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Nutrition Counseling For Pregnant Women As An Effort To Prevent Stunting In Simasom Village, Padangsidimpuan Angkola Julu District, 2025

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ABSTRACT

Stunting remains a serious public health problem in Indonesia, especially in rural areas. Simasom Village, Padangsidimpuan Angkola Julu District, is an area vulnerable to stunting due to limited knowledge about maternal nutrition during pregnancy, economic constraints, and strong local myths that restrict nutritious food intake. This community service activity employed a health promotion approach through direct nutrition counseling for pregnant women at an integrated health post (Posyandu). The method included pre-test and post-test assessments using questionnaires to measure knowledge levels, direct counseling using leaflets, and anthropometric measurements (weight, height, Mid-Upper Arm Circumference). The activity involved nine pregnant women. The activity showed a significant increase in participants' knowledge. Pre-test results indicated 68.8% of pregnant women had poor knowledge about nutrition and stunting prevention. After the counseling, the post-test results showed a decrease to only 12.5% with poor knowledge, while 87.5% achieved a good knowledge level, indicating a 56.3% improvement. Anthropometric data revealed that most participants had normal nutritional status, although two pregnant women required further nutritional intervention based on their Mid-Upper Arm Circumference measurements. Direct nutrition counseling using leaflets is effective in significantly increasing the knowledge of pregnant women about balanced nutrition and stunting prevention. Continuous and routine educational activities at Posyandu are essential to maintain and improve maternal understanding, which is expected to lead to positive behavioral changes and contribute to stunting reduction efforts in Simasom Village.

Keywords: Alphabetic, Article Template, Journal, Manuscript, Maximum of Five

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INTRODUCTION

Stunting, defined as impaired growth and development in children resulting from poor nutrition, recurrent infection, and inadequate psychosocial stimulation, remains a critical global health challenge (WHO 2014). In Indonesia, the prevalence of stunting, although declining, persists above the World Health Organization's (WHO) 20% threshold, with significant disparities observed in rural and remote areas (BPS, 2022). The first 1000 days of life from conception to a child's second birthday constitute a critical "window of opportunity" for preventing irreversible growth faltering and itsassociated long term consequences on cognitive development and economic productivity (Victora et al., 2010)

The nutritional status of pregnant women is a fundamental determinant of fetal growth and a key modifiable factor in interrupting the intergenerational cycle of stunting. Inadequate intake of essential nutrients such as protein, iron, folate, and zinc during pregnancy can directly compromise fetal development and increase the risk of low birth weight, which is a significant precursor to postnatal stunting (Black et al., 2013). However, in many resource-limited settings, maternal nutrition is often suboptimal because of the complex interplay between factors. These include limited access to diverse and nutritious foods, economic constraints, low literacy levels, adherence to harmful food taboos, and insufficient knowledge of the specific nutritional requirements of pregnancy (Lassi et al., 2014).

Simasom Village, located in the Padangsidimpuan Angkola Julu District, exemplifies such a vulnerable community. Preliminary observations and discussions with local health cadres indicated gaps in pregnant women's knowledge regarding balanced nutrition and its direct link with preventing stunting in their offspring. The community's reliance on carbohydrate-dense diets, coupled with the limited consumption of animal-source proteins, fruits, and vegetables, underscores the need for targeted nutritional education. While antenatal care services are available, the intensity and depth of nutrition-specific counseling are often constrained by the high workload of health center personnel and limited capacity of community health cadres.
Direct interactive nutrition counseling has been identified as an effective strategy to bridge this knowledge-practice gap. Educational interventions that employ simple, culturally appropriate messaging and visual aids, such as leaflets, can empower pregnant women to make informed dietary choices (Girard & Olude, 2012). Therefore, this community service project was designed and implemented to address the needs identified in Simasom Village. The primary objectives were to: (1) increase pregnant women's knowledge of balanced nutrition and the importance of key micronutrients during pregnancy and (2) enhance their understanding of practical measures to prevent stunting, thereby contributing to improved maternal and child health outcomes at the community level.

METHOD

This community service initiative employs a participatory health promotion approach with pre- and post-intervention assessment designs. The program was

conducted in Simasom Village, Padangsidimpuan Angkola Julu District in November 2025. The target participants were all pregnant women attending an integrated health post (Posyandu) on the scheduled activity day.

