



## THE RELATIONSHIP BETWEEN FOOD SECURITY AND NUTRITIONAL STATUS (WASTING) : LITERATURE REVIEW

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### ABSTRACT

Malnutrition in toddlers remains a public health challenge in Indonesia. Malnutrition (wasting) is an important indicator reflecting the imbalance between children's nutritional intake and needs. One important factor associated with malnutrition is household food security. This study aims to analyze the relationship between food security and malnutrition in toddlers based on the results of a literature review. This study used a literature review to examine the relationship between food security and malnutrition. Data was obtained from Google Scholar, ScienceDirect, and PubMed using the keywords "malnutrition," "wasting," "food security," "nutritional status," and "child nutrition." The publication period was limited to 2021–2026. Articles were then screened based on relevance, full-text availability, and suitability to the research objectives. A total of 227 articles were identified, of which 11 met the inclusion criteria, and 5 articles. Data analysis was conducted descriptively by comparing and summarizing the findings from selected articles related to food security and the incidence of malnutrition in toddlers. The results indicate that most studies found a significant relationship between household food security and the nutritional status of toddlers. Households with low food security tend to have toddlers with malnutrition. Other factors such as energy intake, maternal education, family income, and sanitation conditions also play a role in influencing children's nutritional status. Inadequate food security impacts the quality and quantity of food consumption, thereby increasing the risk of malnutrition in toddlers. The conclusion of this literature review is that household food security is a significant factor associated with the incidence of malnutrition in toddlers.

Keywords: child nutrition; food security; malnutrition; nutritional status; wasting

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## INTRODUCTION

Indonesia continues to face complex nutritional challenges among children under five, characterized by high prevalence of stunting, wasting, and underweight. Wasting and underweight are important indicators of nutritional problems, reflecting an imbalance between children's nutritional intake and needs (Verma et al., 2021; Alhamid et al., 2021; Anwar et al., 2024). This situation is a serious concern because it directly impacts the quality of future human resources, including health, development, and economic productivity (Shekar et al., 2021; Alfi & Putri, 2025). Globally, food insecurity remains a major problem contributing to high rates of child malnutrition, particularly in developing countries due to limited food access, infectious diseases, and unfavorable environmental conditions (WHO EMRO, 2024; Aghamohammadi et al., 2024).

Undernutrition in children is a form of malnutrition that can be acute or chronic due to inadequate nutritional intake over a period of time. These two indicators are interrelated as part of malnutrition in children under five and reflect ongoing nutritional inadequacy (Verma et al., 2021). The impact is not limited to impaired physical growth and reduced immunity, but also affects cognitive development and the child's future quality of life.

One of the main factors associated with wasting in toddlers is household food security. Food security encompasses not only food availability but also physical and economic access to, and the utilization of, nutritious and diverse foods. UNICEF (2022) emphasizes that food security is a crucial determinant in supporting child growth and development, as limited food access directly impacts the poor quality of household food consumption. Households with low food security tend to experience limitations in providing a balanced, nutritious diet, increasing the risk of wasting and underweight in toddlers.

In Indonesia, household food security remains a critical issue in determining children's nutritional status. Research shows that households experiencing food insecurity are at higher risk of malnutrition due to low food quality and quantity (Sari, 2022). Furthermore, household food security has also been shown to be significantly associated with the nutritional status of toddlers, including the incidence of malnutrition (Rahmatika et al., 2024; Arif et al., 2020). This indicates that food security is a key factor in determining children's nutritional status at the household level.

Household food security does not exist in isolation but is influenced by various socioeconomic factors such as family income, maternal education, and childcare knowledge and practices. Low maternal education and nutritional knowledge are associated with suboptimal feeding practices, increasing the risk of malnutrition in toddlers (Helyaning et al., 2024). Furthermore, parenting patterns and household food security are significantly associated with wasting and other nutritional problems in children (Ibu et al., 2023). Households experiencing food insecurity also tend to employ coping strategies, such as reducing meal frequency, reducing food quality, or limiting consumption of certain foods (Mbhenyane et al., 2025; Lybaws et al., 2022). While this strategy is adaptive in the short term, if continued for a long time, it can negatively impact the nutritional adequacy of toddlers.

