



Educational Intervention on Nutritional Improvement for Pregnant Women to Prevent Stunting in Gampong Lampasi Engking, Darul Imarah District, Aceh Besar Regency, Indonesia

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Abstract

Stunting remains a significant public health problem in Indonesia, particularly in rural areas, largely due to inadequate maternal nutrition during pregnancy. This community service program aimed to improve pregnant women's knowledge and awareness of balanced nutrition and stunting prevention in Gampong Lampasi Engking, Aceh Besar. The program applied a participatory, educational approach through interactive counselling, group discussions, and demonstrations on preparing balanced meals using locally available foods. The activities involved pregnant women, community health cadres, and local stakeholders to ensure active participation and program sustainability. The results showed a notable improvement in participants' knowledge, attitudes, and skills related to maternal nutrition. Pregnant women demonstrated a better understanding of essential nutrients, such as iron, protein, and folic acid, and were able to apply this knowledge in planning daily meals. The participatory approach also encouraged active engagement, peer learning, and stronger support from family and community members. The discussion highlights that interactive, community-based educational methods are effective in promoting behavioural change and increasing awareness of maternal nutrition. The involvement of local stakeholders further strengthens program acceptance and sustainability. In conclusion, this community-based nutritional education program is an effective strategy to enhance maternal nutritional practices and prevent early stunting, particularly in resource-limited rural settings.

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1. Introduction

Stunting remains a major public health concern in Indonesia and requires serious, sustained attention. It is defined as a condition of impaired growth and development in children caused by chronic malnutrition and recurrent infections, particularly during the first 1,000 days of life (HPK). This critical period spans from conception to a child's second birthday, consisting of approximately 270 days in utero and 730 days post-birth, during which rapid physical and cognitive development occurs. Failure to meet nutritional requirements during this window can lead to irreversible consequences, including stunting, which affects both physical growth and long-term human capital development [1]–[3]. Maternal nutrition during pregnancy plays a crucial role in determining fetal growth and birth outcomes. Inadequate nutritional intake among pregnant women increases the risk of low birth weight (LBW), maternal anaemia, and ultimately stunting in children. These conditions highlight the urgent need for targeted nutritional education interventions that enhance maternal knowledge of balanced diets and

promote the use of locally available food resources. Poor maternal nutrition not only affects children's height but also influences brain development, cognitive performance, academic achievement, and future productivity [4]–[7]. According to the Indonesian Nutritional Status Survey (SSGI) 2022, the national stunting prevalence remains at 21.6%, exceeding the World Health Organization (WHO) threshold of 20% and posing a challenge to achieving the national target of reducing stunting to 14% by 2024 [8], [9].

Despite various government efforts, low awareness and limited understanding of maternal nutrition remain significant barriers to stunting prevention. Many communities still perceive short stature in children as normal and not requiring intervention, which perpetuates the cycle of malnutrition across generations. This misconception reduces the effectiveness of preventive programs and delays early interventions. Furthermore, socio-cultural factors, limited access to health services, and economic constraints contribute to suboptimal maternal dietary practices [10]–[12].

Recent studies emphasise that community-based nutritional education is an effective strategy for improving maternal knowledge and behaviour. Educational interventions that incorporate participatory approaches, interactive discussions, and practical demonstrations have shown significant improvements in maternal awareness and dietary practices. Moreover, integrating local food resources into nutrition education programs enhances sustainability and accessibility, especially in rural areas [13]–[15]. Strengthening family involvement, particularly from husbands and community health workers, further supports behavioural change and improves maternal health outcomes [16].

The implementation of nutritional education programs in Gampong Lampasi Engking is particularly urgent, as pregnancy represents a critical window for intervention. Nutritional deficiencies during this period can result in adverse birth outcomes and increase the risk of stunting, ultimately hindering the development of high-quality human resources. Community service initiatives that focus on improving maternal nutrition knowledge and practices are essential to support national stunting reduction programs and promote healthier future generations [17]–[19].

