



The Correlation Between Feeding Patterns and The Incidence of Stunting in Children Aged 0-59 Months

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A B S T R A C T

Stunting is one of the severe problems in Indonesia. One of its causes is a lack of nutritional intake during infancy. In addition, maternal parenting, especially in feeding patterns, will affect the children's growth and development. This study aims to determine the correlation between feeding patterns and the incidence of stunting. The research design used correlational analytics. The population was stunted children aged 0-59 months at Kalibuntu Village, Probolinggo Regency. In addition, there were 66 respondents in this study with total sampling. The independent variable was feeding patterns, while the dependent variable was the incidence of stunting. Data collection was carried out using a questionnaire on feeding patterns that respondents' mothers filled out. In addition, the authors measured respondents' height and assessed with a WHO (World Health Organization) growth chart to collect data on the incidence of stunting. Data analysis used the Spearman rank rho test. Almost half of the respondents had inappropriate feeding patterns (42.4%). In addition, most of the stunted children's height was categorized as short (85.3%). 15.2% of stunted children with inappropriate feeding patterns had very short height. In addition, 56.1% of respondents with appropriate feeding patterns were categorized as short. The Spearman rank rho test obtained $p=0.000$, indicating H_0 was rejected and H_1 was accepted. In addition, the value of the correlation coefficient was 0.439, showing a moderate correlation between both variables. In conclusion, feeding patterns correlate with the incidence of stunting among children aged 0-59 months in Kalibuntu Village, Probolinggo Regency.

INTRODUCTION

Stunting in Indonesia is a severe problem at the village, sub-district, district, provincial, and national levels. Therefore, all parties should play an active role in reducing the prevalence of stunting. Indonesia is still ranked fifth as a country with a high stunting incidence. Until now, children with chronic malnutrition in Indonesia have reached 30 percent. The Basic Health Research in 2018 showed that the prevalence rate of stunting (short and very short) in children under five was 30.8% and in infants under two years old was 29.9%. That percentage in children under five decreased from 2019, with a prevalence of 37.2%. In addition, the Basic Health Research in East Java Province in 2018 revealed that the stunting prevalence rate was 32.81% or decreased compared to 2013, with a prevalence of 35.8% (Kementerian Kesehatan RI, 2020). Furthermore, The Basic Health Research in Probolinggo Regency in 2020 found that the stunting prevalence rate was 16.24%. That rate was lower compared to the strategic plan target of the District Health Office of 29%, the strategic plan of the East Java Provincial Department of Health of 25.2%, and Indonesia's National Medium-Term Development Plan of 28%.

Monitoring the nutritional status in children under five, especially stunting, is carried out twice a year, in February and August or the weighing month. Stunting prevalence in Probolinggo Regency in 2020 was

16.24% or 12,833 of the 79,497 children under five. A preliminary study conducted on September 25, 2021, at the Kraksaan Health Center showed that the stunting rate was 4.14% of 3896 children under five in February 2019 and 5.05% of 3759 in August 2019. Furthermore, the rate in Kalibuntu Village was 11.52% of 654 children under five in February 2019 and 11.09% of 622 in August 2019.

One of the causes of children under five stunting is a lack of nutritional intake during infancy (Kementerian Kesehatan RI, 2020). Two factors, direct and indirect, influence the nutritional status of children. The direct factors related to stunting are low energy and protein intake and not exclusively breast milk. In addition, missing the golden period (the first 1000 days of life) causes stunting in children under five. It can inhibit child growth and development. Nutrient intake in pregnancy and breastfeeding has a long-term impact until adulthood. Good nutrient intake can prevent stunting and malnutrition in children (Yuliana *et al.*, 2019).

Malnutrition in children is irreversible, so they need good quality food intake. Acute malnutrition in children can lead to physical weakness. In addition, chronic malnutrition in children, especially those that occur before two years, will impact physical growth disorder or become short (stunted). It is riskier if nutritional problems have begun to happen in the womb. Stunting will directly impact children and indirectly affect the resilience of the Indonesian state. The impacts include cognitive and psychomotor impairment, difficulty in science and sports, high risk for degenerative diseases, and low-quality human resources (Dasman, Hardimas, 2019).