1. Participants and Data Collection

Nine pregnant women participated in the activity sequence. After providing informed consent, the participants underwent baseline data collection. This included administering a pre test questionnaire and conducting anthropometric measurements. The questionnaire consisted of 10 multiple-choice questions designed to assess knowledge of key topics: the definition of stunting, the critical 1000-day window, essential micronutrients (e.g., folic acid and iron), recommended dietary patterns, and the role of antenatal care and breastfeeding in preventing stunting. Anthropometric measurements including body weight, height, and Mid-Upper Arm Circumference (MUAC) were performed by the service team assisted by midwifery students using standardized tools (digital scales, stadiometers, and MUAC tapes). Data on the participants' age, occupation, and educational level were also collected.

2. Intervention: Nutrition Counseling Session

The core intervention was a structured, face-to-face nutrition counseling session conducted at Posyandu. The session was led by a team of lecturers from Matorkis Padangsidimpuan Midwifery Academy. The counseling material was developed based on national guidelines from the Indonesian Ministry of Health and covered 1) the concept of balanced nutrition for pregnant women, 2) the critical importance of the first 1000 days of life, 3) specific nutrient needs during pregnancy (energy, protein, iron, folic acid), 4) local food sources to meet these needs, and 5) ractical strategies for preventing stunting Counseling was delivered in an interactive, easily understandable manner using a specially designed leaflet as a visual aid and reference tool for participants.

3. Post-Intervention Assessment and Data Analysis

Immediately following the counseling session, participants completed a post-test questionnaire identical to the pre-test to evaluate changes in knowledge. The primary outcome was the change in knowledge scores, categorized as "Good" or "Poor" based on a predetermined cut-off point. Data from the pre-test, post-test, and anthropometric measurements were tabulated and descriptively analyzed. The analysis focused on presenting frequency distributions and percentages for the participant characteristics and knowledge categories. The effectiveness of the intervention was assessed by comparing the proportion of participants with "Good" knowledge before and after the counseling.

RESULTS AND DISCUSSION

Participant Characteristics

Community service activities were attended by nine pregnant women. As shown in Table 1, the majority of the participants (87.5%) were aged 30 years or older. Most of

them were housewives (75.0%) and had attained a higher level of education (93.8%). Anthropometric measurements indicated that the majority had normal nutritional status based on Body Mass Index (BMI) and weight-for-height (93.8%). However, Mid-Upper Arm Circumference (MUAC) measurements revealed that 2 out of 9 participants (22.2%) had a MUAC less than 23.5 cm, indicating a risk of chronic energy deficiency and requiring targeted nutritional intervention.

Table 1. Characteristics of Pregnant Women Participants (N=9)

Characteristic	Frequency (n)	Percentage (%)
Age		
< 30 years	2	12.5
≥ 30 years	7	87.5
Occupation		
Housewife	5	75.0
Private Sector	3	18.8
Others	1	6.2
Education		
Low (≤ Senior High School)	3	6.2
High (> Senior High School)	6	93.8
MUAC		
Normal (≥ 23.5 cm)	7	77.8
Deficient (< 23.5 cm)	2	22.2

Knowledge Improvement

The effectiveness of the direct nutritional counseling intervention is clearly demonstrated in Table 2 and Figure 1. The pre-test results indicated that the majority of participants (68.8%) had "oor" knowledge of maternal nutrition and stunting prevention. Following the interactive counseling session utilizing leaflets, significant improvement was observed. The post-test results showed that only 12.5% of the

participants remained in the "Poor" knowledge category, while 87.5% achieved a "Good" knowledge level. This represents a 56.3% increase in the proportion of participants with good knowledge after the intervention.

Table 2. Knowledge Level of Pregnant Women Before and After Counseling

Knowledge Category	**Pre-Test**	**Post-Test**		
	n	**%**	**n**	**%**
Good	4	31.2	7	87.5
Poor	6	68.8	2	12.5
Total	**9**	**100.0**	**9**	**100.0**

Figure 1. Comparison of Participants' Knowledge Level Before and After Nutrition Counseling
(A bar chart showing pre-test: Good 31.2%, Poor 68.8%; and post-test: Good 87.5%, Poor 12.5%)

Discussion

This community service activity successfully demonstrated the effectiveness of direct, structured nutrition counseling in improving the knowledge of pregnant women in Simasom Village regarding stunting prevention. The significant increase in knowledge scores from pre-test to post-test aligns with the findings of similar studies in low-resource settings. For instance, a systematic review by Girard and Olude (2012) concluded that nutritional education during pregnancy is effective in improving dietary practices and knowledge. The use of simple visual aids such as leaflets, as employed in this intervention has been shown to enhance message retention and comprehension, especially among populations with varying literacy levels (Kavle & Landry, 2018).

