
Factors Contributing to Stunting in Indonesia: A Review

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ABSTRACT: The prevalence of stunting in Indonesia shows a relatively consistent trend, namely 36.8% in 2007, 35.6% in 2010, and increased slightly to 37.2% in 2013, although it showed a decline to 30.8% in 2018. Apart from that, the number of individuals experiencing stunting in Indonesia has continuously decreased from around 26.92% in 2020 to around 24.4% in 2021. Meanwhile, according to data from the Indonesian Nutrition Status Survey (SSGI) which was released by the Ministry of Health, the incidence of stunting among toddlers in Indonesia in 2022 will reach 21.6%. Despite this decrease, Indonesia's stunting rates remain higher than the global prevalence of 22.2%, indicating a significant public health concern. Stunting poses long-term health risks, and early prevention is crucial. This article review aims to identify factors contributing to child stunting in Indonesia, utilizing the WHO's conceptual framework. Employing various study designs and extensive literature search, the review identified 15 relevant articles, highlighting factors like exclusive breastfeeding, household economic status, maternal education, and environmental conditions as key determinants of child stunting.

Keywords: Stunting, Children, Exclusive Breastfeeding, Premature Birth.



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INTRODUCTION

Stunting is a persistent nutritional issue resulting from multiple factors that transcend generations. In Indonesia, societal perceptions often associate height with descent. Addressing this misconception requires serious attention from the community, the government, and the relevant authorities. Research findings indicate that descent contributes only 15%, with the primary factors being nutrition, growth hormones, and recurrent infectious illnesses (Calkins & Devaskar, 2011; Sari, 2010). In addition, variables such as cigarette smoke and air pollution play a role in stunted growth. The first 1000 days of life (1000 HPK) constitute a critical period, marking the onset of

stunted growth in children under the age of five, with lasting consequences throughout the life cycle (M. Onis, 2015). Inadequate nutrition, being a direct factor, has immediate repercussions, particularly increasing morbidity in young children. This nutritional issue is persistent and can adversely affect cognitive function, leading to lower intelligence levels and affecting the quality of human resources. In a recurring scenario within the life cycle, children lacking proper nutrition during the early 1000 PKH period face a heightened risk of noncommunicable diseases, commonly known as degenerative illnesses, as they transition into adulthood (Amin & Julia, 2016).

Stunting represents a significant social health issue that requires serious attention. According to the Riskesdas findings, the prevalence of stunting has remained relatively constant, at 36.8% in 2007 and 37.2% in 2013 in the 33 provinces of Indonesia. More than half of these provinces exhibit prevalence rates that exceed the national average. In particular, the disparity in the prevalence of stunting between DIY (22.5%) and NTT (58.4%) highlights a distinct and uneven development (Riskesdas, 2013). Riskesdas reported a prevalence of 11.1% for low birth weight (BBLR) in 2010 and 10.2% in 2013, while the proportion of short births (<48 cm) was 20.25% in 2003. Furthermore, the exclusive breastfeeding rate for six months is low, at 15.3% (Aryastami, 2017). Apart from that, the number of individuals experiencing stunting in Indonesia has continuously decreased from around 26.92% in 2020 to around 24.4% in 2021 (Sadat et al., 2022). according to data from the Indonesian Nutrition Status Survey (SSGI) which was released by the Ministry of Health, the incidence of stunting among toddlers in Indonesia in 2022 will reach 21.6% (Saranani et al., 2023).

Previous research indicates a significant correlation between stunting and factors such as birth weight, exclusive mother's milk provision, and suboptimal additional food (Paramashanti et al., 2016). Stunted growth during early childhood can persist, posing a risk of short stature during adolescence. Children who exhibit short stature between the ages of 0-2 years and continue to be short between 4-6 years face a 27 times higher risk of remaining short until puberty. On the contrary, children with normal growth in early childhood who experience growth faltering between 4-6 years have a 14-fold higher risk of stunted growth before puberty. Consequently, interventions to prevent stunted growth remain essential even after the initial 1000 days of life (1000 HPK) (Aryastami et al., 2017). The mentioned phenomenon has drawn attention for analysis because stunting entails significant consequences. These include short-term impacts on the morbidity and mortality of infants and children under the age of five, intermediate effects on intellectual and cognitive skills, and long-term implications for the quality of human resources and the development of degenerative diseases in adulthood.

