

The Importance of Optimal Nutritional Intake for The Health of Pregnant Women in Indonesia: Key Challenges and Strategic Solutions

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ABSTRACT

Optimal nutrition during pregnancy plays a vital role in ensuring maternal health and healthy fetal development. Appropriate nutritional needs, including macronutrients and micronutrients, are essential to support fetal growth, prevent pregnancy complications, and reduce the risk of premature birth and low birth weight. In Indonesia, maternal nutrition is still a major challenge, with a high prevalence of anemia and chronic energy deficiency. Factors such as economic constraints, unequal access to health services, lack of education about the importance of nutrition, and socio-cultural influences on diet, exacerbate this condition. The challenge in meeting the nutritional needs of pregnant women is also related to the low awareness and knowledge of nutrition among the community, especially in remote areas. To overcome this problem, a multi-sectoral approach is needed involving government intervention, community empowerment, and increasing access to health services. Continuous education and targeted nutritional assistance programs can be effective solutions in improving the nutritional status of pregnant women in Indonesia. Thus, strong cooperation is needed between various stakeholders to ensure optimal maternal health, which will ultimately improve the quality of future generations.

Keywords: Maternal nutrition, Maternal health, Nutritional challenges, Health solutions

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INTRODUCTION

Optimal nutrition during pregnancy is the main foundation for maternal health and fetal development.¹ Optimal nutrition is a balanced nutritional intake that supports maximum health and body development.² Adequate nutritional intake not only supports fetal growth, but also maintains maternal health, reducing the risk of complications such as preeclampsia, anemia, and gestational diabetes. Globally, the World Health Organization (WHO) reports that around 15% of the total burden of disease in pregnant women is related to malnutrition.² In Indonesia, this problem is still very relevant, with the prevalence of anemia in pregnant women reaching around 48.9% in 2021.³ Based on the most recent data from 2023, approximately 27% of pregnant women in rural areas of Indonesia still lack access to nutritious food, significantly increasing the risk of health complications for both the mothers and their unborn children.^{2,3} Lack of iron, folic acid, and protein intake are some of the main causes of this condition, which has serious impacts on maternal and fetal health, including the risk of premature birth, low birth weight (LBW), and impaired cognitive development in children.¹

Several factors that influence the nutritional status of pregnant women in Indonesia include economic constraints, limited access to health services, and lack of education and knowledge about the importance of nutrition during pregnancy. In addition, eating habits influenced by local cultural and traditional factors often lead to an unbalanced diet, especially in rural and remote areas. Globally, similar challenges are also faced in many developing countries, where inequality in access to nutritious food and health services is a major obstacle in efforts to improve the nutritional status of pregnant women.⁴ The impact of this malnutrition is not only felt directly by the mother and fetus, but also by the wider community through increased health costs and decreased quality of human resources in the future.⁵

Globally, the issue of access to nutritious food during pregnancy remains a challenge, especially in developing countries.⁵ In Indonesia, this is reflected in the latest data showing that in 2023, 27% of pregnant women in rural areas still experience difficulties in obtaining sufficient and nutritious food, increasing the risk of significant health complications.³ To address nutritional problems in pregnant women, a comprehensive approach involving various sectors is needed.⁴ In Indonesia, government programs such as the Provision of Additional Food (PMT) for pregnant women and nutritional education campaigns have been implemented, although they still need to be strengthened and expanded in scope.³ Global efforts are also focused on increasing access to nutritional supplements, improving the quality of maternal health services, and providing ongoing nutrition education. In addition, empowering local communities through education and training on the importance of

nutrition during pregnancy can be an effective step in creating an environment that supports maternal health. Synergy between the government, private sector, and communities is essential to ensure that all pregnant women get the nutrition they need to have a healthy pregnancy and give birth to a strong and healthy generation.⁵ The purpose of this Commentary is to outline the challenges in meeting optimal nutrition and offer relevant solutions.