The baseline data revealed a critical gap in knowledge among participants prior to the intervention, with over two-thirds categorized as having a poor understanding. This underscores the persistent need for targeted health education in rural communities, where access to high quality antenatal information may be limited. Interestingly, while most participants had a normal BMI, the MUAC measurement identified 22.2% as at risk of undernutrition. This finding highlights the importance of using simple, community-friendly tools such as MUAC tapes for the early identification of at-risk pregnant women who may need more intensive counseling and support beyond general group education (Bhandari et al., 2020).

The success of this intervention can be attributed to its participatory and interactive approaches. Conducting the session within the familiar setting of Posyandu, led by a team of midwifery lecturers, likely fostered trust and engagement. The interactive Q&A session allowed for the clarification of local misconceptions and the customization of advice to the community's context, which is a crucial factor for the adoption of new practices (Perez-Escamilla et al., 2018).

Despite a clear improvement in knowledge, this activity has limitations that must be acknowledged. The primary limitation is the lack of long-term follow-up to assess whether the increased knowledge translates into sustained improvements in dietary practices and ultimately impacts birth outcomes and child growth. Knowledge is a necessary precursor to behavior change but does not guarantee it, as barriers such as food insecurity, economic constraints, and deeply held cultural beliefs can persist (Ruel & Alderman, 2013). Furthermore, the small sample size and one-time nature of the intervention limit the generalizability of the findings.

To build upon this initial success, future programs should integrate periodic reinforcement sessions, involve family members (especially husbands and mothers-in-law) in education, and link nutrition counseling with practical support such as demonstrations on preparing affordable, nutrient-dense local foods. Collaboration with local health centers to ensure consistent messaging and follow-up of at-risk mothers identified through MUAC screening is also recommended. In conclusion, this activity confirms that direct nutrition counseling is a vital and effective first step in empowering pregnant women with knowledge to combat stunting, forming a foundation upon which more comprehensive and sustained interventions can be built.

CONCLUSION

This community service activity demonstrated that direct and interactive nutrition counseling, supported by visual aids such as leaflets, is an effective intervention for significantly improving knowledge about balanced nutrition and stunting prevention among pregnant women in Simasom Village. The structured session led to a remarkable increase of 56.3% in the proportion of participants with good knowledge. However, the identification of pregnant women with Mid-Upper Arm Circumference (MUAC) measurements indicating nutritional risk underscores the fact that knowledge dissemination alone is insufficient. This finding highlights the critical need for sustained, multi component programs that combine education with practical support, routine monitoring, and targeted interventions for at-risk individuals. Therefore, it is strongly recommended that such educational initiatives be integrated into the regular agenda of integrated health posts (Posyandu) and strengthened through collaboration between academic institutions, local health centers, and community cadres to create a supportive ecosystem for long-term behavior al change and stunting reduction

Funding Statement

A Funding Statement is a section in a scientific publication or research report that explains the source of funding used to support a research or project. This

statement aims to ensure transparency about who provided the funding and whether there are any potential conflicts of interest related to funding. Common Elements in a Funding Statement: 1) Funding Source: Identifies the agency, organization, or individual who provided the funding. 2) Grant or Funding Number: Includes the reference number for funding, if applicable. 3) Scope of Funding: Describes which aspects of the research or project were supported by funding (e.g., laboratory costs, data collection, or publication). 4) Conflict of Interest Disclosure: If the funding source has a vested interest in the research outcomes, it should be disclosed.
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Ethical Compliance

This community service project and preparation of this report received no external funding from any public, commercial, or not-for-profit funding agency. All activities, including the production of educational materials (leaflets), logistical costs, and personnel time, were fully supported and self-funded by the implementing institution, the Matorkis Padangsidimpuan Midwifery Academy, as part of its institutional responsibility and commitment to community services.

Data Access Statement

The full dataset generated and analyzed during this community service project, including de-identified participant characteristics, pre-test/post-test scores, and anthropometric measurements (anonymized to protect participant privacy), is available from the corresponding author upon reasonable request for academic and non-commercial purposes. All data requests should be directed to **Yolanda Putri, S.Tr.Keb, M.K.M** via email at **darnanst@gmail.com**.

Conflict of Interest declaration

The authors declare no financial or non-financial conflicts of interestin relation to the work reported in this community service project. No external funding was received, and there were no personal circumstances or relationships that could have influenced the design, implementation, or reporting of this study. This project was conducted as an independent academic service initiative by Matorkis Padangsidimpuan Midwifery Academy.

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