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Narrative Review: Efforts to Prevent Stunting through the Role of Midwifery during the First 1,000 Days of Life

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Abstract: Stunting remains one of the major chronic nutritional problems and a serious challenge in Indonesia. This condition not only affects children's physical growth but also impacts cognitive development, productivity, and the overall quality of human resources in the future. The Government of Indonesia has set a target to reduce the prevalence of stunting through various cross-sectoral programs, ranging from specific nutrition interventions to broader sensitive interventions. This article discusses the causes of stunting, prevention strategies involving the health, education, social, and economic sectors, as well as the role of public policy in supporting these efforts. A review of the literature indicates that reducing stunting requires an integrated approach focused on the First 1,000 Days of Life, improved access to health services, provision of nutritious food, community education, and stronger inter-agency coordination. The findings highlight that the success of stunting prevention depends not only on medical interventions but also on policy synergy, community participation, and long-term political commitment. With appropriate and sustainable strategies, Indonesia has the potential to achieve its stunting reduction targets in line with the Sustainable Development Goals (SDGs) 2030 agenda.

Keyword: Stunting, Nutrition, Prevention, Public Policy, Public Health

INTRODUCTION

Stunting is a condition of impaired growth and development in children under five caused by chronic malnutrition and recurrent infections, characterized by a height-for-age below the standard (WHO, 2020). It remains a global challenge, with around 148.1 million children under five experiencing stunting in 2022 (UNICEF, 2023). In Indonesia, the prevalence of stunting is still high despite showing a declining trend. The Indonesian Nutrition Status Survey (SSGI) reported a prevalence of 21.6% in 2022, decreasing slightly to 21.5% in 2023, and further dropping to 19.8% in 2024 (Ministry of Health RI, 2024).

However, this figure remains above the WHO public health problem threshold of 20% (WHO, 2019). Several provinces even report prevalence rates above 25%, indicating disparities between regions (Ministry of Health RI, 2023).

Stunting has wide-ranging impacts on children's lives, both in the short and long term. Children with stunting are at higher risk of cognitive impairments, delayed motor development, and reduced learning capacity (Black et al., 2017). In the long run, stunting is associated with lower productivity, an increased risk of non-communicable chronic diseases, and significant economic losses at the national level (Danaei et al., 2021).

The First 1,000 Days of Life (from pregnancy until a child's second birthday) are recognized as a critical window of opportunity to prevent stunting (Bhutta et al., 2020). Nutritional interventions during this period have been proven to significantly improve maternal and child health outcomes. Failure to meet nutritional needs during this phase can result in irreversible consequences for a child's growth and development (Victora et al., 2021).

Midwives play a strategic role in stunting prevention. Beyond providing maternal and child health services, they are actively involved in maternal nutrition education, promotion of exclusive breastfeeding, complementary feeding counseling, and monitoring of child growth and development (Titaley et al., 2020). Other studies also show that active midwife involvement in community-based stunting prevention programs improves child feeding practices and reduces stunting prevalence (Aridiyah et al., 2021).

Based on this background, this article aims to review current literature on stunting prevention efforts through the role of midwifery during the First 1,000 Days of Life, highlighting effective strategies, implementation challenges, and recommendations for future midwifery practice..

METHOD

This article employs a narrative review design to examine literature on stunting prevention through the role of midwifery during the First 1,000 Days of Life (HPK). A narrative review was chosen because it allows for a broader and more in-depth analysis of the topic by synthesizing various types of studies and reports, even though it does not follow the more rigid protocols of a systematic review (Green et al., 2018).

The literature search was conducted across several electronic databases, including PubMed, Scopus, Google Scholar, and Garuda. Keywords were applied in both English and Indonesian, such as "stunting," "midwifery," "maternal nutrition," "child growth," "1000 days of life," "prevention of stunting," "kebidanan," and "1000 HPK." The search was limited to articles published between 2017 and 2024 to ensure the relevance and currency of the data (Snyder, 2019).

