OMNI HEALTH JOURNAL
e-ISSN: 3047-6216
Volume 3 Issue 2, 2026

Original Research

Effect Module Based Education on Mothers' Knowledge of Stunting Prevention: A Pre - Post Study

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Article Info

Article History:
Received: 2025-07-08
Revised: 2026-04-09
Accepted: 2026-04-10

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DOI: 10.65277/ohj.v3i2.122

Abstract

Background: Stunting is a chronic growth disorder caused by long-term inadequate nutritional intake, particularly during the first 1,000 days of life. This condition does not occur at birth but develops over time and becomes evident as impaired linear growth in children under five years of age.
Objective: This study aimed to assess mothers' knowledge regarding stunting prevention before and after the provision of module-based education in Sanrobone Village, Takalar Regency.
Methods: This study used a quantitative descriptive design with a pre–post approach. The population and sample consisted of 62 pregnant women selected using total sampling. Data were collected using a structured questionnaire administered before and after the educational intervention.
Results: Before the intervention, 17 respondents (27.4%) had good knowledge, while 45 respondents (72.6%) had poor knowledge. After the intervention, the proportion of respondents with good knowledge increased to 37 (59.6%), while those with poor knowledge decreased to 25 (40.4%). These findings indicate a clear improvement in maternal knowledge following the educational intervention.
Conclusion: Module-based education effectively improves mothers' knowledge regarding stunting prevention. Strengthening educational interventions at the community level is essential to support early prevention efforts and improve child health outcomes.

Keywords: Stunting prevention; maternal knowledge; educational module; health education; pregnant women

How to Cite:
Sah Puteri, S. K., Sumarmi, Nuryana, R., Mantasia, Hermadin, & Hartati. (2026). Effect Module Based Education on Mothers' Knowledge of Stunting Prevention: A Pre - Post Study. *Omni Health Journal*, *3*(2), 31-35. https://doi.org/10.65277/ohj.v3i2.122

Introduction

Stunting is a chronic nutritional problem that affects children under five years of age and is characterized by impaired growth and development. This condition occurs due to long-term inadequate nutritional intake, particularly during the first 1,000 days of life, and is identified by a height-for-age z-score below -2 standard deviations based on the WHO-MGRS (Multicenter Growth Reference Study) standard (Ginting et al., 2022). Stunting does not occur suddenly at birth but develops over time and becomes more visible as the child grows, especially after the age of two years.

Stunting remains a major global public health problem. In 2017, approximately 22.2% of children under five worldwide, or about 150.8 million children, were affected by stunting, with the highest burden found in Asia and Africa (Fitriana et al., 2021). In Asia, the prevalence is highest in South Asia and lowest in Central Asia. Based on World Health Organization (WHO) data, Indonesia has one of the highest stunting prevalence rates in Southeast Asia, with an average prevalence of 36.4% between 2005 and 2017 (Fitriana et al., 2021).

Indonesia also faces a triple burden of malnutrition, including stunting, wasting, and obesity among children under five years of age. According to national data, the prevalence of stunting has shown a gradual decline but remains above the national target. Although there was a decrease in prevalence in recent years, the reduction rate is still insufficient to meet the national target set by the Ministry of Health, which aims to reduce stunting to 14% by 2024 (Masta Melati Hutahaean et al., 2021). In addition, the coverage of exclusive breastfeeding in Indonesia has fluctuated and has not yet reached the national target of 80%, which is an important factor in preventing stunting.

The Indonesian government has made stunting prevention a national priority, in line with the Sustainable Development Goals (SDGs), particularly Goal 2, which focuses on ending malnutrition and improving nutritional status. Various strategies, including the National Strategy for the Acceleration of Stunting Prevention (Stranas Stunting), have been implemented to address this issue (Fitriahadi et al., 2023). Based on Regulation Number 72 of 2021, efforts to reduce stunting prevalence continue to be strengthened through multisectoral interventions.

Despite these efforts, stunting prevalence in Indonesia remains a significant challenge. Data from the Indonesian Nutrition Status Survey (SSGI) showed a decrease from 24.4% in 2021 to 21.6% in 2022; however, the annual reduction rate is still below the expected target, making it difficult to achieve the national goal within the planned timeframe (Stuart et al., 2024). This indicates that existing interventions need to be further optimized, particularly at the community and household levels.

However, although various national programs have been implemented, gaps remain in community-level understanding and preventive practices related to stunting. Limited knowledge and awareness among mothers regarding nutrition, child care, and early prevention strategies may contribute to the persistence of stunting cases. Therefore, this study aims to analyze factors related to stunting and to assess maternal knowledge and practices in preventing stunting in children under five years of age.

Methods

Study Design

This study used a quantitative descriptive design with a pre–post intervention approach. The study aimed to assess changes in maternal knowledge regarding stunting prevention before and after the provision of educational intervention. Primary data were collected directly from respondents, while supporting secondary data were obtained from relevant health records at the Sanrobone Health Center.

Samples

The total population consisted of 62 pregnant women in the working area of the Sanrobone Health Center, Takalar Regency. The sample size was 62 respondents, and all members of the population were included using a total sampling technique.

Instruments

The instruments used in this study were an educational module and a structured questionnaire. The educational module was developed by the researchers based on established theoretical concepts related to stunting prevention, including maternal nutrition, exclusive breastfeeding, and early child care practices. The questionnaire was used to measure respondents' knowledge before and after the intervention. It consisted of structured questions covering key aspects of stunting prevention. Prior to data collection, the questionnaire was tested for validity and reliability. Validity testing was conducted using item-total correlation, and all items were declared valid. Reliability testing using Cronbach's alpha showed that the instrument was reliable for use in this study.