Stunting must be immediately addressed before children are two years old because it has short and long-term impacts. The short-term effects of stunting are impaired growth and development (cognitive, motoric, and verbal) in children and more susceptibility to getting sick. In addition, there are increased health costs because children are susceptible to illness and have health problems, so they must always do examinations and treatment. Furthermore, one of the long-term impacts of stunting is an abnormal posture in adulthood because the height of a stunted child can only be corrected before two years old. In addition, stunting increase the risk of nutritional problems such as obesity, other diseases, and reproductive disease. Moreover, it declines the learning capacity and performance in school because the cognitive development in stunting children is less optimal than that of children their age. Productivity and working capacity also become less than optimal when adults (Apriani, 2019).

Some factors predisposing malnutrition in children are poor micronutrient quality, lack of food diversity and food intake sourced from animals, non-nutritive food, the low calories in complementary foods, and inadequate feeding pattern. After six months of age, each baby needs complementary foods. The introduction and administration of complementary foods should be carried out in stages according to the baby's and child's digestive abilities (Rahayu *et al.*, 2018). Thus, maternal parenting, especially in feeding patterns, will affect the children's growth and development. This study aims to determine the correlation

between feeding patterns and the incidence of stunting in children aged 0-59 months.

METHOD

The population was stunted children aged 0-59 months at Kalibuntu Village, Probolinggo Regency. In addition, there were 66 respondents in this study with total sampling. The independent variable was feeding patterns, while the dependent variable was the incidence of stunting. Data collection was carried out using a questionnaire on feeding patterns that respondents' mothers filled out. In addition, the authors measured respondents' height and assessed with a WHO (World Health Organization) growth chart to collect data on the incidence of stunting. Data analysis used the Spearman rank rho test. An ethical clearance in this paper has been carried out at the Ethics Test Commission at STIKes Hafshawaty, Probolinggo Regency.

RESULT

The univariate analysis described the feeding patterns and the incidence of stunting. Meanwhile, the bivariate analysis analyzed the correlation between both variables.

Table 1. Distribution of Frequency in Respondents based on Feeding Patterns and The Incidence of Stunting in Kalibuntu Village, Probolinggo Regency

	Frequency (n)	Percentage (%)
Feeding patterns		
Inappropriate	28	42.4
Appropriate	38	57.6
The incidence of stunting		
Very Short	11	16.7
Short	55	83.3
Total	66	100

Almost half of the respondents had inappropriate feeding patterns (42.4%). In addition, most of the stunted children's height was categorized as short (85.3%) (Table 1).

Table 2. Cross-Tabulation between Feeding patterns and The Incidence of Stunting and Statistic Test Result

Feeding Pattern	The Incidence of Stunting					
	Very Short		Short		Total	
	n	%	n	%	n	%
Inappropriate	10	15.2	18	27.3	28	42.4
Appropriate	1	1.5	37	56.1	38	57.6
Total	11	16.7	55	83.3	66	100.0
Spearman rank rho test	$p=0.000$		$r=0.439$			

15.2% of stunted children with inappropriate feeding patterns had very short height. In addition, 56.1% of respondents with appropriate feeding patterns were categorized as short. The Spearman rank rho test obtained $p=0.000$, indicating H_0 was rejected and H_1 was accepted. In addition, the value of the correlation coefficient was 0.439, showing a moderate correlation between both variables (Table 2). Thus,

there was a correlation between feeding patterns and the incidence of stunting among children aged 0-59 months in Kalibuntu Village, Probolinggo Regency.

DISCUSSION

Feeding patterns in children aged 0-59 months in Kalibuntu Village

Almost half of the stunting children in this study had inappropriate feeding patterns (Table 1). It was indicated that feeding patterns consisting of the diet, the type of food, and the amount of food given to children aged 0-59 months were inadequate or did not meet their needs. According to (Waryono, 2010), diet is a person's behavior such as attitudes, beliefs, and food choices in meeting food needs. The physiological, psychological, cultural, and social factors influence diet in individuals. A study by Ridha Cahya Prakhasita (2019) showed that the feeding patterns for children aged 0-59 months were influenced by maternal age, maternal education, maternal occupation, and family income. In addition, number of children, family members, and people living in the respondent's house also correlated with the feeding patterns. That study showed that most respondents aged 20-35 (65.2%), were graduated from elementary (59.1%), housewives (66.7%), and had two or three children (59.1%). In addition, their income was below the Regional Minimum Wage of Lumajang (78.8%), their family members were 1-4 people (87.9%), and the number of people living in the respondent's house was 1-4 people (60.6%).

