

Review Article



The relationship between household food security and incidence of stunting in toddlers during the new normal: A systematic review

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ABSTRACT

Background: Stunting is a growth disorder and malnutrition problem experienced by toddlers worldwide and affects the quality of human resources that have an essential role in developing a nation. Households experiencing food insecurity led to a lack of nutritional intake and stunting. This work aimed to analyze the relationship between household food security with the incidence of stunting in toddlers during the new normal era.

Method: This was a systematic review design conducted by searching relevant articles from some databases: Google Scholar, PubMed, and Science Direct using the keywords (“Household Food Security” OR “Food Security Families”) AND (“Stunting” OR “Stunted” “Nutritional Status”) AND (“Toddlers” OR “Children”) AND (“New Normal” OR “Adaptation of “new habits”) in Bahasa Indonesia and English. This work was performed following PRISMA guidelines. Articles were selected based on inclusion criteria: publication date from 2017 to 2022, food security with stunting incidence and factors affecting stunting, full text, open access, and academic journals. Articles were analyzed using a matrix table.

Results: Based on the search results for articles that match the keywords, there are 333 articles. Of these, ten articles come from Indonesia, Iran, and Rwanda. The analyzed articles were selected from 10 articles.

Conclusion: This study concludes that there is a relationship between household food security and the incidence of stunting in toddlers during the new normal.

Keywords: Household Food Security; Stunting; Toddlers; New Normal

INTRODUCTION

Human Resources (HR) quality is critical to a country's development. Indonesia 2020 has a Human Resources Index of 0.54 and is ranked 87th out of 174 countries.¹ As a developing country, Indonesia's low human resource index is a serious issue, with stunted children being one of the causes. This situation demonstrates that Indonesia is likely to lose its future economic potential.

New normal is a term that refers to a new situation or condition that arises after significant changes occur in society during the COVID-19 pandemic. In the context of the COVID-19 pandemic, stunting can become a severe problem due to the pandemic's impact on food and nutrition available for the population, primarily related to the ability to provide sufficient nutrients. For some low-income families who are affected economically and struggle to meet their children's nutritional needs, thus pandemic could be a horrible situation. Accordingly, efforts are needed to address the potential increase of stunting in the new normal condition. This must be a collective concern and the responsibility of the entire community to prevent young children from stunting.

Stunting is one of the effects of hunger on toddlers worldwide. In 2017, approximately 150.8 million (22.2 %) children under five were stunted. According to the World Health Organization, Indonesia ranks third in the Southeast Asia/South-East Asia Regional (SEAR) region for stunting prevalence, with 36.4 percent (WHO).² Furthermore, according to the Riskesdas findings from 2018, Indonesia has a stunting rate of 30.8 percent.³ In 2019, the prevalence of stunting in children under five years old, based on the *Studi Status Gizi Indonesia* (SSGI) results, was 27.67 percent⁴ and decreased to 24.4 percent in 2021.⁵ Although the prevalence of stunting has decreased, the prevalence is still very high. It is considered a public health problem because the target for reducing the prevalence of stunting is less than 20%.² One of the public health issues associated with stunting is an increased risk of disease, death, and cognitive and motor development challenges that will limit their productivity as adults.⁶

Problems with food security, education, access to clean water, poverty, social issues, and other issues, in addition to health issues, influence the high stunting rate.⁷ The COVID-19 pandemic has significantly impacted people's lives in the health and economic sectors, particularly on the elements that affect stunting. Children's nutritional status will undoubtedly be influenced by the fact that approximately 3 million people have lost their jobs or means of support, children no longer have access to programs that deliver nutritious food to schools, and some families are struggling to buy the food they usually eat.⁸ Previous research has found that households with low socioeconomic status are 1.67 times more likely to experience stunting than households with higher socioeconomic status.⁹

This study aims to determine whether household food security and the prevalence of stunting in toddlers during the new normal era are related based on the information provided. According to Unicef (2013), one factor that influences stunting is household food security.¹⁰ Food insecurity in households can be caused by insufficient availability and access, resulting in inadequate food intake or nutrition.¹¹ According to Safitri, children under five from food-insecure families have a 21.4 percent higher risk of stunting.¹² Adelina claimed that children under five from non-food insecure homes are 3,059 times more likely to suffer from stunting.¹³

In the new normal era, it is necessary to make adjustments and adaptations to the new way of life after experiencing many changes in social and economic aspects during the COVID-19 pandemic that have affected or worsened the stunting condition. In the new normal era, it is essential to continue consuming healthy and nutritious foods and maintaining hygiene and health by adhering to health protocols. Therefore, this research contributes to determining policies for preventing and reducing the stunting rate.

