

Research Article

Analysis of Risk Factors for Stunting in Toddlers in Cicantayan Sukabumi Regency

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Abstract. Stunting is a major public health problem in most developing countries. Although worldwide the prevalence is decreasing slowly, the number of stunted children is still increasing. Stunting can occur in the first thousand days of birth and many factors can influence it, including knowledge, nutritional intake and parenting. The purpose of this study was to analyze the risk factors for stunting in infants aged 24-59 months. This study used a cross-sectional approach. The research sample was 75 respondents, recruited through purposive random sampling techniques, and data were collected using a questionnaire that had been tested for validity and reliability. Bivariate tests using simple linear regression and multivariate tests using multiple linear regression were carried out. The results of the study showed there was a significant effect of mother's knowledge on stunting ($p < 0.001$), of parenting on stunting ($p < 0.001$) and of nutritional intake on stunting ($p = 0.004$).

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1. Introduction

Stunting is one of the Sustainable Development Goals (SDGs) targets which are included in the second sustainable development goal, namely eliminating hunger and all forms of malnutrition and achieving food security by 2030. The target set is to reduce the stunting rate to 40% by 2025[1]. Stunting is a condition where the measurement of height is not in accordance with age or z-score is less than 2SD which is the median standard for child growth [2]. The first thousand days of life as the period from conception to the age of 2 years, ensuring proper nutritional status during this period is important for a child's growth and development[3]. At this time toddlers need adequate intake of nutrients in greater quantity and quality, due to high physical activity[4]. Children with stunting can experience impaired growth and development, may experience poor conditions and the spread of repeated infections [5]. Mycotoxin exposure can occur through the food supply chain [6]. Toddlers with stunting have a risk of decreased intellectual ability, productivity, and an increased risk of degenerative diseases in the future. This is because stunted

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children tend to be more susceptible to infectious diseases, so they are at risk of decreasing the quality of learning in schools so that they are more often absent [7].

Globally, it was recorded that 32.6 percent of children under five were stunted under the age of 5 years in 2000, and the level continued to decrease gradually to 22.2% or around 150.8 million children under five in the world were stunted [2]. According to the World Health Organization, there were 149 million children suffering from stunting in 2018, 55% of stunting children live in Asia with a fairly high distribution compared to wasting and obesity. The prevalence of stunting in Indonesia reached 30.8% in 2018, according to the National Basic Health Research Report [1].

Adequate nutrition is essential to ensure long term physical & mental development. Malnutrition accounts for 35% of all deaths among children under five. More than 2 million children under five die every year due to malnutrition. Undernutrition refers to a condition resulting from a relative or absolute deficiency of one or more essential nutrients [8]. Toddler age 24-59 months is an important period in child growth and development, where growth and brain cells are still ongoing. The first 24 months of age are very important for brain development where the formation of apical dendrites from the cerebral cortex continues after birth and is completed around the age of the second year [9]. At this time toddlers need adequate nutritional intake in greater quantity and quality, because physical activity is quite high and still in learning changes [4]

Factors that are directly related to stunting are the characteristics of children in the form of gender, low birth weight, food consumption in the form of low energy intake and low protein intake. Parenting patterns, health services in the form of incomplete immunization status, and family characteristics in the form of parental occupation, parental education, knowledge, and family economic status are indirect factors that cause stunting [10].

Parents' understanding of good parenting, environmental health and the ability to provide adequate nutrition is still low so that the prevalence of stunting is still high. Nutrition knowledge has a significant role in fulfilling nutritional needs, especially for children under five. Wrong feeding at this time can cause children to experience nutritional deficits, frequent illness and impaired growth and development, one of which is stunting [11].

A person's level of knowledge on nutrition affects attitudes and behavior in determining the type and variety of food and will subsequently affect the nutritional status of the individual concerned. The provision of food intake to children is considered poor or the fault of parents who provide food intake to their children so that it can increase the risk of infectious diseases in children who experience stunting [12].

According to [13] the realm of parenting is divided into 3 types, namely democratic, authoritarian, and permissive. The difference between the three types of parenting can be seen from several aspects, namely how much parents demand or encourage their children to eat, how much parental assistance or support is related to their child's food intake, and whether the choice of food menu is absolutely determined by the parents or according to the wishes of the parents. This is in accordance with the research of [14] shows that there is a significant relationship between parenting and the incidence of stunting in toddlers.

