

Preparing Stunting-Free Families: A Family-Centered Strategy for Preventing Childhood Stunting

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Article Info

Article history:

Received April 30, 2026

Revised May 13, 2026

Accepted May 21, 2026

Keywords:

Stunting Prevention, Family Preparedness, Health Education

ABSTRACT

Background: Indonesia remains one of the countries with the highest prevalence of childhood stunting. According to the Indonesian Ministry of Health, the national stunting prevalence declined from 24.4% in 2021 to approximately 21.5% in 2024, reflecting progress in prevention efforts. Despite this improvement, the prevalence remains above the threshold recommended by the World Health Organization (WHO), which considers a stunting prevalence below 20% as the target for effective public health control. These findings highlight the need for sustained and comprehensive interventions to accelerate stunting reduction in Indonesia. Situation analysis: Stunting remains a major public health concern in Indonesia, with a national prevalence of 21.5%, still above the WHO target of <20%. In Central Jakarta, Johar Baru is one of the priority areas for stunting reduction, with a reported 0.36% increase in identified stunting cases following improved child growth monitoring. In addition, 46 children under five at risk of stunting have been identified in Galur Village, within the service area of Johar Baru Community Health Center (Puskesmas Johar Baru). These conditions highlight the need for community-based interventions that strengthen family preparedness, improve nutrition knowledge, and promote healthy practices from the preconception period through the first 1,000 days of life to prevent stunting. Problem: Stunting remains a significant public health concern in Indonesia and requires urgent attention, as its high prevalence is strongly associated with inadequate knowledge and unhealthy behavioral practices among families. Solution: Health education is an effective strategy to improve individuals' knowledge and skills with the aim of promoting positive behavioral change and empowering them to become more independent in achieving and maintaining a healthy lifestyle. Results: The community education program on preparing stunting-free families effectively improved participants' knowledge. Among the 19 respondents who completed both the pre-test and post-test, the mean knowledge score increased from 5.4 before the intervention to 9.6 after the intervention, with the minimum score increasing from 0 to 8 while the maximum score remained at 10. These findings indicate that health education is an effective strategy for enhancing community knowledge and supporting family preparedness for stunting prevention. Conclusion: The community education program on preparing stunting-free families improved the knowledge and awareness of pregnant women and women of reproductive age regarding the importance of family preparedness for stunting prevention.

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INTRODUCTION

Stunting is a condition of impaired linear growth in children under five years of age caused by chronic undernutrition and recurrent infections, resulting in a height-for-age that falls below minus two standard deviations of the WHO Child Growth Standards. The process of growth faltering often begins during fetal development and continues throughout the first 1,000 days of life, making this period the most critical window for nutritional interventions (World Health Organization [WHO], 2023; UNICEF, WHO, & World Bank Group, 2025).

Stunting remains one of the most significant public health challenges worldwide because its consequences extend beyond impaired physical growth. Children affected by stunting experience delayed cognitive development, poorer educational achievement, reduced economic productivity during adulthood, and an increased risk of non-communicable diseases later in life. Consequently, stunting contributes to intergenerational poverty and imposes substantial social and economic burdens on countries, thereby hindering sustainable human capital development (Victora et al., 2021; WHO, 2023).

Despite continuous efforts to reduce child malnutrition, Indonesia remains among the countries with a considerable burden of stunting. According to the Joint Child Malnutrition Estimates released by WHO, UNICEF, and the World Bank, global progress in reducing stunting remains insufficient to achieve the Sustainable Development Goal (SDG) target by 2030, highlighting the need for stronger multisectoral interventions, particularly in low- and middle-income countries (UNICEF, WHO, & World Bank Group, 2025).

The etiology of stunting is multifactorial and involves interactions among maternal, child, environmental, and socioeconomic factors. Maternal undernutrition before and during pregnancy, maternal anemia, inadequate antenatal care (ANC), low birth weight (LBW), fetal growth restriction, recurrent childhood infections, poor sanitation, food insecurity, and poverty have consistently been identified as major determinants of childhood stunting. Among these factors, maternal nutritional status during pregnancy plays a particularly important role because inadequate intake of energy, protein, and essential micronutrients may impair placental development and fetal growth, thereby increasing the risk of low birth weight and subsequent stunting (Victora et al., 2021; WHO, 2023).

