

THE RELATIONSHIP BETWEEN FOOD SECURITY AND FOOD DIVERSITY WITH STUNTING PREVALENCE IN TODDLERS AGED UNDER FIVE

Ratna Suminar^{1*}, *Fatmawati Karim*²

¹ *Department of Midwifery, Universitas Galuh, Indonesia*

² *Department of Midwifery, Universitas Bhakti Kencana, Indonesia*

Corresponding Author: ^{1}ratna.suminar@gmail.com*

ABSTRACT

The association between food security, food diversity, and the prevalence of stunting in children under 59 months is investigated in this systematic study. This research examined the effects of food insecurity, food security, and food diversity on the incidence of stunting over the last nine years (2013–2024), based on several studies. To determine the correlation between food security, the variety of food consumed by children under five, and the prevalence of stunting, a method of data synthesis from many settings is employed. Using three scholarly databases (PubMed, ScienceDirect, and Google Scholar) with publication spans from 2013 to 2024, this study carried out a comprehensive journal review. Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) are used by publication criteria. The study's findings indicate a connection between the frequency of stunting in children under 59 months, food security, and food diversity. This comprehensive observation concludes that there is a correlation between the prevalence of stunting in children under 59 months and dietary security and diversity. To expedite the decrease of stunting, we must lower the need to reduce stunting comprehensively, including the availability of food security and food diversity.

Keywords: food security, food diversity, stunting, toddler

INTRODUCTION

Food is a basic human need that must be met at all times. The right to obtain food is a human right, as stated in Article 27 of the UUD 1945 Constitution and the Rome Declaration (1996). These considerations underlie the issuance of Law No. 7 of 1996 concerning Food. As a basic need and a human right, food has a very important meaning and role in the life of a nation. Food diversity is a dish consisting of various kinds of dishes combined and served with different colors, shapes, and tastes. Based on Article 18 of the UU 2012 Constitution, food security is the condition of food fulfillment for the country and individuals, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, equitable, and affordable and does not conflict with the religion, beliefs, and culture of the community, for can live a healthy, active and productive life sustainably.

The terrible outcome of inadequate nutrition throughout pregnancy and the early years of life is stunting. Children who are stunted may never grow to their full height and may never develop to the full capacity of their brains. These kids start life with a clear disadvantage, which has an impact on them far into adulthood. They struggle academically, earn less as adults, and encounter obstacles to getting involved in their communities. Over the past ten years, stunting has been gradually decreasing; in 2022, there will be 148.1 million stunted children worldwide or 22.3% of children under the age of five. 52% of the afflicted youngsters worldwide were living in Asia. Increased endeavors are necessary if the world is to meet the global goal of lowering the proportion of stunted children to 89 million by 2030. (Unicef, 2023)

Stunting reflects the child's food and environmental conditions and is an indicator of the child's long-term growth and intellectual potential. The UNICEF framework for nutrition intervention is to focus on environmental factors around poverty that impact food availability, consumption, and dietary quality since nutrition is integral to child growth and health.

(Weatherspoon, and Oehmke 2019). Stunting is one of the global health problems that need to be considered because the impacts are very complex and long-term. Various factors influence the incidence of stunting, including food security and parenting (Rohmawati et al, 2022). Food insecurity is a condition characterized by restricted or unpredictable access to nourishing food for individuals or communities of individuals who are not equipped to foresee their needs and who are active, healthy, and disproportionate. Food security and stunting emphasize risk factors such as family socio-economic status, maternal education, low birth weight, and nutritional deficiencies. (Yuliantini et al, 2022)

Dietary diversity is important as an indicator of nutritional status, and the impact of stunting on child development. Household food insecurity, related to poor dietary diversity and malnutrition, is a challenge in achieving food security (Gassara, and Chen, 2021). Based on research findings in Ethiopia, stunting, poor dietary diversity, food insecurity, timely initiation of complementary feeding, deworming, wasting, educational status, maternal weight, and antenatal care visits a risk factors for anemia problems in children under 5 years of age (Belachew and Tewabe, 2020).

