ KEPK-PTKMKS/V /2021.

RESULTS

Table 1. Characteristic of subject.

Variabel	Categories	Case		Control	
		n	%	n	%
Mother Education	high school	5	26,3	8	42,1
	Universities	14	73,6	11	58,0
Ethicity	Bugis	11	58,0	12	63,0
	Makassar	8	42,0	7	37,0
Mother Age	25-30 y	11	58,0	8	38,0
	31-35 y	5	26,3	1	5,2
	36-40 y	3	15,7	10	52,6
Mother occupation	Civil Servant/Military/Police	3	15,7	4	21,0
	Private Employees	9	47,3	6	31,5
	Contract Workers/Interns	7	36,8	9	47,3

Mother education: The majority of mothers in the case group had attended universities, with 73.6% having higher education. In the control group, 58.0% of mothers had a high school education. Mother occupation: In the case group,

15.7% of mothers were employed as civil servants, military personnel, or police officers (PNS/TNI/Polri), while 47.3% worked in the private sector. In the control group, these percentages were 21.0% and 31.5% respectively.

Table 2. The Correlation between Parenting, Nutrient Intake and Stunting in Gowa Regency.

Variabel	Categories	Case		Control		P	OR	CL
		n	%	n	%			
Parenting	Good	2	10,5	9	47,4	0,012	7,650	1,370-42,713
	Less	17	89,5	10	52,6			
Protein intake	Good	4	21,1	11	57,9	0,020	5,156	1,234-21,554
	Less	15	78,9	8	42,1			
Fat Intake	Good	3	15,8	10	52,6	0,017	5,926	1,287-27,283
	Less	16	84,2	9	47,4			
Carbohydrate intake	Good	3	15,8	11	57,9	0,007	7,333	1,583-33,967
	Less	16	84,2	8	42,1			
Infectious Diseases	Good	17	89,5	16	84,2	0,631	0,627	0,092-4,259
	Less	2	10,5	3	15,8			
Environmental Sanitation	Good	17	89,5	16	84,2	0,631	0,627	0,092-4,259
	Less	2	10,5	3	15,8			

Based on the data from Table 02, it was observed that in the case group, the lack of parenting pattern was found in 17 individuals (89.5%), while in the control group, it was present in 10 individuals (52.6%). The chi-square test yielded a p-value of 0.012, indicating a significant correlation between parenting and stunting in toddlers of working mothers in Gowa Regency. The odds ratio (OR) value of 7.605 suggests that parenting is a risk factor for stunting. Additionally, the study

found a significant correlation between protein intake and stunting (p=0.020), fat intake and stunting (p=0.017), as well as carbohydrate intake and stunting (p=0.007) in toddlers of working mothers. The OR values of 5.156 for protein intake, 5.926 for fat intake, and 7.333 for carbohydrate intake indicate that these nutrient deficiencies are risk factors for stunting. However, no correlation was found between infectious diseases or environmental sanitation and stunting in the study population.

DISCUSSION

The study highlights several important points. Firstly, the research shows that parenting practices play a crucial role in the occurrence of stunting in toddlers. This emphasizes the significance of paying attention to good parenting practices that support the growth and development of children. Secondly, there is a relationship between the intake of protein, fat, and carbohydrates and the occurrence of stunting. This underscores the importance of providing nutritionally rich and balanced food to prevent or address stunting in toddlers. Thirdly, the study reveals that stunting in toddlers is not associated with infectious diseases or specific environmental conditions. Other factors such as parenting practices and nutrient intake have a more significant impact. Lastly, these findings have policy implications and can contribute to the development of child health policies and stunting prevention programs. Recognizing the importance of good parenting practices and adequate nutrient intake can help reduce the incidence of stunting in toddlers.

Parenting is one model of nutritional intervention, accompanying other intervention packages such as zinc supplementation and micronutrient supplementation in pregnant women. Parenting is part of nutrition education and the strengthening of interventions targeting children¹⁷. Effective parenting improves both macro and micronutrient intake. Nutrient intake can be enhanced by improving parenting models related to children's food choices. If parenting is already good and there is support in terms of the availability of animal-source foods or sufficient protein, it will contribute to efforts in preventing stunting^{18,19}. Infant formula, enriched with protein, is crucial for growth, as well as the appropriate content of fats and carbohydrates to meet the maximum growth needs. If there is inadequate intake of these macro nutrients, it can lead to growth failure. If this condition persists, it can result in a generally shorter stature in children^{20,21}.

The nutritional status of toddlers is influenced by family parenting patterns because toddlers are still completely dependent on the family to fulfill their food intake and health care. The quality of food is very dependent on the child's parenting style applied by the family. Healthily parenting in feeding, providing

nutritious food, and managing the portion spent will improve the nutritional status of children. Good food for toddlers must meet the requirements for adequacy of energy and nutrients according to age, a balanced menu pattern with varied food ingredients, children's eating habits and tastes, the shape, and the portion of food that is adapted to the child's condition, and pay attention to personal and environmental hygiene²².

In this study, working mothers generally have less parenting to their toddlers, because of the lack of time and attention given to the toddler, the mother's work will greatly affect the mother's interaction with toddlers, working mothers have approximately 8 hours outside the home to work so that time for parenting is given to other family members. This interaction between mothers and toddlers is an important part of the toddler's development process. Lack of parenting for toddlers can result in stunted toddlers because most toddlers born have good nutritional status but because the parenting provided by parents is not good growth is stunted results in stunting²³.

One of the factors that influence the growth and development of children is nutritional intake. Lack of nutrition in food causes impaired child growth which will affect the development of the whole body. Malnutrition can be caused by a lack of nutritional intake, an imbalance between input and the need for the necessary nutrients. In this study, the lack of nutritional intake of toddlers is related to the condition of the working toddler mother because it can cause the child to pay less attention than the mother because the toddler child is very dependent on the caregiver (mother) or other family nodes. Working mothers of toddlers are not able to give full attention to their children the busyness and burden of work borne resulting in a lack of attention in preparing diverse food dishes that are suitable for toddlers²⁴.

This study found no association between infectious diseases and stunting in children under the age of five. However, conducted research that suggested a connection between infectious diseases and the incidence of stunting in toddlers. Children with a history of infections are at three times higher risk of experiencing stunting.

The results of this study differ from other studies that strongly associate infectious diseases with stunting. It can be explained that

although this study did not show a correlation between stunting and infectious diseases, it does not mean that infectious diseases can be disregarded. This is because the sample diversity in this study was not robust enough to detect that relationship²⁵. Infectious diseases result in the energy needed for growth being diverted and used to fight the body against infection as well as lower defenses and interfere with immune function²⁶. In this study, toddlers generally do not suffer from infectious diseases even though the toddler's mother works because the toddler's mother routinely pays attention to the child's health if sick and routinely gives worm medicine²⁷. Environmental sanitation can have an impact on children's growth and development, lack of good environmental sanitation has an indirect impact on the health of toddlers which can ultimately affect their nutritional status²⁸.

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CONFLICTS OF INTEREST:

The authors declare no conflict of interest.

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