Improving maternal nutrition is therefore considered one of the most effective strategies for preventing stunting. Pregnancy substantially increases physiological requirements for energy and nutrients to support fetal growth, placental development, maternal tissue expansion, and metabolic adaptations. Consequently, ensuring adequate maternal dietary intake, micronutrient supplementation, and quality antenatal care throughout pregnancy is essential for optimizing fetal growth and reducing adverse birth outcomes associated with childhood stunting (WHO, 2023).

Recognizing the importance of improving nutritional status, the Government of Indonesia introduced the Free Nutritious Meals Program (Program Makan Bergizi Gratis) as one of its national priority programs following the inauguration of President Prabowo Subianto in 2024. The program is being implemented progressively by prioritizing schoolchildren, Islamic boarding school students, pregnant women, breastfeeding mothers, toddlers, and other nutritionally vulnerable populations. The initiative aims to improve nutritional intake, strengthen food security, support local food systems, and contribute to reducing the prevalence of stunting while preparing a healthy and productive generation toward Indonesia Golden Generation 2045. However, because the program is relatively new, its long-term impact on reducing stunting prevalence still requires comprehensive evaluation.

In addition to nutrition-specific interventions, increasing maternal knowledge through community-based health education remains an essential strategy for preventing stunting. Educational interventions targeting pregnant women and women of reproductive age have been shown to improve

knowledge regarding maternal nutrition, antenatal care, breastfeeding, complementary feeding, hygiene, and parenting practices, all of which contribute to improved child growth and nutritional outcomes. Empowering women before and during pregnancy is therefore considered one of the most cost-effective investments for improving maternal and child health (Victora et al., 2021; WHO, 2023).

Based on this rationale, this community engagement program aimed to provide health education on preparing stunting-free families among pregnant women and women of reproductive age in RW 07, Tanah Tinggi Village, Johar Baru District, Central Jakarta, Indonesia, through interactive lectures, group discussions, and question-and-answer sessions. Furthermore, participants' knowledge was assessed before and after the educational intervention to evaluate the effectiveness of the program in improving family preparedness for stunting prevention.

IMPLEMENTATION METHOD

This community engagement program was implemented in three phases: preparation, implementation, and evaluation. The preparation phase began on June 24, 2025, and included preliminary data collection, stakeholder coordination, proposal development, scheduling, and preparation of educational materials and learning media. These activities were conducted to ensure that the intervention addressed the needs of the target community and was implemented efficiently.

The implementation phase was conducted on July 14, 2025, from 09:00 to 11:00 a.m. at the Community Interaction Hall of RW 007, Tanah Tinggi Village, Johar Baru District, Central Jakarta, Indonesia. The target participants consisted of 50 individuals, including pregnant women, women of reproductive age, and couples of reproductive age. The program began with participant registration, an introduction to the objectives of the activity, and the administration of a pre-test using Google Forms to assess participants' baseline knowledge regarding family preparedness for stunting prevention.

The educational session focused on preparing stunting-free families and was delivered through interactive lectures, group discussions, and question-and-answer sessions. The educational content included maternal nutrition during pregnancy, pregnancy danger signs and risk factors, appropriate child-rearing practices, and strategies for preventing stunting from the preconception period through the first 1,000 days of life. The session was supported by multimedia presentations using PowerPoint, a laptop, an LCD projector, a sound system, and printed leaflets to reinforce key messages and provide participants with educational materials for future reference.

Following the educational session, participants completed a post-test using Google Forms to evaluate changes in their knowledge after the intervention. The pre-test and post-test results were compared to assess the effectiveness of the educational program in improving participants' understanding of family preparedness for stunting prevention. The program concluded with participant appreciation through a door prize distribution and a closing session.

The implementation adopted a participatory and interactive educational approach, encouraging participants to actively engage in discussions, ask questions, and share their experiences. This approach was intended not only to increase participants' knowledge but also to strengthen their awareness and readiness to implement appropriate practices for preventing stunting within their families.

