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Optimization of the role of community midwives in maternal nutrition education to prevent stunting during the first 1000 days of life

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ABSTRACT

Stunting remains a major public health issue that threatens the quality of human resources, particularly in developing countries. One of the critical periods for preventing stunting is the First 1000 Days of Life (F1000D), spanning from conception to a child's second birthday. This community service program aimed to optimise the role of community midwives in providing maternal nutrition education to pregnant women as an effort to reduce the prevalence of stunting. The method employed was participatory action, involving training, counselling sessions, and the development of educational media tailored to local cultural contexts. Community midwives were equipped with up-to-date knowledge and skills regarding balanced nutrition, micronutrient supplementation, and strategies to increase family awareness about food diversity. Counselling activities were conducted in small groups, featuring interactive discussions supported by leaflets and visual aids to facilitate a deeper understanding. The results indicated an improvement in the knowledge and attitudes of both midwives and pregnant women. Midwives demonstrated greater confidence in delivering nutritional education, while pregnant women showed increased awareness of the importance of protein, iron, folic acid, and other essential nutrients for fetal growth. Furthermore, family involvement in supporting pregnant women's dietary practices became more evident. This program highlights that empowering community midwives as local health educators can be a strategic approach to break the intergenerational cycle of malnutrition. Strengthening collaboration among health workers, local governments, and community leaders is crucial to sustaining the impact and ensuring long-term stunting prevention efforts.

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1. INTRODUCTION

Stunting has been recognized as a critical global public health challenge that significantly affects the growth and development of children, particularly in low- and middle-income countries (Syahrir et al., 2025). According to the World Health Organisation, stunting reflects a chronic condition of undernutrition that occurs when children fail to reach their optimal height for their age. This condition not only impacts physical development but also leads to long-term consequences, such as impaired cognitive function, reduced productivity in adulthood, and increased vulnerability to

chronic diseases (Hernawati et al., 2025). The first 1000 days of life, spanning from conception to the child's second birthday, are widely acknowledged as the most decisive period to intervene. Nutritional adequacy during this window directly influences fetal growth, birth outcomes, and early childhood development. Therefore, improving maternal health and ensuring proper nutritional practices during pregnancy represent essential strategies for preventing stunting (Ayu Rahmadani et al., 2025).

Community empowerment plays a central role in addressing this issue. Stunting is not merely a biological or medical problem, but also a social phenomenon influenced by education, cultural norms, family dynamics, and access to health services (Hatijar et al., 2025). Communities that are empowered with knowledge and resources are better able to support pregnant women in meeting their nutritional needs. By engaging local stakeholders, fostering awareness, and enhancing capacity at the grassroots level, interventions can be sustained and adapted to the specific socio-cultural context. Within this framework, the role of midwives emerges as particularly significant, especially in rural and underserved communities where they often serve as the first and sometimes only point of contact with the health system (Tyarini, Setiawati, et al., 2024).

Midwives are trusted health professionals who accompany women throughout pregnancy, childbirth, and the postpartum period. Their proximity to communities positions them not only as care providers but also as educators and advocates. In the context of nutrition education, midwives can effectively bridge the gap between scientific knowledge and community practices (Ode Novi Angreni et al., 2024). Through structured counselling sessions, home visits, and group discussions, midwives can deliver messages that are both evidence-based and culturally sensitive (Tyarini et al., 2025). Empowering midwives with updated information, teaching skills, and relevant educational materials ensures that pregnant women receive accurate guidance on dietary diversity, micronutrient supplementation, and healthy lifestyle practices. This approach can significantly improve maternal health outcomes and reduce the risk of stunting among newborns (Setyawati et al., 2024).

Nutrition education itself is an essential component of preventive health strategies. Many pregnant women, particularly those in low-resource settings, lack sufficient understanding of the importance of balanced diets, protein intake, and the role of micronutrients such as iron, folic acid, calcium, and vitamin A (Tyarini, Akib, et al., 2024). Misconceptions and taboos related to food during pregnancy often exacerbate this problem, leading to inadequate dietary intake. By providing targeted education, midwives can help dispel myths, encourage positive behavior changes, and promote practical solutions using locally available food sources (Suprapto, 2022). The inclusion of family members, particularly husbands and mothers-in-law, in education sessions further enhances the effectiveness of these interventions, as family support has a strong influence on maternal practices (Arda et al., 2023).

The integration of community empowerment with maternal health initiatives generates a synergistic effect, extending interventions from individual behavior change to collective action. Community groups may establish nutrition gardens, conduct cooking demonstrations, or create savings schemes for pregnant women, thereby reinforcing midwives' educational efforts and fostering sustainable change. Aligning maternal health promotion with broader empowerment initiatives supports holistic development and poverty reduction, both closely related to stunting prevention (Zakiyyah Putri et al., 2025). Stunting prevention must be approached as

a multi-sectoral and multi-level effort. While national policies provide direction, implementation occurs most effectively at the community level. Midwives, as frontline health workers, translate policies into action by delivering nutrition education that enhances maternal health and encourages wider community participation. To sustain this role, continuous training, capacity building, and institutional support are essential to maintain their competence and motivation. Optimising the role of midwives in nutrition education provides a practical strategy to prevent stunting during the first 1,000 days of life. Integrating community empowerment with maternal health initiatives addresses both individual and structural factors that contribute to malnutrition. Collaboration among midwives, families, and communities strengthens health system outreach, contributes to public health goals, and helps break the intergenerational cycle of stunting and underdevelopment.

