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Impacts of food insecurity on child growth status: A scoping review

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ABSTRACT

Introduction: This review aimed to synthesis available evidence on the impact of food insecurity on child growth status. The Arksey and O'Malley framework served as the basis for developing this scoping review. **Methods:** A search strategy was conducted across three databases (Web of Science, Scopus, and Science Direct). Studies published from January 2015 to September 2025 and written in English were included in this review. Articles with participants who lived in institutions or organisations that provided meals were excluded. **Results:** Based on the search strings used, 44 articles were identified for review. Articles that did not focus on impact of food insecurity on children's growth status were excluded. Ultimately, 14 publications met inclusion criteria for this scoping review. **Conclusion:** This review provides an overview of how food insecurity affects child growth status. The findings demonstrated that household food insecurity (HFI) has persistent and detrimental effects on child growth and nutritional outcomes, with stunting being the most consistent consequence. In addition, the review provides insights into factors contributing to HFI, which may be helpful for informing future research, interventions, and other measures to address the issue.

Keywords: child growth status, food insecurity, nutritional status

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INTRODUCTION

Food insecurity has become a primary global concern, alongside malnutrition and poverty. Household food insecurity (HFI) is defined as limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways (Anderson, 1990). The significance of this issue is emphasised by recent global data indicating that nearly 29.6% of the global population, approximately 2.4 billion people, experienced moderate or severe food insecurity in 2022 (FAO *et al.,* 2023). Regionally, Southeast Asia continues to face significant challenges; for instance, the prevalence of moderate or severe food insecurity in the region was estimated at approximately 15% during the same period (FAO *et al.*, 2023). In the Malaysian context, local studies have highlighted that low-income urban and rural households are particularly susceptible, with some communities reporting food insecurity rates exceeding 50%, directly threatening the nutritional status of children (Goh *et al.*, 2023; Tan & Aziz, 2023).

This review focuses primarily on food insecurity at the household level, acknowledging that while a household may be insecure, the impact is often disproportionately felt by the most vulnerable members. Children are considered a high-risk population in this context due to their higher nutritional needs for growth and development (Dubois *et al.*, 2023). Unlike adults, children are undergoing rapid physical growth and critical windows of neurodevelopment, making them highly sensitive to even short-term nutritional deficiencies (Qureshi *et al.*, 2025). Furthermore, their complete dependence on caregivers for food access and their limited personal coping capacity leave them unable to mitigate the effects of a constrained household food supply (Gallegos *et al.*, 2021). Children living in such households often experience unhealthy body weight, exhibiting low weight-for-age and low height-for-age. Additionally, these children tend to have inadequate dietary intake, resulting in poor-quality diets and insufficient nutrient intakes (Law *et al.*, 2018).

Persistent HFI is associated with a less diverse diet among children than among those in food-secure households (Nguyen *et al.*, 2021). Moreover, children from moderately to severely food-insecure households are at a higher risk of developing nutritional issues. In a study conducted in Rwanda's Gicumbi District, stunting and severe stunting among children aged 6 to 59 months were significantly associated with moderate to severe HFI (Agho *et al.*, 2019). The likelihood of household food insecurity was notably higher among stunted children compared to those who were not stunted (Borauzima *et al.*, 2020). Severe stunting was also more prevalent among children from households experiencing moderate to severe food insecurity (Niragire *et al.*, 2022). Other factors associated with stunting include mother's height, child's age, province, mother's education level, and child's birth weight and size (Ndagijimana *et al.*, 2023).

HFI worsened when the COVID-19 pandemic hit globally. The pandemic altered child feeding habits, especially within households experiencing food insecurity. This is attributed to increased stress levels and limited resources (Adams *et al.*, 2020). In a recent study during the COVID-19 pandemic, 37.7% of Malaysians experienced income shocks (Ibrahim & Othman, 2020); this affected food security through their reduced daily food consumption and the inability to obtain and afford sufficient food during the pandemic (Thinagar *et al.*, 2021).

Although the impact of food insecurity on children has been widely discussed in numerous studies (Williams *et al.*, 2024), evidence regarding its specific impact on child growth and nutritional status remains scarce. Therefore, this scoping review aimed to provide an overview of the effects of food insecurity on children's growth status and nutritional outcomes.

