

# Education on High-Risk Pregnancy and Nutritional Monitoring of Pregnant Women to Prevent Stunting



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**Abstract:** Stunting remains a major public health problem in Indonesia, particularly in rural areas, and prevention efforts must begin during pregnancy. This community service program aimed to improve knowledge and awareness regarding high-risk pregnancy and maternal nutritional monitoring as an early strategy to prevent stunting in Tupabiring Village. The program was conducted using a structured approach consisting of preparation, implementation, and evaluation stages. Activities included health education sessions, interactive discussions, nutritional status assessment through body weight and mid-upper arm circumference (MUAC) measurements, anemia risk identification, and individualized counseling for pregnant women. The results showed an improvement in participants' knowledge of high-risk pregnancy, danger signs, balanced maternal nutrition, and the importance of routine antenatal care (ANC) visits. Nutritional monitoring enabled early identification of pregnant women at risk of nutritional problems, providing a basis for targeted counseling and follow-up recommendations. The involvement of family members and community health cadres strengthened community participation and program sustainability. In conclusion, education combined with maternal nutritional monitoring is an effective community-based intervention to enhance maternal health awareness and support early stunting prevention efforts. Sustainable and integrated programs at the village level are recommended to optimize long-term maternal and child health outcomes

**Keywords:** High-Risk Pregnancy Education, Nutritional Monitoring, Maternal Nutrition, Stunting Prevention

## 1. Introduction

Stunting remains a major public health problem in Indonesia, particularly in rural and coastal areas. Stunting is defined as impaired growth and development in children resulting from chronic undernutrition that begins during pregnancy and continues in the early years of life. Its impact extends beyond physical growth deficits to include impaired cognitive development, reduced learning capacity, lower productivity, and increased risk of chronic diseases later in life (Black et al., 2021; UNICEF, WHO, & World Bank Group, 2024). Therefore, stunting prevention must be initiated as early as the prenatal period.

Maternal health and nutritional status during pregnancy are key determinants in preventing stunting. Pregnant women experiencing chronic energy deficiency, anemia, or inadequate dietary intake are at higher risk of delivering low birth weight (LBW) infants, which significantly increases the likelihood of subsequent growth faltering and stunting (Fikawati et al., 2021; Kurniasih & Sari, 2022). Strengthening maternal nutrition through monitoring and counseling has been shown to be an effective strategy in stunting prevention efforts (Astuti & Kurniawan, 2024; World Health Organization [WHO], 2023).

In addition to nutritional factors, high-risk pregnancy conditions also contribute to adverse maternal and neonatal outcomes. High-risk pregnancy includes maternal age that is too young or too advanced, short birth spacing, and the presence of comorbidities during pregnancy (Lestari & Amalia, 2024). Limited knowledge regarding danger signs of pregnancy and the importance of routine antenatal care (ANC) may lead to delayed health-seeking behavior and increased complications (WHO, 2022). Optimal utilization of integrated ANC services is essential for early detection of maternal and fetal health problems and plays an important role in preventing stunting (Putri & Lestari, 2023; Rahman & Sulaiman, 2025).

Tupabiring Village is characterized by socio-economic conditions in which many families rely on informal employment, potentially affecting their ability to meet balanced nutritional needs during pregnancy. Preliminary observations indicated that several pregnant women had limited understanding of high-risk pregnancy, danger signs, adequate nutritional intake, and the importance of routine ANC visits. Family involvement, particularly from husbands and other household members, in supporting



maternal nutrition and health monitoring was also found to be suboptimal. Family support is recognized as an important factor in improving maternal nutritional practices and health behaviors (Handayani & Rahmawati, 2022).

Considering these challenges, a community service program was implemented focusing on education about high-risk pregnancy and nutritional monitoring for pregnant women as a preventive strategy to reduce the risk of stunting. Community-based health education interventions have been shown to improve knowledge, awareness, and health practices related to pregnancy and stunting prevention (Pratiwi & Hidayat, 2025; Susanti & Wahyuni, 2024). Through participatory education, nutritional assessment, and counseling involving families and community health cadres, this program aims to strengthen maternal capacity in maintaining a healthy pregnancy and contribute to early stunting prevention efforts in Tupabiring Village.

## 2. Materials and Methods

This community service program was implemented through a structured and continuous approach consisting of three main stages: preparation, implementation, and evaluation. A systematic approach is essential in community-based health interventions to ensure effectiveness, relevance to community needs, and sustainability (Pratiwi & Hidayat, 2025; Susanti & Wahyuni, 2024). The program was designed to address maternal health and nutritional challenges in Tupabiring Village as part of early stunting prevention efforts.

