

The Relationship Between Maternal Education Level and Stunting: Literature Review

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Abstract: Children who are shorter than their peers due to malnutrition before and after birth are called stunting. Stunting occurs when a married adolescent woman has a low socioeconomic status and education level, thus increasing psychological stress caused by limited human resources and childcare so that child growth and development are not optimal. One important factor that influences the prevalence of stunting in early childhood and toddlers is maternal education. Increasing public awareness of the importance of maternal education in preventing stunting and improving the quality of child health. This review study aims to present evidence on the correlation between stunting and maternal education and to determine the extent to which maternal education affects the nutritional status and growth of children, especially stunting. With these objectives, this study is expected to make a significant contribution to understanding and addressing stunting problems in the community. The literature review method and the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) meta-analysis process were used throughout the investigation. There is a correlation between stunting and maternal education based on many research findings. In conclusion, education level, low maternal age, poor toddler care and nutritional intake during pregnancy are associated with stunting.

Keywords: Maternal education; Stunting; Teenager

Introduction

The majority of toddlers in developing and impoverished nations, such as Indonesia, are stunted. Indonesia is ranked 17th in the world out of 117 countries. In contrast to other middle-income nations like Malaysia (20%) and Thailand (10.5%), Indonesia has one of the highest rates of stunting (Pratiwi, 2019).

A child that is stunted is too small for their age as a result of malnutrition and pre- and postnatal illnesses that stunt growth. Height-for-age is below 2 standard deviations according to the growth curve. Children under five who suffer from stunting will have difficulty achieving optimal physical development and intelligence (Rambe et al., 2023).

Pregnancy after adolescence necessitates greater energy and nutrition for the mother and the unborn child. Adolescent pregnancy results in a nutritional

battle between the expectant woman and her unborn kid (Nguyen et al., 2021). Children born to teenage moms have shorter bodies than children born to mature mothers, according to earlier research. Stunting rates among adult and adolescent moms were 8% after a year (Le Roux et al., 2019). Maternal height below 150cm is a risk factor for stunting. Teenage mothers, too close a gap between pregnancies, and poor nutrition during pregnancy can also affect foetal development (Widayati et al., 2021).

In addition, younger mothers tend to have lower socioeconomic status and education levels, which increases psychological stress caused by limited human resources and childcare (Wemakor et al., 2018).

Using the three most common indices of height, weight, and z-score. An additional year of maternal education increases the weight-for-age z-score by 0.02 standard deviations, and the height education z-score by

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0.02. Naturally, investing in a girl's education can provide financial benefits to the child, support normal growth and reduce negative health impacts so that the child does not become stunted (Le & Nguyen, 2020).

Some other factors that cause stunting are: Firstly, parenting style. Poor parenting styles during pregnancy and after childbirth contribute to stunting in children under five. It is a fact that 2 out of 3 children aged 0-24 months do not get supplemental feeding, and 60% of newborns aged 0-6 months are not exclusively breastfed. It is a fact that complementary foods help babies get the nutrients they need and boost their immune system. Secondly, the limited availability of health services. There are still limited health services, including good services for mothers during pregnancy, after birth, and after birth. In addition, children's access to vaccinations is still limited and inadequate (Sutarto et al., 2018).

Reducing malnutrition in all its manifestations, particularly for children, is one of the Sustainable Development Goals (SDGs). Children's health is vital, with mother and child health as the highest priority and child health as a major area of attention for society, in order to enhance the quality of human development. They require optimal physical and psychological development, together with optimal nutrition and a supportive environment, in order to grow and develop (Binns & Low, 2020). The validity of stunting as a bioindicator of malnutrition and a public health monitor has received increased attention recently. Stunting serves as a classification scheme for malnutrition, which encourages public health measures aimed at reducing the prevalence of malnutrition. Efforts to improve human well-being, including reducing hunger and malnutrition, have been shown to be beneficial in preventing stunting (Frongillo et al., 2019).

For mothers, there are three fundamental things that are very important to prevent having stunted children: the types of activities related to the clarity of institutional structures and coordination that address stunting, the need for a clear design for planning, implementation, and monitoring, and the need for social awareness campaigns that encourage behaviour change in anticipating and addressing stunting. To empower mothers of stunted children, the elements of human resource development, structure strengthening, and management of stunting development are very important (Muksin et al., 2022).