METHODOLOGY

The Arksey & O'Malley (2005) framework was used when conducting this scoping review. This review involved five stages: 1) Identifying the research question; 2) Identifying the relevant studies; 3) Selecting the studies; 4) Extracting the data; and 5) Collating, summarising, and reporting the results. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Study (PRISMA-ScR) served as the foundation for this review.

Stage 1: Identifying the research question

According to Arksey & O'Malley (2005), defining the research question is a crucial step, as it shapes the development of search strategies. In this review, the PCC framework was adopted to structure the inquiry — P (Population): child (0 to 12 years old); C (Concept): impact of food insecurity on child growth status; and Co (Context): from any country. The age range of 0-12 years was selected to focus on the critical developmental window of early and middle childhood, where physical growth outcomes are most susceptible to nutritional deficits. "What are the impacts of food insecurity on child growth status?" was the chosen study topic to guide our methodological search strategy and results reporting.

Stage 2: Identifying the relevant studies

The research team created the search approach together. The search was limited to the period from January 2015 to September 2025, focusing on recent research on the impact of food insecurity on child growth status. A systematic search was conducted in electronic databases Scopus, Science Direct, and Web of Science using standard search terms tailored to each database's requirements. The terms "food insecurity", "household food insecurity", "child", and "growth status" were the primary keywords used during the initial search. The Boolean operators AND and OR were used to join search terms within related keywords. A second search was carried out using expanded terms if the initial searches were found to be insufficient. Table 1 presents the search strings generated in this review.

Table 1. List of search strings

Date of search: up to September 2025		
Database	*Search Strategy*	*n*
Web of Science	((TI=(food insecurity)) OR TI=(household food insecurity)) AND TI=(child*) AND TI=(growth status) AND TI=(nutritional status))	479
Scopus	TITLE-ABS-KEY ("food insecurity" OR "household food insecurity" AND "child development" AND "growth status" AND "nutritional status")	172
Science Direct	Title, abstract, keywords: ("food insecurity" OR "household food insecurity") AND ("child development") AND ("growth status") AND "nutritional status"	17

