



THE RELATIONSHIP BETWEEN STUNTING AND TODDLER DEVELOPMENT

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ABSTRACT

Child development is the process of increasing the capabilities of the body's structure and function. There are various factors that influence toddler development, and special attention needs to be given to poor nutritional status, one of which is stunting. The objective of the study was to determine the relationship between stunting and development in toddlers. This study employed a correlational method with a cross-sectional design. The study population consisted of mothers with toddlers, with a sample size of 224 people. The sampling technique used was cluster random sampling. Data collection used observation sheets covering the age and height of toddlers and the Developmental Pre-Screening Questionnaire (KPSP). Statistical analysis used Continuity Correction. The results show that most respondents were not stunted and had normal development, namely 187 people (83.5%). Statistical testing yielded a p-value of 0.000 ($p < 0.05$), meaning that there is a relationship between stunting and toddler development. There is a link between stunting and toddler development. Community health centres are expected to increase their activities in checking growth and development and monitoring the nutritional status of toddlers on a regular basis.

Keywords: development; infants; stunting

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INTRODUCTION

Child development is the process of increasing the complexity of bodily structures and functions as a result of a predictable and orderly maturation process, which is divided into four domains: gross motor skills, fine motor skills, speech and language, and socialisation and independence (Kemenkes RI, 2016). A total of 35.7% of children under five years of age in Benin, West Africa, experience cognitive developmental delays. Meanwhile, 42% of children aged 1-3 years in Indonesia experience language developmental delays. This indicates that 3 to 4 out of 10 children experience developmental delays (Sari & Sari, 2022).

Development is a regular pattern related to changes in structure, thoughts, feelings, or behaviour resulting from maturation, experience, and learning. Development is a dynamic and continuous process throughout life, characterised by a series of increases, constant conditions, and decreases (Simanjuntak, 2023). The development of toddlers is influenced by various factors that interact in complex ways. Factors such as health status, socioeconomic status, and quality of health services are identified as important factors in supporting child growth and development. However, in addition to these factors, special attention needs to be given to nutritional status (Black et al., 2017). During early childhood, a child's growth begins at birth and is greatly influenced by their nutritional status. Good nutrition plays an important role in supporting the health and optimal development of children in the future. Conversely, nutritional deficiencies can hinder the growth process, which is characterised by a child's body size that does not meet standards and deviations in the growth curve known as stunting (Junaidi et al., 2020; Sinaga et al., 2024).

According to the World Health Organisation (WHO) in 2020, approximately 149.2 million or 22% of toddlers worldwide suffer from stunting. One of the continents with the highest stunting rates is Asia, with 83.6 million or 55% of children under five. South Asia accounts for the highest

proportion at 58.7%, followed by Southeast Asia at 27.8%, and Central Asia at 0.9%. Indonesia is one of the contributors to stunting in Southeast Asia, with a prevalence of around 24%. (Syakir & Darmiati, 2025). Meanwhile, the stunting rate in West Java Province reached 20.2%, making it the 13th highest province nationally. At the district level, Sukabumi ranked second with a stunting prevalence rate of 27.5% (Fadhilatusafitri & Kurniati, 2025).

Stunting is a condition of extreme short stature that exceeds a deficit of 2 standard deviations below the median height according to international growth standards and the Ministry of Health of the Republic of Indonesia (Kemenkes RI, 2016). Stunting occurs as a result of nutritional deficiencies during the first 1,000 days of life. Not only does it have short-term effects, stunting also has long-term effects, including reduced life expectancy, impaired motor and cognitive development, low economic productivity, and an increased risk of living in poverty as an adult (Patimah, 2021). Stunting can hinder toddler development because long-term malnutrition affects brain growth. Children who experience stunting tend to lack essential nutrients, such as protein, iron, and omega-3, which are needed for brain development. As a result, stunted children may experience delays in speech, difficulty understanding instructions, and slow responses when interacting with others (Rahmawati et al., 2025).

Stunting also disrupts growth hormones that are important for physical and brain development. When these hormones are low, children will experience delays in motor skills such as crawling, walking, or holding small objects. Due to their limited abilities, stunted children are also less active and rarely explore their environment, so their brains are not properly stimulated (Majid et al., 2022). The objective of this study was to determine the relationship between stunting and development in toddlers in Sukamanis Village, Kadudampit Community Health Centre Working Area, Sukabumi Regency.