The inclusion criteria were as follows:

1. Original research articles, review articles, and official reports from international or national organizations (e.g., WHO, UNICEF, Ministry of Health of Indonesia).
2. Articles addressing risk factors, impacts, or prevention strategies for stunting.
3. Articles discussing the role of midwives in the context of maternal and child health services.

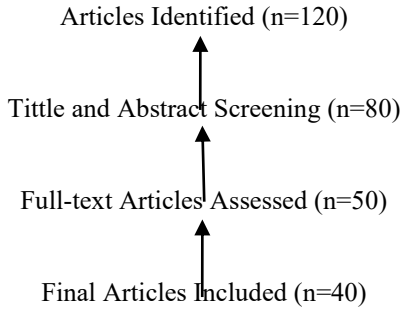
The exclusion criteria were as follows:

1. Articles not available in full text.
2. Opinion pieces, editorials, or reports not based on research evidence.
3. Articles irrelevant to stunting prevention during the First 1,000 Days of Life.

From the initial search, approximately 120 articles were identified. After screening titles, abstracts, and full texts according to the inclusion and exclusion criteria, 40 articles were selected for further analysis. The analysis was conducted using a narrative synthesis

approach, which involved summarizing and categorizing the main findings from the literature into major themes: causes of stunting, impacts of stunting, prevention strategies, and the role of midwifery (Ferrari, 2015; Green et al., 2018).

Figure 1. Article Selection Flow Diagram (Narrative Review)



RESULT AND DISCUSSION

A. Factor Causing Stunting

Stunting is a multidimensional condition influenced by various interrelated factors. The first major factor is the nutritional status of mothers and children. Poor maternal nutrition during pregnancy is closely associated with the risk of low birth weight (LBW), which serves as a primary entry point for growth disorders (WHO, 2020). In addition, suboptimal exclusive breastfeeding practices remain a challenge in many developing countries, including Indonesia. UNICEF (2021) noted that exclusive breastfeeding can prevent nearly one-third of stunting cases if implemented consistently. The quality and quantity of complementary feeding (MP-ASI) also play an important role, as children aged 6–24 months require adequate sources of animal protein, micronutrients, and energy to support growth (Ministry of Health RI, 2022).

Several studies emphasize that low birth weight (LBW) is one of the most important determinants of stunting in children under five. Children with a history of LBW are at higher risk of stunting compared to children with normal birth weight (Putri et al., 2021; BMC Public Health, 2024). In addition, parental stature has also been shown to be a significant predictor of stunting risk, where children of short-statured parents tend to have a higher likelihood of experiencing stunting (PubMed, 2024).

Maternal education and knowledge also play an important role. Mothers with low educational attainment or limited nutritional knowledge are more likely to practice inadequate feeding, thereby increasing the risk of stunting (Harahap et al., 2024; Wulandari et al., 2025; Juniarti et al., 2025). Inappropriate complementary feeding practices, in terms of timing, frequency, or diversity, have also been proven to be associated with increased risk of stunting (Babys et al., 2022).

Beyond nutrition, recurrent infections and illnesses are also significant causes. Children who frequently suffer from diarrhea, acute respiratory infections (ARI), or helminthiasis tend to experience growth restrictions, as nutrients that should have been absorbed by the body are instead lost due to illness. Victora et al. (2021) emphasized that recurrent infections in toddlers exacerbate malnutrition and increase the risk of growth failure. The relationship between infectious diseases, malnutrition, and stunting illustrates a vicious cycle that is difficult to break without comprehensive public health interventions.

Another factor is sanitation and access to clean water. Checkley et al. (2020) showed that children living in environments with poor sanitation are at greater risk of stunting due to repeated exposure to diarrhea-causing pathogens. Limited access to clean water also increases the risk of enteric infections that disrupt nutrient absorption. Therefore, child nutrition

improvement efforts will not be effective without being accompanied by improvements in basic sanitation and the provision of safe drinking water.