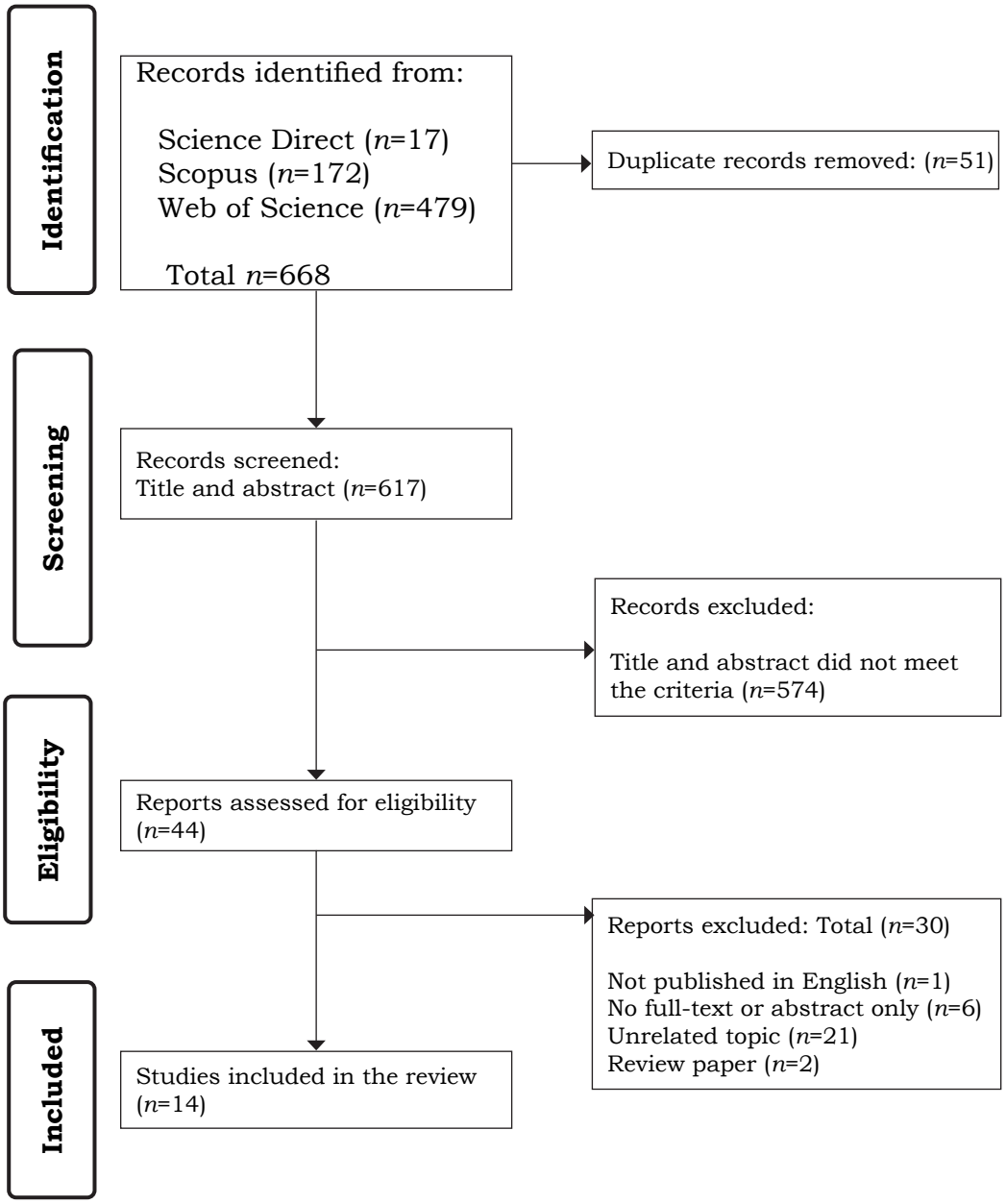

Figure 1. PRISMA diagram

An article was selected if it fulfilled the following PCC elements; P (Population): children aged 0 to 12 years old; C (Concept): food insecurity and child growth status; and Co (Context): from any country. Articles were screened for inclusion criteria: 1) articles published between January 2015 and September 2025; 2) full-text articles published in English. Studies that were 1) restricted to abstracts, case reports, protocols, or unrelated subjects; 2) non-English publications; or 3) non-human or animal studies were excluded.

Stage 3: Selecting the studies
In conducting this review, the relevant articles identified were exported to a reference management software (EndNote). Duplicate articles from the three databases were removed. Two independent reviewers screened the titles and abstracts during the initial stage. Articles that met the PCC elements were retrieved for full text review. Articles that did not meet the inclusion criteria were excluded from the database, and the reasons for exclusion were noted in the final report. The selection process was reported in the Prisma flow diagram (Figure 1). Any disagreements were resolved through discussion or by consulting a third reviewer. Each article was chosen based on the latest publication if the article appeared to have multiple updates.

Stage 4: Extracting the data
The data extraction process was adopted from the Joanna Briggs Institute (JBI) data extraction form (Peters *et al.*, 2020). Key information was collected for selected articles relevant to the review. The information included years, authors, country, study design, population, and setting, as well as the tools used for assessing food insecurity and the outcomes. The outcomes or findings were categorised into two components, which were: 1) prevalence of food insecurity, stunting, or malnutrition among children, and 2) factors associated with food insecurity and nutritional status. Two independent reviewers performed the data extraction; any conflicts were settled through discussion. The data extracted are presented in Table 2.

Stage 5: Collating, summarising, and reporting the results
The fifth stage involved summarising the data that had been extracted. The extracted data were presented in a narrative summary. The analysis conducted and the results were described based on the research questions developed in the first stage of the review. Content analysis focused on two main domains – factors contributing to household food security and the impact of HFI on child nutritional status.

RESULTS

Study selection
The search identified 668 potentially relevant articles, comprising 479 articles from Web of Science, 172 from Scopus, and 17 from Science Direct. After removing 51 duplicates, 617 titles and abstracts were screened, resulting in 44 full texts that were assessed for eligibility. Thirty reports were excluded (non-English, n=1; abstract only or no full text, n=6; unrelated topic, n=21; review paper, n=2). Ultimately, 14 studies met the inclusion criteria and were charted.

