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RISK FACTORS AFFECTING STUNTING IN THE FIRST 1.000 DAYS OF LIFE IN INDONESIA: A SYSTEMATIC REVIEW

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ABSTRACT

One of aims SDGs is Zero Hunger to reduce the number of children who suffer from stunting to ensure a healthy life and improve well-being. We intend to evaluate the current literature published from 2018 to 2023 which study the influence factors stunting in the first 1000 days of life in Indonesia. Aims : The research was to systematically review risk factor that contribute stunting in Indonesia. Methods: this study applied a systematic review using meta-analysis (PRISMA) with some inclusion criteria compiled in three database from PubMed, ProQuest, and ScienceDirect. Results: A total of 10 selected articles show that risk factors affecting stunting in Indonesia such as maternal education and knowledge, parenting style, family income, dietary habit, and sanitation.. Conclusion: The systematic review's findings that risk factor of stunting such as low maternal education and knowledge, low parenting, poor sanitation, low family income were factors most frequently linked to stunting in children. By empowering the local community to make proper weaning food and meets the required nutritional content, an approach that offers continuous guidance and intensive socialization about improving nutritional status so can help to prevent stunting in children.

Keywords: Indonesia; risk factors; stunting

INTRODUCTION

Sustainable Development Goals (SDGs) Zero Hunger is to reduce the number of children who suffer from stunting to ensure a healthy life and improve well-being. Stunting is a serious health problem in the children and SSGI reported that the prevalence of stunting will rise by 23% in 2021, reaching 24.4% in Indonesia, 23.5% (Dinas Kominfo Jawa Timur, 2022). Stunting in childhood can start in the womb and continue for two years. The window of opportunity, or the first 1000 days of life, is acknowledged as the most crucial time to prevent stunting for building the foundation of optimum growth and development of children (Soofi et al., 2022). A number of factors, such as the environment, food intake, infections, maternal nutritional status, infectious diseases, micronutrient deficiencies, and socioeconomic status, can cause stunting in children, which can happen within the first 1000 days after conception (Laillou et al., 2020). Globally in 2018, 21.9% or 149 million children under the age of 5 experienced stunting and this needs to be reduced in order to achieve the 2025 SDGs target (World Health Organization et al., 2021).

Stunting is a condition that requires efforts and control to reduce because people who have it are more susceptible to degenerative diseases, failure to grow before the age of 12 months, and other conditions that affect a child's adult height. In addition, it has an impact on the child's IQ. Short and thin children are more likely to die as adults and are more vulnerable to chronic illnesses(World Health Organization, 2018). In this case, achieving adequate nutrition necessitates multisectoral efforts involves cooperation at the individual, institutional, and system levels in order to carry out successful interventions. This cooperation can generate interest from a variety of stakeholders and sectors.

The various roles of mothers are key to preventing stunting in the child. Additionally, there is a higher prevalence of stunting in children whose mothers have little education, in children who live in rural areas or in places with limited access to nutritional services (Quamme & Iversen, 2022) Stunting is also caused by external factors such as low parental income and unsanitary conditions. Stunting is more common in children who live in rural areas and have low social status. Children who have parents with low levels of education and a combined family income below the minimum wage are at risk of stunting. This is a result of parents lacking sufficient knowledge about supporting their children's growth and development, including the requirements for meeting their nutritional needs (Widyaningsihet al., 2022). Poor water, sanitation and hygiene (WASH) can affect children's growth and development. Poor sanitation conditions risk making children susceptible to disease (Patlán-Hernández et al., 2022). Unbalanced diet causes health problem in Indonesia such as stunting. Increasing the nutritional value of food through consumption patterns is a strategy to reduce the prevalence of stunting (Sitaresmi et al., 2023).

The research was to systematically review external factor that contribute stunting in Indonesia during the first 1000 days of life, or 0–59 months, in order to support intervention efforts aimed at preventing stunting. The aim of this research was to systematically review risk factor that contribute stunting in Indonesia. Thus, in order to implement the necessary interventions, it is critical to investigate the factors that contribute to stunting based on the findings of this systematic review.