Importance of Optimal Nutrition During Pregnancy

During pregnancy, the mother's nutritional needs increase significantly to support fetal development and maintain maternal health. The nutrients needed include macronutrients such as carbohydrates, proteins, and fats, as well as micronutrients such as folic acid, iron, calcium, vitamin D, and iodine. Each type of nutrient has an important role, for example, carbohydrates provide energy, proteins support fetal tissue growth, and fats, especially omega-3 fatty acids, support fetal brain and eye development.^{2,4}

Micronutrient needs are also very important during pregnancy. Folic acid, for example, helps prevent neural tube defects in the fetus, while iron is needed to form hemoglobin, which carries oxygen throughout the mother's and fetus' bodies. Calcium and vitamin D play a role in fetal bone development and maintain maternal bone strength.⁶ Iodine is essential for thyroid function and fetal brain development.⁴ Deficiencies in these nutrients can cause various complications, such as anemia, impaired cognitive development, and bone problems.⁷

To ensure a healthy pregnancy, pregnant women need to get adequate nutritional intake through a balanced diet and, if necessary, supplements. The government and health care providers also play an important role in providing education and access to adequate nutritional sources. By fulfilling good nutritional needs, the risk of pregnancy complications can be minimized, and the fetus can develop optimally.⁶

However, cultural practices in Indonesia, such as family meals and prioritizing traditional foods, often influence pregnant women's food choices.⁴ In addition, some cultural beliefs related to food taboos can limit the consumption of essential nutrients, which impacts maternal and infant health. One example of a successful intervention in Indonesia is a nutrition improvement program through Posyandu in rural areas, which involves local health cadres in providing nutrition education to pregnant women and toddlers, as well as distributing supplementary foods such as nutritional biscuits.² As a result, stunting rates in several areas have been significantly reduced. This success shows the importance of community empowerment and government support in improving the nutritional status of mothers and children.^{4,5}

Impact of Nutritional Deficiencies on the Mother and Fetus

Malnutrition during pregnancy can have serious impacts on maternal and fetal health. One common condition is anemia, which affects around 16% of pregnant women in developed countries and higher in developing countries such as Indonesia. Anemia in pregnant women can cause various complications such as premature birth and low birth weight (LBW). Data from various studies show that daily iron supplementation during pregnancy can reduce the risk of anemia by 12% and the risk of babies being born with LBW by 3%.⁸

In Indonesia, in 2022-2023, the prevalence of anemia in pregnant women remains a major challenge. Premature birth and LBW are also still the main causes of neonatal morbidity and mortality. It is estimated that there are around 15 million premature births worldwide each year, with more than 20 million babies born with LBW. These babies are at high risk of long-term complications such as developmental disabilities and increased risk of chronic diseases in adulthood (BioMed Central, WHO).⁹

Efforts to address this issue in Indonesia include increasing access to and compliance with iron supplementation during pregnancy, as well as closer monitoring of maternal and fetal health. In addition, nutrition education and counselling for pregnant women must also continue to be improved to ensure that nutritional needs during pregnancy are optimally met.¹⁰

According to data from the Ministry of Health of the Republic of Indonesia in 2023, government programs that focus on improving the nutrition of pregnant women, such as the Posyandu program and nutrition counselling, have shown significant results.² Recent studies have shown that this program has succeeded in increasing the nutritional intake of pregnant women by 25% and reducing stunting rates in children under five by 15% in areas that are the focus of the intervention. These data confirm the effectiveness of community-based approaches and government support in improving the nutritional status of pregnant women and child health.³

Challenges Faced by The Indonesian Government

Meeting nutritional needs during pregnancy is a significant challenge, both in Indonesia and globally. One major challenge is limited access to nutritious food, especially in rural and remote areas. In Indonesia, many pregnant women still live below the poverty line, which limits their ability to purchase nutrient-rich foods. In addition, the uneven distribution of health services exacerbates the situation, with many pregnant women in remote areas not receiving regular check-ups and adequate nutrition education.¹¹ Cultural factors also play a role, with traditional, less balanced diets often not meeting the increased nutri-

tional needs of pregnancy.³

Globally, similar challenges are evident, especially in developing countries. Economic inequality, low education, and limited health services mean that many pregnant women do not receive adequate nutrition.¹² In some countries, conditions such as food insecurity, conflict, and climate change exacerbate the situation by reducing the availability and access to nutritious food. In addition, in many places, there is a lack of awareness about the importance of micronutrient intakes such as iron, folate, and calcium, which are critical for maternal health and fetal development.¹³