### *Preparation Stage*

The preparation stage involved coordination with village authorities, community leaders, and local health cadres to obtain support and determine the schedule and venue of the activity. Community engagement and stakeholder collaboration are important components in strengthening health promotion programs at the village level (Kementerian PPN/Bappenas, 2021).

An initial assessment was conducted to identify the condition of pregnant women, including general health status and potential risk factors. Educational materials on high-risk pregnancy and maternal nutrition were developed based on national guidelines and evidence-based recommendations (Kementerian Kesehatan Republik Indonesia, 2022; World Health Organization [WHO], 2023). Educational media and simple tools for nutritional monitoring were prepared, including weight measurement scales and mid-upper arm circumference (MUAC) tapes. The implementation team roles were clearly defined to ensure organized and efficient activity execution.

### *Implementation Stage*

The implementation stage consisted of health education sessions on high-risk pregnancy delivered through lectures and interactive discussions involving pregnant women and their family members. Health education is recognized as an effective strategy to improve maternal knowledge and promote preventive behaviors (Pratiwi & Hidayat, 2025; WHO, 2022). The educational session covered danger signs during pregnancy, risk factors for high-risk pregnancy, the importance of routine antenatal care (ANC), and balanced nutritional intake during pregnancy.

Nutritional monitoring was conducted by measuring body weight and mid-upper arm circumference (MUAC) to identify the risk of chronic energy deficiency. Screening for anemia risk was also performed through symptom identification and history taking. Nutritional assessment during pregnancy plays a crucial role in preventing low birth weight and reducing the risk of stunting (Astuti & Kurniawan, 2024; Fikawati et al., 2021).

Based on the monitoring results, individualized health and nutrition counseling was provided according to each participant's condition. Counseling emphasized adequate balanced nutrition, iron supplementation adherence, regular ANC visits, and early prevention of stunting beginning in pregnancy. Integrated ANC services are essential for early detection and management of maternal and fetal risks (Rahman & Sulaiman, 2025; Putri & Lestari, 2023).

### *Evaluation Stage*

The evaluation stage aimed to assess the effectiveness and outcomes of the community service program. Evaluation included assessing changes in participants' knowledge before and after the educational session, participation rates, and feedback from pregnant women and health cadres. Monitoring and evaluation are key components of sustainable community health programs (Kementerian Kesehatan Republik Indonesia, 2024).

The results of the evaluation were used as a basis for improving future community service activities and ensuring program continuity at the local level.

### *Time and Location of Activity*

The community service activity was conducted on January 5, 2025, at the Tupabiring Village Hall, starting at 09:00 WITA. The program was implemented in a single service period encompassing preparation, educational intervention, nutritional monitoring, individualized counseling, and final evaluation. The activity schedule was adjusted according to field conditions and mutual agreement with village partners to ensure optimal implementation and community participation.

### 3. Results

The implementation of the community service program demonstrated a significant improvement in pregnant women’s knowledge and awareness regarding high-risk pregnancy and the importance of adequate maternal nutrition. Following the educational sessions and interactive discussions, participants showed better understanding of pregnancy risk factors, danger signs, and the impact of maternal health on fetal growth and development.

The improvement in knowledge was reflected in participants’ active engagement during the sessions, their ability to respond correctly to evaluation questions, and their capability to restate key concepts delivered during the education program.

In addition, there was an increase in awareness regarding the importance of routine antenatal care (ANC) visits in accordance with standard guidelines. Pregnant women expressed greater motivation to utilize available health services and acknowledged that regular ANC visits play a crucial role in early detection of pregnancy-related risks and prevention of complications associated with stunting.

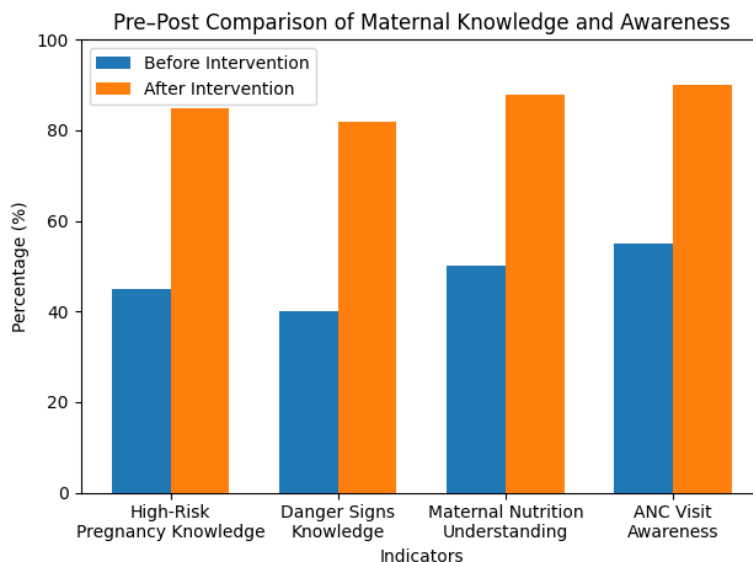


Figure 1. Prepost Comparison of Maternal Knowledge and Awareness

Nutritional monitoring conducted during the program provided an initial overview of maternal nutritional status in Tupabiring Village. Through body weight measurement and mid-upper arm circumference (MUAC) assessment, several pregnant women were identified as being at risk of nutritional problems. These findings served as the basis for individualized nutritional counseling, including dietary improvement recommendations, iron supplementation adherence, and referral to health facilities when necessary.