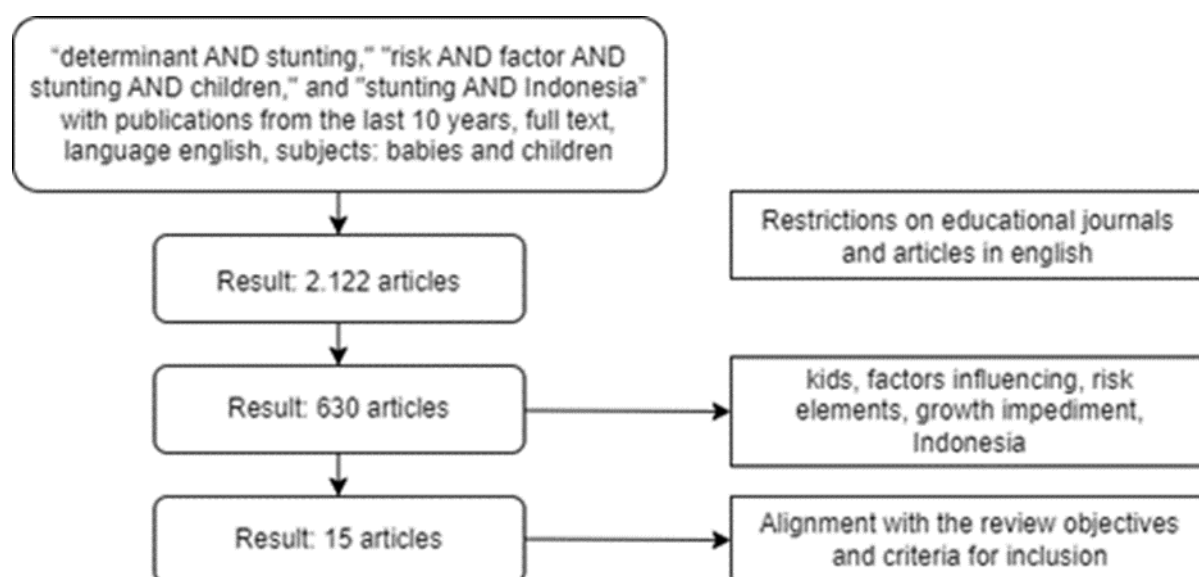
METHOD

The use of data for a literature search involved selection based on criteria related to child stunting, focusing on social research and social health. The review of the literature on stunting, growth, and outcomes, using poor nutrition indicators with a z score <-2 SD, involved various sources such as ProQuest, ScienceDirect, PubMed, Scopus, Google Scholar and results of national surveys such as Riskesdas and Susenas. To identify determinant factors of stunting in Indonesia, keywords such

as "determinant AND stunting", "risk AND factor AND stunting AND children" and "stunting AND Indonesia" were used, focusing on journals published from 2008–2018.

The online search yielded 2,435 relevant articles for citation, with 2,122 meeting the requirements after reviewing titles and abstracts. Subsequently, a full-text review of articles identified 630 titles, leading to the inclusion of 15 articles that met the inclusion/exclusion criteria. Following the WHO concept, the causes of stunting can be classified as direct (insufficient additional food, exclusive breastfeeding, and infectious diseases) and indirect (related to social, political, health, education, cultural, agricultural, food system, water sanitation, and environmental issues) [9]. The literature review was approached from diverse perspectives, incorporating theories, books, and journals to thoroughly explore and examine the determinants and risk factors associated with the variable outcome of stunting. Analysis of the 2013 Riskesdes data was particularly valuable, providing social-based information used to analyze the determinants linked to stunting. Key Points:

- a. Determinant factors for child stunting in Indonesia include gender, premature birth, birth duration, exclusive breastfeeding, maternal height, low maternal education, infectious diseases, low economic status, living in unsanitary environments, consuming untreated water, poor access to healthcare, and living in villages;
- b. Determinant factors with limited evidence for stunting involve low education, social culture, food and agriculture systems, and living in villages;
- c. The WHO conceptual framework aims to demonstrate differences and inadequacies in the causality of stunting.



