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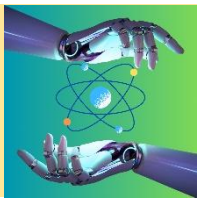

Balanced Nutrition Education for Stunting Prevention Among Mothers of Toddlers in Kandang Village, Darul Imarah

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Abstract

Stunting remains a major public health challenge in Indonesia, largely due to prolonged inadequate nutrition and limited maternal knowledge of balanced nutrition. This community service activity aimed to improve mothers' knowledge of the importance of balanced nutrition as a strategy for stunting prevention. The program was held on March 5, 2026, in Kandang Village, Darul Imarah District, Aceh Besar, and involved 20 mothers of toddlers. An interactive lecture method was applied, combined with pre-test and post-test assessments to measure participants' knowledge before and after the intervention. The results showed a significant increase in participants' knowledge, with the average score rising from 53.7% in the pre-test to 98.0% in the post-test, indicating a 44.3% improvement. This finding demonstrates that interactive lectures are effective at enhancing understanding of balanced nutrition concepts, including dietary diversity, appropriate portion sizes, and the importance of animal protein for child growth. The discussion highlights that increased maternal knowledge can positively influence attitudes and practices related to child feeding and nutrition. In conclusion, the program successfully improved mothers' knowledge and has the potential to contribute to behavioural changes that fulfil family nutritional needs. Continuous, broader implementation of similar educational interventions is recommended to support stunting-reduction efforts at the community level.

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1. Introduction

Stunting remains a major chronic nutritional problem and a key challenge in public health development in Indonesia. This condition is characterised by impaired linear growth in children due to prolonged inadequate nutrition, particularly during the first 1,000 days of life. The consequences of stunting extend beyond physical growth, affecting cognitive development, learning capacity, and future productivity, thereby influencing the overall quality of human resources [1]–[4]. Despite ongoing interventions, the prevalence of stunting in Indonesia remains relatively high, reaching approximately 21.5% in 2024, indicating that more effective and sustainable strategies are still required [5]–[7].

Economic factors do not solely drive the persistence of stunting but are also strongly associated with limited knowledge and awareness of proper nutrition among communities. Previous studies have shown that community-based health education plays a significant role in improving knowledge and awareness regarding balanced nutrition practices [8]–[10]. Therefore, promotive and preventive approaches

through educational interventions are essential strategies to reduce stunting prevalence, particularly among mothers who serve as primary caregivers [11]–[13].

Mothers play a central role in determining the type, quantity, and quality of food children consume. Insufficient maternal knowledge regarding balanced nutrition can lead to inappropriate feeding practices, ultimately increasing the risk of stunting [14]–[16]. Enhancing maternal nutritional literacy is therefore a critical step in preventing stunting at the household level, as mothers are key decision-makers in meeting children's nutritional needs [17]–[19].

Balanced nutrition education is considered an effective intervention to improve knowledge, attitudes, and practices related to healthy dietary patterns. Educational methods that actively engage participants, such as interactive lectures, facilitate two-way communication and deepen understanding of the material presented [20]–[22]. This approach has been shown to improve information retention and encourage sustainable behavioural changes in child-feeding practices [23]–[25].

Kandang Village, located in Darul Imarah District, Aceh Besar Regency, is an area where most residents work as farmers and homemakers. Preliminary observations revealed that many mothers of toddlers still lack adequate understanding of balanced nutrition principles and their practical application in daily life. This condition increases the potential risk of nutritional problems among children, including stunting, if not addressed through appropriate interventions [1], [6], [9].

Given this situation, a structured, participatory educational approach is needed to enhance maternal knowledge. Community service activities focusing on balanced nutrition education using interactive lecture methods are considered relevant and effective in improving awareness and understanding among mothers of toddlers, thereby supporting optimal child growth and development [12], [18], [24].