Lack of information about nutrition and eating a healthy diet will largely lead to children's nutritional issues. Lower parental education is the most important underlying causative factor since it significantly affects how resources are managed to obtain food (Putri & Febrianta, 2024). Stunting and mother educational attainment are related for a number of reasons.

Education's Impact on Nutrition: Mothers with greater education are more likely to recognize the value

of correct feeding techniques and a healthy diet for their kids. This may support normal development and growth. **Health Awareness:** Education frequently raises people's knowledge of health issues and the resources that are accessible. Mothers with higher levels of education are more likely to take their kids to the doctor and get them vaccinated. **Family Planning:** Mothers with higher levels of education are more likely to use family planning, which may have an impact on the spacing of births and the amount of time spent with each kid. **Long-Term Effects:** A child's physical and mental development may be impacted for some time by stunting. Improving maternal education might be the main focus of preventative efforts if this relationship is understood. **Policy and Interventions:** This study can help health programs and policymakers create more successful interventions, like enhancing access to healthcare services and implementing maternal education initiatives. **Social and Economic Links:** The socioeconomic standing of a family is frequently linked to the mother's educational attainment. Finding the causes of stunting can be aided by analyzing this link. Strategic measures to lower stunting and enhance general child health can be implemented by comprehending this relationship.

The level of maternal knowledge has a significant role in stunting. Prospective mothers are expected to improve their formal education, because education is a practical way for mothers to more easily absorb health information.

One important factor influencing the prevalence of stunting in young children and toddlers is maternal education. In order to help other researchers and the general public, this article review study aims to furnish information on the connection between stunting and maternal education.

Method

Research Methods

In this inquiry, the literature review method was applied. Figure 1 illustrates the methods for choosing relevant articles by applying the literature review research technique. Locates and evaluates approaches and theories based on research that are pertinent to a certain subject. During this study phase, data collection, identification, evaluation, and interpretation are done using the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) technique.

Inclusion Criteria

The inclusion criteria for this study were original research publications or not, articles quoting national journals published in Indonesian, and the correlation between maternal education level and stunting. The

latest five years' literature reviews are not included. These items are then taken out to be examined.

Search Keywords

The publications included in this analysis used keywords along with the Boolean operators AND and OR. We conducted a search in December 2023. The database source was searched using Google Scholar, PubMed, and the Google search engine. Papers with the keywords "teenager," "mother education," and "stunting" that were published between 2018 and 2023 make up the information requested.

Results and Discussion

Based on the results of the literature study conducted to ascertain the relationship between Indonesian stunting and water quality, 1,088 articles were located. Along with the 372 publications that were published, 17 papers that were pertinent to identifying the articles that met the inclusion criteria were also acquired. In the end, 10 pieces were selected since they could be completed.

Based on the results of a literature study that looked at recent publications that are relevant to systematic reviews, the process for selecting the identified articles is shown in Figure 1. The results of the literature review

indicate a connection between maternal education and stunting. Table 1 presents an overview of the research results.