Therefore, educational interventions targeting pregnant women are expected to play a pivotal role in reducing stunting prevalence by improving maternal dietary behaviour, enhancing awareness of balanced nutrition, and encouraging the utilisation of local food resources. Such interventions not only contribute to better maternal and child health outcomes but also align with broader national and global health priorities, including the Sustainable Development Goals (SDGs) related to nutrition and well-being [20].

This community service and research activity aims to improve pregnant women's knowledge regarding balanced nutrition, encourage behavioural changes in dietary practices using locally available foods, and strengthen family involvement in maternal nutrition support. The novelty of this study lies in its integration of participatory nutrition education with local food-based approaches and community engagement through posyandu cadres and village stakeholders, specifically in Gampong Lampasi Engking, a setting with documented maternal nutritional challenges. Unlike conventional interventions, this program emphasises practical demonstrations and culturally relevant strategies to enhance sustainability. However, this study has several limitations, including a small sample size, a limited intervention duration, and variability in participants' educational backgrounds, which may affect the generalizability and depth of understanding. Additionally, economic constraints among participants may limit the implementation of recommended dietary practices, indicating the need for long-term, multi-sectoral support.

2. Methodology

2.1 Study Design (Research Approach)

This study employed a mixed-method approach combining quantitative and qualitative designs to evaluate the effectiveness of nutritional education interventions for pregnant women in preventing stunting. The quantitative component used a pre-experimental design (one-group pretest–posttest) to measure changes in participants' knowledge, attitudes, and practices before and after the intervention.

Meanwhile, a qualitative approach was used to explore participants' experiences, perceptions, and barriers to nutritional practices during pregnancy.

2.2 Community Service Approach

The study was integrated with a community service (pengabdian masyarakat) program using a participatory and educational approach. This approach emphasised active involvement of pregnant women, posyandu cadres, and local stakeholders. Activities were conducted through interactive counselling sessions, small-group discussions, and practical demonstrations of balanced nutrition menus using locally available ingredients. This participatory model was chosen to ensure sustainability and community empowerment in addressing maternal nutrition issues.

2.3 Study Location and Participants

The study and community service activities were conducted in Gampong Lampasi Engking, Darul Imarah District, Aceh Besar Regency, Indonesia. This location was selected based on preliminary data from the local health centre indicating the presence of pregnant women with poor nutritional status and anaemia, which increases the risk of stunting. The participants were pregnant women registered at the local posyandu, with a total of 7 respondents involved in the program. Additional stakeholders included posyandu cadres, village officials, and health workers, who supported the implementation of the activities.

2.4 Intervention Procedures

The intervention was carried out in several stages:

- a) Preparation Stage
 - (a) Coordination with local health centres, village authorities, and posyandu cadres
 - (b) Development of educational materials (leaflets and visual aids)
 - (c) Identification and recruitment of participants
- b) Implementation Stage
 - (a) Delivery of nutritional education through interactive lectures
 - (b) Group discussions to explore participants' understanding and challenges
 - (c) Demonstration of preparing balanced meals based on local food resources
 - (d) Provision of supplementary nutritious food (PMT)
- c) Evaluation Stage
 - (a) Pretest and posttest assessments to measure knowledge improvement
 - (b) Observation of participants' skills in preparing balanced meals
 - (c) Documentation of participant engagement and attendance

2.5 Data Collection Methods

Data were collected using both quantitative and qualitative techniques:

- a) Quantitative Data:

Collected through structured questionnaires administered before and after the intervention to assess knowledge and awareness of maternal nutrition and stunting prevention.
- b) Qualitative Data:

Obtained through direct observation, informal interviews, and group discussions to capture participants' perceptions, behavioural changes, and challenges in implementing balanced nutrition practices.
- c) Secondary Data:

Supporting data were obtained from local health records and posyandu reports related to maternal nutritional status.

2.6 Data Analysis

Quantitative data were analysed using descriptive statistics to compare pretest and posttest results and to show changes in participants' knowledge and understanding. Qualitative data were analysed using content analysis, in which responses and observations were categorised into themes such as knowledge improvement, behavioural change, and barriers to nutrition fulfilment.

