



## PREVENTION OF STUNTING IN RURAL FAMILIES: LITERATUR REVIEW

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### ABSTRACT

**Background:** The high prevalence of stunting is still a health problem that is often discussed by people in developing countries. Factors related to stunting have been sought using a variety of methods. This study aims to identify the dominant factors that families can do related to stunting prevention in children. **Methods:** This research used relevant databases including PubMed, ScienceDirect, SAGE journals, and Google Scholar. **Result:** 15 articles were entered. Factors affecting stunting in families in rural areas are explained in the categories of maternal education, nutritional intake patterns, family size, and absence of latrines and safe water. **Conclusions:** The findings of this study show that several factors that influence the incidence of stunting or several studies that show a significant relationship between variables can be applied and adjusted at the family level in preventing stunting where the family is the smallest social environment that takes care of children 24 hours. Further studies are needed to identify more specific family functions in preventing

**Keywords:** Family, Stunting Prevention Factors

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### INTRODUCTION

Stunting remains a trending health problem among people in developing countries. Factors related to stunting have been grouped using various methods (Yani et al., 2023). Stunting, according to the WHO, is defined as a condition in which children experience growth delays due to poor diet or repeated infections, with a great risk of illness or death. Stunting is a condition that is interpreted as a height Z score according to age (HAZ) of less than two standard deviations (WHO, 2018).

Globally, an estimated 140 million children under the age of 5 will be stunted by 2020 in developing countries (UNICEF, 2020). Based on the results of the 2022 nutritional status survey, there are 21.6% stunting rates in Indonesia, and they are targeted to decrease to 14% in 2024. Meanwhile, in Jember Regency, stunting prevalence ranks first in East Java Province with a figure of 34.9% (Kemenkes RI, 2023).

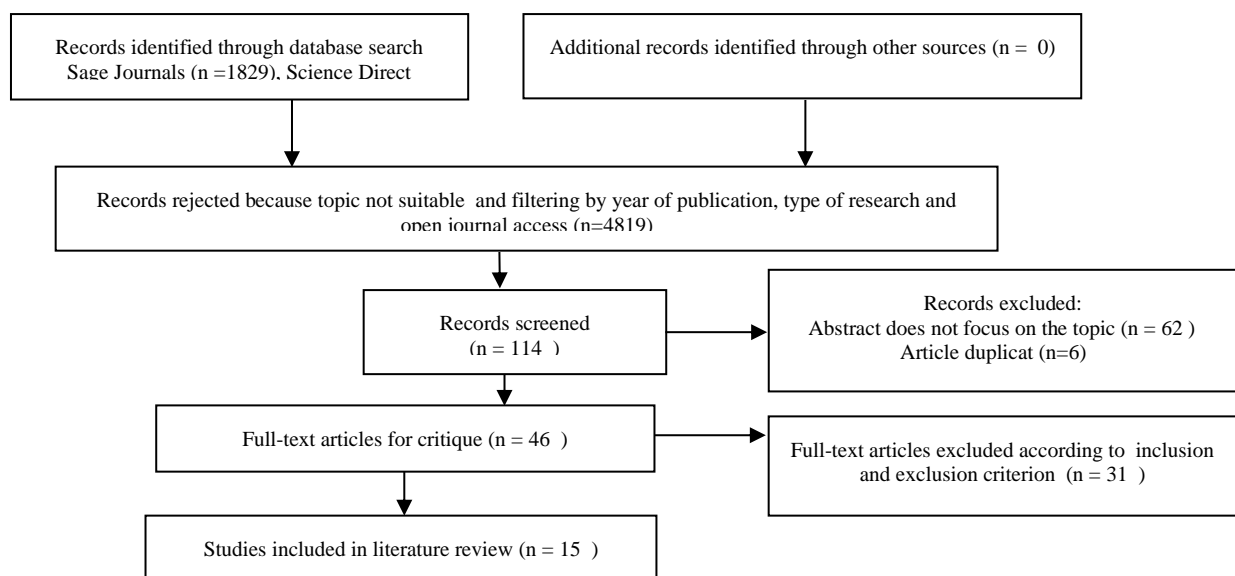
Stunting is caused by several factors, including food intake, inadequate parenting and feeding practices for

