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ADOLESCENT MOTHERS' NUTRITIONAL KNOWLEDGE AND STUNTING RISK : A SYSTEMATIC REVIEW

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Abstrak

Stunting masih menjadi masalah gizi kronis yang signifikan di Indonesia, terutama pada anak-anak yang lahir dari ibu remaja. Ibu remaja kerap memiliki keterbatasan pengetahuan gizi, literasi kesehatan rendah, dan kesiapan reproduksi yang belum optimal, sehingga meningkatkan risiko stunting pada anak. Penelitian ini bertujuan untuk menelaah hubungan antara pengetahuan ibu remaja dengan kejadian stunting pada balita serta mengidentifikasi faktor-faktor yang memengaruhi kondisi tersebut. Penelitian ini merupakan *systematic literature review* yang disusun berdasarkan pedoman PRISMA dengan pendekatan kerangka *Population, Concept, and Context* (PCC). Artikel dikumpulkan melalui pencarian pada basis data Scopus, PubMed, Google Scholar, dan Crossref menggunakan kata kunci "pengetahuan", "ibu remaja", "stunting", dan "balita". Kriteria inklusi mencakup artikel kuantitatif berbahasa Indonesia atau Inggris yang melibatkan ibu remaja dengan anak usia di bawah lima tahun. Data yang diperoleh dianalisis secara deskriptif dengan mengelompokkan hasil temuan berdasarkan kesamaan tema. Hasil telaah terhadap lima artikel menunjukkan bahwa pengetahuan ibu remaja memiliki hubungan signifikan dengan kejadian stunting. Faktor sosial-ekonomi, pendidikan rendah, keterbatasan akses pelayanan kesehatan, dan praktik pengasuhan yang tidak memadai memperkuat hubungan tersebut. Beberapa penelitian menegaskan bahwa peningkatan literasi gizi dan perawatan prenatal dini dapat menurunkan risiko stunting pada anak. Kesimpulannya, rendahnya pengetahuan gizi ibu remaja menjadi determinan penting terhadap stunting pada balita. Upaya intervensi perlu difokuskan pada peningkatan pendidikan dan literasi gizi remaja putri melalui edukasi sekolah, kelas ibu remaja di Puskesmas, serta kampanye berbasis komunitas untuk memutus rantai stunting lintas generasi.

Kata Kunci : Pengetahuan, ibu remaja, stunting, dan balita.

Abstract

Stunting remains a significant chronic nutritional problem in Indonesia, particularly among children born to adolescent mothers. These young mothers often face limitations in nutritional knowledge, lower health literacy, and suboptimal reproductive preparedness, which collectively increase the risk of stunting in their children. This study aimed to conduct a review to determine the association between adolescent mothers' nutritional knowledge and the incidence of stunting in toddlers, and to identify the contributing factors. This was a systematic review conducting following the PRISMA guidelines and utilizing the Population, Concept, and Context (PCC) framework. Articles were collected through searching the Scopus, PubMed, Google Scholar, and Crossref databases for studies up to October 2025. Two reviewers independently screened and included full-text article that examined Mothers Knowledge and stunting, focusing on the concept of knowledge, adolescent mother, and stunting. A review included five articles. Adolescent mothers' knowledge had a significant association with the incidence of stunting. This association was often strengthened by confounding factors such as socio-economic status, low education levels, limited access to healthcare services, and inadequate childcare practices. Several studies found that improving maternal nutritional literacy and initiating early prenatal care can effectively reduce the risk of stunting in children. Low nutritional knowledge among adolescent mothers is confirmed as an important determinant of stunting in toddlers. Intervention efforts need to be focused on enhancing the education and nutritional literacy of adolescent girls through structured programs, including school-based education, adolescent mother classes in community health centers (Puskesmas), and targeted community campaigns. The integrated approach is crucial to break the intergenerational cycle of stunting and foster the development of quality human resources.

Keywords: *Knowledge; Adolescent mother; Stunting; children*

INTRODUCTION

Stunting is a condition of growth failure in children, measured by height-for-age (HFA), and remains a major nutritional problem in Indonesia. The prevalence of stunting in Indonesia in 2023 reached 21.5% and decreased in 2024 to 19.8% (SSGI, 2024). Several studies show that the prevalence of stunting in Indonesia is still quite high, especially in rural areas and underdeveloped regions. For example, research in Aceh Province shows a significant correlation between mothers' knowledge and the incidence of stunting in toddlers. The study confirms that not only economic factors or access to healthcare services play a role, but also factors such as nutritional knowledge and maternal behavior in meeting children's nutritional needs (Zhafira, S.N., et al., 2024).