METHOD

This study used a correlation method with a cross-sectional design. It was conducted in Sukamanis Village, Kadudampit Community Health Centre, Sukabumi Regency. The study population consisted of mothers with toddlers, with a sample size of 224 people. The inclusion criteria included mothers of toddlers who were willing to be respondents and toddlers aged 0-59 months who were registered at the research location. The exclusion criteria included mothers with visual or speech impairments, mothers of toddlers who were not at the research location, and if a mother had more than one toddler, the data used was for the youngest toddler. The sampling technique used was cluster random sampling. The instruments used were observation sheets and questionnaires. Data analysis used descriptive analysis to describe each category of respondent characteristics and research variables. Statistical analysis used Continuity Correction to test the relationship between independent and dependent variables with a significance value of 0.05.

RESULT

Table 1.
Respondent Characteristics

Respondent Characteristics	f	%
Age (Months)		
0 – 11	41	18,3
12 – 36	108	48,2
37 – 59	75	33,5
Gender		
Male	113	50,4
Female	111	49,6

Table 1 shows that most respondents were aged 12-36 months, numbering 108 (48.2%), and male, numbering 113 (50.4%).

Table 2.
Univariate Analysis

Variable	f	%
Stunting		
Not Stunting	187	83,5
Stunting	37	16,5
Development		
Appropriate	187	83,5
Inappropriate (Doubtful, Deviation)	37	16,5

Table 2 shows that most respondents were not stunted and had normal development, namely 187 people (83.5%).

Table 3.
Bivariate Analysis

Stunting	Development		Total		<i>p-value</i>
	Appropriate	Inappropriate	f	%	
Not Stunting	f 187	% 100,0	f 0	% 0,0	<0,001
Stunting	f 0	% 0,0	f 37	% 100,0	

Table 3 shows that most respondents were not stunted, with 187 respondents (83.5%) developing normally, while a small number of respondents were stunted, with 37 respondents (16.5%) not developing normally. After conducting a statistical test using Continuity Correction, a p-value of <0,001 ($p < 0.05$) was obtained, meaning that there is a relationship between stunting and toddler development.

DISCUSSION

The results of the study show that most toddlers are not stunted. Stunting is a condition in which a child does not have sufficient nutrition until the age of five and does not experience normal growth. As a result, the child is shorter than other toddlers of the same age. This nutritional deficiency can occur during pregnancy and continue after birth, but usually only becomes apparent when the toddler is two years old (Afrida, B. R., & Aryani, 2022). The results of the study also show that almost all of the toddlers were male. According to Yuningsih & Perbawati (2022), the gender of toddlers is often associated with nutritional problems, including stunting. Some say that male toddlers are more prone to stunting than female toddlers, due to their higher energy and metabolic needs, as well as their tendency to suffer from infections that interfere with nutrient absorption.

The results of the study also show that most respondents were aged 12-36 months. According to Wahyuningsih (2021), stunting reflects long-term malnutrition during the growth and development of infants, which is the most important part of their lives. Children with a Z-score for height-for-age that is less than two standard deviations (-2 SD) from the median according to the WHO are considered short for their age (dwarfism) or chronically malnourished. Children with a score of less than three standard deviations (-3 SD) are considered severely stunted. This indicator shows a condition of long-term malnutrition. Various factors, such as diet, recurrent infections, and socioeconomic conditions, can influence it (Kusuma et al., 2025).

Based on facts in the field, toddlers experience more stunting because their growth and development period is very rapid. If their nutritional intake is insufficient, their height growth can be disrupted. In addition, children's nutritional needs continue to increase as they age, so it is very important to meet these needs. Children aged 1 to 5 years are also undergoing a transition from breast milk to complementary foods. If this process does not go well, the risk of stunting can increase. Thus, providing nutrition appropriate for the child's age is very important to prevent stunting based on height for age (HAZ). The results of the study show that most toddlers develop according to Development is a more complex structure and function of the body, including gross motor skills, fine motor skills, speech and language, as well as social interaction and independence. Everyone develops in different stages, from basic skills to perfect skills (Setyatama et al., 2023).