Age indicates maturity in thinking, the more mature your age, the more mature your mindset. Mindset will underlie actions, including feeding patterns in toddlers. In addition, education indicates the respondents' knowledge of the children's needs. The understanding will be the basis for providing food to toddlers based on their needs. Furthermore, occupation relates to feeding patterns. Housewives have more time with their children under five, giving them more opportunities to feed their toddlers. Family income also shows the monthly income received to meet family needs, including the child's food intake. A high family income or equal to the Regional Minimum Wage will guarantee the mother can provide food following the toddler's needs. Moreover, the number of family members or people living in a house is related to meeting consumption needs. The consumption level will be higher in families with many family members. Thus, the ability to meet the needs of children under five tends to be not optimal because parents must divide their income with other family members' needs.

The incidence of stunting in children aged 0-59 months in Kalibuntu Village

This paper revealed that most of the stunted children's height was categorized as short (Table 1). The stunting assessment measures height with a WHO growth chart (Kementerian Kesehatan RI, 2020). Risk factors for stunting are economic status, maternal intake during pregnancy, disease, and malnutrition in babies. Stunted toddlers will potentially not have optimal physical and cognitive development. Ridha Cahya Prakhasita (2019) also found that 74.1% of stunted children under five were categorized as short,

and 25.9% were classified as very short. A short body in a child below the WHO Child Growth Standards results from chronic malnutrition. Stunting is influenced by children's medical history, including poor nutritional intake, multiple infectious diseases, premature birth, and low birth weight. Inadequate intake in children usually does not occur after the delivery but starts from pregnancy. In the future, stunting can harm children, such as learning difficulties, fatigue, lack of activity, and the risk of other diseases.

The correlation between feeding patterns and the incidence of stunting in children aged 0-59 months in Kalibuntu Village

Our findings revealed a moderate correlation between feeding patterns and the incidence of stunting among children aged 0-59 months in Kalibuntu Village, Probolinggo Regency (Table.2). It is in line with a study by Bella, Fajar, and Misnaniarti (2020) in Palembang City among 100 mothers of toddlers from low-income families. The study found a significant association between feeding habits and the incidence of stunting in toddlers from low-income families ($p=0.000$). It showed that 68.4% of mothers with poor feeding habits had stunted toddlers. Meanwhile, it revealed that only 19.8% of mothers with good feeding habits had stunted toddlers. In addition, Ridha's research (2019) also indicated a significant relationship between feeding patterns and the incidence of stunting in toddlers aged 12-59 months. According to Purwani, Erni, and Mariyam (2013), the diet plays an essential role in children's growth and development because food contains many nutrients. Inadequate nutrition impacts children's health and intelligence, especially in the developmental disorders, thin, short, and even malnutrition.

Dietary problems in toddlers impact the incidence of stunting. Diet determines the adequacy of nutrition for the child, a good diet results in adequate nutrition so the child can develop and grow well. In addition, good feeding habits depend on maternal skills in arranging menus to meet nutritional requirements. The authors found several facts about the feeding pattern of stunted children under five in this research. Some respondents said that they need consultation and nutritional assistance. In addition, some toddlers were used to consuming rice and vegetable soup only, and some only like to eat porridge up to two years old. Furthermore, there was less varied food diversification. Moreover, mothers in this paper preferred to buy foods without considering the nutrient content. Parents, especially mothers, must be concerned about toddlers' poor consumption patterns, such as excessive snacking habits. The type of food consumption also significantly determines the child's nutritional status. Toddlers are a vulnerable group, so the kind of food must follow the child's needs and digestibility. Varied foods and sufficient nutritional value are critical to avoiding a lack of nutrients in children. Parents should apply a good feeding pattern by giving a varied diet. In addition, it must schedule meal times so the child will get used to a healthy diet.

CONCLUSION

In conclusion, feeding patterns correlate with the incidence of stunting among children aged 0-59 months in Kalibuntu Village, Probolinggo Regency. However, this study cannot be generally generalized because it may have different results in other places. Mothers with children under five should apply good feeding patterns for children to prevent stunting. In addition, health workers, especially midwives, could provide nutritional assistance to mothers with children under five, especially related to food menus to meet the needs of toddlers

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