Global efforts to address these challenges involve a variety of initiatives, such as iron and folic acid supplementation programs, nutrition education, and increased access to maternal health services.⁹ In Indonesia, the government has launched programs such as Supplementary Feeding (PMT) and balanced nutrition campaigns, although their implementation still faces various obstacles, including a lack of trained health workers and limited funding. These challenges indicate the need for a more integrated and sustainable approach to ensure that all pregnant women can meet their nutritional needs optimally.¹⁴

Comparison of solution strategies in increasing nutritional intake in pregnant women between Indonesia and developed countries

A comparison of strategies for increasing nutritional intake in pregnant women between Indonesia and developed countries is as shown in table 1.

The main differences lie in the level of access, distribution of programs, and integration of health services, where developed countries often have more structured systems and greater resources compared to Indonesia.¹⁵

The Indonesian government has implemented various strategies to improve nutritional intake, especially for pregnant women and children. Food assistance programs, nutrition education, and health campaigns are held to ensure that nutritional needs are met.¹⁶ Non-cash food assistance (BPNT) and education programs that focus on the importance of nutritional intake are top priorities.¹⁷

The role of families and communities is very important in this effort. Families are expected to support the fulfillment of nutritional needs by providing healthy food and supporting good eating behaviors.¹⁸ In addition, community involvement, such as posyandu groups, also contributes to increasing awareness and support for nutrition at the local level.¹⁶⁻¹⁸

Improving access to health is an integral part of this strategy. The government is working to expand pregnant women's access to quality health services, including the provision of nutritional supplements such as iron tablets.¹⁹

Table 1: Comparative overview of strategies to increase nutritional intake in pregnant women between Indonesia and developed countries

Aspect	Indonesia	Developed countries
Assistance Program Food	Non-Cash Food Assistance Program (BPNT), distribution package food nutritious	Help food nutritious through government programs and subsidies food Healthy
Nutrition Education	Education through integrated health post, training power health, campaign local	Educational program integrated in the clinic health, material online education, and classes Mother pregnant.
Health Campaign	Campaign local about importance nutrition through local media and communities.	Campaign national with mass media support, advertising television, and social media.
Improving Access to Health	Development of health centers in the regions remote, subsidy supplement nutrition.	System health integrated with access easy to clinic and home sick, subsidy medicines and supplements.
Involvement Family	Support from family and community, group programs woman.	Support family through service health integrated, education, and services consultation.
Health Infrastructure	Infrastructure health often limited to areas isolated.	Infrastructure health sophisticated and easily accessible throughout the country.
Funding and Resources	Depends on budget government and NGO support.	Funding stable from government, insurance health, and sectors private.

Effective education programs and awareness campaigns through the media also play a role in increasing knowledge about the importance of good nutrition for maternal and child health.²⁰

Case Study

Case Study: Nutrition Improvement Program for Pregnant Women in Sikka District, East Nusa Tenggara, Indonesia

In Sikka District, East Nusa Tenggara, Indonesia, the local government and local NGOs launched the "Healthy Nutrition for Pregnant Women" program with the aim of improving the nutritional intake and health of pregnant women. The program includes nutrition counselling, distribution of nutritious food packages, and training for local health workers. The food packages provided include nutritious food ingredients such as fortified rice, milk, and vitamins. In addition, regular education sessions are held on healthy eating patterns and the importance of health checks during pregnancy.²¹