Infants develop rapidly from an early age. At 3 months old, babies begin to show basic motor skills such as moving their arms and legs while lying on their back, staring at their parents' faces, and responding with social smiles and cooing. When shown a moving object, they are able to follow its movement with their head, and when lying on their stomach, babies can already lift their head up to a 45° angle. By 6 months of age, babies begin to roll over with assistance, reach for objects with both hands, and turn their head towards sounds. They also begin to laugh more clearly and can hold their head up and lift their chest while in a prone position (Kemenkes RI, 2016).

When babies reach 9 to 18 months of age, their motor and communication skills become more apparent. At 9 months, babies are able to sit up on their own, crawl, move objects between their hands, and begin to say syllables such as 'ba' or 'ma'. They begin to respond when their name is called and try to stand up while holding onto something. At 12 months, children can stand and walk without assistance, begin to point to objects they want, and say meaningful words such as 'mummy' or 'daddy'. At 18 months, children can walk on their own, imitate adult activities such as sweeping, and demonstrate fine motor skills by drawing with crayons (Kemenkes RI, 2016).

Further development between the ages of 24 and 60 months includes improvements in physical, language and social skills. At 2 years old, children can run, kick a ball, stack blocks and recognise body parts. At 30 months, children begin to draw, recognise basic colours and show independence. At 36 months, their speech becomes more complex, they begin to play with friends and draw simple shapes. At 42-48 months, children can walk independently, dress themselves, draw people, and speak fluently. Finally, at 54-60 months, children are able to draw more complex pictures, recognise colours and shapes, count, and show interest in adult activities, indicating readiness for the school-age stage (Kemenkes RI, 2016).

The development of toddlers is influenced by factors related to stunting, including cognitive and motor skill development, social behaviour, school achievement, and psychomotor development. This is in line with Soetjiningsih's opinion that stunting is one of the components that determines child development. Growth and development are components that are of great concern in toddlers because they explain the process of physical and psychosocial formation in toddlers. Gross motor skills, fine motor skills, language and speech, as well as personal social and independence are components of a child's development. The two main factors that influence toddler development are genetic factors and environmental factors. Genetic factors originate from the egg cells of both parents, while environmental factors are external factors that support genetic factors in toddler development (Nur et al., 2023).

The results of the study indicate a relationship between stunting and toddler development. This study is in line with Syahrudin et al. (2022), who stated that there is a significant relationship between stunting and toddler development. This researcher is also supported by Wahyuningsih (2021), who revealed that there is a significant relationship between stunting and toddler development. Although stunting generally has a negative impact on child growth and development, in some cases, children still show good development. This is most likely influenced by adequate stimulation from parents and optimal environmental support. Stunting can affect the physical growth and development of toddlers (Nur et al., 2023).

Stunting is also one of the components that determine toddler development. Growth and development are very important in toddlers because they explain the process of physical and psychosocial formation in toddlers. Infant development encompasses gross motor skills, fine motor skills, language and speech, as well as personal social and independence skills. Two main factors that influence infant development are genetic and environmental factors. Genetic factors originate from the egg cells of both parents, while environmental factors are external factors that support genetic factors in infant development (Nur et al., 2023).

In the short term, stunting can cause brain growth problems, reduced intelligence, and metabolic problems. However, in the long term, stunting increases the risk of metabolic diseases, cardiovascular disease, learning problems, and cognitive impairment. Research conducted by Laily & Indarjo (2023) states that in addition to inhibiting children's physical growth, stunting affects cognitive, motor (gross and fine), language, and socio-emotional development. The results of this study show that of the 224 toddlers who experienced stunting based on the TB/U indicator, there were 37 toddlers whose development was not appropriate. This figure clearly indicates that stunting can have an impact on infant development.

Stunting itself generally occurs due to prolonged malnutrition, which ultimately affects physical growth and brain development in toddlers. Toddlers who experience stunting tend to have insufficient energy reserves and nutrients to support their daily activities and learning processes. This can cause toddlers to experience delays in various aspects of development, such as motor, language, and social-emotional skills. In addition, stunted children often come from families with low economic status, limited access to health services, and low parental knowledge about the importance of nutrition and early stimulation. This inappropriate development shows that stunting not only affects the height of infants, but can also affect their learning abilities and socialisation processes in the future (Sari, 2024).

CONCLUSION

Based on the above results, it can be concluded that there is a relationship between stunting and development in toddlers in Sukamanis Village, Kadudampit Community Health Centre Working Area, Sukabumi Regency.

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