2. METHOD

This community service program was conducted in a rural area characterised by limited access to healthcare services and a high vulnerability to nutritional problems. The primary participants were community midwives, who serve as frontline health providers, and pregnant women in their second and third trimesters. Family members, including husbands and mothers-in-law, were also involved, since they play a significant role in supporting maternal practices. Local health authorities and community leaders were engaged to ensure the sustainability and contextual appropriateness of the program.

The program employed a participatory action research approach, which emphasizes active involvement of the community in every stage of the intervention. This design was chosen to align with the principles of community empowerment, where knowledge transfer and skill building are conducted not only by experts but also through collaboration with local stakeholders. By positioning midwives as both learners and facilitators, the intervention aimed to strengthen their capacity while simultaneously creating ripple effects within the broader community.

The intervention was structured into three main activities:

Capacity Building for Midwives: Midwives participated in a series of workshops focused on maternal health and nutrition education. The training modules covered topics such as balanced diet planning, food diversity, micronutrient supplementation (including iron, folic acid, calcium, and vitamin A), and strategies to address local food taboos. Interactive learning methods, including case studies and role-playing exercises, were employed to enhance midwives' confidence in counselling. Educational tools such as flipcharts, leaflets, and visual aids were developed to support communication during their outreach activities.

Nutrition Education for Pregnant Women and Families. Community midwives, after receiving training, delivered nutrition education sessions to pregnant women in small groups. Each session was designed to be participatory, combining lectures with discussions, cooking demonstrations, and problem-solving exercises. Families were encouraged to join to increase collective awareness and support. Practical examples, such as utilising local food resources to meet nutritional requirements, were emphasised to ensure the feasibility and affordability of dietary recommendations.

Community-Based Empowerment Initiatives. In collaboration with community groups, initiatives such as nutrition gardens and savings schemes for pregnant women

were introduced. The gardens provided sustainable access to fresh vegetables, while the savings schemes enabled families to allocate funds specifically for nutritious food purchases. These collective actions reinforced the individual-level education delivered by midwives and fostered long-term ownership of the program by the community. Evaluation of the program was conducted through both qualitative and quantitative methods. Pre- and post-intervention surveys were administered to assess changes in knowledge, attitudes, and practices among midwives and pregnant women. Midwives were evaluated on their confidence and ability to deliver nutrition education, while pregnant women were assessed on their understanding of essential nutrients, dietary diversity, and healthy pregnancy practices. Focus group discussions with families and community leaders provided qualitative insights into the acceptability and cultural relevance of the intervention. Observation checklists and photo documentation were also employed to monitor the implementation of group activities such as cooking demonstrations and garden development.

The program adhered to ethical principles of community engagement. Informed consent was obtained from all participants, and participation was voluntary. Privacy and confidentiality were respected, particularly in the collection of survey and interview data. Collaboration with local health authorities ensured that the program was aligned with regional health policies and did not conflict with existing services. To ensure long-term impact, the program incorporated a sustainability strategy. Trained midwives were encouraged to continue their educational activities by integrating them with routine antenatal care visits. Community leaders and health officials were engaged to support follow-up programs, including refresher training and the provision of resources. Additionally, the community gardens and savings groups were established with mechanisms for self-management, allowing them to continue operating beyond the intervention period.

3. RESULT AND DISCUSSION

RESULT

The implementation of this community service program generated several notable outcomes:

Table 1. Knowledge Score of Community Midwives (n=20)

Indicator	Pre-test Mean ± SD	Post-test Mean ± SD	p-value
Knowledge of balanced nutrition	58.5 ± 9.2	82.4 ± 7.5	<0.001
Knowledge of micronutrients	55.7 ± 8.6	80.2 ± 6.9	<0.001
Confidence in counseling skills	60.1 ± 10.1	85.6 ± 7.8	<0.001

Midwives showed significant improvement in knowledge and self-confidence after training, with mean scores increasing by more than 20 points across all indicators. Improved Knowledge and Skills of Midwives. After completing the training sessions, midwives demonstrated a significant increase in their knowledge of maternal nutrition and an increase in confidence in conducting educational sessions. Pre- and post-test assessments revealed a marked improvement, particularly in understanding the role of macronutrients and micronutrients during pregnancy. Midwives also demonstrated an enhanced ability to utilise educational media effectively, such as leaflets, flipcharts, and visual aids. Increased Awareness Among Pregnant Women. Pregnant women who participated in group counseling reported greater awareness of the importance of balanced diets, protein intake, and micronutrient supplementation. They expressed a better understanding of how to

incorporate locally available food sources to meet nutritional requirements. A majority of participants also indicated that myths and taboos related to food during pregnancy had been reduced following the sessions.