In addition to maternal factors, environmental and sanitation conditions are also significant causes. Children living in households with limited access to clean water or poor sanitation are at greater risk of stunting compared to those with access to a healthy environment (Sihotang et al., 2023; Risk Factors Associated, 2023). This highlights the importance of integrating nutrition interventions with improvements in sanitation and environmental hygiene.

Overall, the factors causing stunting are highly complex and interrelated. The interaction between maternal nutrition, socioeconomic status, child feeding practices, and environmental conditions are the main determinants of success in preventing stunting (Subratha & Agustia, 2024; Idrus et al., 2023). By understanding these diverse determinants, interventions can be better targeted.

On the other hand, the socioeconomic status of the family is highly influential. Beal et al. (2018) found that families with low economic status tend to face limitations in obtaining nutritious food, accessing healthcare services, and acquiring education related to healthy child-rearing practices. Maternal education, in particular, has been shown to have a strong correlation with child nutritional status. Mothers with higher education levels are generally more aware of the importance of balanced nutrition, healthcare, and environmental hygiene.

Beyond economic factors, culture and parenting styles also have an influence. Prendergast & Humphrey (2020) emphasized that cultural norms, including food taboos that restrict pregnant women or young children from consuming certain foods, can limit the intake of essential nutrients. Less responsive parenting practices, such as delays in introducing nutritious complementary foods or inappropriate feeding practices for the child's age, further increase the risk of stunting. In some communities, traditional foods that are low in protein and micronutrients are still often given to infants, thereby hampering optimal growth.

Thus, the causes of stunting are not limited to nutritional deficiencies, but are the result of complex interactions among biological, environmental, socioeconomic, and cultural factors. A comprehensive understanding of these various determinants is crucial for designing more effective and contextual interventions, particularly through the role of midwives in supporting mothers and families during the First 1,000 Days of Life..

B. The Impact of Stunting on Child Development

Stunting not only affects a child's height, but also has a broad impact on physical, cognitive, and socio-emotional development. Physically, children who experience stunting tend to have impaired linear growth, low immunity, and are more susceptible to infectious diseases. WHO (2020) states that stunting is one of the main factors that increases the risk of morbidity and mortality in children under five. Stunted children are also at higher risk of developing metabolic disorders later in life, such as central obesity, type 2 diabetes mellitus, and cardiovascular disease (Prendergast & Humphrey, 2019).

Stunting affects not only physical aspects, but also cognitive development, social well-being, and overall health in both the short and long term. The most visible physical impact is impaired linear growth. Stunted children tend to be shorter than the average for their age, a condition that may persist into adulthood (WHO, 2020). In addition, stunting is closely related to iron deficiency anemia, which exacerbates growth problems and weakens the immune system (Basrowi et al., 2024).

From a cognitive perspective, stunting has been proven to reduce brain function and learning ability. Children who experience stunting have lower cognitive scores, difficulty concentrating, and poorer academic achievement compared to normal children (Syarif et al.,

2019; UNICEF, 2021). This condition leads to low productivity in adulthood, ultimately affecting the quality of a nation's human resources (FAO, 2021; World Bank, 2022).

Stunting also increases the risk of non-communicable diseases (NCDs) later in life, such as diabetes, hypertension, and heart disease. This is linked to metabolic changes caused by chronic malnutrition from early life (Victora et al., 2021; Dewey & Begum, 2021). Recent studies also show that stunted children are more prone to recurrent infections, such as diarrhea and ARI, which further worsen nutritional status and reinforce the vicious cycle of malnutrition (Juniarti et al., 2025).

Moreover, the social impacts cannot be ignored. Stunted children are more likely to experience social discrimination, face limitations in peer interactions, and encounter barriers to achieving an optimal quality of life (UNICEF, 2021; Armynia & Agustia, 2024). If the prevalence of stunting remains high, in the long term it may hinder a country's economic development due to the suboptimal productivity of its workforce (World Bank, 2022; BMC Public Health, 2025).