This community service activity aims to improve mothers' knowledge of balanced nutrition as a strategy for stunting prevention at the household level. The novelty of this study lies in the application of an interactive lecture method combined with quantitative evaluation using pre-test and post-test assessments to measure the effectiveness of the intervention. Additionally, this activity emphasises a participatory, context-specific approach in a rural community setting, which is expected to yield more relevant and sustainable behavioural changes in family nutrition practices.

2. Methodology

This study was conducted as a community service activity, using a quantitative evaluation approach to assess the effectiveness of balanced nutrition education in improving maternal knowledge. The activity took place on March 5, 2026, in Kandang Village, Darul Imarah District, Aceh Besar Regency. The target participants were mothers of toddlers, given their crucial role in shaping children's dietary patterns and nutritional status. A total of 20 participants were involved in this activity.

The implementation method used was an interactive lecture approach, which allowed two-way communication between facilitators and participants through discussions and question-and-answer sessions. This method was selected for its effectiveness in delivering health education in a simple, clear, and easily understandable manner. The educational materials included the concept of balanced nutrition, the four pillars of balanced nutrition, the importance of animal protein in preventing stunting, and examples of balanced toddler menus.

To measure the effectiveness of the intervention, a pre-test and post-test design was applied. Before the educational session, participants were asked to complete a pre-test consisting of 15 questions to assess their baseline knowledge of balanced nutrition. After the session, the same set of questions was administered as a post-test to evaluate changes in knowledge. The data were analysed using descriptive statistics, with average scores before and after the intervention used to determine the level of improvement.

The activity was carried out in three main stages: preparation, implementation, and evaluation. The preparation stage included developing educational materials, designing pre-test and post-test instruments, and coordinating with local authorities. The implementation stage involved delivering the educational session and facilitating interactive discussions. The evaluation stage focused on analysing the results of the pre-test and post-test to assess the program's effectiveness.

Overall, this methodological approach enabled the researchers to systematically evaluate the impact of balanced nutrition education on maternal knowledge, providing evidence for the effectiveness of community-based educational interventions in supporting stunting prevention efforts at the household level.

3. Result & Discussion

The implementation of the balanced nutrition education program in Kandang Village provides important insights into the effectiveness of community-based interventions in improving maternal knowledge related to stunting prevention. This activity not only served as a medium for information dissemination but also functioned as a participatory learning process that actively involved mothers of toddlers. By integrating interactive lecture methods with direct engagement, the program created an environment that facilitated better understanding and knowledge retention. The evaluation results, as reflected in the significant increase in post-test scores, indicate that the intervention successfully enhanced participants' awareness and comprehension of balanced nutrition principles. These findings highlight the crucial role of educational approaches in addressing nutritional problems at the household level and support the importance of strengthening maternal capacity as a key strategy in reducing stunting prevalence.

Figure 1. Team and Participants of the Community-Based Balanced Nutrition Education Program in Kandang Village

Figure 1 illustrates the team and participants involved in the community-based balanced nutrition education program conducted in Kandang Village. The presence of both facilitators (students and academic staff) and community members in a single setting reflects a collaborative and participatory approach to health promotion. This collaboration is essential for community service activities, as it fosters trust, enhances communication, and ensures that the target population receives the educational messages effectively. The visual representation of the team, together with participants, also highlights the program's inclusiveness, with different stakeholders actively engaging in addressing nutritional issues, particularly stunting prevention among toddlers.

Furthermore, the image demonstrates the importance of community engagement as a key factor in the success of educational interventions. The active involvement of participants indicates a positive response and willingness to participate in health-related programs. This level of participation suggests that the approach used, which was interactive and community-centred, was effective in creating a supportive learning environment. Such engagement not only facilitates knowledge transfer but also strengthens social interaction and collective awareness regarding balanced nutrition practices. Ultimately, the collaboration depicted in this figure contributes to the program's sustainability by

encouraging shared responsibility between the community and facilitators to improve family nutrition and reduce the risk of stunting.