2. Method

This type of research is correlational research with a cross sectional approach. The population in this study were all mothers of toddlers who have children aged 24-59 months at Village of Cisande, the area of public health center Cicantayan, regency Sukabumi a sample of 75 respondents using purposive random sampling. The instrument in this study used a questionnaire on the knowledge variable referring to the Guttman scale, nutrition referring to, parenting patterns and the incidence of stunting referring to the Likert scale. And

The results of the validity test on the knowledge variable were declared valid ($r=0.229-0.502$, cronbach alpha (α)= 0.592), the nutrition variable was declared valid ($r=0.229-0.669$, cronbach alpha (α)= 0.595), on the variable parenting declared valid ($r=0.239-0.718$, cronbach alpha (α)= 0.710) (r table= 0.227). Statistical analysis using simple linear regression test and multiple linear regression test.

3. Results

Based on table 1 on the characteristics of mothers, most of the mothers are in the age range of 20-35 years as many as 46 people (61.3%), have worked as many as 55 people (73.3%), have junior high school education as many as 40 people (53.3%). Based on the characteristics of toddlers, the average age of toddlers is 35 months, most of them are male as many as 44 people (58.7%), the average height of toddlers is 84.88 cm and the average weight of toddlers is 16.24 kg, most of them are toddlers. is the second born child with 37 children under five (49.3).

Based on table 2, it shows that most of the mothers under five have less knowledge as many as 69 people (92.0%) with an average value of 18.65 (2.20). Most of the mothers gave improper nutrition to toddlers as many as 74 people (98.7%) with an average value

TABLE 1: Univariate Analysis Of Research Variables

| Variable | f | % | mean | SD | Min | Max |
|------------------------------|----|------|-------|------|-----|-----|
| Mother's Knowledge | | | 18.65 | 2.20 | 15 | 27 |
| Well | 1 | 1.3 | | | | |
| Enough | 5 | 6.7 | | | | |
| Not enough | 69 | 92.0 | | | | |
| Nutritional Provision | | | 28.27 | 2.85 | 31 | 45 |
| Appropriate | 1 | 1.3 | | | | |
| Not exactly | 74 | 98.7 | | | | |
| Parenting | | | 36.03 | 3.24 | 31 | 45 |
| Authoritarian | 48 | 36.9 | | | | |
| Permissive | 81 | 62.3 | | | | |
| Democracy | 1 | 0.8 | | | | |
| Stunting Incident | | | -2.6 | 1.66 | -5 | 5 |
| Stunting | 65 | 86.7 | | | | |
| No Stunting | 10 | 13.3 | | | | |

TABLE 2: Simple Linear Regression

| Variables | P-Value | Unstandardized Coefficients B | | R | R2 |
|-----------------------|---------|-------------------------------|-----------|-------|-------|
| | | Constant | Variables | | |
| Knowledge | 0.000 | -15,366 | 0.684 | 0.905 | 0.819 |
| Nutritional Provision | 0.000 | -16,602 | 0.495 | 0.850 | 0.722 |
| Parenting | 0.000 | -18,462 | 0.440 | 0.860 | 0.739 |

of 28.27 (2.85). Most of the parenting applied by mothers of children under five is authoritarian parenting as many as 51 people (68.0%) with an average of 36.03 (3.24). Most of the toddlers experienced stunting as many as 65 people (86.7%) with an average Z Score of -2.6.

Based on table 3, it shows that there is a significant effect of mother’s knowledge on the incidence of stunting (p = 0.000, R = 0.905, R2 = 0.819), there is a significant effect of providing nutrition on the incidence of stunting (p = 0.000, R = 0.850, R2 = 0.722), there is an effect of parenting on the incidence of stunting (p=0.000, R=0.860, R2=0.739).

Based on table 3, it shows that mother’s knowledge, nutrition, and parenting have a simultaneous effect on the incidence of stunting (p=0.000, R=0.881, R2=0.876, with the equation $Y=-18.523+0.369X1+0.132X2+0.147X3$)

TABLE 3: Multiple Linear Regression

| Variables | P-Value | Unstandardized Coefficients B | R | R2 | P-Value Anova |
|-----------------------|---------|-------------------------------|-------|-------|---------------|
| (Constant) | | -18,523 | 0.881 | 0.876 | 0.000 |
| Knowledge | 0.000 | 0.369 | | | |
| Nutritional Provision | 0.004 | 0.132 | | | |
| Parenting | 0.000 | 0.147 | | | |

4. Discussion

Stunting is a condition in which the toddler has a length or height that is less when compared to age. This condition is measured by a length or height that is more than minus two standard deviations of the WHO child growth standard median [15]. [16] Several factors that influence the incidence of stunting are; mother’s knowledge, mother’s education, family income, parenting pattern, child’s gender, sanitation and others. In this study, it was found that most of the male sex experienced stunting. Boys are more likely to experience stunting given their higher physical activity than girls. This causes nutrient intake to be used more for activities than to increase body weight or length. Boys are at a higher risk of stunting than girls [17].