In terms of cognition, the impact of stunting is evident in reduced learning ability, delayed language development, and limited memory capacity. A study by Sudfeld et al. (2020) found that children who experienced stunting at an early age scored lower on cognitive tests upon entering school compared to children with normal growth. This is caused by impaired brain development due to inadequate intake of essential nutrients such as iron, iodine, and omega-3 fatty acids during the critical period of brain growth. Nutritional deficiencies during the first 1,000 days of life have been shown to reduce the number of neuronal synapses and hinder nerve myelination, which are crucial for cognitive development (Georgieff et al., 2018).

The impact of stunting also extends to psychosocial and behavioral aspects. Children with a history of stunting tend to have lower self-confidence, difficulties in social interaction, and are more prone to behavioral problems. According to Black et al. (2017), psychosocial developmental disorders in stunted children are often associated with low environmental stimulation, unresponsive parenting, and social stigma due to delayed growth. These conditions can persist into adolescence and adulthood, affecting work productivity and economic achievement.

In the long term, stunting has serious consequences for human resource quality. Children who were stunted in early life tend to have lower educational attainment, limited work productivity, and lower economic income as adults (Hoddinott et al., 2019). This creates an intergenerational cycle, in which women who experienced stunting are at greater risk of giving birth to low birth weight (LBW) and stunted children. Thus, stunting is not only a child health issue, but also a barrier to human development and national economic growth.

Given these multidimensional impacts, it is clear that stunting prevention must be a top priority in maternal and child health services. The role of midwives is crucial in promotive, preventive, and curative efforts to break the chain of negative impacts of stunting from an early stage.

C. Strategies for Preventing Stunting

Efforts to prevent stunting must be carried out comprehensively, involving nutrition, health, environmental interventions, as well as family empowerment. One key strategy is intervention during the First 1,000 Days of Life (HPK), which is recognized as the golden window of child growth. WHO (2020) emphasizes that nutritional interventions during this period can significantly reduce the prevalence of stunting and prevent long-term consequences.

First, specific nutrition interventions are the main component. These include micronutrient supplementation (such as iron, folic acid, vitamin A, and iodine), exclusive

breastfeeding for six months, and providing balanced complementary feeding (MP-ASI) starting at six months of age. Victora et al. (2021) stated that a combination of specific nutrition interventions can reduce stunting rates by up to 20% if consistently implemented at the population level. Supplementary feeding programs (PMT) for pregnant women and young children with poor nutritional status are also an important part of this strategy (Kemenkes RI, 2022).

Second, nutrition-sensitive interventions are needed to strengthen long-term impacts. These interventions are not directly related to food provision but are associated with environmental and social factors. Examples include improving sanitation and access to clean water, enhancing maternal education, empowering family economics, and health promotion through counseling (Ruel et al., 2018). Access to basic sanitation has been shown to reduce the incidence of recurrent infections in children, which is one of the main causes of stunting (Checkley et al., 2020).

Third, maternal and child health services are an essential aspect of stunting prevention strategies. Midwives and health workers play a role in ensuring that pregnant women receive adequate antenatal care, early detection of low birth weight (LBW) risk, and nutrition education during pregnancy and breastfeeding. UNICEF (2021) emphasizes that access to quality antenatal and postnatal services can reduce the risk of stunting through nutrition monitoring and infection prevention for both mother and baby.

In addition, child development stimulation is also an integral part of stunting prevention strategies. According to Grantham-McGregor et al. (2021), interventions such as cognitive stimulation and positive parent-child interactions can reduce the impact of developmental delays caused by malnutrition. Integration of nutrition interventions and developmental stimulation has proven to be more effective in improving children's long-term outcomes compared to single interventions.

Finally, cross-sectoral collaboration is essential to address the multidimensional nature of stunting. The government, health workers, the education sector, and communities must play an active role in creating environments that support child growth and development. Hoddinott et al. (2019) stressed that the success of stunting prevention is not only determined by health programs but also by policy synergies that include poverty alleviation, food security, and public education.