METHOD

This is a systematic review conducted in January 2024. The author selected relevant studies published from 2018 to 2023 with a total of 444 articles found. This systematic review followed the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines (Moher et al., 2009). The literature search process applied research boundaries, and the title of each database was selected according to the patient, population or problem, intervention, comparison, and outcome (PICO) problem framework (Roever, 2018). The research sources used included PubMed, ScienceDirect, and the ProQuest. The keywords used in the article search were factors that cause stunting in Indonesia in the First 1000 Days of Life. The criteria for including scientific articles published online are as follows: i) the articles must be written in English and published between 2018 and 2023; ii) they must contain original research and the full text of a scientific review; iii) the requirements apply to open access journals; iv) all downloaded journals are reviewed and chosen in order to identify the external factors that contribute to stunting in children under the age of five years in Indonesia.

Final data extraction was carried out using a Systematic Literature Review (SLR) of nine journal articles studying external factors causing stunting in Indonesia. Figure 1 shows the journal identification process using the PRISMA method. i) Identification: The first step to find articles is to enter the website https://pubmed.ncbi.nlm.nih.gov for PubMed, https://www.proquest.com for ProQuest, https://www.sciencedirect.com for ScienceDirect. In the site address keywords are entered into the search. In the filter section check the free full text only option, with a publication times of 5 years (2018-2023). Keywords used in article searches include risk factors causing stunting in Indonesia. ii) Screening: articles with titles that are not relevant to the topic are not used, then articles with titles that are relevant to the research theme are then read for their abstracts and reviewed according to the inclusion criteria. The inclusion criteria in this case are original articles that discuss external factors that cause stunting in Indonesia, namely maternal knowledge and education, parenting patterns, family income, dietary habit and environmental sanitation, written in English and published in 2018-2023.

Participants are mothers who have children <59 months old, the role of parents and place of residence is intervened so that the outcome is a reduction in stunting. Abstracts that did not meet the inclusion criteria were eliminated. iii) Eligibility: articles that met the inclusion criteria were downloaded in full text. Requirements apply to open access journals. All downloaded journals were reviewed and selected to determine the relationship between external determinants of stunting in Indonesia in the first 1000 days of life (<59 months). iv) articles that meet the inclusion criteria are arranged according to author, year of publication, sample and results.