RESULT AND DISCUSSION

The global initiative to accelerate nutrition improvement is not exclusive to Indonesia, but extends to all countries that face stunting issues. This effort was initiated by the World Health Assembly and aims to achieve specific goals, including reducing stunting prevalence, preventing overweight in children under five years old, decreasing anemia prevalence in reproductive women, reducing the prevalence of low birth weight (BBLR) and increasing coverage of exclusive breastfeeding (De

Onis et al., 2006). As a member of the United Nations with a high prevalence of stunting, our country actively participates in and commits to accelerating nutritional improvement through the Scaling Up Nutrition (SUN) initiative at the community level. Law number 17 of the year 2007 regarding RPJP (2005-2025) stipulates that food development and nutritional enhancement must be carried out in various sectors, including production, processing, distribution and consumption, with the goal of providing adequate, balanced, and safe nutrition. Subsequently, Health Law Number 36 of 2009 emphasizes the purpose of improving nutrition, aiming to enhance both personal and social nutritional quality through the promotion of proper consumption patterns aligned with balanced nutrition, increased awareness of nutrition, physical activity, and health, enhanced access to nutrition services according to scientific and technological progress, and the advancement of food and nutrition safety systems. Consistent with these laws, Food Law Number 18 of 2012 was enacted, outlining policies for developing the nutritional status of society by formulating strategies for a food and nutrition movement to be implemented every five years.

Subsequently, President Regulation Number 5 of 2010 was issued, addressing RPJM (2010-2014), with the aim of improving food stability and the health and nutrition status of the community. Additionally, Inpres Number 3 of the year 2010 focuses on organizing the planning of the National Action Plan for Food and Nutrition (RAN-PG) for the years 2011–2015 across 33 provinces (Riskasdas, 2013). President Regulation Number 42 of 2013, which addresses the National Movement for Nutrition Development, was issued to support the coordinated efforts of planned participation and the collective commitment of key stakeholders to accelerate nutrition improvement within the first 1000 days of life. Consequently, supporting policy instruments for nutrition improvement have been established and require organized implementation, making them applicable to all involved entities. The enactment of this government law requires concrete efforts with a specific focus on the first 1000 days of life (1000 HPK) and the integration of activities across programs (specific efforts) and sectors (sensitive efforts) involving all stakeholders (Budiastutik & Nugraheni, 2018). According to various studies on the determining factors of stunting, it is noted that stunting in Indonesia can be attributed to several factors. These include exclusive breastfeeding practices, low economic status, premature birth, short birth duration, low maternal education, residing in rural areas, unhygienic environments, and communities with poor sanitation and specific cultural practices.

1. Providing exclusive breastfeeding

Providing exclusive breastfeeding is closely related to reducing child stunting. Therefore, children who do not receive exclusive breastfeeding are at a higher risk of stunting, as indicated by the two latest analyses that reveal that babies weaned before six months face an elevated risk of stunting (Rachmi et al., 2016). The offering of mother's milk to infants aged 0 to 5 months contributes to reducing the prevalence of child stunting (Torlesse et al., 2016).

2. The economic and social status of the family

The economic well-being of a family, reflected in its income, serves as a key social indicator for meeting the family's needs (Reyes, 2004). Research findings indicate an increased risk of stunting among farmer families, particularly those with low incomes (Illahi, 2017). This research, carried out in three Indonesian provinces: Bali, West Java and NTT, reveals that a significant factor contributing to stunting is the father's low income (Nadiyah et al., 2014). Furthermore, a study

in Semarang suggests that families with low socioeconomic status face an 11-fold increased risk of stunting (Al-Anshori & Nuryanto, 2013).

3. Birthing with a low weight

Premature birth poses a risk of low-weight baby birth (BBLR), which significantly increases the chances of stunting. Research indicates that infants born with BBLR face a 1.74 times higher risk of experiencing growth barriers in terms of TB/U (height-to-age ratio) (Aryastami, 2017). Another study highlights a substantial 5.87 times greater risk of stunting for babies born with BBLR (Rahayu et al., 2015). Specific research conducted in Brebes emphasizes that BBLR is associated with a staggering 6.63 times higher probability of stunting.