One aspect that is receiving increasing attention is the role of adolescent mothers or young expectant mothers in preventing stunting. Adolescent mothers often have limited nutritional knowledge, low health literacy, and limited parenting experience, which can increase the risk of stunting in their children later on. A study in West Java found that mothers' nutritional knowledge is an important determinant of stunting, with disparities between urban and rural areas. (Mauludyani, A.V.R., & Khomsan, A., 2022).

A systematic review and meta-analysis conducted by Welch, C., Wong, C. K., Lelijveld, N., Kerac, M., & Wrottesley, S. V., 2024, titled "Adolescent pregnancy is associated with child undernutrition," found that adolescent pregnancy is associated with an increased risk of underweight in children under five years of age. Additionally, no strong association was found between adolescent pregnancy and wasting, but there were regional variations (more pronounced in Asia). Biological factors (mother's nutritional status) and social factors (education, poverty, early marriage) have the potential to link adolescent pregnancy and child malnutrition (Welch, C., et al., 2024).

Considering that pregnancy and the first 1,000 days of a child's life are critical periods, the role of adolescent mothers in understanding and implementing optimal nutrition practices becomes extremely important. Mothers' knowledge includes understanding exclusive breastfeeding, complementary feeding (MPASI), feeding schedules, food diversity, and environmental and sanitation conditions that affect children's nutritional status. For example, research in Sumowono shows that low maternal nutritional knowledge and inadequate energy intake in toddlers are risk factors for stunting with a high odds ratio. This indicates that even tho structural factors such as family income or access to services exist, optimal nutrition is difficult to implement without adequate maternal knowledge (Mazida, Z., et al., 2024).

Additionally, adolescent mothers with limited knowledge may also be less aware of the importance of adequate nutrition, good parenting practices, and regular monitoring of child growth. A study in Lembata found a significant relationship between mothers' knowledge levels and the incidence of stunting in toddlers. This indicates that mothers' knowledge can serve

as an important indicator for intervention (Nago Adja, K.L.M., 2024). Therefore, stunting prevention strategies must consider increasing mothers' nutritional knowledge, especially young mothers or expectant mothers, thru education and community-based interventions.

Based on the above description, this literature review aims to further investigate the relationship between adolescent mothers' knowledge and the incidence of stunting in toddlers in a specific area. Thus, it is hoped that the extent to which adolescent mothers' knowledge influences their children's growth status can be identified, and how appropriate interventions can be designed to strengthen the role of adolescent mothers in preventing stunting. Research conducted by Laksono, A.D., et al. (2022) showed that maternal education is an important factor associated with stunting in children under two years of age in Indonesia. The lower the mother's education level, the greater the child's chance of experiencing stunting. Other social factors such as the area of residence, marital status, mother's occupation, and child's gender also have an impact.

METHOD

The systematic literature review was conducted based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The selected article is research related to adolescent mothers' knowledge about stunting. The process of article collection was carried out by searching several databases and search engines, including Scopus, PubMed, Google Scholar, and Crossref.

The search strategy for articles was developed based on the Population, Concept, and Context (PCC) framework, making adolescent mothers with young children the study population, with knowledge as the concept within the context of stunting. The keywords used were "knowledge," "adolescent mothers," "stunting," and "toddlers" when searching thru Google Scholar and Crossref, while the databases Scopus and PubMed used the English keywords "knowledge," "adolescent mothers," "stunting," and "children".

Inclusion criteria include fully accessible quantitative research articles, articles in English or Indonesian with mothers of children under 5 years old as respondents. Exclusion criteria include paid articles, books, and articles written in languages other than English and Indonesian. Articles selected according to the inclusion and exclusion criteria will be grouped based on the research subtopics, and then extracted for a deeper interpretation of the research results and their relevance to each other.