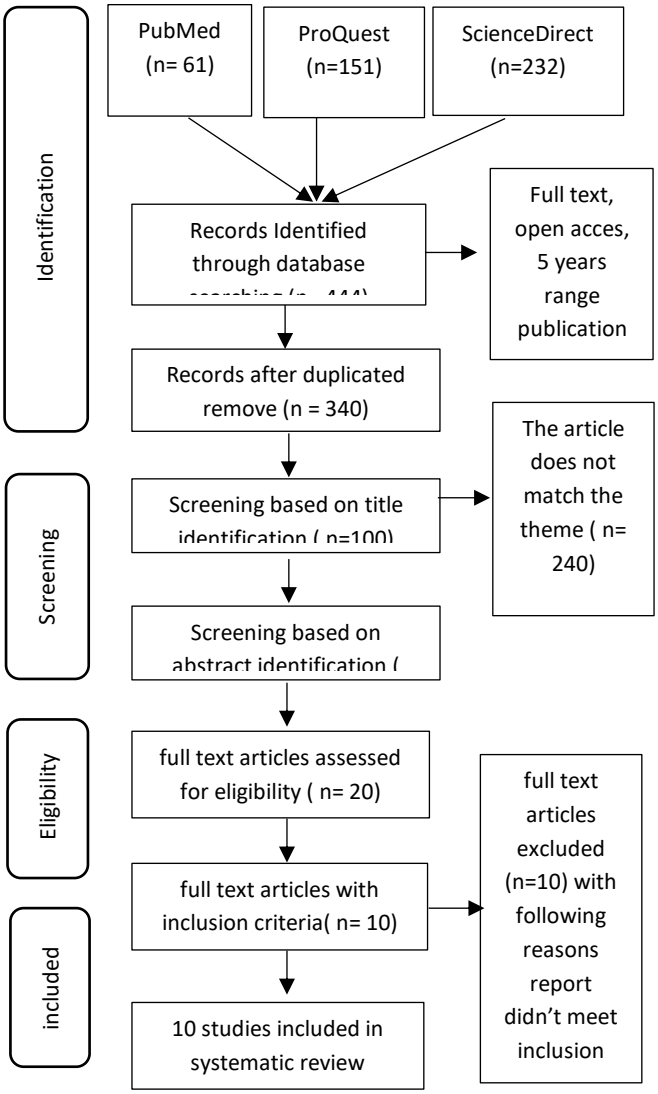

Figure 1. Literature used PRISMA diagram

RESULTH

The study's final findings included a systematic literature review (SLR) of nine journal articles that examined the external factors that contribute to stunting in children during their first 1000 days of life. The journal identification procedure utilizing the meta-analysis method (PRISMA) is shown in Figure 1. Upon reviewing 444 results from online journal databases, it was discovered that 340 of the results had the same title across databases, 240 did not meet the inclusion criteria, and 10 of the results were full text reviews that both complied with the requirements and were pertinent to ongoing research. Table 1 shows the characteristics of articles that were eligible for the systematic review. All articles written in 2018-2023 are the result of research related to external factors that cause stunting in the first 1000 days of life.

The respondents were mothers with children aged <59 months in Indonesia. Table 2 shows the determinant factors that cause stunting problems in children in the first 1000 days of life. The determining factors in question range from the mother's education and knowledge, family income, sanitation, mother's parenting style and the child's residence.

Table 1.
Summary of article's result causes of stunting factors in Indonesia

References	Publish	Province Study	Sample size	Results	Methods
(Kusumajaya et al., 2023)	2018	Bali	768 (< 60 months)	low maternal education and family support significantly associated with stunting	Cross sectional
(Suratri et al., 2023)	2023	East Nusa Tenggara (NTT)	1643 (<60 months)	The highest prevalence of stunting because low maternal education and children who living in rural areas	Cross sectional
(Wiliyanarti et al., 2022)	2022	Talang, Pamekasan, Madura	120 (6-48 months)	Family support and mother's knowledge were factors affecting the behavior of fulfilling nutritional needs in stunted children under 5 years	Cross sectional
(Permatasari & Chadirin, 2022)	2022	Bogor, West Java	330 (<60 months)	Stunting was higher for children under five who live in poor water sanitation, mother's education, parenting, and dietary habit with low frequency of consumption protein sources. The most factor causing stunted is low family income	Cross sectional
(Basri et al., 2021)	2021	Janeponto, South Sulawesi	340 (<60 months)	Stunting in children under related with low dietary habit which are quality and quantity of daily food consumption	Experimental with RCT-DB Design
(Nugraha et al., 2019)	2019	Jabon. Mojoanyar, Mojokerto, Jawa Timur	107 (0-36 months)	The better social support the better the care pattern to support mothers to give nutrition in children under 5 years with provide opportunity to improve food preparation skills and kids do not get bored so as to prevent stunting in children	Cross sectional
(Makatita & Ratna Djuwita, 2020)	2020	Bogor	500 (12-36 months)	High prevalence of stunting caused by poor parenting, increase education and knowledge mother's is important to prevent stunting	Cross sectional
(Nurfita et al., 2022)	2022	Kulon Progo, Yogyakarta	24.644 (<60 months)	Low economic levels or low income families are	Cross sectional

					risk of causing stunting, another determinant factor of stunting were low parenting dan maternal education	
(R. A. Wicaksono et al., 2021)	2021	Aceh	194	(<60 months)	Unimproved water source and sanitation, low maternal education, low family support and family income are the risk factors of stunting	Quantitative with case control study
(Fahmida et al., 2022)	2023	Brebes, Cianjur, Gorontalo, Ketapang, Lampung Tengah, Rokan Hulu, Lanny Jaya, Lombok Tengah, Lampung Tengah, Pemalang	2.442	(<60 months)	Stunting prevalence in under five children because of nutritional problems that is low food pattern	Quantitative with Linear Programming Analysis

DISCUSSION

One of the factors related to the possibility of stunting is the mother's education level. Maternal knowledge and education is very important as an alternative approach to combat stunting and promote healthy child feeding practices (Khan, Zaheer, & Safdar, 2019). Findings from several studies conducted in Ethiopia, Rwanda and Bangladesh are consistent with the results of this study if maternal education influences child stunting (Gebru et al., 2019; Nigusu et al., 2019). The children with mothers who have a higher level of intelligence and education are shown to have toddler with a more appropriate height compared to mothers with lower education. In Ethiopia, children whose mothers have only completed high school have a lower risk of being stunted (Nigusu et al., 2019).