RESULTS AND DISCUSSION

A total of 50 participants attended the community engagement program; however, only 19 participants completed both the pre-test and post-test questionnaires and were therefore included in the evaluation of knowledge improvement. The educational session was delivered by two undergraduate midwifery students under the supervision of a faculty member. Prior to the presentation, the facilitators conducted an interactive brainstorming session to explore participants' baseline understanding of stunting prevention and to encourage active participation throughout the program.

The educational materials covered the prevalence and definition of stunting, its causes, characteristics, short- and long-term consequences, prevention strategies, maternal nutrition during pregnancy, pregnancy danger signs, and maternal risk factors associated with stunting. The session was delivered through interactive lectures, discussions, and question-and-answer activities. Participants actively engaged in the discussion by asking questions related to maternal nutrition, pregnancy care, and strategies for preventing stunting within the family, indicating a high level of interest in the topic.

Participants completed a five-item pre-test before the educational intervention and a five-item post-test immediately after the session, with each questionnaire requiring approximately five minutes to complete. Comparison of the pre-test and post-test results demonstrated a substantial improvement in participants' knowledge following the intervention.



Figure 1. Presentation of material on Stunting-Free Family Preparation during community service activities

Figure 1 presents the educational session on Preparing Stunting-Free Families conducted during the community engagement program. The health education was delivered by two undergraduate midwifery students under faculty supervision using interactive lectures, brainstorming, and question-and-answer sessions. The educational materials included the epidemiology of stunting, definitions, determinants, clinical characteristics, consequences, prevention strategies, maternal nutrition, pregnancy danger signs, and maternal risk factors contributing to childhood stunting. Active participant involvement throughout the session reflected a participatory learning process that facilitated knowledge acquisition and strengthened awareness regarding family preparedness for stunting prevention.

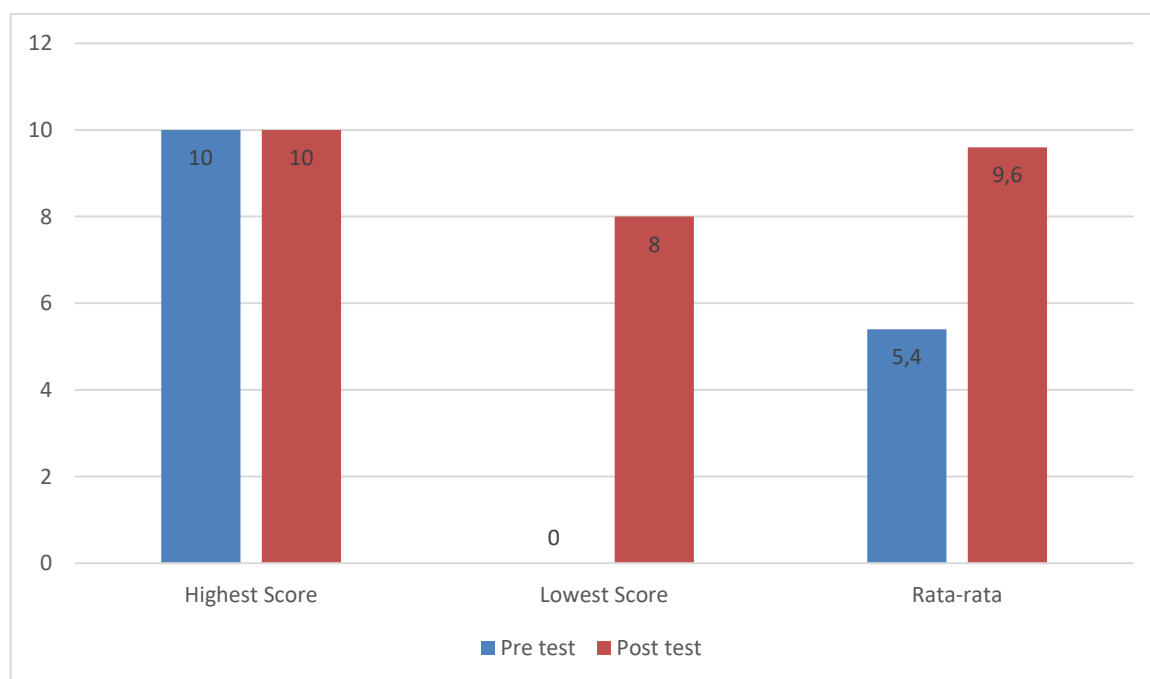


Figure 2. Comparison of mean knowledge scores before and after the educational intervention on preparing stunting-free families.