The problem of stunting in children under five years, emphasizes the importance of factors such as nutrition intake, household food security, and parenting in influencing stunting prevalence, (Laili et al, 2018). Food insecurity has an impact on child undernutrition, and its significance as a public health issue in both developing and developed countries. Food insecurity has detrimental effects on protecting children from undernutrition. (Motbainor, 2015) The effect of household food security and how it interacts with household socioeconomic status on stunting in children in urban poor settings in Kenya between the ages of 6 and 23 months. Millions of people in low and low-middle-income countries suffer from extreme hunger and malnutrition (Mutisya, et al 2015).

Agricultural biodiversity, dietary diversity, and food security are important regarding the nutritional status of children under 5 years of age. The nutritional status of children under 5 years of age is an important indicator of household food security. In Kenya, 1.8 million children are classified as chronically malnourished with poor breastfeeding and infant feeding practices contributing to more than 10,000 deaths per year, Reduction in undernutrition has been very slow, as trends over the past years show continuous deterioration. (M'kaibi, 2017)

Even though stunting is preventable, it remains a significant concern for this country and the rest of the world. Stunting Has a relationship socio-economic relationship (mother's education, father's education, family income) to the incidence of stunting and the phenomenon of providing local food diversity to toddlers with stunting, (Khotimah, 2023).

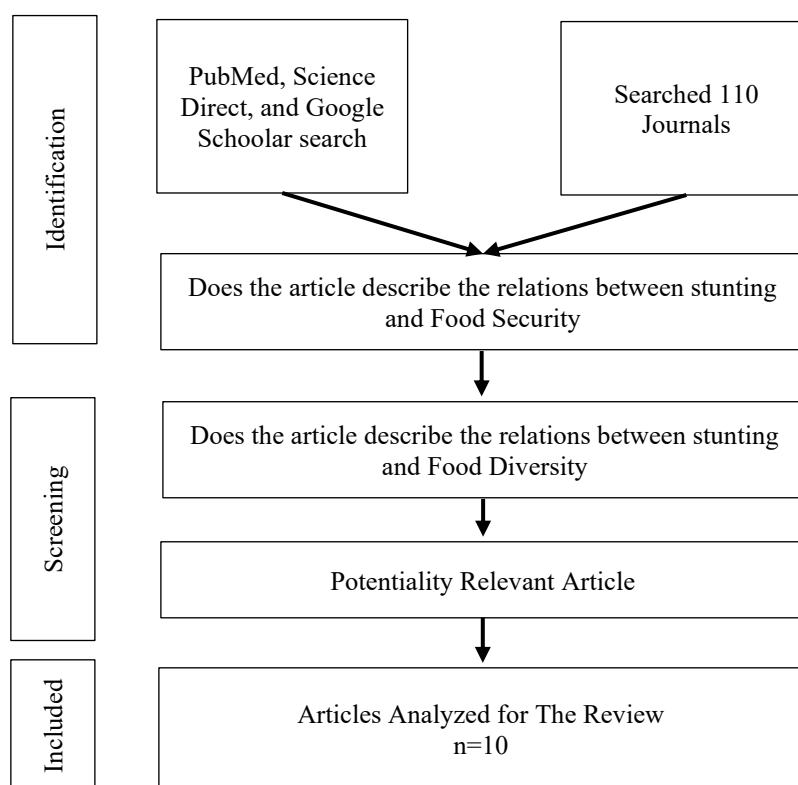
METHODS

The methodology section outlines the systematic approach employed in this review, adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The review techniques encompassed various stages from identifying and screening relevant works to analyzing their content.

A systematic search was conducted across multiple electronic databases including PubMed, ScienceDirect, and Google Scholar. The search strategy employed a combination of keywords related to stunting, food security, dietary diversity, and associated factors. Both English and Indonesian language publications were considered.

In order to find possibly pertinent studies, the titles and abstracts of the retrieved papers were first examined. Then, using predetermined criteria, full-text papers of potentially relevant

research were evaluated for inclusion. The proper software was used to eliminate duplicate articles.



Study Selection Criteria

Table 1

Inclusion Criteria	Exclusion Criteria
Addressed the relationship between stunting and factors related to food security, dietary diversity, and/or household characteristics. Presented original research findings. Included children under the age of five years. Provided adequate methodological details.	Studies do not address food security, food diversity, or stunting in children younger than five. Research has not looked at the connection between dietary diversity and food security determinants and stunting..