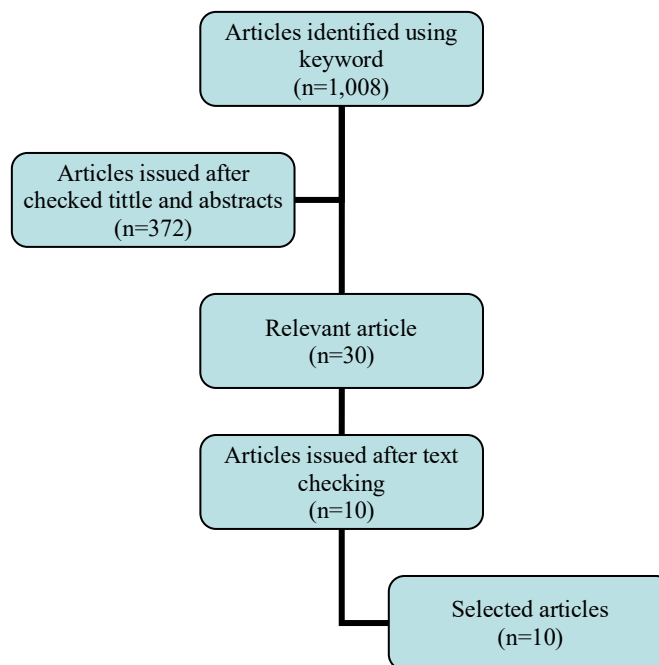


Figure 1. Article Selection Flow

Table 1. Summary of data descriptions

Heading	Author	Method	Result
Maternal stature, maternal education and child growth in Pakistan	Javid, N., & Pu, C. (2020).	cross-sectional	The prevalence of underweight, overweight, underweight, and stunting were found to be, respectively, 45%, 26.2%, 9.9%, and 9.5% of the population. Across all educational levels, the proportion of stunted and underweight children born to short moms was equal to that of tall mothers, but short women had more undernourished children than tall mothers. The growth of children is significantly benefited by maternal education. Policies that consider maternal education and children born to short mothers are crucial (Javid & Pu, 2020).
Maternal factors associated with moderate and severe stunting in Ethiopian children: analysis of some environmental factors based on 2016 demographic health survey	(Amaha & Woldeamanuel, 2021)	Health Survey	Maternal autonomy, height, and weight, as well as greater levels of education, were all positively correlated with lower incidence of stunting. Stunted children were 32% more likely to be born to mothers who gave birth at home (p = 0.002). Stunted children were 23% less likely to be born to non-working moms than to working mothers (p = 0.003). moms taller than 160 cm had a 2.5-fold increased risk of having stunted offspring compared to shorter moms (less than 150 cm). The risks of stunting decreased by 4% (p=0.014) for every unit increase in body mass index (BMI) and by 0.5% (p=0.01) for every centimeter increase in maternal height (Amaha & Woldeamanuel, 2021).
Prevalence of Malnutrition and Associated Factors of Stunting among 6–23-Month-Old Infants in Central Rural China in 2019	Liu, J., Sun, J., Huang, J., & Huo, J. (2021).	cross-sectional	Our findings showed that in 2019 among infants aged 6 to 23 months in impoverished parts of central China, stunting, wasting, underweight, overweight, and obesity were highly prevalent. Malnutrition is a complicated problem with many influencing factors. Stunting is associated with a number of risk factors, such as low mother education levels, inadequate autism spectrum disorder (MDD), baby age, and male gender. To identify and prevent malnutrition, newborns in China's rural areas require earlier and more sophisticated surveillance. In the end, this might lessen the