RESULT AND DISCUSSION

Here is some of articles about determinants factors of Low birth weight (Table 1)

Table 1. Article Data Mapping Results

Author	Research Title	Method	Result
Mtongwa, et al. (2021)	A comparative analysis of determinants of low birth weight and stunting among under five children of adolescent and non adolescent mothers using 2015/16 Tanzania Demographic and Health Survey (TDHS)	This study is a secondary analysis of data from the 2015/2016 Tanzania Demographic and Health Survey (TDHS), using a cross-sectional design. The research focus is to compare the determinants in two groups: children of adolescent mothers (15–19 years old) and non-adolescent mothers (20–49 years old). A total of 13,266 women with children under five years old responded.	Maternal age affects LBW, but not stunting. Important factors influencing LBW: maternal nutrition (low BMI), marital status, and the number of ANC visits. Main factors for stunting: low economic status, low birth weight, child's age, and male gender. It is recommended that there be a multi-sectoral approach and adolescent-specific interventions, including emotional support, nutritional education, and early pregnancy care, to improve birth outcomes and reduce stunting.
Ceren Varer Akpinar & Asli Ata Teneler (2022)	Adolescent Motherhood and Negative Birth Outcomes, Stunting and Social Determinants: Secondary Analysis of Turkish National Data 2018	This study is a secondary analysis of data from the 2018 Turkey Demographic and Health Survey (TDHS), which is cross-sectional. Population: Women aged 15–49 who gave birth in the last 5 years. Sample: 2,755 mothers, consisting of 2,638 mothers with data on their child's birth weight and gestational age, and 2,102 mothers with data on their child's height (for stunting analysis).	Children of teenage mothers have a higher prevalence of LBW and stunting compared to children of adult mothers. However, after considering socioeconomic factors, low education, poverty, and regional inequality became the main determinants, not the mother's age itself. Interventions to improve maternal and child nutrition need to focus on increasing women's education, equalizing access to ANC services, and reducing poverty disparities between regions.
Shahid, S., & Siddiqui, S. (2022)	Stunting Status of Ever-Married Adolescent Mothers and Its Association with Childhood Stunting with a Comparison by Geographical Region in Bangladesh	The research design uses a cross-sectional study. Source: Pakistan Demographic and Health Survey (PDHS) 2017–18 data. The population and sample in this study are women who have been married and become mothers in their teenage years (10–19 years old).	Stunting in adolescent mothers has a direct impact on the risk of stunting in their children. Prevention efforts must begin during adolescence, including improving the nutrition of adolescent girls, providing reproductive health education, and preventing early marriage.

O'Connor, et al. (2023)	Social, biological, and programmatic factors linking adolescent pregnancy and early childhood undernutrition: a path analysis of India's 2016 National Family and Health Survey	This study is a large-scale secondary analysis with a cross-sectional design, using data from Demographic and Health Surveys (DHS) in 46 low- and middle-income countries (LMICs) collected between 2010 and 2020. Total data analyzed: 140,000 mother-child pairs.	Pregnancy at <18 years of age is strongly associated with an increased risk of stunting and underweight in children under five years old. This relationship is largely mediated by socioeconomic inequality, low education, and limited access to maternal and child health services. The author emphasizes the importance of preventing adolescent pregnancy thru education and access to contraception, improving the nutritional status and education of adolescent girls, and enhancing ANC and nutritional services for young pregnant women to break the cycle of intergenerational malnutrition.
Mohamad Yoto, et al. (2025)	Determinants of Stunting among Children with Teenage Mothers: Evidence from Indonesia	The research design used is a cross-sectional study using secondary data from the 2021 Indonesian Nutritional Status Survey conducted by the Indonesian Ministry of Health. The population consists of children aged 0–23 months with adolescent mothers (<19 years old) in Indonesia. The sample size analyzed was 1,946 children, representing the national population thru multistage random sampling.	Eight factors are the main determinants of stunting in children with adolescent mothers in Indonesia. This study emphasizes the need for nutritional intervention and education for adolescents, the prevention of early marriage, and increased participation in prenatal classes to accelerate the reduction of stunting rates.