RESULTS AND IMPACT

The program showed significant positive impacts on maternal health in Sikka District. The anemia rate among pregnant women decreased significantly from 40% to 25% within two years of the program's inception. In addition, there was an increase in infant birth weight and a decrease in the rate of premature births. The education provided also increased maternal knowledge about proper nutrition, which impacted their daily eating behavior. Overall, the program succeeded in improving the health of pregnant women and their babies, as well as strengthening the

capacity of local health workers to provide better nutrition services.²¹

CONCLUSION

The conclusion of this commentary is that optimal nutrition during pregnancy is critical for maternal health and fetal development, with undernutrition leading to serious complications such as anemia and preterm birth. In Indonesia, key challenges include high prevalence of anemia and difficulty accessing nutritious food, particularly in rural areas. Addressing these issues requires a comprehensive approach involving government, the private sector, and communities, as well as strengthening programs such as PMT and nutrition education. A nutrition improvement program in Sikka District has shown positive results, such as reduced anemia rates and increased infant weight, highlighting the success of community-based approaches in improving maternal health.

To overcome these challenges, solutions that can be done include increasing access to health services and nutritious food, and strengthening education programs at the community level. The government needs to expand food assistance and nutrition education programs, while communities and families can provide support by ensuring that daily nutritional needs are met. Practical solutions for optimal nutrition management in Indonesia can be implemented by strengthening community-based nutrition education programs, distributing appropriate food supplements, and involving local health cadres in direct monitoring and support. To effectively improve community education in rural areas, intensive training is provided to local cadres so that they can convey health information more clearly and accurately. In addition, participatory methods such as work-

shops and discussion groups are applied to ensure that educational materials are relevant and easily accepted by local communities. Another form of collaboration between the government, NGOs, and the private sector is important to create an integrated system to improve maternal and infant health. In addition, collaboration between the government, NGOs, and the private sector is important to create an integrated system to improve maternal and infant health.