Heading	Author	Method	Result
			impact of malnutrition overall. Follow-up research can examine the first thousand days of life's general nutritional quality by gathering further information on maternal circumstances and pregnancy (Liu et al., 2021)
Risk factors of stunting in children aged 24-59 months.	Manggala, A. K., Kenwa, K. W. M., Kenwa, M. M. L., Jaya, A. A. G. D. P., & Sawitri, A. A. S. (2018).	cross-sectional	37 (22.3%) of the 166 subjects were stunted kids. Multivariate research revealed a significant relationship between stunting and the subsequent variables: mother height of less than 150 cm, low birth weight, low birth length, high-risk pregnancy age, and poor paternal education (Manggala et al., 2018).
Effect of maternal and child factors on stunting: partial least squares structural equation modeling	Santosa, A., Novanda Arif, E., & Abdul Ghoni, D. (2022)	case-control study	Stunting is directly influenced by maternal variables ($t=3.527$, $P<0.001$), with a 30.3% effect. Stunting is also significantly influenced by maternal variables indirectly through child factors ($t=4.762$, $P<0.001$), with a 28.2% effect. The moderating variables that reflect the degree of stunting are maternal and child factors, according to the results of the moderation analysis (Santosa et al., 2022).
Maternal knowledge, attitude, and practices about traditional food feeding with stunting and wasting of toddlers in farmer families.	Simanjuntak, B. Y., Haya, M., Suryani, D., Khomsan, A., & Ahmad, C. A. (2019).	cross-sectional	Bengkulu Tengah Regency farmer families show an association between mother eating habits and the nutritional status of under-five children (12-59 months) based on the WAZ and WHZ month indices. As the child's gender and the HAZ index are significantly correlated, gender needs to be adjusted in the interim. Moms of children under five should be allowed to practice eating traditional meals in order to improve their child's nutritional health. Techniques for improving family nutrition with traditional food ingredients can be used. Among other micronutrients, the majority of traditional diets include some kind of iron, vitamin A, and vitamin C. Instead, local food optimization simplifies the process of optimizing locally grown food. Nonetheless, utilizing local food sources maximizes their affordability and accessibility (Simanjuntak et al., 2019).
Maternal Factors In Stunting Among Vulnerable Children	Stefanus Mendes Kiik and Muhammad Saleh Nuwa. (2021)	cross-sectional	Significant correlations were found between maternal education ($p = 0.014$), height ($p = 0.003$), previous birth spacing ($p = 0.001$), and visits to the neonatal care unit ($p = 0.009$). Further study is required to assist treat stunting by adopting medicines that lessen risk factors (Kiik & Nuwa, 2021).
Stunting Was Associated with Reported Morbidity, Parental Education and Socioeconomic Status in 0.5-12-Year-Old Indonesian Children	Soekatri, M. Y., Sandjaja, S., & Syaquy, A. (2020)	Cross sectional	The overall prevalence of stunting was found to be 31.4%, according to the results. Stunted children with one or more episodes of gastrointestinal, respiratory, or infectious diseases did not differ in HAZ (Height for age Z) from children without a history of disease. Children in Indonesia are frequently stunted, and there is a substantial correlation between stunting and general health issues, parental education, and child morbidity. SES (Asset Classification) (Soekatri et al., 2020).
Association between Maternal Mental Health and Child Stunting in Indonesia	Annisa Purbaning Tyas and Diah hadi Setyonaluri. (2022)	Logistic Regression	The findings demonstrated that stunting was related to mother height, length of nursing, child age, birth weight, and residential location across all age groups. Maternal education was also associated with stunting in the 0-59 months and 24-59 months age groups (Purbaning & Setyonaluri, 2022).
Association of Maternal Education With Nutritional Outcomes of Poor Children With Stunting in Indonesia	Handayani, N. S., Huriyati, E., & Hasanbasri, M. (2023).	Cohorts design.	The findings indicated that stunted children were 1.69 to 2 times more likely to be obese and overweight than other stunted children if their moms had high levels of education, if they resided in highly educated neighborhoods, and if their families were low income. Thus, for women to preserve the health of their offspring in the future, basic education and health education are crucial (Handayani et al., 2023).

Data from multiple research that have demonstrated the link between maternal education level and stunting, based on literature review studies, include:

The Relationship Between Maternal Education Level and Stunting

Stunting, underweight, overweight, and obesity were prevalent in percentages of 45%, 26.2%, 9.9%, and 9.5%, respectively. Children of shorter mothers were more likely to be undernourished, although the proportion of stunted and underweight children was the same for all educational levels. The growth of children is positively impacted by maternal education. Policies that prioritize maternal education and children of short mothers are crucial (Javid & Pu, 2020). In impoverished areas of central China in 2019, there were high rates of stunting, wasting, underweight, overweight, and obesity among infants aged 6-23 months. Factors such as infant age, male gender, inadequate support for autism spectrum disorder (MDD), and low maternal education influence the risk of stunting. To detect and prevent malnutrition and potentially lower the overall incidence of malnutrition, infants in rural China require earlier and more thorough surveillance. Subsequent research endeavors may examine the nutritional status during the initial thousand days of life, encompassing additional data gathering regarding pregnancy and maternal circumstances (Liu et al., 2021).

Maternal nutritional deficiencies can impair foetal growth and infectious diseases during pregnancy can lead to premature birth. Both of these conditions play a major role in causing early childhood stunting, although their relative contributions vary globally. After birth, stunted growth may begin at three to five months of age and become more pronounced from six to eighteen months of age (Black & Heidkamp, 2018).