The incidence of stunting is also influenced by the birth order of children, research in [18] states that most of the first and second birth orders of toddlers are stunted. This is in accordance with the results of the study that most of the toddlers are the 2nd child. Parenting for the first child usually does not have adequate experience. Therefore, some parents give attention that may not be appropriate for their babies or toddlers.

The results of the study show that most of the as many as 69 (92%) respondents with knowledge in the category of less. Knowledge is the result of knowing and occurs after someone senses a certain object. Sensing occurs through the five human senses, namely sight, hearing, smell, taste, and touch [19]. Factors that can affect knowledge include education, age, environment, experience and mass media/information [20].

Education is a process of changing attitudes and behavior of a person or group and is an effort to mature humans through teaching and training efforts [20]. According to [18] the higher a person’s level of education, the more information he will receive so that the higher the level of knowledge. In accordance with the interpretation, it can be seen that most of the mothers with the last education in junior high school are 28 people or 37.3% and have less knowledge about nutrition for toddlers aged 24-59 months.

Age will affect a person’s grasping power and mindset of the information provided [21]. It is known that most of the respondents are mothers aged 21-32 years as many as 43

respondents or 57.3% where someone at that age will have a good mindset and grasping power so that their knowledge will also improve. In contrast to the results of this study which showed a lack of knowledge, this was in accordance with research conducted by [22] which showed that there was no significant relationship between age and level of knowledge.

The results show that as many as 81 or (62.3%) respondents with permissive parenting, 48 or (36.9%) respondents with authoritarian parenting. Parenting is one of the factors that cause stunting in toddlers. Parenting is one of the determinants of the quality of a child's life, in the form of attitudes and behavior of the mother or caregiver in terms of proximity to the child, providing food, caring for, cleanliness, giving affection and so on. All of them relate to the mother's condition in terms of health (physical and mental).

According to [23], parenting has a role in the incidence of stunting in toddlers because food intake for toddlers is fully regulated by the mother or caregiver. Mothers with good parenting will tend to have toddlers with better nutritional status than mothers with poor parenting. Good parenting plays an important role in the emotional and psychological development of children so as to create normal child development. This is supported by [24], which shows that parents with poor parenting for their toddlers have a 6.62 times greater risk of having stunting toddlers than parents who have good parenting for their toddlers.

According to [25] There are several factors that can affect parenting, namely parental education, age, sex of children, number of children and age of children. [26] states that there are several factors that determine the way parents take care of their children, including the living environment, culture in an environment and work status. One of the factors that can affect parenting is work status. according to [27] stated that work status is one of the factors that influence parenting given by parents.

[28] Explained that parents who do not work mostly have democratic parenting. Because parents who are busy working tend to have less time together with their children, resulting in the function or role being handed over to the maid. Parents who are busy working or having a career result in reduced attention to their families, including children, and not even a few who finally don't pay attention to their children's condition.

Another factor that can affect parenting is the age of the parents. [29] Stated that the age of parents greatly influences the application of parenting. Meanwhile, according to [25]. A person's age also has an influence on the parenting given to their children. In line with [30] explained that the age of parents is one of the factors that influence the chosen parenting style.

[25] Stated that parents aged over 20 years tend to choose democratic parenting. [4] States that the age of 20-50 years is the age of early and middle adulthood or the reproductive period, the role of parents at this age is to help children grow and develop and focus on good parenting patterns for children, one of the good parenting patterns is democratic parenting. Democratic parenting tends to be the most effective, because democratic parents apply the right balance. This parenting pattern is well applied by parents because it emphasizes the educative aspect or education in guiding children so that parents more often provide understanding, explanation, and reasoning to help children understand why this behavior is expected. While the research results are more dominant permissive parenting, this can be influenced because most parents work,

The results of the study show that most of the it was found that as many as 74 or (98.7%) of nutrition for toddlers were not appropriate Nutritional intake is the most important feeding and drinking behavior that can affect nutritional status because the quantity and quality of food and drink consumed will affect individual and community health levels[1].Feeding toddlers plays an important role in the growth process in toddlers, because food contains a lot of nutrients. If the toddler's diet is not achieved properly, growth will be disrupted, the body is thin, short (stunting) and even malnutrition occurs in toddlers [31].

Most mothers who have stunting toddlers have inappropriate behavior in providing food to their children, because mothers still cannot meet the nutritional needs of their toddlers because they have not fulfilled the 4 principles of balanced nutrition. Most mothers do not give fruit and do not make a feeding schedule for children. Based on[32], the lack of fruit consumption in toddlers will pose a risk of health problems in the future due to lack of mineral and vitamin intake. [33]states that children's habits of eating irregularly will tend to lack vitamins A, D, E, and K, as well as several other important minerals needed by the body.