METHOD

Strategies for searching for relevant articles in Indonesian and English, the age of the children who are respondents under five years old, and research articles published online between 2017 and 2022 using three databases: Google scholar databases, PubMed and Science Direct. In the research, the authors used the Boolean operators “AND” and “OR,” wildcards, and truncation to expand the search for various tenses. The keyword used for the search were (“Household Food Security” OR “Food Security Families”) AND (“Stunting” OR “Stunted” “Nutritional Status”) AND (“Toddlers” OR Children”) AND (“New Normal” OR “Adaptation of new habits”). A matrix table was used to analyze the literature review.

This review included studies with cross-sectional designs. Studies were excluded if they were not linked to stunting, the child was not under five, and the subject was drawn from an unhealthy population. The inclusion criteria for this study were articles with titles and content relevant to the objectives that were published in full text in English or Indonesian.

Articles found were screened by title and abstract according to the inclusion and exclusion criteria—literature search strategies using the PICO approach (Table 1).

Table 1. PICO approach used in this research

| PICO | Search Terms |
|---------------------------|--|
| <i>Patient or problem</i> | Stunting and toddler |
| <i>Intervention</i> | New normal, household food security |
| <i>Comparison</i> | - |
| <i>Outcome</i> | Household food security is good, so there are no stunting toddlers |

The flow of the article review using the PRISMA guideline is presented in Figure 1. Based on search results on Google Scholar, Pubmed, and Science Direct, we found 6,101 articles that match those keywords. As many as 2,232 report found according to the research title are then screened, namely looking at the article list that matches the inclusion criteria; after being traced there, are:1,899 articles were excluded because they did not meet the inclusion criteria. By going back and re-excluding up to 324 articles that were duplicated and did not fulfill the inclusion criteria, 10 articles that did meet the inclusion criteria were obtained for evaluation, allowing for the assessment of eligibility against 333 full-text articles.

