

The Impact of Nutrition Education Intervention on Parental Knowledge to Prevent Child Stunting

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ABSTRACT

Stunting remains a significant health problem among children worldwide. Stunting has an impact on children's physical and cognitive development; if it is not addressed in the earliest stage, it can lead to decreased national productivity and economic growth. Whilst parents play a crucial role in preventing stunting in children, ensuring they have adequate knowledge is essential. This study aimed to determine the effect of educational intervention on the level of knowledge among parents in preventing child stunting. This is a pre-experimental study using a pretest and posttest design. This study involved a sample of 93 respondent in an area in the Bali area. The educational intervention involving a single session of health education focused on increasing knowledge about childhood stunting. Pre-test dan post-test was conducted before and after the intervention, and the results were categorized into good, simply and less. Pre-test and post-test data was analysed using a paired t-test. The results showed a significant increase in the percentage of parents with good knowledge from 11.8% in the pre-test to 30.1% in the post-test (p -value < 0.001). This finding showed the effectiveness of educational interventions to enhance parental knowledge, which might increase their participation in preventing the risk of child stunting.

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Keywords:

Children; Educational Intervention; Nutritional Knowledge; Stunting

Received:

2025-03-13

Accepted:

2025-04-09

Online:

2025-04-10

1. Introduction

Stunting is one of the serious health problems that occur in society, especially in children. Stunting is a condition of growth failure that occurs in children, especially in the first thousand days of life, which is generally caused by chronic malnutrition, repeated infections, and inadequate stimulation [1-4]. Globally, the *World Health Organization* (WHO) estimates the prevalence of stunting in children under the age of five (under five) in 2022 to be around 148 million children, with almost two in five children stunted [1,5]. Stunting is also a serious health problem in Indonesia, where Indonesia is the country with the third highest stunting status in the Asian region [2,4,6]. According to the Ministry of Health of the Republic of Indonesia (Kemenkes RI), the prevalence of stunting in Indonesia was 30.8% in 2018 [1,2,4,7]. The impact of stunting on children can cause *irreversible* physical developmental disorders, vulnerability to disease, cognitive decline and decreased productivity. Children who are stunted tend to

have lower levels of education and income as adults, thus impacting individual economic risk and impacting the country's economic growth [1,2,4,6]. To overcome this, the government has launched several programs to overcome the problem of stunting. Some of these programs include: the provision of blood supplements for adolescent girls, free nutritious food programs, pregnancy check-ups and provision of additional food for pregnant women. This program is running well, where the stunting prevalence rate has dropped by 9.3% (21.5%) by 2023 [1,2,4,7]. However, this prevalence rate is still considered high and is above the standard set by WHO [1,8]. One of the main factors contributing to the high stunting rate is the low level of parental knowledge related to stunting. Increasing awareness of parents' knowledge related to stunting is an important step in reducing the prevalence of stunting. A good level of knowledge can increase compliance, which greatly affects the success and prevention of stunting risk. Some studies show that the level of knowledge will affect the level of compliance [1,2,4,6-9]. Therefore, educational interventions in increasing knowledge related to stunting need to be carried out considering the high prevalence of stunting and still not meeting standards.

2. Methods

This research is a *pre-experimental* design with a *one-group pretest-posttest* model. Data collection was carried out in November 2024. The study population was mothers who had toddlers in an area in the Bali area, totaling 93 respondents. The sampling technique used total sampling where the selection of this technique was based on the need to ensure that all population characteristics were represented thoroughly. The research sample was all respondents who met the criteria for this study. The inclusion criteria in the study was mothers who were present at the implementation of the study, and mothers who were willing to fill out the questionnaire. While the exclusion criteria was mothers who were absent/resigned during the implementation of the study. *Written informed consent* was obtained from the respondents. Data collection was carried out using a questionnaire. The questionnaire consists of two parts including: respondent characteristics data and nutritional knowledge questions (macronutrients and essential micronutrients) related to stunting. Data were analyzed using the *Statistical Product and Service Solutions* (SPSS) version 26 program (IBM Corp., Armonk, NY, USA). Data were displayed as frequency (n) and percentage (%). The level of knowledge was interpreted in several categories: poor category (percentage $\leq 55\%$), moderate category (percentage 56%-75%) and good category (percentage $> 75\%$). Ethics approval was obtained from the Ethical Committee University of Surabaya, Indonesia (No.: 357/KE/III/2024).

3. Results and Discussion

In total, 93 mothers were willing to participate and be involved in this study. The majority of respondents were aged 26 to 35 years (72%). A total of 39.8% of respondents had a high school education and most respondents were housewives (84.9%) which can be seen in **Table 1**.