A standardized form was used for data extraction to gather pertinent information from the included research. Study features, participant demographics, methods, and important conclusions were among the extracted data. To guarantee accuracy and dependability, two reviewers carried out this procedure independently.

Data synthesis involved a systematic narrative review of key findings and methodological approaches across included studies. Where appropriate, meta-analysis was conducted to quantitatively assess the relationship between stunting and specific factors.

A summary of findings from the included studies was presented, highlighting common themes, trends, and variations across different geographic regions and study populations. Subgroup analyses were conducted where feasible to explore potential sources of heterogeneity.

The findings of the systematic review were interpreted in the context of existing literature and implications for policy, practice, and future research were discussed. Conclusions were drawn based on the synthesis of evidence and the overall strength of the findings.

RESULTS AND DISCUSSION

Result

The result describes review techniques from identifying and screening the works to be reviewed to their analysis. Our findings include: Stunting has a relationship has three broad conclusions Stunting has a relationship with the child's food and environmental conditions, food security and stunting emphasizes, and Food diversity is important as an indicator of nutritional status, and the impact of stunting on child development.

Finding 1 Healthy environmental sanitation practices and the nutritional status of children under five are significantly correlated with the prevalence of stunting and the foods that children eat. 29.9% of toddlers in Indonesia are very short or short (Yuliantini et al, 2022). It has been demonstrated that the prevalence of childhood stunting is influenced by geophysical circumstances. A household's proximity to marketplaces where food may be bought and sold has been determined by measuring how far it is from the main road and the market (Weatherspoon et al, 2019).

Finding 2 The relationship between food insecurity and food security with stunting prevalence

food insecurity was significantly associated with growth retardation. The proportion of children suffering from stunted growth increases with the level of food insecurity in households. (Gassara and Chen, 2021) Nutrition intake and household food security could influence the incidence of stunting children under five years old (each p-value was 0.00) (Laili, 2022). The condition of household food security experienced a significant difference between food-insecure families to very food-insecure families. This increase in food insecurity presents many potential health impacts including stunting in toddlers under five years of age. (Yuliantini et al, 2022) The prevalence of stunting was significantly correlated with the food security condition of the household. Toddlers in food-insecure households were 3.5 times more likely to suffer from stunting than toddlers in families that were resistant to food. There is a relationship between these two variables (Rohmawati et al, 2022).

Finding 3 The relationship between food security, food diversity, stunting, and deworming with under-five anemia was carried out The connection between household food and food variety and the prevalence of stunting. It was determined how under-five anemia was related to food security, food diversity, stunting, and deworming. Anemia in children is related to stunting. Increased coverage of supplementation and fortification programs, periodic deworming, feeding diversified food, supplement food for those who are stunted, and securing food in the households may all alleviate under-five anemia. (Belachew and Tewabe, 2020) Stunting was lowest in food-secure households in the middle wealth tertile and highest in severely food-insecure households placed in the poorest tertile. The interactive effect of household food security and wealth status on child nutrition. (Mutisya et al, 2015)

In Ethiopia, there was a significant correlation between food insecurity and wasting ($\beta = -0.108$ at $P < 0.05$). However, there was no significant correlation between food insecurity and stunting or underweight. Stunting was significantly predicted by food diversity and residential area ($\beta = 0.039$, $P < 0.05$). (Motbainor et al, 2015). Based on Khotimah et al, 2023 in Pamengkang Village, None of the respondents gave their children a variety of foods, paid attention to the balanced nutritional content that was appropriate for their children, or knew how to transform local wisdom-based food sources into nutrient-rich dishes. Households that have children with and without stunted growth were significantly different in individual dietary diversity and household food security levels (M'Kaibi et al, 2016)

Discussions

This systematic review of research on The Relationship Between Food Security and Food Diversity with Stunting Prevalence in Toddlers Aged Under 59 Months has three broad conclusions Stunting has a relationship with the child's food and environmental conditions, food security and stunting emphasizes, and Food diversity is important as an indicator of nutritional status, and the impact of stunting on child development.