The results of the study show that most of the it was found of statistical tests, multivariate linear regression analysis showed that there was an influence of mother's knowledge about nutrition on the incidence of stunting in toddlers aged 24-59 atVillage of Cisande, the area of public health center Cicantayan, regency Sukabumi with P-value = 0.000 (<.0.05).

This study is in line with [34] which concluded that there is a relationship between maternal knowledge about nutrition and the incidence of stunting in children aged 6-23 months with a p-value of 0.000. In addition, research by [35] which explains that there is a relationship between maternal knowledge about nutrition and stunting for children

aged 4-5 years with a p-value obtained of 0.000. So it can be said that the incidence of stunting can be influenced by the mother's knowledge about nutrition.[36]

Shows that mother's knowledge about nutrition affects the incidence of stunting where mothers' knowledge of low nutrition has a risk of stunting 3.8 times greater than mothers who have a high level of knowledge about nutrition. These results are in line with research [37] which shows that there is a significant relationship between maternal knowledge about nutrition and the incidence of stunting in toddlers aged 12-59 months.

The level of knowledge of maternal nutrition will change the nutritional status. The higher the knowledge of maternal nutrition, the better the nutritional status of the child, thereby reducing the risk of stunting[38]. A person's level of knowledge on nutrition affects attitudes and behavior in determining the type and variety of food and will subsequently affect the nutritional status of the individual concerned. In line with the results of research [39] that mother's knowledge about food is one of the influencing factors on the incidence of stunting in children.

The results of the study multivariate linear regression analysis showed that there was an effect of parenting on the incidence of stunting in toddlers aged 24-59 months at Village of Cisande, the area of public health center Cicantayan with P-value = 0.000 (<0.05) and showed that there was an effect of nutritional intake on the incidence of stunting in toddlers aged 24-59 months at Village of Cisande, the area of public health center Cicantayan with P-value = 0.004 (<0.05)

[37] Concluded that there is a relationship between eating patterns and the incidence of stunting. Good eating parenting is reflected by the better food intake given to toddlers. Qualitatively assessed food intake is described through the diversity of food consumption. The research of [40] the most dominant factor related to the incidence of stunting in toddlers is feeding parenting. Low feeding parenting tends to be 6 times higher in the incidence of stunting in toddlers compared to mothers with high feeding parenting patterns.

In line with [41] Maternal parenting influences the incidence of stunting in children aged 24-59 months. The food given by the mother to the child should be in accordance with balanced nutritional needs and adjust to the portion of the meal according to the child's age so that the child's nutritional needs can be met properly.

The toddler's diet plays an important role in the growth process in toddlers, because food contains a lot of nutrients. If the toddler's diet is not achieved properly, growth will be disrupted, the body is thin, short (stunting) and even malnutrition occurs in toddlers [31].

The results of research conducted by [12], showed a relationship between nutritional intake and the incidence of stunting in children aged 24-59 months at Posyandu Asoka II Coastal Area, Barombong Village (p-value = 0.007). The results of another study conducted by [26] showed that there was a significant relationship between diet and the incidence of stunting with an OR value of 8.07, which means that toddlers with a poor diet have an 8 times greater chance of experiencing stunting. Providing good nutrition can prevent stunting thus need to be carefully designed and monitored to prevent impacts associated with [42]

The type of food consumed every day is limited to food sources of carbohydrates, namely rice and vegetables as a source of fiber. Consumption of meat, fish and eggs as a source of protein is not consumed every day. Consumption of animal protein sources can be said to be seasonal, for example, fish consumption is more frequent in the rainy season. Consumption of meat, usually limited if there is a family celebration or other activities. In general, people have pets such as chickens, buffalo, horses and cows. However, the most common are pet chickens. People's habits prefer to sell their livestock rather than for their children's consumption. The feeding pattern for their children is only 3 main meals with a type of high energy intake. This feeding pattern does not pay attention to the nutritional needs that are important for the growth of toddlers so that it is possible that these habits have an impact on the nutritional status of toddlers. This is in line with research[43]that Daily energy and protein intakes are below the RDI (Recommended Daily Intake) and are significantly associated with nutritional deficiencies. The efforts that have been made in preventing and dealing with stunting include counseling for nutritionally aware families, providing additional food for pregnant women and toddlers, providing vitamins and conducting nutritional surveillance by evaluating the height of children under five which are carried out in each village [37].

This research was first conducted in Cisande Village, Sukabumi Regency, with a high incidence of stunting. This is in line with the results of the study where one of the factors that influence the knowledge of mothers under five is lacking, this can also be seen in the odds ratio ($R^2=0,819$) which shows the largest number. So it can be stated that the knowledge of the mother of toddlers is the most influential.

5. Conclusion

There is an influence of mother's knowledge, parenting, and nutritional intake on the incidence of stunting.

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Conflict of Interest

The authors have no conflict of interest to declare.

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