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Optimizing Community Nutrition Knowledge in Stunting Prevention Efforts through an Integrated Counseling Program

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A R T I C L E I N F O

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A B S T R A C T

This community service activity used a pre-experimental design with a one-group pretest-posttest approach. The activity was conducted with 45 pregnant women and mothers of toddlers in Tanah Baru, Cimahpar, and Cibuluh villages. The intervention was carried out through integrated counseling, including educational lectures, interactive discussions, and practical demonstrations. Data were collected using pretest and posttest questionnaires, then analyzed descriptively and with a paired t-test. The results showed a significant increase in participants' knowledge scores after the intervention, with an average pretest score of 16.24 ± 2.85 increasing to 19.38 ± 2.12 in the posttest. There was an increase of 3.14 points (19.3%) with a p value of 0.000 ($p < 0.05$). Furthermore, the proportion of participants with "good" knowledge increased from 24.4% to 68.9%, while the "poor" category decreased from 28.9% to 4.4%.

INTRODUCTION

Stunting is a chronic nutritional problem that remains a major challenge in public health development, particularly in developing countries. Stunting is defined as a condition of failure to thrive in children due to chronic malnutrition that occurs over a long period, particularly during the First 1,000 Days of Life, from conception to age two. This condition is characterized by a height-for-age (H/A) value below minus 2 standard deviations according to the World Health Organization (WHO) growth standards. Stunting not only reflects nutritional problems but also serves as an indicator of complex social, economic, and public health inequalities (Organization, 2025). Globally, stunting remains a significant health issue. An estimated 149 million children under five worldwide suffer from stunting, which impacts the quality of future human resources. Children who experience stunting are at higher risk of impaired cognitive development, reduced learning abilities, and an increased risk of non-communicable diseases in adulthood. Furthermore, stunting also contributes to low labor productivity and a country's economic growth (Mporanyi et al., 2025).

In Indonesia, stunting remains a serious public health problem, despite a downward trend in prevalence in recent years. Indonesia faces the triple burden of malnutrition, the coexistence of undernutrition (stunting and wasting), overnutrition, and micronutrient deficiencies within the same population. This demonstrates that the nutritional problem in Indonesia is complex and multidimensional (benjohnson, 2025; Organization, 2021; Unicef, 2021). Stunting is the most prevalent form of malnutrition, with millions of children under the age of five directly affected. Stunting not only impacts physical health but also has long-term consequences for an individual's quality of life. Children who experience stunting tend to have lower cognitive abilities, poor academic performance, and limited economic opportunities in the future. This can ultimately reinforce the intergenerational cycle of poverty. Furthermore, women who experience stunting as children are at risk of giving birth to low-birth-weight babies, increasing the likelihood of stunting in the next generation (Organization, 2020; UNICEF, 2015). Thus, stunting is not only an individual health issue but also a national development issue.

Etiologically, stunting is a multifactorial condition influenced by various determinants, both direct and indirect. Direct factors include inadequate nutritional intake and recurrent infections, while indirect factors include socioeconomic conditions, parental education, environmental sanitation, and access to health services. Studies show that inappropriate feeding practices, such as not providing exclusive breastfeeding for the first six months and providing inadequate complementary foods (MP-ASI), are important factors contributing to stunting (Beal et al., 2018; Klaten et al., n.d.; Ramadhaniah et al., n.d.; Torlesse et al., 2016). Furthermore, poor maternal nutritional status during pregnancy also plays a significant role in stunting. Mothers who experience chronic energy deficiency or anemia have a higher risk of giving birth to babies with low birth weight, which is a major risk factor for stunting. UNICEF (2023) reports that more than a quarter of pregnant women suffer from anemia, which impacts fetal growth and increases the risk of stunting during pregnancy. This suggests that

stunting prevention interventions must begin during pregnancy, even before conception.

Among these determinants, maternal knowledge about nutrition and child health is a key modifiable factor. Maternal knowledge plays a crucial role in determining feeding practices, child care, and utilization of health services. Mothers with good nutritional knowledge tend to be better able to provide a balanced diet, support exclusive breastfeeding, and implement complementary feeding practices that meet their child's needs. Several studies have shown a significant relationship between maternal knowledge and the incidence of stunting. A study conducted by (Amini et al., 2024; Simanjuntak et al., 2019) found a significant relationship between maternal nutritional knowledge and the incidence of stunting in toddlers ($p < 0.05$), indicating that improving maternal knowledge can be an effective strategy in reducing stunting prevalence. Similar findings were also reported by (Mporanyi et al., 2025; Rosmiati et al., 2025; Umwali, 2020), who stated that low maternal knowledge correlated with high rates of stunting in children aged 6–59 months.