The UNICEF (2021) conceptual framework explains that children's nutritional status is influenced by direct factors such as food intake and disease, indirect factors such as food security, parenting patterns, and health services, and underlying factors such as socioeconomic and environmental conditions. Within this framework, household food security is a crucial factor that directly and indirectly influences children's nutritional status. Various studies also show that children from households with low food security are at higher risk of malnutrition compared to children from households with good food security (Li et al. 2023). Therefore, this study is important to provide a comprehensive understanding of the relationship between household food security and malnutrition in toddlers through a literature review approach. The findings of this study are expected to serve as scientific evidence and a reference for policymakers and health practitioners in developing effective nutrition intervention programs to improve children's nutritional status and strengthen household food security.

## **METHOD**

This study used a literature review approach to examine various research findings related to the relationship between food security and nutritional status outcomes (wasting and underweight). The data analysis process involved four main stages: organizing, synthesizing, identifying, and further analyzing relevant research findings. The literature sources included national and international publications obtained from three main databases: Google Scholar, ScienceDirect, and PubMed. Articles were searched using the keywords “underweight,” “wasting,” “food security,” “nutritional status,” and “child nutrition.” The publication period was limited to 2020–2025 to ensure that the evidence collected reflects the most recent and relevant scientific developments. All retrieved articles were downloaded using Mendeley Desktop version 1.19.8, and duplicates were manually removed before further screening. The article selection process was conducted systematically based on the relevance of titles and abstracts, full-text availability, and alignment with the research objectives.

The inclusion criteria in this study were research articles discussing the relationship between food security and the incidence of wasting and underweight, involving human subjects, and published between 2020 and 2025 in either Indonesian or English. In addition, the selected articles had to be available in full text and include a clear research methodology. Meanwhile, the exclusion criteria included articles that did not specifically discuss the relationship between food security and undernutrition, studies focusing on nutritional problems other than undernutrition such as obesity, articles that did not present quantitative data or measurable outcomes related to food security or undernutrition, as well as non-scientific publications such as opinions, editorials, proceedings, or narrative reviews without clear data analysis. Articles that met the inclusion criteria were then included in the final analysis. Each article was classified based on key research information, including author name, year of publication, study design, research location, sample characteristics, and main findings related to the relationship between food security and undernutrition outcomes.

## RESULT

This study used a literature review approach to assess the relationship between food security and malnutrition. A literature search was conducted through several scientific databases using relevant keywords, resulting in 227 articles in the initial identification stage. Based on the selection results, five articles were identified as relevant and met the inclusion criteria for analysis in this study.

Table 1.  
Description of research on food security in wasting

| Title/Author (Year)                                                                                                                                                                                | Study Design    | Population and Sampel                                                                                          | Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Household Food Security, Dietary Diversity, Dietary Intake, and Infectious Diseases as Risk Factors for Malnutrition in Toddlers During the Covid-19 Pandemic (Hesti Permata Sari et al., 2023)    | Case control    | Population: all children in Karanglewas Village, Sample: 66 toddlers aged 1-5 years                            | The results of the analysis showed that household food security ( $p=0.047$ ) and adequacy of energy intake ( $p=0.025$ ) were significantly related to the nutritional status of toddlers, while adequacy of protein intake ( $p=0.196$ ), dietary diversity ( $p=0.255$ ) and history of infectious diseases ( $p=1.000$ ) were not related to the nutritional status of toddlers. Household food security and adequacy of energy intake are risk factors associated with the incidence of malnutrition in toddlers during the COVID-19 pandemic.                                                                                                        |
| Household Food Security Study in Fafoe Village, West Malaka District, Malaka Regency (Anastasia Hoar dkk., 2022)                                                                                   | cross-sectional | Population All toddlers in Fafoe Village, West Malaka District, Regency Sample: 67 toddlers aged 12-59 months. | The results of the study showed that most families were in a state of inadequate food security (74.6%). Energy consumption in toddlers was mostly insufficient to sufficient (44.8%), while protein consumption was mostly sufficient (49.2%). In addition, more than half of the mothers had low education (53.7%), family size tended to be large (58.2%), family income was low (55.2%), and most mothers had insufficient nutritional knowledge (80.6%). These conditions indicate that nutritional problems in children are greatly influenced by family conditions, especially food security, income, maternal education, and nutritional knowledge. |
| The Relationship between Food Security and Hygiene and Sanitation with the Incidence of Malnutrition in Toddlers at the Caringin Community Health Center, Bandung City(Melania Dera Amelia , 2025) | Case Control    | involving 100 toddlers (50 cases and 50 controls) selected through non-proportional stratified sampling        | The results showed that 78% of malnourished toddlers came from food-insecure households and 70% lived in environments with poor sanitation. Statistical tests showed a significant relationship between food security ( $p=0.000$ ; $OR=6.222$ ) and sanitation hygiene ( $p=0.000$ ; $OR=9.333$ ) and toddler nutritional status. It can be concluded that food security and good sanitation play a crucial role in preventing                                                                                                                                                                                                                            |