2.7 Ethical Considerations

All participants were informed about the study's purpose and the community service activities. Participation was voluntary, and informed consent was obtained before data collection. Confidentiality of participants' personal information was maintained throughout the study.

2.8 Indicators of Success

The success of the intervention was measured based on:

- a) Increased knowledge of pregnant women regarding balanced nutrition
- b) Improved skills in preparing nutritious meals using local food
- c) Increased awareness of the importance of antenatal care and posyandu services
- d) Active participation and engagement of community members

3. Result & Discussion

The results and discussion of this community service program highlight the effectiveness of participatory nutritional education in improving pregnant women's knowledge, attitudes, and practices in Gampong Lampasi Engking. Through a combination of interactive counselling, group discussions, and practical demonstrations using locally available foods, participants showed a significant increase in their understanding of the importance of balanced nutrition during pregnancy. The involvement of community health cadres, local authorities, and family members further strengthened program implementation and encouraged active participation. These findings indicate that community-based nutritional education is a practical and effective approach to preventing stunting by promoting early awareness and behavioural change among pregnant women, particularly in rural settings.



Figure 1. Community Service Team and Local Stakeholders during Nutritional Education Program in Gampong Lampasi Engking

Figure 1 illustrates the collaboration between the community service team and local stakeholders during the implementation of the nutritional education program in Gampong Lampasi Engking. The presence of village authorities, community leaders, and student volunteers reflects a strong multi-sectoral approach, which is essential for the success of community-based health interventions. This collaboration demonstrates institutional support and enhances the program's credibility, making it more acceptable to the local community. The involvement of academic institutions, as represented by the student team, also underscores the integration of education, research, and community service to address public health issues such as maternal nutrition and stunting prevention.

Furthermore, active engagement of local stakeholders is crucial to facilitating program sustainability and community participation. Their involvement not only helps in mobilising participants, particularly pregnant women, but also strengthens communication and trust between the program implementers and the community. This aligns with participatory approaches in health promotion, where local support systems contribute significantly to behaviour change and program effectiveness. The collaboration shown in this figure indicates that community empowerment, supported by local leadership and institutional partnerships, is a key factor in enhancing awareness and promoting long-term improvements in maternal nutrition and stunting prevention.

Figure 2 demonstrates the implementation of an interactive group discussion as part of the maternal nutrition education program. This activity reflects a participatory learning approach, in which participants actively share experiences, ask questions, and discuss nutritional practices during pregnancy. The use of small-group discussions creates a more comfortable, supportive environment, allowing pregnant women to express their concerns and gain practical knowledge. This method is particularly effective in community settings, as it encourages two-way communication and enhances understanding compared to one-way lectures. The presence of facilitators guiding the discussion ensures that the information delivered is accurate, relevant, and tailored to the participants' needs.



Figure 2. Interactive Group Discussion on Maternal Nutrition Education with Community Participants

Moreover, this interactive session plays a crucial role in improving not only knowledge but also attitudes and behavioural intentions among participants. Through direct engagement, participants are more likely to internalise key messages about balanced nutrition, the importance of micronutrients, and healthy dietary practices during pregnancy. The discussion format also promotes peer learning, where participants can learn from each other's experiences and challenges. This aligns with the program's participatory and promotive-preventive approach, emphasising that community involvement and active engagement are essential for achieving sustainable health behaviour changes and effectively reducing the risk of stunting.

Figure 3 illustrates direct community engagement through personalised nutritional counselling for pregnant women in a real-life setting. This activity reflects an interpersonal communication approach, where facilitators interact closely with participants to address individual needs, concerns, and nutritional conditions. Unlike group sessions, this method allows for more tailored guidance, enabling pregnant women to understand better their specific nutritional requirements, including the importance of iron intake, protein consumption, and balanced dietary patterns. The informal, familiar environment also fosters a sense of trust and openness, encouraging participants to share personal experiences and challenges related to their pregnancies and nutrition.