Overall, the program positively impacted maternal knowledge, awareness, and early risk identification. The findings suggest that community-based education combined with direct nutritional monitoring is an effective preventive strategy for stunting beginning in pregnancy.



Figure 1. Pregnancy Education Leaflet



#### 4. Discussion

As a follow-up to this community service activity, a sustainable mentoring program for pregnant women is planned in collaboration with local health cadres and healthcare professionals. Continuous assistance is essential to ensure that the knowledge gained during the educational sessions translates into consistent health behavior changes (Pratiwi & Hidayat, 2025; Susanti & Wahyuni, 2024). Regular monitoring of maternal health and nutritional status aligns with Indonesia's national strategy for accelerating stunting reduction, which emphasizes specific interventions targeting pregnant women (Ministry of Health of the Republic of Indonesia, 2021; Ministry of National Development Planning/Bappenas, 2021).

The mentoring activities will include strengthening adherence to integrated antenatal care (ANC) visits, periodic nutritional monitoring, and individualized health education. Integrated ANC services play a crucial role in early detection of pregnancy-related risks and prevention of complications associated with stunting (Ministry of Health of the Republic of Indonesia, 2022; Rahman & Sulaiman, 2025; World Health Organization [WHO], 2022). Routine nutritional monitoring during pregnancy contributes significantly to preventing chronic energy deficiency, anemia, and low birth weight—conditions strongly associated with stunting (Astuti & Kurniawan, 2024; Fikawati et al., 2021; Nugroho & Fitriani, 2022).

The involvement of community health cadres is strategic in ensuring program sustainability. As frontline community health agents, cadres have direct access to pregnant women and can facilitate early detection of health and nutritional risks. Community-based mentoring models have been shown to improve maternal compliance with recommended health practices (Susanti & Wahyuni, 2024). Additionally, family support plays a crucial role in ensuring adequate maternal nutrition and healthcare utilization during pregnancy (Handayani & Rahmawati, 2022).

Beyond pregnancy, the development of extended educational programs involving breastfeeding mothers and families with toddlers is planned to broaden stunting prevention efforts during the first 1,000 days of life. This critical period significantly determines child growth and long-term human capital development (Black et al., 2021; UNICEF, 2023). Global evidence highlights that nutrition interventions during pregnancy and early childhood yield substantial long-term benefits in reducing stunting (Bhutta & Victora, 2022; UNICEF, WHO, & World Bank Group, 2024).

The extended education program will focus on exclusive breastfeeding practices during the first six months of life, adequate nutrition for lactating mothers, and appropriate complementary feeding (MP-ASI). Specific nutrition interventions integrated across pregnancy and early childhood are central components of national stunting reduction policies (Ministry of Health of the Republic of Indonesia, 2024). Through a family- and community-based approach, sustainable improvements in maternal and child nutrition practices are expected to be achieved.

This follow-up plan reflects a comprehensive and sustainable approach to stunting prevention, integrating maternal education, nutritional monitoring, community empowerment, and alignment with national health policies.

#### 5. Conclusions

The community service program implemented in Tupabiring Village demonstrated that education on high-risk pregnancy and nutritional monitoring of pregnant women is an effective preventive strategy for reducing the risk of stunting starting from the prenatal period. The program successfully improved pregnant women's knowledge and awareness regarding pregnancy risk factors, danger signs, the importance of routine antenatal care (ANC) visits, and adequate balanced nutrition during pregnancy.

Nutritional monitoring through body weight and mid-upper arm circumference (MUAC) measurements provided an initial overview of maternal nutritional status, enabling early identification of women at risk of nutritional problems and facilitating targeted counseling interventions. The involvement of community health cadres and family members strengthened social support and enhanced the sustainability of the program at the community level.

The program contributed not only to increased knowledge but also to improved attitudes and motivation among pregnant women to maintain a healthy pregnancy. Therefore, integrated and sustainable education and nutritional monitoring programs are strongly recommended as part of a comprehensive village-level strategy for stunting prevention.

#### Conflict of Interest

No conflicts of interest

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