Food insecure households have very low food security, characterized by eating disorders and reduced food or hunger (Yuliantini et al, 2022) The influence between household food security and the incidence of stunting children under five years showed that 71 stunted children mostly (85.5%) or 61 children family with nonfood security. (Gassara and Chen, 2021)

When analyzed using the WHO conceptual framework, it reveals a thorough analysis of publications on food security and the factors that contribute to childhood stunting in Indonesia's coastal regions. This literature review shows that the risk factors for stunting in coastal areas of Indonesia are food security, nutritional intake, maternal height, premature birth, low birth weight, birth length, low maternal education, knowledge, infectious diseases, and family socioeconomic. (Yuliantini et al. 2022)

The relationship between food security and intake and the prevalence of stunting in toddlers under five years old. Parents are required to get nutritional status counseling, particularly with stunting of children under five. Not just toddler therapy in Posyandu, but also social services for all members of society, particularly parents of young children. Education regarding the value of nutrients in daily eating must be provided. As a result, it will increase the prevalence of stunting among kids under five. (Yuliantini, et al, 2028) The odd ratio result of 3.509 indicates that children under five living in food-insecure homes are 3.5 times more likely to be stunted than toddlers living in food-insecure households. (Rohmawati et al, 2023)

Stunting, inadequate dietary diversity, food instability, and not being dewormed were the contributing factors to anemia in children under five. A child's risk of developing anemia was 1.71 times higher if they were fed fewer than four food groups each day. In a similar vein, children who experienced food insecurity were 2.87 times more likely than those who did not to develop anemia. One of the main reasons for stunting is anemia. (Tewabe and Belachew, 2020) the significance of enhancing dietary diversity and household food security to safeguard children's nutritional status. This does not, however, negate the necessity of learning more about the functions of other risk variables. As a result, other factors will likely influence how dietary diversity affects kids' nutritional status. (Chen and Gassara, 2010)

Children from moderately and severely food-insecure homes were more likely to be stunted than children from food-secure households, even after adjusting for household wealth status and other known drivers of stunting. Models of food security and child nutrition assume that food insecurity results in a lower intake of energy-rich foods and nutrients resulting in changes to child health. (Mutisya et al, 2015). Based on Khotimah et al, 2023 in Pamengkang Village, None of the respondents gave their children a variety of foods, paid attention to the balanced nutritional content that was appropriate for their children, or knew how to transform local wisdom-based food sources into nutrient-rich dishes.

Food security is related to access to food. Stunting for both the overall and male kid models was significantly and negatively correlated with the availability of roads leading to a market. If a household has good access to a road that leads to the market, the likelihood of stunting in male children is reduced by 8%. Stunting was more likely in children who lived at higher altitudes, however the difference was not statistically significant when compared to gender subsamples. On the other hand, homes in villages with more fertile soil tended to have

a greater effect on male offspring. In this regard, higher soil fertility was associated with a higher prevalence of stunting. (Weatherspoon et al, 2019)

Food insecurity was not linked to stunting or underweight, however, it was found to be a major predictor of wasting. Different research findings indicated whether or not there was a substantial correlation between malnutrition and food insecurity. Research carried out in rural Bangladesh and Colombia revealed a strong correlation between malnutrition and food insecurity. While there is substantial evidence indicating that household food security is among the key determinants of the nutritional status of children, and food security may be a necessary prerequisite for good nutrition outcomes, it is insufficient on its own. (Motbainor et al, 2015).

Individual dietary diversity and household food security levels differed significantly between households with children who grow stunted and those that do not. The Interventions to improve child nutritional status in resource-poor rural households such as in the study area should therefore aim at increasing dietary diversity and/or AB in order to improve household food security. (M'Kaibi et al, 2016)

Figure 1 (10pt, calibri, sentence case, centre)

CONCLUSION

This systematic analysis of The Relationship Between Food Security and Food Diversity with Stunting Prevalence in Toddlers Aged Under 59 Months. We propose to accelerate the reduction of stunting comprehensively, including the availability of food security, and food diversity.

Limitations and Future Direction

Limitations in this research include limited reference sources that are by the systematic review research theme because the information was completely obtained from the journal.

Acknowledgments

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Declarations

Ratna Suminar was the main investigator and Fatmawati Karim was a contributing member. The data and resources are confirmed to be available by all authors. There are no competing interests among the writers. For this systematic review, each author offered their knowledge of child development, nutrition, and cultural studies. The review complies with moral principles and directives.

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