THE ROLE OF PARENTAL STIMULATION IN THE DEVELOPMENT OF STUNTED TODDLERS IN THE LEMBANG COMMUNITY HEALTH CENTER WORK AREA

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Abstract

Stunting remains a significant public health problem in Indonesia, including in West Bandung Regency. One of the factors influencing the development of stunted toddlers is parental stimulation behavior. This study aims to determine the relationship between parental stimulation behavior and the development of stunted toddlers in the working area of the Lembang Health Center. This research used a quantitative approach with a cross-sectional design, involving 95 respondents selected based on inclusion and exclusion criteria from September 2024 to April 2025. Data were collected using the Stimulation, Early Detection, and Intervention of Child Growth and Development (SDIDTK) questionnaire to assess parental stimulation behavior and the Pre-Screening Developmental Questionnaire (KPSP) to assess toddler development. Both questionnaires were tested for validity and reliability prior to use. The results showed that 61 parents (64.2%) demonstrated good stimulation behavior, while 34 (35.8%) had poor stimulation. Meanwhile, 42 toddlers (44.2%) exhibited development appropriate to their age, and 53 toddlers (55.8%) showed developmental delays. Statistical analysis using the chi-square test indicated a significant relationship between parental stimulation behavior and the development of stunted toddlers (p = 0.012). The proportion of normal development was higher among toddlers whose parents provided good stimulation (55.7%) compared to those with poor stimulation (26.5%), suggesting that positive parental stimulation contributes to optimal toddler development.

Keywords: Development, Parents, Stimulation Behavior, Stunting, Toodler.

1. INTRODUCTION

Stunting is a key indicator of growth failure that reflects chronic nutritional deficiencies and long-term inequalities in child well-being. It occurs when a child experiences impaired linear growth due to inadequate nutrition and repeated infections during the first 1,000 days of life, resulting in a height that is below the standard for their age. Stunting not only affects a child's physical development but also has long-term consequences on cognitive abilities, health, and productivity in adulthood. According to the 2023 Indonesian Health Survey (SKI), the national stunting prevalence remains high at 21.5%, showing only a 0.1% decrease from the previous year and still falling short of the national target of 14% by 2024 [1]. West Java is among the provinces with the highest prevalence, at 24.5%, with Bandung Regency as a major contributor. In West Bandung Regency, the Lembang Health Center reported a 4.35% stunting rate in 2024 among 1,591 toddlers, with the highest concentration in Pagerwangi Village.[2].

Although nutrition interventions are often the main focus in stunting reduction programs, parenting practices especially developmental stimulation play an equally crucial role. Early and consistent stimulation is essential to support children's motor, cognitive, language, and socio-emotional

development [3]. Without adequate stimulation, toddlers are at risk of developmental delays, learning difficulties, and reduced productivity later in life. Stunted toddlers, in particular, require age-appropriate stimulation as a complement to nutritional support to promote optimal development [4].

Unfortunately, parental awareness and knowledge of early stimulation remain low. UNICEF Indonesia reports that only about 50–60% of parents understand the importance of stimulation in child development [5]. Barriers such as low education levels, limited access to information, poor socioeconomic conditions, and a lack of learning facilities at home hinder the implementation of effective stimulation practices [6]. A preliminary study in the Lembang Health Center area also found that most parents tend to focus more on providing supplementary food, without fully understanding the role of stimulation in supporting stunted children's development.

Given these conditions, this study is urgently needed to analyze the relationship between parental stimulation behavior and the development of stunted toddlers in the working area of the Lembang Health Center in 2025. The findings are expected to serve as a foundation for more comprehensive educational and promotive efforts in addressing stunting not only through nutritional approaches but also through improved parenting practices [7]. Furthermore, this study may strengthen family-based and community-driven interventions to support holistic child development and help build a healthier, smarter, and more productive generation.[8].

2. METHODOLOGY

This study used a quantitative research with a cross-sectional design[9]. The aim was to analyze the relationship between parental stimulation behavior and the development of stunted toddlers at the Lembang Public Health Center, West Bandung Regency, in 2025. The study was based on the hypothesis that there is a significant relationship between parental stimulation behavior and the development of stunted toddlers. The research was conducted in the working area of Lembang Public Health Center. The total population in this study was all parents who had stunted toddlers aged 24–59 months in the five villages. The total sampling is 95 respondents were selected with inclusion criteria such as mothers who were willing to participate, had toddlers diagnosed with stunting based on the health center records, and lived in the working area of Lembang Health Center. There were two variables in this study: the independent variable was parental stimulation behavior, and the dependent variable was the developmental status of stunted toddlers. Data were collected using a structured questionnaire that assessed the frequency and quality of stimulation provided by parents that have been tested for validity and reliability. The toddler development assessment was conducted using a standard tool based on guidelines from the Ministry of Health of the Republic of Indonesia. Data analysis was carried out in two stages: univariate analysis to describe the characteristics of respondents and bivariate analysis using the Chi-Square test to determine the relationship between stimulation behavior and toddler development. A p-value of <0.05 was considered statistically significant. This study was conducted ethically by obtaining informed consent from each respondent. Respondents' data confidentiality and privacy were maintained throughout the study[10].