children, including breast milk (Tafesse et al., 2021) and exposure to disease, including household food insecurity (lack of availability, access to, and/or utilization of diverse foods), unhealthy households around the environment, and inaccessible health care that is often inadequate. Social, economic, and political factors can have a long-term influence on maternal and child malnutrition. In addition, chronic malnutrition can lead to a greater risk of stunting (UNICEF, 2020), Mothers who do not have formal education (Berhe et al., 2019; Dorsey et al., 2018; Tafesse et al., 2021), and recurrent diarrhea in children (Berhe et al., 2019; Tafesse et al., 2021). Some stunted toddlers may have difficulty achieving optimal physical and cognitive development. In addition, the damage caused by stunting can last a lifetime and affect the next generation (Vaivada et al., 2020). Children whose growth is stunted have suboptimal cognitive and motor skills and are at risk of higher morbidity and mortality rates (UNICEF, 2020; Black et al., 2013).

One of the functions of the family is family care (Ainy et al., 2021). The family has a very important role in fulfilling the nutrition needs of children (Putri & Rong, 2021; Yani et al., 2023). However, there are still a few specific reviews that determine this aspect. This study aims to identify the dominant factors that families can do to prevent stunting in children.

## METHODS

This research is a type of literature review. Article searches use several search engines, such as PubMed, Science Direct, and Sage Journals, with the keywords "reduction" "stunting" "family" and "rural". Study the selection process with a PRISMA diagram approach. The author sets the exclusion criteria for this article as a literature review, articles before 2018, and stunting in urban areas. While the inclusion criteria of this study are: 1) articles in English; 2) publications after 2018; 3) stunting prevention; and 4) families in rural or agricultural areas.



**Figure 1.** Prisma flowchart



## RESULT

This study identified fifteen articles that met the specified inclusion criteria. Most of the articles discuss the problems and factors related to stunting in rural areas. Of the fifteen articles, nine were cross-sectional studies, which on average identified factors related to stunting. The four articles are random control trials discussing the types of interventions that have a significant impact on reducing stunting. One article is a case-control study that discusses identifying maternal and household determinants of the timing of initiation of complementary feeding in children, and another article is a prospective study of food intake in infants aged 9–24 months, determining nutrient intake associated with the risk of underweight, wasting, and stunting. Six articles by Murarkar, et al (2020), Wiliyanarti, et al. (2022), Rachmawati, et al (2021), Berhanu Mamo, et al (2022), Sserwanja, et al (2021), Sadhu & Gandhi (2020) explain how mothers' knowledge and education are very important and closely related to stunting. Meanwhile, three articles by Murarkar, et al (2020), MacIel, et (2021), Sadhu & Gandhi (2020) explain how complementary foods and nutritional intake affect stunting in children. Two articles by Berhanu Mamo, et al (2022) and Danso & Appiah, (2023) describe family structures that focus on the number of families at greater risk of stunting. Two articles by Berhanu Mamo, et al (2022) and Sadhu & Gandhi (2020) explain how the availability of latrines affects stunting.

## DISCUSSION

The literature review describes the factors that influence child stunting in rural areas in various countries. According to a literature review, families with mothers who do not have good knowledge and are

not educated are most often and dominantly associated with stunting. The mother is the first caregiver in the child's life in the family area. Educated mothers will be more aware of health services (Russell et al., 2016), including what is needed for themselves and their families. Mothers are also the first teachers in children's lives, therefore, mothers and children are one unit (Murarkar et al., 2020). Mothers with good knowledge of the child's nutritional status will do well, especially in breastfeeding. It appears that exclusive breastfeeding for up to 6 months protects against wasting in both children from rural areas. In addition, mothers' knowledge is also able to help them choose more selectively and feed their children better (Mensch et al., 2019; Yuarnistira et al., 2019) so that it has an impact on providing a sufficient variety of food (Berhanu Mamo et al., 2022) and better health decision-making regarding their children (Wogderes et al., 2022). This is also backed up by the findings of earlier studies that indicate a connection between toddler nutrition and family functioning. According to Isnaini, et al (2020), inadequately carried out family responsibilities within the family can contribute to the undernutrition and undernourishment of children under the age of five. Therefore, in the context of carrying out family functions, additional food is required. Families can use Integrated Health Post (Posyandu) to get information so that each parent can manage family responsibilities effectively.