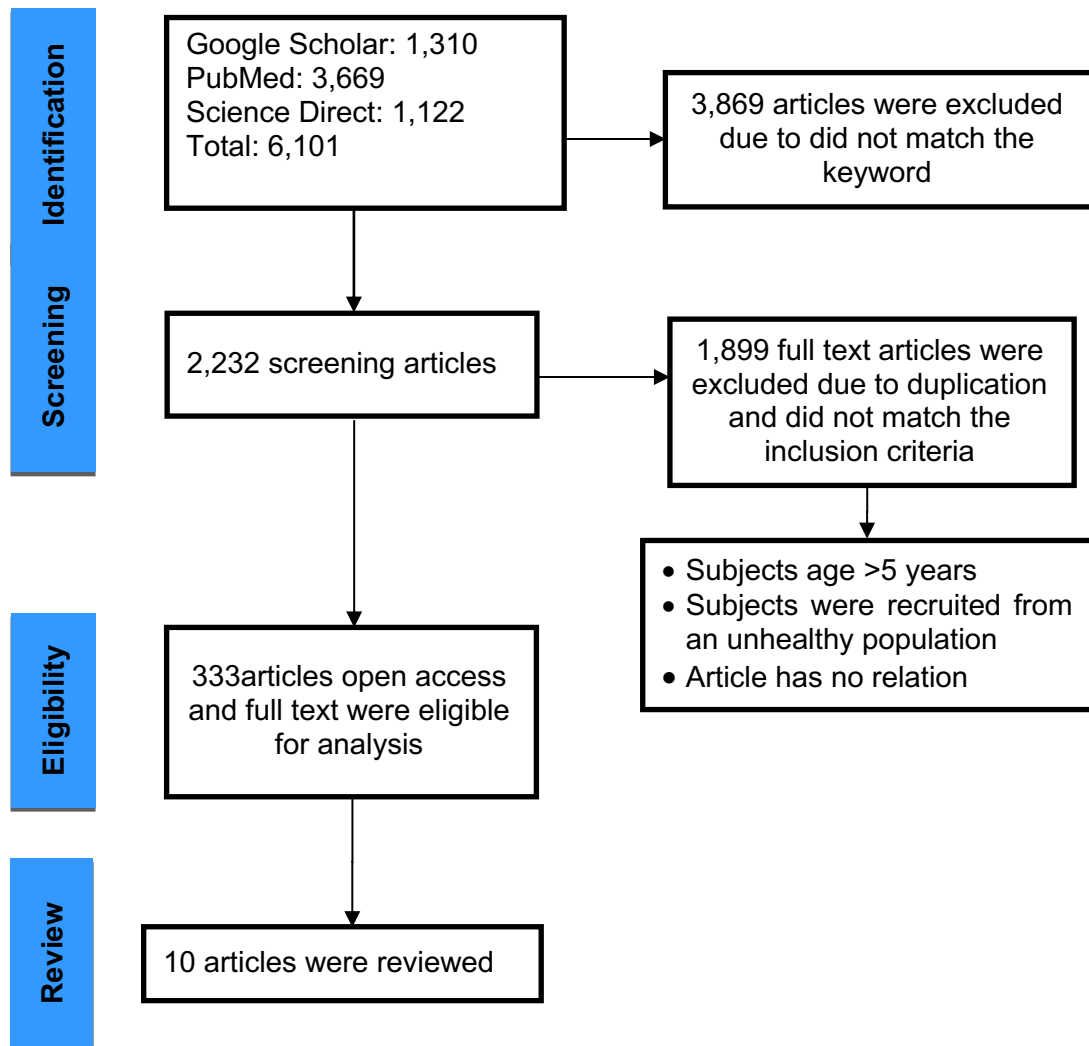


Figure 1. Flowchart of the study course

RESULTS

The reviewed articles have shown a correlation between household food security and the occurrence of stunting in toddlers. To examine this relationship, relevant and recent studies were tracked and compiled in Table 3. Each study presented in the table includes information on the author, title, purpose, methodology, and results of the research

Table 3. Article Review Result

| No | Title, Author | Study aims | Method | Result |
|----|--|---|-----------------------|--|
| 1. | Relationship between Food Security and Diarrhea Disease with Stunting in Toddlers 13-48 Months in Manyar Sabrangan Village, Surabaya <i>Safitri et al., (2020)</i> ¹² | To analyze the relationship between household food security and diarrheal diseases with stunting in children under five. | Cross-sectional study | There is a relationship between household food security and stunting with a p-value<0.050. |
| 2. | The Relationship between Household Food Security with Toddler Nutritional Status (Study in Palasari Village and Community Health Center in Legok District, Tangerang Regency) <i>Arlus A et al., (2017)</i> ¹⁴ | This study aims to examine the relationship between food security and the nutritional status of children under five and various efforts to improve food security in preventing under-five malnutrition in the working area of the Legok Health Center, Legok District, Tangerang Regency. | Cross-sectional study | There is a relationship between household food security and the nutritional status of children under five |
| 3. | Household Food Insecurity as a Predictor of Stunted Children dan Overweight/ Obese Mothers (SCOWT) in Urban Indonesia <i>MahmudionoT et al., (2018)</i> ¹⁵ | To determine the relationship between household food security with the incidence of stunting and obesity (SCOWT) | Cross-sectional study | There is a relationship between household food insecurity with stunting children and SCOWT |
| 4. | Household Food Security with Stunting and non-stunting in children aged 6-23 months in Wilangan sub-district, Nganjuk Regency <i>Fadzila D et al., (2019)</i> ¹¹ | Analyzing the condition of household food security with stunting and non-stunting in children aged 6-23 months in Wilangan sub-district, Nganjuk Regency. | Case-control | There is a relationship between the age of children under two years (p = 0.02) and food security (p = 0.041) with stunting. |
| 5. | Analysis of Factors Affecting the Prevalence of Stunting in Children Under Five Years <i>Rahayuwati L et al., (2020)</i> ¹⁶ | To analyze the factors that affect the prevalence of stunting in children in the West Java region, including socio-demographics of mothers, children, and children's health status. | Cross-sectional | There is a relationship between mother's work, childbirth complications, completeness of immunization distribution, schedule of immunizations, exclusive breastfeeding, and medical records of children with stunting. |
| 6. | A Community-Based Survey of Household Food Insecurity and Associated Socio demographic Factors among 2-6 Years Old Children in the Southeast of Iran <i>Sotoudeh M et al., (2021)</i> ¹⁷ | To find out the status of household food insecurity and influencing sociodemographic factors in children aged in urban areas of Iran | Cross-sectional | There is an influence of household food insecurity and sociodemographic factors, including weight and height, mother's education level, and sanitation in children 2-6 years old. |