A situation analysis in the villages of Tanah Baru, Cimahpar, and Cibuluh shows that most pregnant women and mothers of toddlers still have limited understanding of the concept of balanced nutrition and stunting prevention. This is reflected in the low level of understanding regarding the importance of the first thousand days of life (1000 days), the practice of exclusive breastfeeding, and the preparation of nutritious menus for children. Furthermore, there are still inaccurate perceptions regarding dietary patterns, such as the belief that satiety is the most important factor, rather than the nutritional quality of food. This situation indicates a gap between community knowledge and ideal health practices. This gap is a factor that increases the risk of stunting at the community level. Therefore, interventions are needed that focus not only on curative aspects but also on promotive and preventive aspects by increasing public knowledge and awareness.

One effective approach to increasing public knowledge is through counseling-based health education. Health counseling is a communication method that aims to improve public knowledge, attitudes, and behavior by delivering systematic, structured information. Direct and interactive education allows for two-way communication, enabling participants to better understand the material presented. Various studies have shown that health education is highly effective in increasing maternal knowledge regarding stunting prevention. (Astuti et al., 2024; Novitasari & Wanda, 2020) in a literature review stated that stunting education significantly improved pregnant women's knowledge and contributed to behavioral changes in child feeding practices. Furthermore, ongoing educational interventions have also been shown to improve maternal adherence to recommended nutritional practices. An integrated outreach approach that combines lectures, interactive discussions, and practical demonstrations is considered more effective than conventional methods. This is because participants not only passively receive information but also actively participate in the learning process. This makes the material easier to understand and implement in their daily lives.

Based on a needs analysis by partners, pregnant women and mothers of toddlers in the villages of Tanah Baru, Cimahpar, and Cibuluh require educational interventions that not only provide information but also improve practical skills in meeting family nutritional needs. These needs include an understanding of balanced nutrition, healthy menu planning, the importance of exclusive breastfeeding, and appropriate complementary feeding practices. Considering the complexity of the stunting problem and the crucial role of maternal knowledge in stunting prevention, an integrated, community-based intervention program is needed. An integrated outreach program is a relevant and effective strategy for increasing public knowledge and awareness, particularly among pregnant women and mothers of toddlers, regarding stunting prevention efforts.

Therefore, a community service activity entitled "Optimizing Community Nutrition Knowledge in Stunting Prevention Efforts through an Integrated Outreach Program" is crucial. This activity is expected to make a real contribution to improving public knowledge and behavior regarding nutrition, as well as supporting government efforts to accelerate stunting reduction in Indonesia.

IMPLEMENTATION AND METHODS

This community service activity was implemented through a community-based educational approach with the goal of improving mothers' nutritional knowledge in stunting prevention. The implementation method was comprehensively designed, encompassing activity design, objectives, implementation stages, and program evaluation.

Activity Design

This activity used a pre-experimental design with a one-group pretest-posttest approach. Participants' knowledge levels were measured before (pretest) and after (posttest) the counseling intervention. This design was used to evaluate the effectiveness of counseling in improving community knowledge of stunting prevention.

The activity targets groups at risk of stunting, namely:

a. Pregnant women
b. Mothers with toddlers

45 participants from three villages: Tanah Baru, Cimahpar, and Cibuluh

The implementation of the activity is carried out through several stages as follows:

1. Preparation Stage

This stage aims to ensure the administrative and technical readiness of the program, including:

a. Coordination and Permits
   - Coordination with village officials, Posyandu cadres, and local health workers.
   - Determining the activity schedule and location.

b. Identification of partner problems and needs
   - Initial observation of community conditions.
   - Brief interviews with health cadres.
   - Analysis of nutrition education needs.

c. Preparation of extension materials
   The materials are prepared based on partner needs, including:
   - Definition and impact of stunting.
   - Risk factors for stunting.
   - Balanced nutrition.
   - The First 1000 Days of Life (HPK).
   - Exclusive breastfeeding and complementary feeding.

d. Preparation of evaluation instruments
   - Pretest and posttest questionnaires.
   - Participatory observation sheets.

e. Preparation of educational media
   - Presentation slides.
   - Leaflets and posters.
   - Food demonstration aids.

2. Implementation Stage

The activity is implemented through an integrated outreach method with a participatory approach, as follows:

a. Pretest
   - Conducted before the outreach begins.
   - Aims to measure participants' initial knowledge level.

b. Outreach (Educational Lecture)
   The material is delivered systematically by the implementation team, including:
   - Definition and impact of stunting.
   - Factors causing stunting.
   - The importance of achieving balanced nutrition.
   - The role of the 1000 Days of Childhood in preventing stunting.
   - The lecture method uses simple language to ensure participants can easily understand.

c. Interactive Discussion
   - Participants are given the opportunity to ask questions.
   - The discussion is two-way.
   - Real-life problems faced by participants are discussed together.

d. Practical Demonstration
   - Simulation of preparing a balanced nutritious menu.
   - Education on the use of local food ingredients.
   - Demonstration of appropriate complementary feeding.

e. Posttest
   - Conducted after all material has been delivered.
   - Aims to measure the increase in participants' knowledge.

3. Monitoring Stage

Monitoring is conducted throughout the activity, including:
- Observing participant activity.
- Assessing engagement in discussions.
- Evaluating the achievement of material delivery.