Study characteristics
The study characteristics are summarised in Table 2. Among the 14 included studies, ten publications employed cross-sectional design. The other four publications included a mixed-methods study (a cross-sectional and a longitudinal cohort study), a longitudinal study, a cohort study, and a descriptive study, respectively.

Among the 14 included studies, three (Nyaupane *et al.*, 2023; Hamid *et al.*, 2024; and Abdi *et al.*, 2024) utilised statistics obtained during or immediately following the COVID-19 pandemic. These articles provided insights into how

Table 2. Summary of publications included in this scoping review

Year	*Authors & Country*	*Study Design/ Research Design*	*Population & Settings*	*Food Insecurity Tools*	*Outcomes/Findings (Prevalence of Food Insecurity, stunting, or malnutrition among children)*	*Outcomes/ Findings (Factors associated with Food Insecurity and Nutritional Status)*
2024	Abdi *et al.* (Central Lombok, Indonesia)	• Cross-sectional household Survey	• *n*=391 (caregivers and children)	• Food Insecurity Experience Scale Survey Module (FIES-SM)	60.1% of households experienced food insecurity.	• Low household income, reliance on social assistance, poor dietary diversity (HDDS).
2024	Hamid *et al.* (Urban Selangor, Malaysia)	• Cross-sectional study	• 112 children aged <2 years old from low-income households	• Household Food Insecurity Access Scale (HFIAS)	• 55.4% of households experienced food insecurity. • 34.8% of children were stunted. • 7.2% were underweight. • 16.1% were overweight or obese.	• Household size was the sole significant predictor.
2023	Nyaupen *et al.* (Nepal, India)	• Cross-sectional study	• *n*=304 (Mothers and <24 months children)	• Pretested Semi-structured Questionnaire	25% of children <24 months were underweight (higher than the national average of 16.3%).	• Disadvantaged ethnicity, maternal occupation in agriculture, younger maternal age at first childbirth, recent diarrhoea were key determinants of HFI.
2022	Agarwal *et al.* (United States of America)	• Mixed method • Cross-sectional study • Longitudinal cohort study (2016-2019)	• *n*=1296 (Parents with child) • Six racial/ ethnic samples	• Home Food Inventory (shortened version of fast-food consumption assessment) • Children Eating Habits Questionnaire (Score using the Healthy Eating Index-2015)	Lower food security (*p<0.01)* and poorer child diet quality (*p<0.01).*	• Children's weight-related outcomes were negatively affected by poor neighbourhood food. environments • The link to weight was stronger among children experiencing HFI.

(To be continued)

Table 2. Summary of publications included in this scoping review *(continued)*

Year	*Authors & Country*	*Study Design/ Research Design*	*Population & Settings*	*Food Insecurity Tools*	*Outcomes/Findings (Prevalence of Food Insecurity, stunting, or malnutrition among children)*	*Outcomes/ Findings (Factors associated with Food Insecurity and Nutritional Status)*
2022	Burman *et al.* (India)	• Community-based cross-sectional observational study	• *n*=257 (Mothers and <5 years old children)	• Household Food Insecurity Access Scale (HFIAS)	• 72.4% of participants were from food-insecure households. • 29.9% of children under five were underweight. • The proportion of wasting among children under five was 17.8%. • The proportion of stunting among children under five was 27.2%	• Food insecurity (FI) continued to be a key predictor of chronic undernutrition, including wasting and stunting.
2021	Abedi *et al.* (India)	• Cross-sectional study	• *n*=766 of caregivers with children (0-59 months)	• HFIAS	• Low food security was observed in 41.1 % of children. • 1.8% of the children were identified as having very low food security.	• Food insecurity and malnutrition in children were significantly associated ($p<0.05$). • Significant associations were found with place of residence, caste, type of family, parents' education, and father's occupation.