Maternal autonomy, height, and weight, as well as high levels of education, were linked to low incidence of stunting. The likelihood of stunting rose by 32% with home birth and decreased by 23% with unemployment. If a mother was taller over 160 cm, her chances of stunting were 2.5 times higher than if she was less than 150 cm. The risks of stunting decreased by 4% and 0.5%, respectively, for every unit increase in body mass index (BMI) and one centimeter increase in maternal height (Amaha & Woldeamanuel, 2021). Furthermore, a strong connection was found between stunting and height ($p = 0.003$), previous birth spacing ($p = 0.001$), visits to neonatal care centers ($p = 0.009$), and maternal education ($p = 0.014$). Further research is needed to develop treatments that help combat stunting and reduce risk factors (Kiik & Nuwa, 2021). Thirty-seven (22.3%) of the 166 participants were stunted. Stunting was strongly correlated with low birth weight, short birth length, high-risk mother age, maternal height less than 150 cm,

and low paternal education, according to multivariate analysis (Manggala et al., 2018). With a sig result of $0.019 < \alpha 0.05$, in terms of parenting culture, the father has a significant effect on the prevention of stunting in toddlers. This shows that the role of fathers will increase the prevention of stunting in toddlers, and highly educated fathers increase the culture of parenting in toddlers (Januarti & Hidayathillah, 2020).

Stunting is influenced by maternal education. Low maternal education has an impact on child health care, diet, hygiene, and the amount of food children should consume (Chowdhury et al., 2022). Analyses show that factors associated with stunting vary between children in poor and non-poor households, and between children in urban and rural areas. At all levels of society, stunting tends to increase due to low levels of education and short maternal stature (Widyaningsih et al., 2022). Previous research suggests that the main risk factors for stunting in children aged 0-23 months are weight and length at birth, and short maternal stature (Utami et al., 2018).

In terms of lower-level families, farming families in Bengkulu Tengah Regency showed an association between maternal dietary habits and the nutritional status of under-fives (12-59 months) based on the WAZ and WHZ month indices. The importance of gender needs to be noted as it has a significant correlation with the HAZ index. Therefore, it is recommended that mothers practice traditional eating patterns to improve children's nutritional status. Using traditional foods that are high in micronutrients like calcium, zinc, magnesium, iron, iodine, omega-3 fatty acids, and vitamins (folic acid/folate), such as A, B6, B12, C, D, and E, can be one strategy to improve family nutrition. Local food optimization is thought to be a simple, affordable option (Simanjuntak et al., 2019).

Stunted children with a history of one or more bouts of infectious, gastrointestinal, or respiratory diseases have HAZ (Height for age Z) values that do not differ from stunted children without a history of disease. Stunting is common in Indonesia and is closely related to child morbidity, parental education, and socioeconomic status (Soekatri et al., 2020). The results of the study demonstrated that variables like mother height, length of nursing, child age, birth weight, and residential location were linked to stunting in all age groups. The age ranges of 0-59 months and 24-59 months showed a correlation between stunting and maternal education (Purbaning & Setyonaluri, 2022).

The moderation study's findings demonstrate that mother and child characteristics are moderating variables that affect how severe stunting is (Santosa et al., 2022). Children with stunted bodies who live in low-income households, in highly educated neighborhoods, and whose moms have advanced degrees are 1.69-2.2 times more likely to be obese and overweight. Therefore,

women must prioritize fundamental health and education in order to preserve their children's health in the future (Handayani et al., 2023).

Conclusion

Low education level, young maternal age, poor toddler care and nutritional intake during pregnancy are strongly associated with stunting. Maternal education plays a significant role in increasing knowledge about nutrition, health, and good feeding practices, which have a direct impact on child growth. In order to reduce the prevalence of stunting, the government and stakeholders should increase access to education for women and provide nutrition counseling programs. In addition to having an impact on children's current health, maternal education also helps to develop better human resources in the future. Accordingly, this study provides a strong basis for developing more effective strategies and policies in addressing stunting problems in the community.

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Author Contributions

A short paragraph that highlights each author's distinct contribution must be included in research articles with multiple authors. The following terms should be used: "Rusdi and Nurhasan Syah—conceptualization, methodology, and data analysis; Rusdi—writing—original draft preparation; Nurhasan Syah—resources, writing—review and editing, funding acquisition." Each author has authorized the manuscript after seeing it in print.

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Conflicts of Interest

According to the writers, they have no competing interests.

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