Besides that, other factors that also influence and are related to stunting are complementary foods and nutritional fulfillment. Toddlers who have shown poor nutritional status must immediately receive special treatment, such as the practice of giving complementary food to breast milk, which is applied as additional food, not a meal replacement (Susanto et al., 2021).



Poor family nutrition practices and poor health behaviors will have an impact on child malnutrition (Sadhu & Gandhi, 2020). This continues to grow to support the strong link between malnutrition and stunting, which has important implications for policy and practice in prevention. Some literature shows malnutrition and stunting (Thurstans et al., 2022). In a family environment in rural areas, you can optimize the intake of these nutrients according to the environment and agricultural production. Because rural areas are still rich in easily accessible agricultural products that still have sufficient nutritional value for children. Kaimila, et al (2019) revealed that food sourced from animal protein is highly recommended to prevent stunting, even though the implementation is relatively more expensive. However, there are options for families living in rural areas, namely protein from animals such as insects, which can be consumed safely.

A further review of the literature also explains that family structure influences and is related to stunting. The article's discussion of family structure focuses on the number of children in the family and the distance between births. The number of family members is a higher risk factor for stunting. The spacing of children's births is also a significant influence on stunting because the parenting style of the parents will be divided so that it will have an impact on the lack of nutrition for the child. Another rational thought is that having two or more children close reduces food allocation related to economic factors, which in turn also has an impact on the nutritional status of children so that parenting and food intake will be reduced and the risk of stunting is more likely to occur (Donatus et al., 2017). This is in line with previous research, which also explains that children from households with larger

members are at greater risk of experiencing stunting (Hailegebriel, 2018).

According to a literature review, the availability of latrines is also an important factor influencing stunting. The literature explains that families without latrines have a higher risk of stunting than families with latrines. The result of not having latrines is for families to defecate in the open so that clean and healthy living habits are ensured to be low. Furthermore, open defecation has a greater prevalence of diarrhea. Recurrent diarrhea also has a large effect on stunting (Berhe et al., 2019; Tafesse et al., 2021). His shows that diarrhea is related to stunting (Njuguna, 2016; Spears et al., 2013). So the availability of latrines also has an indirect effect on the process, resulting in stunting due to environmental factors. In addition, access to clean water and its availability are further linked to stunting. In accordance with research by Aini, et al (2021) explaining that there is a relationship between environmental sanitation and the prevalence of stunting. Clean water will prevent the spread of diarrheal diseases, which hurt the health of children (Mebrahtom et al., 2022). The availability of water facilitates family behavior in daily life, such as clean drinking water, washing hands before eating, and defecating. Families with children who experience difficulties accessing water are more susceptible to diarrheal disease (Adekanmbi et al., 2013; Woldesenbet et al., 2023). If analyzed, the availability of water is ultimately also related to the availability of latrines, which influence each other and are closely related to family behavior towards both (water and latrines). So family behavior that is not good regarding latrines (open defecation) and water (drinking water and the habit of washing hands before eating and after defecation) will have a higher risk of stunting in children.