Figure 2 shows the participants in the balanced nutrition education program receiving the educational materials provided during the activity in Kandang Village. The image reflects a high level of engagement and enthusiasm among mothers of toddlers, as evidenced by their active participation and willingness to showcase the learning materials. These materials, which include visual aids related to balanced nutrition, play an important role in facilitating understanding by making abstract concepts more concrete and easier to grasp. The involvement of both mothers and children in this session also highlights the program's inclusive nature, where knowledge transfer occurs not only at the individual level but also within the family context.

Figure 2. Participants of the balanced nutrition education program showing educational materials during the activity in Kandang Village

Moreover, the figure demonstrates the effectiveness of interactive, participatory learning approaches in community-based education. The participants' expressions and active involvement indicate that the educational session successfully fostered a positive, supportive learning environment. Such engagement is crucial in enhancing knowledge retention and encouraging behavioural change, particularly in adopting balanced nutrition practices in daily life. The distribution and use of educational materials further reinforce the learning process, as participants can revisit them after the session. Overall, this activity contributes to strengthening maternal capacity to manage family nutrition, a key factor in preventing stunting at the household level.

Figure 3 illustrates community engagement in gardening activities as part of the balanced nutrition education program in Kandang Village. This activity serves as a practical approach to reinforcing the concepts covered in the educational sessions by translating theoretical knowledge into real-world applications. Participants, particularly mothers, are actively involved in preparing planting media, organising planting areas, and cultivating local food sources. This hands-on experience not only enhances their understanding of nutritious food sources but also encourages the utilisation of home gardens as a sustainable strategy to improve household food security and nutritional intake.

Furthermore, the gardening activity reflects a participatory and empowerment-based approach in community service programs. By directly involving participants in food production processes, the program promotes self-reliance and strengthens community awareness of the importance of accessing fresh, nutritious food. This approach also supports behavioural change, as participants are more likely to adopt and maintain healthy practices when they are actively engaged in the learning process. In the context of stunting prevention, such activities are highly relevant because they address both knowledge

and practice simultaneously, enabling families to apply balanced nutrition principles by providing locally grown, nutrient-rich foods.

Figure 3. Community engagement in gardening activities as part of nutrition education for stunting prevention

Figure 4 depicts an educational activity combined with a hands-on food-preparation demonstration during the balanced nutrition education session in Kandang Village. This activity emphasises experiential learning, with participants, including mothers and children, directly involved in practical demonstrations of food processing and preparation. Such an approach helps participants better understand how to apply balanced nutrition principles in everyday life, particularly in selecting and preparing appropriate foods for toddlers. The presence of children in this session also underscores the program's inclusive nature, fostering early awareness of healthy eating habits within the family environment.

Figure 4. Educational activity and hands-on demonstration of food preparation during the balanced nutrition education session

Moreover, integrating practical demonstrations into educational sessions enhances participants' comprehension and skill development. By actively engaging in food preparation, participants are more likely to internalise the knowledge provided and apply it in real life. This method also promotes interactive communication between facilitators and participants, encouraging questions, discussions, and shared experiences. In the context of stunting prevention, such hands-on learning is particularly important, as it bridges the gap between knowledge and behaviour, enabling mothers to implement balanced nutrition practices effectively in their households.

Figure 5. Participants displaying educational materials after the completion of the balanced nutrition education session

Figure 5 presents the participants, consisting of mothers and children, displaying educational materials after completing the balanced nutrition education session in Kandang Village. The image reflects a positive outcome of the activity, as participants appear enthusiastic and actively engaged in showcasing the materials they received during the session. This indicates that the educational intervention was well-received and successfully attracted participants' interest. The inclusion of children alongside their mothers also highlights the program's family-based approach, in which knowledge transfer extends beyond individuals to influence household-level awareness and practices.

Furthermore, the display of educational materials in this figure demonstrates the effectiveness of using visual and tangible learning tools in community education. Such materials not only support participants' understanding during the session but also serve as reminders for use at home, reinforcing the information delivered. The participants' active involvement and expressions of satisfaction suggest that the program fostered a supportive and interactive learning environment. In the context of stunting prevention, this engagement is crucial, as it encourages families to adopt balanced nutrition practices, thereby contributing to improved child health and nutritional status in the long term.