Figure 3. Direct Community Engagement and Nutritional Counselling with Pregnant Women

Furthermore, this direct engagement approach plays a significant role in strengthening behavioural change at the individual level. By providing one-on-one or small-scale counselling, facilitators can ensure that key health messages are clearly understood and practically applicable in daily life. The involvement of family members and the surrounding community, as seen in the figure, also reinforces social support, which is crucial for sustaining healthy practices among pregnant women. This strategy aligns with the program's promotive and preventive framework, emphasising that effective stunting prevention requires not only knowledge dissemination but also continuous support, personalised guidance, and active community involvement.



Figure 4. Community Outreach Activity Involving Mothers and Children in Nutrition Education Program

Figure 4 illustrates a community outreach activity that actively involves both mothers and children in the nutrition education program. This activity reflects a family-centred approach, in which not only pregnant women but also other family members, including children, are engaged in the learning process.

Such involvement is important because family plays a crucial role in supporting maternal nutrition practices at home. By including children and caregivers in the activity, the program fosters a broader understanding of healthy nutrition within the household, which can contribute to better dietary habits and long-term health outcomes. The informal setting also allows participants to interact more freely, making the educational messages more relatable and easier to adopt in daily life.

Moreover, including children in the outreach activity underscores the program's emphasis on early prevention and intergenerational impact. Nutrition education delivered in this context not only targets current pregnant women but also raises awareness about child nutrition and growth, which are directly linked to stunting prevention. The interaction between facilitators, mothers, and children creates a supportive learning environment that encourages behavioural change through observation and participation. This approach aligns with the program's promotive and preventive strategy, emphasising that improving maternal and child nutrition requires active family involvement, continuous engagement, and community-based interventions to sustain health improvements.



Figure 5. Group Photo of Community Service Team, Mothers, and Children after Nutrition Education Program

Figure 5 presents a group photo of the community service team with mothers and children who participated in the nutrition education program. This image reflects the successful implementation of the activity and highlights the strong engagement between facilitators and community members. The presence of both mothers and children indicates that the program effectively reached its target beneficiaries and encouraged inclusive participation. Such group documentation is important because it visually represents the collaborative atmosphere and the program's positive reception within the community. It also signifies the completion of the activity and serves as evidence of community involvement and partnership.

Furthermore, this group photo illustrates the program's social impact by showing the connection between the community and the service team. The interaction captured in this moment reflects increased trust, acceptance, and enthusiasm among participants toward health promotion activities. The inclusion of children alongside their mothers underscores the program's broader objective of improving family and child health as part of stunting-prevention efforts. Overall, this figure symbolises not only the conclusion of the educational intervention but also the foundation for sustained community engagement and continued efforts to promote balanced nutrition and healthy behaviours in the future.

The novelty of this community service article lies in its integrative, participatory approach to maternal nutrition education, combining interactive counselling, small-group discussions, practical

demonstrations using locally available food resources, and active family involvement in a rural community setting. Unlike conventional one-way health education, this program emphasises community engagement by involving local stakeholders, posyandu cadres, and family members to strengthen social support and ensure sustainability. Additionally, incorporating locally accessible food-based menu planning enhances the practicality and cultural relevance of the intervention, making it more easily adopted by participants. This approach not only enhances knowledge but also fosters behavioural change among pregnant women, thereby contributing to early stunting prevention through a context-specific, community-driven strategy.

4. Conclusion

In conclusion, this community service program demonstrated that a participatory, community-based nutritional education approach is effective in improving pregnant women's knowledge, attitudes, and practices regarding balanced nutrition. The integration of interactive counselling, group discussions, and practical demonstrations using locally available food resources enabled participants to understand better and apply essential nutritional concepts during pregnancy. Moreover, the involvement of local stakeholders, community health cadres, and family members strengthened program implementation, increased community acceptance, and supported sustainable behavioural change. The findings suggest that maternal nutrition education delivered through a culturally relevant and participatory framework can serve as a practical strategy for early stunting prevention, particularly in rural and resource-limited settings. This approach not only enhances individual awareness but also fosters community empowerment and collective responsibility for maternal and child health. Therefore, it is recommended that similar programs be implemented and integrated into routine community health services to ensure long-term impact in reducing stunting prevalence and improving overall public health outcomes.

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