**Table 1.** Result of literature review

NO	Author (Year)	Purpose of Study	Design	Subjects	Measure	Main Finding
1	Murarkar, et al (2020)	Assessing the prevalence and determinants of malnutrition in children under five in Maharashtra, India	cross-sectional	3671 children under 5 years of age and their mothers	Measurements using a door-to-door questionnaire were carried out in two places, namely rural and urban slums and compared the two in terms of stunting, wasting and underweight (measured by scales and standardized height measurements).	Malnutrition in the form of underweight and stunting is more common than wasting in urban and rural slums. Factors such as the sex of the child, birth order, exclusive breastfeeding, family economic status, type of family, acute diarrhea and mother's education affect the nutritional status of children. Increasing mother's education will improve children's nutritional status. Mother's education has a dominant influence on children's nutritional status.
2	Kaimila, et al (2019)	Assessing the relationship between the type and quality of food protein consumed with stunting in rural areas of Melawi	randomized controlled trials	355 children divided into 2 age groups; 1) 6 months = 172 , 2) 12 months = 183 participants	Measurements used a prospective study in which children received intervention with the addition of peanut flour to additional food (daily) and were recorded every day in the form of a checklist by the parents of the children and were observed for 6 months (age 6-12 months) and for 12 months (age 12 -23 months) and addition of CSB flour to the control group	Animal-source protein was associated with an increase in the height-for-age score (z-score) in rural Malawian children aged 12-36 months. Animal-source foods (ASF) are superior to plant-based foods due to their rich protein and micronutrient profiles, and we conclude that interventions that promote higher intakes of ASF in such populations have the potential to reduce stunting.
3	Maciel, et al(2020)	Describes food intake in infants aged 9-24 months, determines nutrient intake associated with the risk of underweight, wasting, and stunting	Prospective Study	child in a poor community of 7 low and middle income countries	Measurements using the MAL-ED Study (Etiology, Risk Factors and Interactions of Enteric Infections and Malnutrition and Consequences for Child Health and Development) in 8 low- and middle-income countries	<ol style="list-style-type: none"> <li>1) Higher zinc intake is associated with a reduced risk of being underweight</li> <li>2) higher energy intake is associated with a reduced risk of being underweight</li> <li>3) boys are more at risk of experiencing stunting</li> </ol>
5	Seetha, et all(2018)	Knowing the impact of training on nutrition, hygiene and food safety designed by the Nutrition Working Group, Child Survival Collaborations and Resources Group (CORE).	randomized controlled tria	179 mothers and their children	Intervention of diet diversification, sanitation practices, hygiene and control of flatoxin in food in a rural environment in 21 days	<ol style="list-style-type: none"> <li>1) cause changes in behavior among mothers in improving child malnutrition</li> <li>2) Direct observation convinced the mothers to maintain the practice</li> <li>3) positive effect of comprehensive training on indicators of undernutrition in children, especially wasting, underweight</li> </ol>
6	Kwami (2019)	explore the relationship between stunting and Water	randomized controlled trial	families with toddlers	Using the Water, Sanitation questionnaire instrument	The caregiver's gender (single female), age, water source, and behavioral practices around hand washing are strong predictors of stunting



NO	Author (Year)	Purpose of Study	Design	Subjects	Measure	Main Finding
		Sanitation and Hygiene (WASH) factors			and Hygiene (WASH) and stunting according to WHO standards	
7	Wiliyanarti, et all(2022)	Measuring the factors that influence behavior in meeting nutritional needs in children under the age of 5 years with stunting	Cross Sectionals	120 mothers who have children under 5 years old	Measurement using a self-report questionnaire consists of culture, family support, mother's knowledge, and behavior to meet nutritional needs	<ol style="list-style-type: none"> <li>1) Family support has a positive impact on nutritional fulfillment</li> <li>2) Knowledge has a positive impact on nutrition fulfillment</li> <li>3) culture has an effect on providing malnutrition interventions compared to those who are not influenced by culture</li> </ol>
8	Rachmawati, et all (2020)	Analyzing the relationship between family functions, knowledge and attitudes of families with toddler mothers with stunting	Cross Sectionals	129 Mothers with their children who care for their children directly	Family Functioning Device Questionnaire	<ol style="list-style-type: none"> <li>1) There is no significant relationship between family functioning and stunting</li> <li>2) The better the mother's knowledge, the better the child's nutritional status. Attitudes of mothers with short nutritional status of children. also has a strong relationship in this study</li> </ol>
9	Danso, et all (2022)	Assess prevalence and associated factors affecting stunting and wasting in children aged 1 to 5 years in rural Ghana	Cross Sectionals	240 Children aged 1 to 5 years and parents	Questionnaire with interview method. The demographic survey was developed from the Ghana Demographic and Health Survey. socioeconomic status was assessed by Udai Pareekh's revised scale.	<ol style="list-style-type: none"> <li>1) Parents with two or more children have a greater chance of stunting</li> <li>2) Parents who do not work have a greater chance of stunting children</li> </ol>
10	Mamo, et all (2022)	Identify the determinants of mothers and households towards time of initiation of complementary feeding in children aged 6 to 23 months in Gedeo Zone, Southern Ethiopia	Case control Study	Children aged 6-23 months living with their parents	Measurement with 24-hour dietary assessment instrument The sample consists of cases (children who receive complementary foods before their time) and controls (children who receive complementary foods according to time)	<ol style="list-style-type: none"> <li>1) Early initiation of feeding will increase the likelihood of food insecure households more than food insecure households</li> <li>2) Fathers are more likely to start feeding prematurely</li> <li>3) Inappropriate mother's perception of the introduction of breastfeeding increases the initiation of complementary foods prematurely</li> <li>4) Initiation of complementary feeding prematurely has a greater risk for mothers who have poor knowledge about initiation of complementary feeding</li> </ol>
11	Sserwanja, et all(2019)	Rural-urban correlations of stunting in children under 5 years of age in Sierra Leone	Cross Sectionals	4045 children aged less than 60 months	The measurement uses the 2019 Sierra Leone Demographic and Health Survey (SLDHS) which focuses on children under five	<ol style="list-style-type: none"> <li>1) Stunting is more common in rural areas than in urban areas</li> <li>2) Short mothers, 15-19 year old mothers, uneducated mothers and sons are more likely to experience stunting</li> </ol>
12	Ghost, et all (2022)	Assess the magnitude of stunting and	Cross Sectionals	606 school age children	Questionnaire adopted and	<ol style="list-style-type: none"> <li>1) Families with more members will be more at risk of experiencing stunting</li> </ol>