Stunting prevention is a multidimensional effort that must be carried out comprehensively through both specific and sensitive nutritional interventions. The main focus lies in the First 1,000 Days of Life (HPK), which is considered the golden window for preventing stunting (Dewey & Begum, 2021).

One of the most important strategies is exclusive breastfeeding during the first six months of life, which has been proven to significantly reduce the risk of stunting. A meta-analysis in Indonesia showed that children who were not exclusively breastfed were at higher risk of experiencing stunting (Simbolon & Putri, 2024). After six months, the practice of appropriate complementary feeding in terms of timing, quality, frequency, and diversity is crucial for determining a child's nutritional status (Babys et al., 2022).

Another crucial intervention is fulfilling the nutritional needs of pregnant and breastfeeding mothers. Chronic energy deficiency and anemia in pregnant women are closely related to LBW, which later becomes a risk factor for stunting (Putri et al., 2021; Harahap et al., 2024). Iron, folic acid, and calcium supplementation during pregnancy have been proven effective in preventing LBW and pregnancy complications (Basrowi et al., 2024).

From an environmental perspective, improving sanitation and access to clean water are important strategies to reduce stunting prevalence. Children living in poor sanitation conditions are more susceptible to infectious diseases such as diarrhea, which hinders nutrient absorption (Sihotang et al., 2023; Juniarti et al., 2025). Community-based programs that

integrate nutrition education with hygiene practices have been proven to improve stunting prevention behaviors (Wulandari et al., 2025; BMC Public Health, 2025).

Furthermore, the role of health workers, particularly midwives and posyandu cadres, is crucial in early detection and family support. Studies in Indonesia show that trained health cadres can detect stunting cases earlier and provide more effective nutrition education (BMC Public Health, 2025). The role of midwives in antenatal care (ANC), promotion of exclusive breastfeeding, and monitoring of child growth is at the forefront of stunting prevention (Idrus et al., 2023; Subratha & Agustia, 2024).

Moreover, prevention strategies must also involve cross-sectoral policies, such as nutritious food assistance programs, adolescent reproductive health education, and socio-economic interventions for poor families. A combination of these interventions has been proven to be more effective in reducing stunting rates compared to a single approach (World Bank, 2022; FAO, 2021).

With comprehensive and integrated strategies, stunting prevention can be more effective. The role of midwives as the spearhead of maternal and child health services is highly strategic in implementing these interventions at the community level.

D. The Role of Midwives in Preventing Stunting

Midwives hold a strategic position in stunting prevention, as they are directly involved in maternal and child health services from the preconception period, pregnancy, childbirth, to infant and toddler development. WHO (2020) emphasizes that midwives are at the frontline of reducing maternal and child morbidity and mortality, while also preventing nutritional problems that lead to stunting.

First, during the preconception and pregnancy period, midwives play a role in providing nutrition education, monitoring maternal health status, and ensuring that pregnant women receive essential nutrient supplementation such as iron, folic acid, and calcium. A study by Black et al. (2021) shows that nutritional interventions during pregnancy can improve birth weight and reduce the risk of early childhood stunting. Midwives are also responsible for the early detection of risk factors such as anemia, infections, or pregnancy-induced hypertension that may affect fetal growth.

Second, during childbirth and the postpartum period, midwives play a role in ensuring that early initiation of breastfeeding (IMD) is optimally practiced and in supporting exclusive breastfeeding. UNICEF (2021) highlights the importance of midwives in providing breastfeeding counseling, addressing lactation problems, and preventing the premature introduction of complementary foods. Midwives' support during this period greatly contributes to ensuring that children receive optimal nutrition from the very beginning of life.