Figure 2 demonstrates a substantial improvement in participants' knowledge following the health education program on preparing stunting-free families. Before the intervention, participants achieved a mean knowledge score of 5.4, with scores ranging from 0 to 10. After participating in the educational sessions, the mean score increased to 9.6, while the minimum score rose markedly from 0 to 8, indicating that even participants with the lowest baseline knowledge experienced considerable improvements. Although the maximum score remained unchanged at 10, the significant increase in the average and minimum scores indicates that the educational intervention effectively enhanced participants' understanding while reducing disparities in knowledge among participants. These findings suggest that community-based health education is an effective strategy for strengthening maternal knowledge regarding stunting prevention.

The improvement in knowledge observed in this community engagement program is consistent with previous studies demonstrating that structured health education significantly increases maternal understanding of nutrition, pregnancy care, infant feeding, and child growth monitoring. Maternal knowledge is recognized as one of the strongest predictors of preventive health behaviors because women with adequate health literacy are more likely to practice balanced nutrition during pregnancy, attend regular antenatal care (ANC), initiate early breastfeeding, provide exclusive breastfeeding, introduce appropriate complementary feeding, and routinely monitor child growth. Consequently, improving maternal knowledge represents one of the most cost-effective interventions for reducing childhood stunting (Desiyanti & Ardiningtyas, 2024; Putri et al., 2024; World Health Organization [WHO], 2023).

One notable finding in this program is the remarkable increase in the minimum knowledge score from 0 to 8. This result indicates that participants who initially had very limited understanding of stunting prevention benefited substantially from the educational activities. Such findings are particularly important because health inequalities often arise from disparities in access to information rather than differences in the availability of health services alone. Educational interventions that successfully improve knowledge among participants with the lowest baseline understanding may contribute to reducing inequalities in maternal health literacy within the community. Similar findings have been reported in several community-based educational programs in Indonesia, where participatory nutrition education effectively narrowed knowledge gaps among women of reproductive age and pregnant women (Hardiyanti et al., 2024; Fajar et al., 2024).

The educational intervention implemented in this program adopted an interactive learning approach consisting of brainstorming, lectures, group discussions, and question-and-answer sessions. Compared with conventional one-way health promotion methods, interactive educational strategies encourage participants to actively engage in the learning process by expressing opinions, sharing personal experiences, asking questions, and discussing practical solutions to everyday problems. Active participation enables participants to process information more deeply, thereby improving comprehension and long-term knowledge retention. Adult learning theory also suggests that experiential and participatory learning methods produce greater cognitive engagement than passive information delivery, ultimately facilitating sustainable behavioral change (WHO, 2023; UNICEF, WHO, & World Bank Group, 2025).

The effectiveness of interactive education observed in this program is consistent with findings from recent systematic reviews indicating that community-based nutrition education significantly improves maternal knowledge, dietary diversity, infant feeding practices, and child nutritional outcomes. Educational interventions delivered through participatory approaches have also been shown to strengthen mothers' confidence in implementing recommended health practices, particularly when education is integrated with local community health services and peer support activities (Tam et al., 2024; Goudet et al., 2023).

Another important finding is the increased awareness among participants regarding maternal nutrition during pregnancy, the importance of regular antenatal care, pregnancy risk factors, and the critical role of the first 1,000 days of life in preventing stunting. Scientific evidence consistently demonstrates that maternal nutritional status before conception and during pregnancy substantially influences fetal growth and subsequent child development. Nutritional deficiencies during pregnancy increase the risk of fetal growth restriction, low birth weight, preterm birth, and impaired linear growth, all of which are major risk factors for childhood stunting. Therefore, improving maternal nutritional knowledge before and during pregnancy represents a strategic investment for breaking the intergenerational cycle of malnutrition (Victora et al., 2021; WHO, 2023).