NO	Author (Year)	Purpose of Study	Design	Subjects	Measure	Main Finding
		related factors in childhood school in Mulo district, Ethiopia			re-edited from a similar study after a review of the scientific literature available and the child's height was measured according to WHO procedures	2) The availability of latrines is significantly related to stunting
13	Nsubuga, et all(2022)	Assessing the prevalence and predictors of stunting and underweight in children aged 6 to 59 months in the Bussi Islands Wakiso District in Uganda.	Cross Sectionals	Children aged 6-59 months from 409 families	Questionnaire adapted from the Uganda Demographic Health Survey (UDHS) which has been validated by the Uganda Ministry of Health	Predictors of stunting include suffering from diarrhea, household food insecurity, not taking deworming drugs, children aged 12-35 months, using less than 80 liters of water and having more than 9 family members
14	Jubayer, et all (2022)	studied the prevalence and risk factors for malnutrition in children under five in Bangladesh	Cross Sectionals	256 children under five years old and their parents	The questionnaire that has been measured against 10% of the sample ( given to the mother) and using anthropometric measurements (child measurements) and the classification of stunting based on WHO standards	1) Stunting poses a risk to children in economically middle-class families 2) Stunting children are more likely if their father is illiterate
15	Sadhu and Gandhi (2021)	Knowing the determinants of stunting	Cross Sectionals	720 children in the family	Collection of family socio-demographic indicators and anthropometric measurements	1) boys are more at risk of experiencing stunting 2) Families who do not have toilets for excrement disposal are more at risk of stunting 3) delays in providing complementary foods are at greater risk of experiencing stunting 4) Uneducated mothers are at high risk of stunting in children

## CONCLUSION

Dominant factors related to stunting that are often described in the literature, such as the mother's knowledge, the provision of nutrition, the availability of latrines, and the availability of clean water, are still closely related to the family. Factors related to stunting provide insight for us into how families can avoid or suppress these factors so they don't appear. Factors that might be prevented in the family environment and can be applied, such as the mother's education or knowledge, should be optimized in the Wariin, et al (2023)

family with support from family members (the mother does not have to pursue higher education), but family support is needed to attend the Integrated Services Post (Posyandu) both during pregnancy and after giving birth because it includes counseling related to maternal and child health. Furthermore, maximizing nutrition for children is recommended for protein sourced from animals. And in an agricultural environment, we can use alternatives such as insects that can be consumed as a cheap nutritional solution. And for the availability of latrines and clean



water, special attention is needed from the government because making latrines requires more costs, especially for families with middle- to lower-income status. However, before providing clean water and toilet facilities, what must be built first is an understanding of clean and healthy lifestyles in families and communities. Further studies are needed to identify more specific family functions in preventing stunting in developing countries because families are very close to the child (stunting) and are together for 24 hours, including studying how the mother behaves during pregnancy.

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