3. RESULTS

This section presents the findings of the study which include univariate and bivariate analyses. The univariate analysis aims to describe the frequency distribution of parental stimulation behavior and the developmental status of stunted toddlers. The bivariate analysis is used to examine the relationship between parental stimulation behavior and the development of stunted toddlers at Lembang Public Health Center, West Bandung Regency, in 2025.

1.1 Univariat Analysis

1.1.1 Parental Stimulation Behavior

Table 1. *Parental Stimulation*

Parental Stimulation	Frequency (f)	Percentage (%)
Good	61	64,2
Poor	34	35,8
Total	95	100,0

Define Based on the frequency analysis of the parental stimulation variable, it was found that out of 95 respondents, the majority, 61 respondents (64.2%), provided stimulation categorized as good. Meanwhile, 34 respondents (35.8%) gave stimulation considered less adequate. These findings indicate that most parents in this study have sufficient awareness and ability to provide stimulation that supports toddler development, particularly during the golden age. The stimulation referred to includes various aspects such as emotional attention, verbal communication, educational play activities, and the provision of a safe and stimulating environment that fosters motor, cognitive, and social development.

These results are in line with a study by Chi, which stated that consistent and appropriate stimulation by parents has a significant effect on early toddlerhood development[11]. Additionally, research by Grantham showed that parents who possess knowledge and actively engage in their toddler's growth and development tend to provide beneficial stimulation that encourages optimal development[12]. This support reinforces the validity of the finding that parental stimulation is one of the critical factors that must be considered in efforts to prevent developmental delays, including stunting, which is often associated with motor and cognitive delays[13].

The findings also show that although most parents have provided good stimulation, there remains about one-third of respondents who offer inadequate stimulation[14]. This is a significant concern, as toddlers from this group are at risk of experiencing developmental delays if not given timely intervention. Therefore, this study highlights the importance of strengthening early education programs and community-based interventions such as those conducted by integrated health posts (Posyandu) and primary health care centers (Puskesmas) to enhance parental knowledge and skills in providing appropriate stimulation. The research also opens the opportunity for developing interactive educational media or family-based training programs to improve the quality of stimulation provided at home.

The level of stimulation given by parents is influenced by several factors, such as educational background, knowledge, parenting experience, and the social support they receive In addition, the stimulation provided is not merely the result of good intentions but also relates to the availability of time, understanding of toddler developmental stages, and access to learning resources or information.

1.1.2 Development of Stunted Toddlers

Table 2. *Development of stunted toodlers*

Development of Stunted Toddlers	Frequency (f)	Percentage (%)
appropriate	42	44,2
questionable	37	38,9
deviant	16	16,88
Total	95	100,0

The analysis results showed that out of 95 toddlers studied, 42 toddlers (44.2%) had development that was categorized as appropriate according to normal developmental stages. Meanwhile, 37 toddlers (38.9%) showed questionable development, and 16 toddlers (16.8%) exhibited deviant development. These findings indicate that more than half of the toddlers in this study have not reached optimal development, with approximately 55.8% falling into the questionable to deviant categories. This highlights a significant risk of developmental delays among toddlers who are experiencing or at risk of stunting, emphasizing the importance of early detection and appropriate intervention to prevent long-term impacts on toddler growth and development.

This study supports previous findings by McCann, which state that stunting not only affects toddlers's physical growth but also significantly impairs cognitive, language, socio-emotional, and motor development. Stunted toddlers are more likely to experience developmental delays because prolonged nutritional deficiencies can disrupt the formation and connection of neurons in the brain [15]. Additionally, a study by Landsford found that toddlers with poor nutritional status are three times more likely to experience developmental delays compared to toddlers with normal nutritional status. These results reinforce the evidence that nutritional status and stunting are strongly associated with a toddler's overall development[16].

The fact that only 44.2% of toddlers demonstrated development appropriate to their age, while the rest showed questionable or deviant development, indicates a serious need to address stunting not only from the nutritional aspect but also in terms of stimulation and toddler development. Questionable development may serve as an early indicator of more severe delays if left unaddressed. Therefore, this study implies the importance of a holistic approach in managing stunting by integrating regular developmental monitoring into community-based programs such as *Posyandu* and basic health services, as well as actively involving parents in providing age-appropriate stimulation.