Active Involvement of Families. Family members, particularly husbands and mothers-in-law, played an active role in supporting pregnant women. Their participation in discussions and cooking demonstrations improved household-level awareness about maternal nutrition. This collective involvement facilitated changes in food purchasing and preparation practices within the family. Community-Based Initiatives. The establishment of nutrition gardens in several households provided direct access to fresh vegetables, which complemented the dietary recommendations given during counseling. In addition, savings schemes organised at the community level enabled families to allocate resources for purchasing nutritious food and supplements, thereby reducing financial barriers to healthy diets. Positive Feedback and Sustainability Prospects. Feedback from participants and local leaders indicated that the program was well-received and culturally appropriate. Midwives expressed motivation to continue providing nutrition education as part of routine antenatal services. The involvement of community leaders also laid the groundwork for long-term sustainability, as they committed to integrating the initiatives into existing village health programs.

DISCUSSION

The results of this program highlight the critical role of midwives in promoting maternal health through nutrition education. By equipping midwives with both knowledge and communication skills, the program effectively strengthened their position as trusted educators within the community. This finding aligns with previous studies that emphasise the potential of midwives to serve as change agents in primary healthcare, particularly in rural areas with limited medical resources. Community empowerment emerged as a pivotal factor in ensuring the success of the intervention. The establishment of nutrition gardens and savings groups illustrates how collective action can complement individual behavior change. These initiatives not only improved food access but also fostered a sense of ownership and responsibility among community members. Such outcomes confirm that stunting prevention is more effective when approached as a community-driven endeavor rather than a top-down intervention (Raflizar et al., 2025).

From a maternal health perspective, the increased awareness and behavioral changes observed among pregnant women are particularly significant (Knorr & Fox, 2023). Adequate nutrition during pregnancy is directly linked to fetal growth and development. By addressing misconceptions, the program contributed to healthier dietary practices. The involvement of families further amplified the impact, as household decisions regarding food allocation are often influenced by cultural hierarchies (Burger et al., 2022). Encouraging husbands and mothers-in-law to participate helped overcome traditional barriers that frequently hinder maternal autonomy in dietary choices (Carmichael et al., 2022).

The integration of midwives' education efforts with nutrition education strategies also demonstrated a strong potential for stunting prevention. By focusing

on the first 1000 days of life, the program addressed a critical window of opportunity where nutritional interventions have the greatest impact (Sentika et al., 2024). Evidence suggests that interventions implemented during this period can significantly reduce the risk of stunting and its long-term consequences, including impaired cognitive development and reduced economic productivity. The program's findings reinforce the importance of targeting this timeframe through practical and culturally sensitive approaches (Aisyah et al., 2025).

At the policy level, the program underscores the necessity of aligning national stunting prevention frameworks with local implementation. While policies provide direction, their effectiveness depends on translation into action at the community level (Sofiyah et al., 2025). Midwives, as frontline implementers, bridge this gap by adapting policies to fit local contexts. However, to sustain their role, ongoing capacity building and institutional support are essential. Without adequate resources, supervision, and incentives, midwives may face challenges in maintaining their educational activities over time (Yang et al., 2025).

Another important insight is the contribution of this program to stunting prevention as a multi-sectoral effort. Beyond health services, factors such as food security, education, and poverty reduction play interconnected roles in shaping overall well-being. By incorporating community gardens and savings schemes, the intervention addressed both health and socioeconomic determinants of malnutrition. This holistic approach illustrates how community service initiatives can contribute not only to maternal health but also to broader development goals. Positive reception of the program demonstrates the importance of cultural sensitivity in community-based interventions. By tailoring educational messages to local contexts and involving community leaders, the program ensured relevance and acceptability. This approach increased trust, facilitated participation, and enhanced the likelihood of long-term adoption of recommended practices.

The findings of this program confirm that optimising the role of midwives in nutrition education is an effective strategy for enhancing maternal health and preventing stunted growth. Through community empowerment, the program achieved both individual behavior change and collective action, addressing structural barriers to adequate nutrition. The integration of midwives, families, and community initiatives demonstrates a practical and sustainable model for reducing stunting during the first 1000 days of life.

4. CONCLUSION

This community service program showed that empowering midwives through training and participatory approaches effectively strengthened their role in maternal nutrition education. Pre- and post-test results indicated significant improvements in midwives' knowledge and confidence, enabling them to provide more effective counseling. Pregnant women also demonstrated greater awareness of balanced diets, protein intake, and micronutrient needs, along with reduced food misconceptions. The program further emphasized the importance of community empowerment as a

complementary strategy. Initiatives such as nutrition gardens and savings schemes improved food access and demonstrated the benefits of collective action. Family participation reinforced maternal health practices, underscoring the importance of social support in sustaining these outcomes. Optimising midwives' role in nutrition education during the first 1,000 days of life is a practical strategy for preventing stunting. Integrating maternal health promotion with community empowerment ensures both immediate and sustainable impact, contributing to the reduction of malnutrition across generations.

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CONFLICT OF INTERESTS

All authors declare no conflict of interest in this community service program.

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