A study in Vietnam showed that the strongest associations with child stunting were low maternal education affected stunting it has been explained that mother's education is very important and influences the nutritional status of her child. Mothers who lack education tend not to realize the need for good hygiene and nutrition (Beal et al., 2019). A mother's education influences parenting patterns and sanitation practices, including nutritional regulation during feeding practices and maintaining child health (González et al., 2021). Apart from higher education, you must also be active and responsive in seeking information about nutrition from the media and health workers. High maternal education is undoubtedly closely related to improved health (Mensch et al., 2019; Victora et al., 2021). The mother’s education level functions as an indicator of her knowledge in the field of health and nutrition for her toddler so that the health development of children in the family will be better (Li et al., 2024).

Compared to children living in urban areas, children in rural areas are more likely to be stunted. Children who live in urban areas are 15% less likely to experience stunting than children who live in rural areas (Wicaksono & Harsanti, 2020). Food quality, quantity, and variety typically decline for low-and middle- income families. Based on research in Tuban Indonesia explains that the majority of low family income is 51.4% less than the regional minimum wage, which

has an influence on stunting (Novia & Adi, 2020). Stunting incidents are often found in countries with low and middle income (Martin et al., 2020). The mother's education level directly increase the family economic income, thus encouraging children's growth and development and educated mothers tend to make more use of available health service. Countries with female heads of household tend to have lower income than male heads of household, if women are heads of household they tend not to spend much time with their children and this has an impact on children's health (Wendt et al., 2021).

Unsupportive family environment such as low family support negatively impacts child health in the first 1000 days of life. Family social support with parenting style in preventing stunting in toddlers has an influence. Good family social support, the parenting patterns for toddlers will be better to prevent stunting (Nugraha et al., 2019). Apart from the mother's role, support from the family is also needed to optimize children's growth and development to prevent stunting (Saleh et al., 2021). A Study in Etiophia showed that high prevalence of stunting was caused by poor sanitation, this is due to the habit of defecating in the household, animal waste in the living environment, contaminated soil with bacteria E.coli (Gizaw et al., 2022). Poor sanitation can also be through contamination of hand pumps and tank water sources which is a major contributing stunting factor (Batool et al., 2023). Study in the working area of the Tajinan Malang health center, the cause of stunting is because 73% of mothers have at least elementary school education and supported by poor sanitation 67% because some of the residences are far from the healthy house category such as do not have closed and watertight trash cans, lack of ventilation in the house and do not have a family toilet (Maulina, 2020). The majority of children who live in environments without access to water and sanitation are more likely to cause stunting (Mulyaningsih et al., 2021). Supported by research in Zambia showing that children with good drinking water sources (33.7%) are less likely to experience stunting than children with poor drinking water sources (47.7%) (Mzumara et al., 2018).

Enhancing maternal nutrition from the time of pregnancy to the first 1000 days of life is another endeavor. To improve sanitation, there needs to be education about healthy home indicators. In addition, implementing outreach programs promoting clean living practices and helping the community to live in houses that satisfy the requirements of a healthy home—particularly with regard to the use of safe building materials that make it difficult for microorganisms to proliferate—are important. Multisector collaboration from the non-health and health sectors at the community reduced the burden of stunting used community based approach (Brar et al., 2020). Aside from that, food is an area where children under five years old require extra care. Children run the risk of stunting because there is little variation in their diets. Both macro and micronutrients are required for growth. Macronutrients include fat and protein, whereas micronutrients are primarily found in vegetables (Dewey et al., 2020).

CONCLUSION

The findings of this systematic review can serve as a foundation for choosing the right interventions to avoid stunting. Revealed information about the variables that affect childhood stunting, including low maternal knowledge and education, hygienic practices, maternal parenting styles, low income or poverty, and the child's living in a rural area. The government must step in to prevent childhood stunting, particularly for mothers with low levels of education and those residing in rural areas. The intervention includes intensive outreach about improving nutritional status during pregnancy by practicing making proper weaning food with the required nutritional content as well as community empowerment by utilizing the potential of natural resources and human resources to meet children's nutritional needs and reduce the incidence of stunting in Indonesia.

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