Figure 6 illustrates an educational activity involving children as part of the balanced nutrition program in Kandang Village. The image shows children actively participating in an interactive learning session, holding visual educational materials and engaging with facilitators. Although the program's primary target is mothers of toddlers, including children in educational activities reflects a broader approach to health promotion that emphasises early awareness and learning. By directly involving children, the

program fosters curiosity and introduces basic concepts of healthy living in an engaging, age-appropriate manner.

Moreover, this activity highlights the importance of interactive, participatory methods for delivering educational content to younger audiences. The use of visual aids and hands-on interaction helps children better understand and retain information, while also creating a fun and supportive learning environment. Such early exposure to health and nutrition concepts can foster positive habits from a young age. In the context of stunting prevention, involving children alongside their mothers strengthens the family-based approach, ensuring that knowledge is shared across generations and supporting long-term behavioural change within the community.

Figure 6. Educational activity for children supporting balanced nutrition awareness through interactive learning in Kandang Village

Figure 7 illustrates active community involvement in supporting nutrition programs through food distribution and logistical preparation in Kandang Village. The image shows residents collaboratively organising food containers and preparing resources for distribution, reflecting strong collective participation in health-related initiatives. This activity demonstrates that community engagement extends beyond educational sessions, encompassing practical support that directly improves access to nutritious food. Such involvement indicates a sense of shared responsibility among community members in addressing nutritional challenges, particularly those related to stunting prevention.

Furthermore, the collaborative nature of this activity highlights the importance of social cohesion and cooperation in the success of community-based programs. By working together in logistical preparation and food distribution, participants strengthen community bonds while ensuring that the program's benefits reach a wider population. This approach not only enhances the effectiveness of the intervention but also promotes sustainability, as community members become actively involved in maintaining and supporting ongoing initiatives. In the context of stunting prevention, integrating educational efforts with practical support mechanisms, such as food distribution, is crucial for reinforcing balanced nutrition practices at the household level.

Figure 7. Community involvement in supporting nutrition programs through food distribution and logistical preparation in Kandang Village

The novelty of this community service article lies in its integrated and participatory approach that combines interactive nutrition education, practical demonstrations, and community-based empowerment activities within a single intervention model. Unlike previous studies that primarily focus on one-way health education or limited counselling sessions, this program incorporates multiple components, including pre-test and post-test evaluations, hands-on food preparation, local food gardening practices, child-inclusive learning, and community-supported food distribution. This comprehensive approach not only enhances knowledge but also directly facilitates behavioural change and practical implementation at the household level. Furthermore, the involvement of both mothers and children, along with the emphasis on using local resources, provides a context-specific and sustainable strategy for stunting prevention. This multi-dimensional intervention model represents an innovative contribution to community-based nutrition programs, particularly in rural settings, by bridging the gap between knowledge acquisition and real-life application.

4. Conclusion

This community-based balanced nutrition education program demonstrated significant effectiveness in improving maternal knowledge related to stunting prevention in Kandang Village. The application of an interactive lecture method combined with pre-test and post-test evaluation showed a substantial increase in participants' knowledge, indicating that educational interventions can play a crucial role in addressing nutritional problems at the household level. The integration of participatory approaches, including hands-on food preparation, local food gardening, and child-inclusive learning, further strengthened participants' understanding and encouraged the practical application of balanced nutrition principles.

Moreover, the program highlights the importance of community engagement and multi-component interventions in promoting sustainable behavioural change. The involvement of mothers, children, and the wider community helped create a supportive environment that facilitated the adoption of healthy nutritional practices. This study suggests that combining education with practical, context-based activities is more effective than conventional approaches for improving knowledge and awareness. In conclusion, this integrated community service model has strong potential to contribute to stunting reduction efforts by enhancing maternal capacity and promoting sustainable nutrition practices. Future programs are recommended to expand coverage, include long-term behavioural evaluations, and

strengthen collaboration with local stakeholders to ensure sustained impact and scalability in broader community settings.

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