4. Evaluation Stage

Evaluation is conducted to assess the effectiveness of the program, including:

a. Knowledge Evaluation
   - Comparing pretest and posttest results.
   - Identifying improvements in participant understanding.

b. Process Evaluation
   - Assessing the smoothness of the activity.
   - Evaluating the material delivery method.

c. Participant Satisfaction Evaluation
   - Collecting feedback.
   - Assessing the relevance of the material to participants' needs.

RESULTS AND DISCUSSION

The community service activity was attended by 45 participants, including pregnant women and mothers of toddlers from Tanah Baru, Cimahpar, and Cibuluh villages. The evaluation used pre- and post-test questionnaires to measure participants' knowledge of nutrition and stunting prevention.

The general results are presented in some the table below:

Table 1. Participant Characteristics

Characteristics	Frequency (n)	Percentage (%)
Pregnant women	18	40%
Mothers of toddlers	27	60%
Education ≤ Junior High School	20	44.4%
Education ≥ High School	25	55.6%

Table 2. Results of the Knowledge Pretest and Posttest

Variable	Mean ± SD	Score Minimum–Maxiimum	Mean difference	Percentage of Increasing	p-Value
Pretest	16.24 ± 2.85	10 – 21	3.14	19.3	0.000
Posttest	19.38 ± 2.12	14 – 23			

Table 3. Distribution of Knowledge Levels

Category	Pretest	Posttest
Good	11 (24.4%)	31 (68.9%)
Enough	21 (46.7%)	12 (26.7%)
Poor	13 (28.9%)	2 (4.4%)

Documentation as in Figure 1 below:

Figure 1. Activity Documentation

The results of this study indicate that the integrated counseling program significantly improved mothers' knowledge regarding nutrition and stunting prevention. The average score increase of 3.14 points (19.3%) indicates that community-based educational interventions are highly effective in improving community nutrition literacy. This finding is consistent with previous studies showing that nutrition education delivered through a pretest-posttest design can significantly improve mothers' knowledge. A study by (Dhirah et al., 2022) demonstrated a significant effect of nutrition education on mothers' knowledge of toddlers, with a p-value <0.05. Furthermore, other research has shown that health counseling increased mothers' knowledge scores from 17.02 to 19.06, with a p-value of 0.000.

The increase in knowledge in this activity can be explained by health behavior change theories, specifically the Health Belief Model and Social Cognitive Theory, which state that increased knowledge is the first step in changing health attitudes and behaviors. Education delivered through lectures, interactive discussions, and demonstrations is more effective because it engages cognitive, affective, and psychomotor aspects.

More broadly, these findings are supported by international research showing that community-based educational interventions significantly improve nutrition knowledge and practices. Global studies have shown that nutrition education interventions can improve child feeding practices and reduce the risk of stunting by increasing maternal literacy (Mporanyi et al., 2025). Furthermore, (Unicef, 2021) emphasized that improving maternal knowledge is a key strategy in nutrition-specific interventions to reduce stunting.

However, increased knowledge does not always directly translate to long-term behavioral change. This is a major criticism of single educational interventions. Increased knowledge needs to be accompanied by environmental support, adequate food access, and sustainable interventions. Studies show that socioeconomic factors and access to nutritious food remain important determinants of successful stunting prevention.

In the context of this activity, an integrated outreach approach offers advantages over conventional methods. The combination of lectures, discussions, and demonstrations allows participants to: 1) Understand concepts theoretically; 2) Relate them to everyday experiences; 3) Practice directly. This aligns with research showing that multimodal educational methods are more effective than one-way methods in increasing knowledge and changing health behaviors.

Furthermore, the success of this program is also influenced by its community-based approach. This approach allows interventions to be more tailored to the local sociocultural context, thereby increasing program acceptance and effectiveness.

However, there are several limitations to this activity:

1. The lack of a control group means that it is not possible to completely eliminate external bias.
2. The evaluation was only conducted in the short term.
3. No direct measurement of behavior change was conducted.

This limitation is also found in many similar studies that use a one-group pretest-posttest design.

To improve the effectiveness of the program in the future, a more comprehensive approach is needed, such as:

- Integrating education with food interventions
- Long-term monitoring
- Continuous involvement of health cadres

Therefore, although outreach has proven effective in increasing knowledge, stunting prevention efforts require a multidimensional approach that encompasses educational, economic, and environmental aspects.

CONCLUSIONS AND RECOMMENDATIONS

A community service program through integrated outreach has proven effective in improving the knowledge of pregnant women and mothers of toddlers regarding nutrition and stunting prevention. This is demonstrated by a statistically significant increase in knowledge scores between before and after the intervention ($p < 0.05$), as well as an increase in the proportion of participants with "good" knowledge. The outreach approach, which integrates lectures, interactive discussions, and practical demonstrations, significantly improves participants' understanding. Furthermore, participants' active involvement in the educational process contributes to the program's effectiveness. Therefore, integrated outreach can be an effective promotive and preventive strategy in stunting prevention efforts in the community. However, to achieve a sustainable impact, further interventions are needed, including mentoring, monitoring, and integration with other public health programs.

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