4. The length of gestation of a baby

A study carried out in Kulon Progo indicates that babies with a birth length less than 48 cm are at risk of experiencing stunting in the future (Illahi, 2017). Similar findings from research in India suggest that babies born with a shorter body face an increased risk of stunting (Aguayo et al., 2016). In Depok, research also reveals a correlation between babies with a short body length and the risk of future stunting (Isnaini, 2014).

5. Maternal Education

The mother plays a crucial role in influencing the health of the baby, and a well-rounded maternal education improves her ability to be discerning and innovative in providing nutritious food to her children. Research indicates that a lower level of maternal education is associated with a 1.6 times higher risk of stunting (Nkurunziza et al., 2017). A study conducted in Banjar Baru further emphasizes that children born to mothers with lower education levels face a significantly increased risk of stunting, amounting to 5.1 times (Rahayu et al., 2015).

6. Disease caused by infection

Following the WHO framework, stunted children are frequently susceptible to various infections, including diarrhea, worm infestations, inflammation, malaria, and respiratory issues. The highest observed risk is associated with diarrhea, mainly due to incomplete immunization in children. Research conducted in impoverished communities and rural areas indicates that infectious diseases such as diarrhea pose a significant risk of stunting (Bardosono et al., 2007). In Ethiopia, research findings reveal that children experiencing diarrhea face a substantial 6.3 times higher risk of stunting (Batiro et al., 2017).

According to the theories and concepts established by the WHO, the determinants of stunting can be identified as follows:

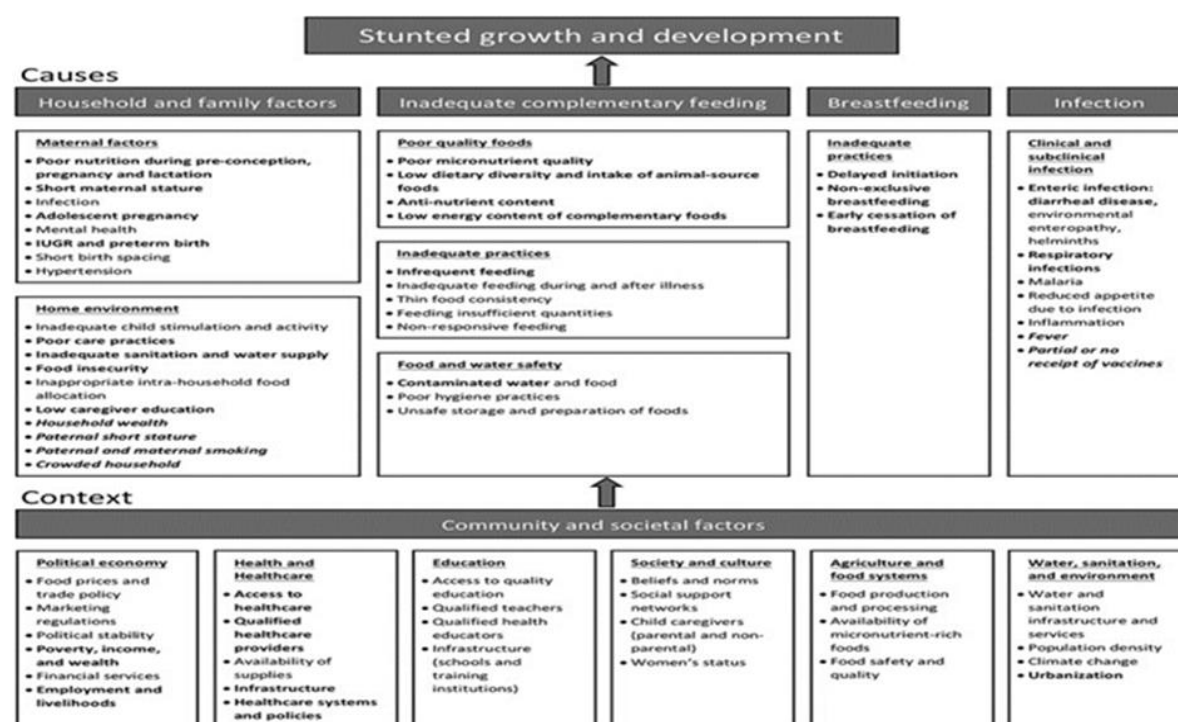


Figure 1. The conceptual framework from the World Health Organization regarding stunting in childhood: Immediate causes and contextual factors (Beal et al., 2018)