Stunting in toddlers remains a serious chronic nutritional problem in Indonesia and other developing countries. Stunting occurs due to prolonged linear growth failure, typically triggered by chronic nutritional deficiencies, recurrent infections, and inadequate care practices during the first 1,000 days of life. According to the UNICEF Framework for Child Malnutrition theory, the causes of stunting can be divided into direct causes (inadequate nutritional intake and infectious diseases) and indirect causes (family food security, health environment, and maternal care practices and nutritional knowledge) (UNICEF, 2021). In this context, adolescent mothers are a high-risk group because they have physical, psychological, and social limitations that impact their child's nutritional practices. Low nutritional knowledge among adolescent mothers can potentially lead to inappropriate feeding patterns, ignorance about the importance of exclusive breastfeeding, and delays in detecting child growth disorders (Laksono et al., 2022).

Based on data from the article data mapping results, there are five relevant studies highlighting the link between adolescent mothers and stunting. Research by Mtongwa et al. (2021) in BMC Nutrition found that maternal age influences the incidence of low birth weight (LBW), which is subsequently associated with an increased risk of stunting. Ceren Varer Akpinar and Asli Ata Teneler (2022) also showed that children of adolescent mothers have a higher prevalence of negative birth outcomes, including LBW and growth disorders. Next, O'Connor et al. (2023) identified social, biological, and programmatic factors that influence stunting, including low education and health literacy among young mothers. Meanwhile, the study by Mohamad Yoto et al. (2025) found eight main determinants of stunting in children of adolescent mothers, with maternal knowledge being the dominant factor. All five studies consistently show that adolescent mothers are a population vulnerable to stunting due to limited knowledge, reproductive readiness, and low social and health support.

Theoretically, the relationship between maternal knowledge and the occurrence of stunting can be explained thru the Health Belief Model (HBM), which states that a person's health behavior is determined by their perception of risk, benefits, barriers, and cues to action (Glanz et al., 2015). In the context of adolescent mothers, low levels of knowledge make them unaware of the risks of malnutrition, leading to a lack of preventive measures such as prenatal checkups, iron tablet consumption, or monitoring child growth. This is consistent with the research findings of Mauludyani and Khomsan (2022), which show that maternal nutritional knowledge is a significant determinant of stunting incidence in West Java, with mothers with low knowledge having a 2.3 times higher chance of giving birth to a stunted child compared to mothers with good knowledge. Additionally, Zhafira et al. (2024) reported that low maternal nutritional knowledge is associated with low energy and protein intake in toddlers in agricultural areas, ultimately increasing the risk of stunting.

Socioeconomic factors and formal education also strengthen this relationship.

Adolescent mothers generally have lower levels of education, which impacts limited access to information and low ability to understand nutritional messages (WHO, 2022). A study by Nago Adja et al. (2024) in East Nusa Tenggara found that maternal knowledge and parenting patterns were significantly associated with stunting (p=0.001). Good knowledge allows mothers to adopt a more varied diet, recognize signs of malnutrition, and access healthcare services in a timely manner. Conversely, less knowledgeable teenage mothers tend to rely on family habits without considering the principles of balanced nutrition. This condition is exacerbated by economic limitations and social pressures, leading to suboptimal nutritional intake for children.

From a policy perspective, these results confirm the importance of a life-course approach in preventing stunting. Interventions should not only focus on pregnant women, but should also target adolescent girls before marriage thru nutrition education, reproductive health, and strengthening health literacy. Programs like the Healthy Youth Movement and Adolescent Nutrition Education in Schools can serve as a means of raising awareness among adolescent girls about the importance of nutrition before and during pregnancy. Increasing the knowledge of adolescent mothers can also be done thru adolescent pregnant mothers' classes at health centers, family counselling, and youth-friendly social media campaigns. The findings of Mohamad Yoto et al. (2025) confirm that the main determinants of stunting in children with adolescent mothers are not only biological, but also related to the mother's nutritional behavior and knowledge, making education-based interventions a key strategy in accelerating the national reduction of stunting.

CONCLUSION

Thus, the research findings indicate that adolescent mothers' knowledge is closely related to the occurrence of stunting in toddlers thru two main factors: direct factors such as nutritional behavior and child rearing, and indirect factors such as socio-economic and reproductive factors. Efforts to increase the knowledge of adolescent mothers will have a positive impact on child feeding practices, growth and development monitoring, and the ability to detect nutritional problems early. Therefore, strengthening the capacity of adolescent girls and young mothers-to-be is a long-term investment in breaking the intergenerational cycle of stunting in Indonesia.

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