2021	Belayneh *et al.* (Ethiopia)	• Cohort study
		• Community-based follow-up study
			• *n*=935 children (6-47 months)	• HFIAS (modified for Ethiopia season)	• Stunting varied by season:
					  • 38% (95% CI: 34.7-41.0) in March.
					  • 49% (95% CI: 45.8-52.5) in December.
						• Household characteristics associated with subsequent wasting or stunting included:
						• Poverty level

(To be continued)

Table 2. Summary of publications included in this scoping review *(continued)*

Year	*Authors & Country*	*Study Design/ Research Design*	*Population & Settings*	*Food Insecurity Tools*	*Outcomes/Findings (Prevalence of Food Insecurity, stunting, or malnutrition among children)*	*Outcomes/ Findings (Factors associated with Food Insecurity and Nutritional Status)*

				• Household Dietary Diversity Score (HDDS)
				• Wealth index household assets
					• Wasting affected 6% (95% CI: 5.0-6.6) of children:
					  • Prevalence was higher in March (8%).
					  • Prevalence was lower in September (3%).
						• Education
						• Occupation
						• HFI
						• Dietary diversity

2020	Berra (Ethiopia)	• Cross-sectional study	• *n*=525 households • Data collection period: June 2016-October 2016 • Location: West Oromia zones, Ethiopia	• HFIAS • Household Hunger Scale (HHS)	• The prevalence of child undernutrition in the target population was 21.3% with: • 16.2% stunted • 6.9% underweight • 6.3% wasted • Food-secure households were 54% protective against child undernutrition.	• Household food security had no significant correlation with acute malnutrition in children (wasting).
2019	Agho *et al.* (Rwanda, East Africa)	• Cross-sectional study	• *n*=2,222 children (6-59 months)	• HFIAS	• The likelihood of severe stunting was 2.47 times higher for kids from households with moderate food insecurity. • Severe stunting was more likely among children from a household with severe food insecurity.	• There was a significant correlation between moderate and severe HFI and both stunting and severe stunting.

(To be continued)

Table 2. Summary of publications included in this scoping review *(continued)*

Year	*Authors & Country*	*Study Design/ Research Design*	*Population & Settings*	*Food Insecurity Tools*	*Outcomes/Findings (Prevalence of Food Insecurity, stunting, or malnutrition among children)*	*Outcomes/ Findings (Factors associated with Food Insecurity and Nutritional Status)*
2018	Chakona & Shakelton (South Africa)	• Cross-sectional study	• *n*=554 women • Households were randomly selected along a rural-urban continuum • The selection was made in three towns • The towns were located along an agro-ecological gradient	• HFIAS • HDDS	• Stunted growth was the most common form of malnutrition in 35% of children. • Wasting affected 18% of children.	• Child wasting was the highest in areas with the lowest agro-ecological potential. • Children from households with low HDDS had larger MUAC, showing an inverse relationship between HDDS and obesity. • Areas with higher agro-ecological potential had lower rates of food insecurity and child wasting.
2017	Betebo *et al.* (South Ethiopia)	• Cross-sectional study	• *n*=508 mother/ child pairs • Children aged 6-59 months • From a rural-urban continuum • Located in three towns along an agro-ecological gradient.	• HFIAS	• HFI prevalence was 75.8%. • Stunting prevalence among children was 45.6%. • Underweight prevalence among children was 26.3%. • Wasting prevalence among children was 14.6%.	• HFI was significantly associated with underweight and stunting. • No significant association was found between HFI and wasting.

(To be continued)

Table 2. Summary of publications included in this scoping review *(continued)*

Year	*Authors & Country*	*Study Design/ Research Design*	*Population & Settings*	*Food Insecurity Tools*	*Outcomes/Findings (Prevalence of Food Insecurity, stunting, or malnutrition among children)*	*Outcomes/ Findings (Factors associated with Food Insecurity and Nutritional Status)*
2016	Abdurrahman *et al.* (Haromaya, Ethiopia)	• Cross-sectional study	• *n*=453 children (24-59 months) • Haromaya District Community	• HFIAS	• 39.7% of households experienced food insecurity. • 34% reported worry about food supply. • 40% of mothers could not adequately feed their families. • 22% ate fewer meals per day than usual.	• HFI was a strong predictor of underweight. • HFI showed marginal significance for wasting.
2016	Anjum *et al.* (Pakistan)	Descriptive study	• *n*=120 household respondents • Each household had at least one child <5 years old • The study focused on rural areas in the district of Faisalabad.	• Semi-structured interview guide	NIL	• 93.3% of respondents cited poverty as the leading cause of food insecurity and believed it affected their children's height growth. • 94.2% thought food insecurity impacted their children's weight. • 92.5% believed it affected their children's activeness.