The educational sessions also emphasized the concept of preparing a "stunting-free family," highlighting that stunting prevention requires collective family responsibility rather than relying solely on mothers. Decisions regarding maternal nutrition, household food allocation, healthcare utilization, breastfeeding support, and childcare practices are often influenced by spouses and other family members. Consequently, family-centered educational interventions have been increasingly recommended because they strengthen family support systems and improve adherence to recommended maternal and child health practices. Previous studies have demonstrated that involving family members, particularly husbands, significantly increases maternal compliance with antenatal care, balanced nutrition, exclusive breastfeeding, and child growth monitoring (Fajar et al., 2024; Hardiyanti et al., 2024).

The findings of this community engagement program also support Indonesia's national strategy for accelerating stunting reduction through integrated nutrition-specific and nutrition-sensitive interventions. In addition to improving access to nutritious food through the Free Nutritious Meals Program (Program Makan Bergizi Gratis), strengthening maternal knowledge remains an essential component because increased food availability alone does not necessarily translate into improved nutritional practices. Appropriate knowledge enables families to make informed decisions regarding food choices, meal preparation, maternal dietary intake, infant feeding, hygiene, sanitation, and healthcare utilization. Therefore, educational interventions complement government nutrition programs by addressing behavioral determinants of child nutrition (Badan Gizi Nasional, 2025; WHO, 2023).

The considerable improvement in participants' knowledge observed after a relatively short educational intervention suggests that community empowerment initiatives have substantial potential for preventing stunting when implemented systematically through primary healthcare services. Integrating educational programs into antenatal care, Posyandu, community health centers (Puskesmas), and family planning services would enable continuous reinforcement of key health messages throughout pregnancy and early childhood. Repeated exposure to evidence-based health education has been shown to improve long-term retention of knowledge and facilitate sustained behavioral changes among mothers and caregivers (UNICEF et al., 2025; Goudet et al., 2023).

Despite these encouraging findings, several limitations should be acknowledged. The evaluation focused primarily on immediate improvements in knowledge following the educational intervention and therefore could not determine whether knowledge gains were maintained over time or translated into sustained behavioral changes. In addition, the study did not assess changes in maternal dietary practices, antenatal care attendance, infant feeding behaviors, or child nutritional outcomes. Since behavioral change is influenced by multiple factors including household income, food availability, cultural beliefs, family support, and healthcare accessibility, future community engagement programs should include longitudinal follow-up, behavioral assessments, home visits, and child growth monitoring to evaluate the long-term impact of educational interventions on stunting prevention (Tam et al., 2024; WHO, 2023).

Overall, this community engagement program demonstrates that interactive health education effectively improves maternal knowledge regarding family preparedness for stunting prevention. The significant improvement in knowledge scores indicates that educational interventions delivered through participatory learning methods can strengthen maternal health literacy and increase awareness regarding the importance of nutrition, antenatal care, and early-life interventions. Sustained implementation of family-centered educational programs integrated with existing maternal and child health services is expected to contribute to long-term behavioral changes and support Indonesia's national target of reducing childhood stunting while improving the quality of future human capital (Victora et al., 2021; UNICEF et al., 2025; WHO, 2023).

CONCLUSION

This community engagement program demonstrated that health education on preparing stunting-free families effectively improved the knowledge and awareness of pregnant women and women of reproductive age regarding family preparedness for stunting prevention. The increase in the mean knowledge score from 5.4 before the intervention to 9.6 after the intervention indicates that interactive educational approaches, including lectures, discussions, brainstorming, and question-and-answer sessions, are effective in enhancing participants' understanding of stunting prevention.

In addition to increasing knowledge, the program fostered participants' enthusiasm and awareness of the importance of maternal nutrition, regular antenatal care, pregnancy risk identification, and optimal childcare practices during the first 1,000 days of life. These findings suggest that community-based health education can serve as an effective strategy for strengthening family readiness to prevent stunting.

Sustained and collaborative educational programs involving healthcare providers, educational institutions, and local communities are recommended to reinforce healthy behaviors and support the national strategy for accelerating stunting reduction in Indonesia.

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