The WHO framework involves a comprehensive examination of articles addressing the determinants of child stunting in Indonesia. Our review of the literature consistently reveals that variables such as maternal height, premature birth, low weight baby birthing (BBLR), birth duration, low maternal education, infectious diseases, and family socioeconomic status contribute to risk factors for stunting in Indonesia. Furthermore, recent cross-sectional research indicates that early weaning, paternal height, untreated water consumption, and poor sanitation pose risks for stunting (Hwalla, 2017). Meanwhile, a study in Madura suggests that introducing additional food too early is associated with an increased risk of stunting in children (Illahi & Muniroh, 2016). To address stunting, experimental research has been carried out that involves the administration of zinc supplements to children, with a focus on observing the Z-score TB/U (Kusudaryati et al., 2017). Linear growth disparities in stunted children under five years of age are evident after the provision of zinc and calcium supplements (Saraswati & Budiman, 1999). Furthermore, the participation of the community, the accessibility to health services and the quality of health services play a significant role in the prevalence of stunting in Indonesia. In addition to academic research, Indonesia has implemented the "Scaling Up Nutrition" policy, which is interpreted as the National Movement for the First 1000 Days of Life. Recognizing the multifaceted nature of nutritional issues, the successful execution of this policy requires the participation of various sectors. Studies examining the effectiveness of nutrition policy implementation through diverse methods such as systemic reviews and problem analysis reveal that globally, the implementation of policies to reduce nutritional issues faces challenges (Morris et al., 2008).

As a member nation of the United Nations, Indonesia is committed to playing a role in reducing the prevalence of stunting. The issuance of Presidential Regulation Number 42/2013 is one of the strategies within the Scaling Up Nutrition (SUN) initiative, which emphasizes cross-sectoral

collaboration. This regulation is of significance, as stunting is closely linked to factors such as poverty, low education, illness, and reduced female productivity (Keats et al., 2018; A. W. O. Onis et al., 2006). A study conducted in Bangladesh reveals a correlation between poverty and nutritional challenges, particularly in mothers with low literacy, limited income, a larger family size, poor access to the media, inadequate nutrition and substandard sanitation (Rahman et al., 2015). Furthermore, regional development disparities in Indonesia contribute to significant variations in the prevalence of stunting. The Ghana findings highlight how poverty and district characteristics play a role in variations in nutritional challenges among children under the age of five (Vollmer et al., 2014). Therefore, it is crucial to address the issue and reduce stunting cases at an early age, particularly during the 1,000-day window known as the golden age for preventing stunted growth (M. B. Onis & Borghi, 2012). Insufficient growth during the fetal period or within the first 1000 days has enduring consequences. If external factors after birth do not provide adequate support, stunted growth can become permanent, resulting in shorter stature during adolescence. Research findings indicate that individuals with shorter stature or stunting at birth biologically differ in size from those with larger birth sizes (Krebs, 2013). Consequently, efforts to control stunting should begin well before birth (during the 1000-day period) and extend even into adolescence to effectively address and prevent persistent stunted growth.

CONCLUSION

The findings of the identification process, combined with insights from numerous articles, underscore the persistent connection between stunting in Indonesia and a variety of economic and social factors. These include, but are not limited to, family income, maternal education, low birth weight (BBLR), premature birth, exclusive breastfeeding, birth length, and macro and micronutrient deficiencies. Furthermore, community and social influences play a significant role in shaping the prevalence of stunting in the country. To comprehensively address the issue, it is imperative to broaden the scope of research to encompass a holistic examination of the impact of various variables. Economic, political, social, cultural, agricultural, food system, water and sanitation factors should be thoroughly investigated to gain a deeper understanding of their individual and collective contributions to the prevalence of stunting in Indonesia. This multifaceted approach will provide valuable insights into the complex interaction of these variables and how they affect the nutritional status of the population. By delving into these diverse aspects, researchers can develop a nuanced understanding of the root causes of stunting and formulate targeted interventions. In addition, such research initiatives should not only be designed to identify the factors influencing stunting, but also to propose effective strategies for improvement. Ultimately, the goal is to improve productivity and well-being by increasing the social nutrition status of the population, thus fostering a healthier and more prosperous future for Indonesia.

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