REFERENCES

1. Apostolopoulou A, Tranidou A, Tsakiridis I, Magriplis E, Dagklis T, Chourdakis M. Effects of Nutrition on Maternal Health, Fetal Development, and Perinatal Outcomes. *Nutrients*. 2024 Jan 27;16(3):375. doi: 10.3390/nu16030375. PMID: 38337660; PMCID: PMC10857165.
2. Del Castillo-Matamoros SE, Poveda NE. Importance of nutrition in pregnant women. *Rev Colomb Obstet Ginecol*. 2021 Dec 30;72(4):339-345. doi: 10.18597/rcog.3825.
3. Suega K, Dharmayuda TG, Sutarga IM, Bakta IM. Iron-deficiency anemia in pregnant women in Bali, Indonesia: a profile of risk factors and epidemiology. *Southeast Asian J Trop Med Public Health*. 2002 Sep;33(3):604-7.
4. Chaparro CM, Suchdev PS. Anemia epidemiology, pathophysiology, and etiology in low- and middle-income countries. *Ann N Y Acad Sci*. 2019 Aug; 1450(1): 15-31. doi: 10.1111/nyas.14092.
5. Atukunda P, Eide WB, Kardel KR, Iversen PO, Westerberg AC. Unlocking the potential for achievement of the UN Sustainable Development Goal 2 - 'Zero Hunger' - in Africa: targets, strategies, synergies and challenges. *Food Nutr Res*. 2021 May 26; 65. doi: 10.29219/fnr.v65.7686.
6. Brink LR, Bender TM, Davies R, Luo H, Miketinas D, Shah N, Loveridge N, Gross G, Fawkes N. Optimizing Maternal Nutrition: The Importance of a Tailored Approach. *Curr Dev Nutr*. 2022 Jul 22;6(9):nzac118. doi: 10.1093/cdn/nzac118.
7. Gernand AD, Schulze KJ, Stewart CP, West KP Jr, Christian P. Micronutrient deficiencies in pregnancy worldwide: health effects and prevention. *Nat Rev Endocrinol*. 2016 May; 12(5): 274-89. doi: 10.1038/nrendo.2016.37.
8. Bukhari IA, Alzahrani NM, Alanazi GA, Al-Taleb MA, AlOtaibi HS. Anemia in Pregnancy: Effects on Maternal and Neonatal Outcomes at a University Hospital in Riyadh. *Cureus*. 2022 Jul 25;14(7):e27238. doi: 10.7759/cureus.27238.
9. Karami M, Chaleshgar M, Salari N, Akbari H, Mohammadi M. Global Prevalence of Anemia in Pregnant Women: A Comprehensive Systematic Review and Meta-Analysis. *Matern Child Health J*. 2022 Jul;26(7):1473-1487. doi: 10.1007/s10995-022-03450-1.
10. Collier AY, Molina RL. Maternal Mortality in the United States: Updates on Trends, Causes, and Solutions. *Neoreviews*. 2019 Oct;20(10):e561-e574. doi: 10.1542/neo.20-10-e561.
11. Zhong C, Tessing J, Lee BK, Lyall K. Maternal Dietary Factors and the Risk of Autism Spectrum Disorders: A Systematic Review of Existing Evidence. *Autism Res*. 2020 Oct;13(10):1634-1658. doi: 10.1002/aur.2402.
12. Atukunda P, Eide WB, Kardel KR, Iversen PO, Westerberg AC. Unlocking the potential for achievement of the UN Sustainable Development Goal 2 - 'Zero Hunger' - in Africa: targets, strategies, synergies and challenges. *Food Nutr Res*. 2021 May 26;65. doi: 10.29219/fnr.v65.7686.
13. Schnitter R, Berry P. The Climate Change, Food Security and Human Health Nexus in Canada: A Framework to Protect Population Health. *Int J Environ Res Public Health*. 2019 Jul 16; 16(14):2531. doi: 10.3390/ijerph16142531.
14. Herawati DMD, Sunjaya DK. Implementation Outcomes of National Convergence Action Policy to Accelerate Stunting Prevention and Reduction at the Local Level in Indonesia: A Qualitative Study. *Int J Environ Res Public Health*. 2022 Oct 20;19(20):13591. doi: 10.3390/ijerph192013591. PMID: 36294173; PMCID: PMC9602846.
15. Sandhu S, Sharma A, Cholera R, Bettger JP. Integrated Health and Social Care in the United States: A Decade of Policy Progress. *Int J Integr Care*. 2021 Oct 29;21(4):9. doi: 10.5334/ijic.5687. PMID: 34785994; PMCID: PMC8570194.
16. Kehm R, Davey CS, Nanney MS. The role of family and community involvement in the development and implementation of school nutrition and physical activity policy. *J Sch Health*. 2015 Feb;85(2):90-9. doi: 10.1111/josh.12231. PMID: 25564977; PMCID: PMC4903017.
17. Dixon J. Improving the quality of care in health systems: towards better strategies. *Isr J Health Policy Res*. 2021 Feb 19;10(1):15. doi: 10.1186/s13584-021-00448-y.
18. Morrison JL, Regnault TR. Nutrition in Pregnancy: Optimising Maternal Diet and Fetal Adaptations to Altered Nutrient Supply. *Nutrients*. 2016 Jun 4;8(6):342. doi: 10.3390/nu8060342. PMID: 27271666; PMCID: PMC4924183.
19. Likhari A, Patil MS. Importance of Maternal Nutrition in the First 1,000 Days of Life and Its Effects on Child Development: A Narrative Review. *Cureus*. 2022 Oct 8;14(10):e30083. doi: 10.7759/cureus.30083.
20. Lowensohn RI, Stadler DD, Naze C. Current Concepts of Maternal Nutrition. *Obstet Gynecol Surv*. 2016 Aug;71(7):413-26. doi: 10.1097/OGX.0000000000000329.
21. Beal T, Tumilowicz A, Sutrisna A, Izwardy D, Neufeld LM. A review of child stunting determinants in Indonesia. *Matern Child Nutr*. 2018 Oct;14(4):e12617. doi: 10.1111/mcn.12617.