Data Collection

Data collection was conducted in the working area of the Sanrobone Health Center, Takalar Regency. All respondents first completed a pre-test questionnaire to assess baseline knowledge. Subsequently, they received education through the module-based intervention. After the educational session, respondents completed a post-test questionnaire to evaluate changes in knowledge levels.

Data Analysis

Data were analyzed using quantitative descriptive analysis. The results were presented in the form of frequency distributions and percentages to describe respondents' knowledge levels before and after the intervention. The comparison of pre-test and post-test results was used to identify changes in knowledge following the educational intervention.

Ethical Considerations

Ethical approval for this study was obtained from the Tanawali Takalar Stikes Ethics Institute. Prior to data collection, respondents were provided with an informed consent form, and participation was voluntary. Respondents were assured of the confidentiality and anonymity of their data throughout the research process.

Results

Table 1 shows that the majority of respondents were aged 20–35 years (83.8%), indicating that most participants were within the productive reproductive age group. Based on education level, most respondents had a senior high school background (40.3%), while only a small proportion had higher education (3.2%). In terms of occupation, the vast majority were housewives (93.5%), indicating limited workforce participation among respondents.

Table 1. Distribution of Respondents Based on Characteristics
Sanrobone Health Center, Takalar Regency (n = 62)

Variable	Category	n	%
Age (years)	17–20	5	8.0
	20–35	52	83.8
	35–42	5	8.0
Education	Elementary School	17	27.4
	Junior High School	18	29.0
	Senior High School	25	40.3
	Bachelor	2	3.2
Occupation	Civil Service Police (Satpol PP)	1	1.6
	Housewife	58	93.5
	Trader	3	4.8
	Honorary Worker	1	1.6
Total		62	100

Source: SPSS Processed Data

Table 2 shows a clear improvement in maternal knowledge after the educational intervention. Before receiving the module, the majority of respondents (72.6%) had poor knowledge, while only 27.4% had good knowledge. After the intervention, the proportion of respondents with good knowledge increased substantially to 59.6%, while those with poor knowledge decreased to 40.4%. This finding indicates that the educational module was effective in improving mothers' understanding of stunting prevention.

Table 2 Distribution by Respondent Mother's Knowledge Before and During
June 2024, the workplace is in Sanrobone, Takalar Regency

Knowledge	Previous(s)	%	After(s)	%
Good	17	27,4	37	59,6
Less	45	72,5	25	40,3
Total	62	100	62	100

Source: SPSS Processed Data

Discussion

This study aimed to evaluate the effect of educational modules on maternal knowledge regarding stunting prevention. The findings indicate a substantial improvement in knowledge after the intervention, as shown by the increase in the proportion of respondents with good knowledge and the decrease in those with poor knowledge. This suggests that educational interventions, particularly module-based education, are effective in enhancing maternal understanding of stunting prevention.

The improvement in knowledge can be explained by the role of structured educational materials that are tailored to the needs of the target population. Modules that use simple language, visual aids, and practical examples are easier to understand, especially for mothers with lower educational backgrounds. This is consistent with previous studies stating that health education interventions can significantly increase awareness and knowledge related to stunting prevention. For instance, findings from PKM May (2021) and Sundari (2022) emphasize that education plays a key role in improving awareness and preventive behavior, particularly among mothers with limited access to information.

Respondent characteristics also provide important context for interpreting the findings. Most respondents were within the productive age range (20–35 years), had a high school education level, and were predominantly housewives. These characteristics suggest that although respondents are in a biologically optimal age group, their level of knowledge may still be limited due to educational and social factors. Lower educational attainment, particularly among those with elementary and junior high school backgrounds, may contribute to limited understanding prior to the intervention. This aligns with Lestari (2015) cited in (Yusmaeni Gulo, 2019), which states that education influences a person's ability to receive and process information.

In addition, occupation may influence access to information. The majority of respondents were housewives, which may limit their exposure to health information outside the home environment. However, this also highlights the importance of community-based education programs, as housewives are more likely to benefit from accessible and context-specific health education interventions.

The findings of this study also indicate that knowledge improvement is not only influenced by the intervention itself but also by the learning environment. During the study, some respondents initially showed low attention when completing the questionnaire. However, after receiving counseling supported by educational modules, their engagement and understanding improved. This suggests that combining verbal counseling with written educational materials can enhance learning effectiveness and information retention. Repeated exposure to health education has also been shown to strengthen understanding and promote long-term behavioral change (Putri et al., 2022).

Although this study demonstrates positive results, several limitations should be acknowledged. First, the study used a relatively small sample size (n = 62) from a single health center, which limits the generalizability of the findings. Second, the study applied a descriptive approach without advanced statistical testing, so the magnitude of the intervention effect cannot be measured statistically. Third, the use of self-reported questionnaires may introduce response bias.

Despite these limitations, this study provides important evidence that module-based education is an effective strategy to improve maternal knowledge regarding stunting prevention. Strengthening such interventions at the community level may contribute to reducing the prevalence of stunting in Indonesia.

Conclusion

This study shows that module-based education effectively improves pregnant women's knowledge regarding stunting prevention. Before the intervention, most respondents had low levels of knowledge, while after the intervention, there was a clear increase in the proportion of respondents with good knowledge. These findings indicate that educational interventions, particularly those using structured modules, play an important role in enhancing maternal understanding and awareness of stunting prevention. Improving maternal knowledge is essential for supporting early prevention efforts and promoting better child health outcomes. Future research is recommended to include a larger sample size, additional variables, and more comprehensive analytical methods to further examine factors influencing maternal knowledge and the long-term impact of educational interventions.

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