Third, during infancy and early childhood, midwives are responsible for monitoring growth through posyandu activities, providing nutrition counseling, and detecting early signs of growth failure. Victora et al. (2021) state that routine growth monitoring is a crucial step in stunting prevention, as it enables timely interventions when growth problems are identified. Midwives also provide education on appropriate complementary feeding (MP-ASI) in terms of both quality and quantity to ensure that children's nutritional needs are met.

In addition, midwives have an important role in family and community empowerment. Through community-based approaches, midwives can educate families on responsive parenting, the importance of sanitation and environmental hygiene, and child development stimulation. According to Grantham-McGregor et al. (2021), cognitive stimulation provided by parents from an early age, with support from health professionals including midwives, has been shown to reduce the impact of developmental delays caused by stunting.

Lastly, midwives also contribute to advocacy and cross-sectoral collaboration. Hoddinott et al. (2019) emphasize that stunting prevention requires synergy among the

health, education, and social sectors. Through professional organizations and healthcare networks, midwives can advocate for local policies that support maternal and child nutrition programs as well as the strengthening of primary healthcare services.

Midwives have a strategic role in stunting prevention, particularly during the First 1,000 Days of Life (HPK). As frontline health workers in communities, midwives are involved not only in clinical services but also in education, health promotion, and family empowerment (Kemenkes RI, 2021).

During pregnancy, midwives play an essential role in providing quality antenatal care (ANC), including monitoring maternal nutrition status, detecting risks of chronic energy deficiency (CED), and administering iron, folic acid, and calcium supplementation (Harahap et al., 2024). Research shows that proper ANC is associated with a reduced risk of low birth weight (LBW), which is a major risk factor for stunting (Putri et al., 2021).

In the postpartum period, midwives promote and support exclusive breastfeeding during the first six months of life. Meta-analyses confirm that successful exclusive breastfeeding significantly reduces the risk of stunting (Simbolon & Putri, 2024). Midwives also provide education for mothers on appropriate complementary feeding in terms of timing, frequency, diversity, and nutritional quality (Babys et al., 2022).

Midwives also play a central role in monitoring child growth and development through posyandu activities. They collaborate with health cadres to conduct early detection of stunting cases, provide nutrition counseling, and refer at-risk children to healthcare facilities (BMC Public Health, 2025). Local studies in Indonesia have shown that the presence of village midwives helps reduce stunting prevalence through community-based nutrition interventions (Idrus et al., 2023).

Beyond clinical interventions, midwives are also involved in empowering families and communities. Midwife-led education on nutrition, adolescent reproductive health, sanitation, and parenting practices significantly influences community behavior in stunting prevention (Wulandari et al., 2025; Juniarti et al., 2025).

Thus, midwives are at the frontline of stunting prevention through comprehensive services from preconception, pregnancy, childbirth, to monitoring child growth and development. Optimizing the role of midwives at the community level is key to the success of stunting prevention programs in Indonesia (Subratha & Agustia, 2024).

With their broad role spanning individual, family, and community services, midwives serve as the spearhead in preventing stunting during the First 1,000 Days of Life. Optimizing their role not only contributes to maternal and child health but also enhances the quality of human resources in the future..

CONCLUSION

Stunting is a complex and multidimensional public health problem, influenced by factors such as nutrition, infection, sanitation, socioeconomic status, as well as parenting practices and cultural norms within families. Its impact goes beyond physical growth, extending to cognitive and psychosocial impairments, ultimately reducing the quality of human resources in the long term.

Efforts to prevent stunting must be comprehensive, encompassing specific and sensitive nutrition interventions, improved maternal and child health services, better sanitation, and enhanced child development stimulation. These strategies require a cross-sectoral approach, involving government, healthcare providers, education, and community participation.

Midwives play a central role in stunting prevention during the first 1,000 days of life. Their contributions include providing nutrition education and interventions during the preconception period, monitoring pregnancies, supporting breastfeeding, tracking child growth and development, and empowering families and communities. Optimizing the role of

midwifery strengthens both national and global efforts to reduce stunting prevalence and contributes to improving the quality of future generations.

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