| Title/Author (Year)                                                                                                                                                              | Study Design          | Population and Sampel                                                              | Results                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analysis of family food security and income as determinants of toddler nutritional status in Ende Regency (Maria Eugenia Hestina Dadi, 2025)                                     | Studi cross-sectional | Population: All toddlers in Ende District. Sample: 194 toddlers aged 24-59 months. | malnutrition in toddlers. The study showed that there was a significant relationship between family food security and the nutritional status of toddlers ( $p = 0.000$ ), and there was no relationship between income level and the nutritional status of toddlers ( $p = 0.646$ ) in Ende District. |
| The relationship between family food security and the incidence of malnutrition (wasting) in toddlers aged 6-59 months in Rengas sub-district, Majene district. (Rahmayani 2025) | Cross sectional       | Population: 764 toddlers<br>Sample: 98 toddlers                                    | The results of the study showed that there was a relationship between food security and the incidence of malnutrition (wasting) with a p-value of 0.005.                                                                                                                                              |

Based on the identification results, all research findings indicate a relationship between food security and malnutrition.

## DISCUSSION

The results of the literature review of the five studies analyzed indicate that household food security has a consistent relationship with the incidence of malnutrition in toddlers. Most studies found that households with low food security tend to have toddlers with malnutrition or wasting. This is evident in the study by Sari et al. (2023), which showed that household food security was significantly associated with toddler nutritional status ( $p=0.047$ ) and was a risk factor for malnutrition, especially during the pandemic, which limited food access and family income. This finding aligns with the concept that inadequate food security will directly impact children's low energy intake.

Another study by Hoar et al. (2022) also showed that the majority of families experienced inadequate food security (74.6%), which was accompanied by a high proportion of toddlers with suboptimal energy intake and low socioeconomic conditions, such as maternal education and family income. This situation illustrates that food security does not exist in isolation, but is closely related to socioeconomic factors and maternal nutritional knowledge, which indirectly influence children's nutritional status. This reinforces the idea that a household's inability to provide sufficient and nutritious food can increase the risk of malnutrition in toddlers.

Similar findings were also demonstrated by Amelia (2025), who found a highly significant relationship between food security and the incidence of malnutrition in toddlers ( $p=0.000$ ;  $OR=6.222$ ), with the majority of malnourished toddlers coming from food-insecure households. Furthermore, environmental factors such as sanitation also increase the risk of malnutrition. This suggests that poor food security not only impacts food intake but is also related to environmental health conditions, which influence children's nutritional status.

Research by Dadi (2025) also confirmed a significant relationship between family food security and toddler nutritional status ( $p=0.000$ ), although income does not always show a direct relationship. This indicates that while income is an important factor, food security more closely reflects the actual conditions of food access and availability at the household level. Meanwhile, Rahmayani's (2025) research also showed a relationship between family food security and wasting in toddlers ( $p=0.005$ ), strengthening evidence that food security plays a significant role in determining acute nutritional status in children.

## CONCLUSION

Based on the results of a literature review of the five articles analyzed, it can be concluded that there is a relationship between household food security and wasting in toddlers. All studies indicate

that households with low food security are more likely to have toddlers with poor nutritional status compared to households with good food security. Inadequate food security impacts limited access to and quality of food consumption, resulting in low energy and nutrient intake in toddlers.

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