The developmental status of toddlers in this study is influenced by a combination of factors, including nutritional status, the quality of stimulation received from parents, and the physical and social environment in which the toddler grows[17]. It is also assumed that toddlers categorized as having questionable or deviant development may face limitations in nutritional intake, a lack of cognitive and emotional stimulation, or insufficient access to health services and early toddlerhood education. Moreover, the presence of stunting as an underlying condition is believed to be a major risk factor affecting the quality of toddler development[18]. Therefore, a comprehensive intervention approach is necessary one that includes nutritional improvement, parenting education, and strengthened roles for health workers and community health volunteers (*kaders*) in supporting early toddlerhood development.

1.2 Bivariat Analysis

Table 3. *Relationship Between Parental Stimulation and Toddler Development Status*

Parental Stimulation	Development of Stunted Toddlers				*P*
	appropriate	questionable	deviant	Total	
	n (%)	n (%)	n (%)	n (%)	
Good	34	23	4	61	0.000
Poor	8	14	12	34	

The analysis of the relationship between parental stimulation and the development of stunted toddlers showed that among the 61 parents who provided good stimulation, the majority of their toddlers experienced appropriate development (34 toddlers or 35.8%), while only 4 toddlers (4.2%) exhibited deviant development. Conversely, among the 34 parents who provided poor stimulation, only 8 toddlers (8.4%) showed appropriate development, while 12 toddlers (12.6%) displayed deviant development. The hypothesis test using the Chi-Square method resulted in a p-value of 0.000, which is significantly

lower than the standard significance level of 0.05. This indicates that there is a statistically significant relationship between parental stimulation and the development of stunted toddlers. In addition, the odds ratio (OR) was calculated at 4.9, meaning that toddlers whose parents provided good stimulation were approximately 4.9 times more likely to achieve appropriate developmental outcomes compared to those who received poor stimulation.

These findings align with a study by Bian, which stated that stimulation within the family environment, particularly from parents, is a dominant factor influencing the development of toddlers, including those experiencing stunting[19]. Similarly, research from the World Health Organization emphasized that early stimulation interventions consistently provided by parents can improve cognitive and motor development, even in toddlers with poor nutritional status. The present study is also supported by research from Ginsburg, which found that toddlers who received low levels of stimulation had a threefold increased risk of developmental delays compared to those who received adequate stimulation[20].

These findings demonstrate that the role of parents is not only crucial in fulfilling a toddler's nutritional needs but also in providing stimulation that supports holistic growth and development. Toddlers who receive insufficient stimulation tend to fall into the questionable or deviant development categories, which, in the long term, may impact their intelligence, social skills, and readiness to learn. The implications of these results highlight the need for intervention programs that do not only focus on restoring nutritional status in stunted toddlers, but also emphasize parenting skills and early stimulation. Community-based health services such as *Posyandu* and *Puskesmas* can serve as the front line in educating parents about the importance of stimulation and offering simple yet effective methods to support toddler development.

The significant relationship between parental stimulation and toddler development is influenced by the quality of interactions within the home environment, including the time spent with the toddler, the types of games or activities conducted, and the parents' ability to respond to the toddler's emotional and cognitive needs [21]. The researcher also believes that parents who have greater knowledge and awareness of the importance of stimulation tend to be more active and responsive in parenting, which in turn affects the quality of toddler development even among toddlers experiencing stunting. This assumption also includes the role of external factors such as education, economic status, and access to information, which can influence parental behavior in providing appropriate stimulation to their toddlers.

4. CONCLUSIONS

This study confirms a significant relationship between parental stimulation behavior and the development of stunted toddlers in the working area of Lembang Health Center, West Bandung Regency, in 2025. Out of 95 respondents, 61 parents (64.2%) provided good stimulation, with 34 toddlers (35.8%) demonstrating appropriate development. In contrast, among the 34 parents (35.8%) who provided poor stimulation, only 8 toddlers (8.4%) showed appropriate development, and 12 toddlers (12.6%) exhibited deviant development. The Chi-Square test resulted in a p-value of 0.000 with an odds ratio (OR) of 4.9, indicating that toddlers who received good stimulation were 4.9 times more likely to achieve age-appropriate development compared to those who received poor stimulation. These findings emphasize that parental stimulation plays a crucial role in supporting the growth and development of stunted toddlers, alongside nutritional interventions. Therefore, efforts to address stunting should also include education on parenting and early childhood stimulation. To further strengthen this evidence, follow-up research is recommended using a longitudinal design to observe the long-term effects of stimulation on the development of stunted toddlers, so that the results can serve as a foundation for developing more comprehensive, family- and community-based intervention strategies..

ACKNOWLEDGEMENTS

The author would like to express sincere gratitude to the Rajawali Institute of Health Sciences, especially the Faculty of Midwifery, for the continuous support, guidance, and facilities provided throughout the academic journey and during the completion of this research. Appreciation is also extended to the Parongpong Community Health Center and all parties in Cihanjuang Village for granting permission, providing opportunities, and offering valuable assistance during the data collection process. Special thanks are given to the respondents who willingly participated in this study and contributed their time and insights.

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