| No | Title, Author | Study aims | Method | Result |
|-----|---|---|-----------------|---|
| 7. | Analysis of Household Food Security and Household Characteristics with the Incidence of Stunting <i>Sihite N et al., (2021)¹⁸</i> | To analyze the relationship between household food security and household social factors with the incidence of stunting. | Cross-sectional | A significant relationship exists between household food security ($p=0.031$) and stunting incidence. Household food security is directly related to the incidence of stunting; families in households who are not food insecure tend to have children under five who are classified as stunting; this is due to the lack of nutritional intake received both in terms of quantity and quality and did not meet the nutritional adequacy standard for stunting toddlers. |
| 8. | Food Insecurity in Household Level with Stunting During the Covid-19 Pandemic <i>Imansari A et al., (2022)¹⁹</i> | To analyze the relationship between food insecurity at the household level and stunting during the Covid-19 pandemic | Cross-sectional | There is no significant relationship between the level of household food insecurity with the incidence of stunting in toddlers |
| 9. | Analysis of Food Expenditure, Food Security, and Nutrient Intake of Under Two Years Old as Stunting Risk Factors <i>Aritonang E et al., (2020)²⁰</i> | To analyze the proportion of food expenditure, household food security, and food intake as a risk factor for stunting children aged 6-24 month | Case-Control | There is a relationship between household food security and the incidence of stunting ($p = 0.018$), and household food insecurity has a 6.9 times greater risk of experiencing stunting. |
| 10. | Moderate and Severe Household Food Insecurity Predicts Stunting and Severe Stunting Among Rwanda Children 6-59 Months Residing in Gicumbi District <i>Agho et al., (2018)²¹</i> | To examine the association between household food insecurity and stunting and severe stunting among Rwandan children aged 6-59 months residing in the Gicumbi district. | Cross-sectional | There is a correlation between moderate and severe household food insecurity with stunting and severe stunting. The odds of moderate and severe HFI were significantly higher among stunted children aged 6-59 months than those not. Children from households with moderate food insecurity were 2.47 times more likely to be severely stunted. Those from families with severe food insecurity were more likely to be severely stunted (AOR = 1.82) compared with children aged 6-59 months from households with food security. |

DISCUSSION

The high prevalence of stunting is not only related to health problems but also influenced by other issues that indirectly affect health, such as food security, education, availability of clean water, poverty, social factors, and others.² According to UNICEF (United Nations Children's Fund), household food security is one-factor affecting stunting.¹⁰ Food insecurity in households can be caused by insufficient availability and access to food, resulting in inadequate food or nutrient intake.¹¹

Toddlers classified as stunted are more common in families with inadequate access to nutritious food. Children in households tend to experience a lack of nutritional intake needed for optimal growth and development. This can cause stunting in children, impacting physical

and mental health, and a high risk of developing chronic diseases in the future.¹⁸ A lack of food supply and poor nutrition, especially in terms of providing a balanced diet for the household, are further variables that contribute to food insecurity in families.¹² In addition, food security is impacted by socioeconomic status, which affects children who experience stunting.²³ Food security is when all households have physical and economic access to sufficient and nutritious food for all family members. Poverty and lack of income can lead to a lack of ability for families to provide adequate and healthy food for all family members, resulting in food insecurity, which can impact the nutritional status of children.²⁰

Based on ten reviewed studies, household food security is directly related to the incidence of stunting. In a study by Sihite *et al.*,¹⁸ there was a significant association between household food security and the incidence of stunting in children. Adelina *et al.*¹³ also stated that there is a relationship between household food security and the incidence of stunting, with an OR value of 3.059. This is further supported by the study by Aritonang,²⁰ which found that the risk of stunting is 6.9 times higher in children from households that are not food-secure, as stunting results from the long-term effects of nutrient deficiencies. Therefore, children who live in food-insecure homes for years will experience stunting.²⁴

Household food security and stunting are related because the household's inability to meet sufficient and balanced food needs can affect the child's nutritional intake. Insufficient nutrient intake during early growth and development can lead to stunting. Children who experience stunting tend to have a higher risk of ongoing health problems. Therefore, efforts to improve household food security and ensure sufficient and balanced nutrient intake for children are crucial in preventing and addressing stunting.

In the new normal era, household food security still closely correlates with the incidence of stunting in children. Although there have been changes in eating habits and dietary patterns in the new normal era, the risk of inadequate nutrient intake in children still exists, especially in families experiencing economic difficulties or being affected by the COVID-19 pandemic.²⁵ The new normal era can also worsen household food security due to economic and social restrictions affecting access to nutritious food.²⁶ Therefore, efforts to improve household food security must continue to be increased in the new normal era by providing access to quality food, increasing education on healthy and nutritious eating patterns, and providing support and assistance to families experiencing economic difficulties. This can help prevent stunting in children and improve the quality of life for communities in the new normal era.

CONCLUSION

This review concludes that stunting was still a global health issue that needs to be addressed in the new normal era. There was a relationship between household food security and the incidence of stunting in toddlers. Toddlers from food-insecure households have a higher risk of experiencing stunting compared to toddlers from food-secure families. Using backyard gardens can be an alternative solution for household food security. Therefore, the community needs to be informed about the importance of nutrition and health, educated on how to utilize backyard land effectively, and receive support from the local government to increase access to food or meet the needs of simple gardening activities in their backyard land.

Declarations

Authors' contribution

S and K Designed the study. DSY Writing the manuscript and conducted a literature search. DSY was writing the result. S and K contributed to reviewing and evaluating this manuscript for publication.

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Conflict of interest

There is no conflict of interest in this research.

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