Table 1. Respondent Characteristics Data

Characteristics	Frequency (n)	Percentage (%)
Age	17-25 years old	18
	26-35 years old	67
	36-45 years old	8

Education	SD	1	1.1
	SMP	4	4.3
	HIGH	37	39.8
	SCHOOL	51	54.8
	Higher Education		
Jobs	Housewife	79	84.9
	Self-employed		
	PNS	2	2.2
	Private	5	5.4
	Employee	7	7.5

The results of this study are similar to other studies. A *cross-sectional* study by Dhirah *et al.* (2024) on 130 respondent mothers showed that the majority of respondents were aged 26 to 35 years with high school education and most were housewives [8]. Generally, the comparison between age groups can be related to the risk of stunting in children which can be seen from various aspects such as: parenting, level of knowledge and compliance. Respondents aged 17-25 years are generally still in the early stages of motherhood, so they are more vulnerable to lack of information, experience in caring for and fulfilling child nutrition is more limited, while those aged 26-35 years generally have more experience in caring for children, and tend to be more exposed to education related to stunting and child nutrition. Although the difference in age does not necessarily indicate that older people have a better understanding than those below them, it depends on the individual himself [4,7,10].

Table 2. Data on Respondents Knowledge Level

Knowledge Level	Pretest		Posttest		Sig. (p)
	n	%	n	%	
Less	45	48.4	9	9.7	0.000
Simply	37	39.8	56	60.2	
Good	11	11.8	28	30.1	

The results of the respondents knowledge level showed that the majority of respondents had insufficient knowledge related to stunting (48.4%) in the *pretest* data (Table 2). As many as 39.8% had sufficient knowledge and only 11.8% had good knowledge. In the *posttest* data results, there was a change in the percentage value of the respondents knowledge level. Respondents who had poor knowledge decreased to 9.7%, on the other hand respondents who had sufficient knowledge increased by 20.4% and respondents who had good knowledge increased from 11.8% to 30.1%. The results of *pretest* and *posttest* data on respondents knowledge level showed significant results ($p < 0.001$) where there was a significant difference between the *pretest* and *posttest* respondents knowledge level. The results of this study are similar to other studies. In *cross-sectional* research by Utami *et al.* (2024) on 87 respondent mothers showed that there was a significant difference ($p = 0.002$) in respondents stunting knowledge before and after the intervention [1]. Another study also showed a significant difference in stunting knowledge before and after the intervention [11,12].

The level of parental knowledge has a crucial role in efforts to prevent and overcome the risk of stunting in children, especially in the first thousand days of a child's life [1,13]. Parents with a good level of knowledge tend to better understand the importance of proper parenting, balanced nutrition both macronutrients and

micronutrients, and the utilization of continuous health services in an effort to support optimal child growth [3,14,15,16]. In addition, parents with better knowledge have a good level of compliance in utilizing health services such as providing additional nutritional supplements, routine examinations and immunizations. This good level of compliance plays a role in detecting the risk of stunting as early as possible, allowing for immediate intervention [8,10,11]. Conversely, a low level of knowledge may increase the risk of stunting. Ignorance can also lead to a lack of awareness in prevention and control [17]. Thus, efforts to increase parents' knowledge related to stunting through appropriate interventions are one of the main strategies in reducing the percentage of stunting incidence. Community-based educational intervention programs and the use of appropriate learning media can be an effective strategy in increasing parents' awareness and understanding of the importance of the risk of stunting in children [5,16]. Collaboration between stakeholders, health workers and academics is needed to ensure that interventions run massively and sustainably so that they can reduce the prevalence of stunting in Indonesia.

There are several limitations that need to be considered in this study: first, the research design used was pre-experimental with a one-group *pretest-posttest* approach, so there was no control group to compare the effectiveness of the intervention in more depth. Second, this study only involved respondents in one particular area, so the results may not necessarily be generalized to a wider population. Third, the duration of the intervention was relatively short, so it was not possible to measure the long-term impact of education on changes in parental behavior in stunting prevention. Therefore, further research with a more robust experimental design and wider area coverage is needed to confirm these findings.

4. Conclusion

This study showed that nutrition educational intervention has a significant effect on increasing the level of knowledge of mothers regarding the prevention of stunting in children under five (good level of knowledge increased from 11.8% to 30.1% after the intervention; $p < 0.001$). These findings indicated that nutrition education can be seen as an effective strategy to increase parents' awareness and understanding of the importance of stunting prevention, which in turn can help reducing the incidence of child stunting. Widening the implementation of educational intervention programs should be recommended, while using more interactive and sustainable methods for optimal impact. Further research is needed to evaluate the effectiveness of this program in the long term and to identify other factors contributing to the success of nutrition education for parents.

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