(To be continued)

Table 2. Summary of publications included in this scoping review *(continued)*

Year	*Authors & Country*	*Study Design/ Research Design*	*Population & Settings*	*Food Insecurity Tools*	*Outcomes/Findings (Prevalence of Food Insecurity, stunting, or malnutrition among children)*	*Outcomes/ Findings (Factors associated with Food Insecurity and Nutritional Status)*
2016	Burke *et al.* (United States of America)	Longitudinal study	• *n*=21260 kindergartens (aged 5-9 years old). • Study conducted in kindergarten settings.	• The United State Department of Agriculture's Household Food Security Survey Module (HFSSM)	• Food security was similar for males and females at time points 1-4 (9%, 9%, 6%, 8% food insecure). • At time point 5, food insecurity was slightly lower among females (7.9%) than among males (7.2%).	• BMI was greater for 8th-grade girls from food-insecure homes than for those from food-secure households. • The males' BMI increment did not change significantly according to the level of food insecurity in their households.

HFIAS: Household Food Insecurity Access Scale; HFI: Household Food Insecurity; HDDS: Household Dietary Diversity Score; HFFSM: Household Food Security Survey Module; BMI: Body Mass Index; NIL: No Information Listed; CI: Confidence Interval; *n*: sample size

recent global economic shocks have influenced household food insecurity and contributed to deficits in physical growth among young children.

All publications involved parents or caregivers with children under 9 years old. Studies involving children older than 9 years did not address child growth status but instead focused on other aspects of the child's development. Seven of the studies recruited parents of children younger than 59 months, as this period was considered critical in a child's life. Most studies highlighted the impact of HFI on children's growth status, which included underweight, stunting, and wasting. The findings are presented under the key themes of HFI prevalence, its determinants, and its impact on child nutritional status.

Prevalence of household food insecurity

HFI was highly prevalent across study contexts. In Central Lombok, Indonesia, 60.1% of 391 households experienced mild, moderate, or severe food insecurity, a figure notably higher than reports from Java and Sulawesi during the COVID-19 pandemic (Abdi *et al.*, 2024). A study conducted in urban Selangor among 112 low-income households during the COVID-19 pandemic revealed that 55.4% of the households with children under two years old were food insecure. In Ethiopia, the prevalence of HFI was two-thirds of the sample of 525 households, amounting to 69% (Berra, 2020), while in East Badawacho District, South Ethiopia, the prevalence reached 75.8% from the 508 households involved in the study (Betebo *et al.*, 2017). The prevalence of HFI in India was also reported to be high, with 72.4% of the 257 participants found to be food insecure (Burman et al, 2022).

Determinants of household food insecurity

HFI was influenced by demographic, socioeconomic, and environmental factors. Larger household size and the absence of non-farming income were associated with greater vulnerability (Kabalo *et al.*, 2019). Similarly, an analysis of the determinants of food insecurity in urban low-income households found that household size was the sole significant predictor of HFI (Hamid *et al.*, 2024). Maternal education and maternal emotional distress also emerged as predictors (Kabalo *et al.*, 2019; Berra, 2020). Poverty and low socioeconomic status were consistent drivers (Mahmood *et al.*, 2014; Anjum *et al.*, 2016), while seasonality in drought-prone areas exacerbated food shortages (Belayneh, Loha & Lindtjørn, 2021). At the community level, a limited neighbourhood food environment constrained access to affordable fruits and vegetables, reducing diet quality (Agarwal *et al.*, 2022). Dietary diversity was identified as a significant determinant of household food security in Central Lombok, Indonesia, where households with higher Household Dietary Diversity Scores (HDDS) were significantly more likely to be food secure (Abdi *et al.*, 2024). Protective factors across contexts included participation in social safety net programmes and access to protected drinking water (Berra, 2020; Niragire *et al.*, 2022).

Impacts on child growth and nutritional status

Stunting

Moderate to severe HFI was strongly associated with child stunting across Rwanda, Ethiopia, and India (Belayneh *et al.*, 2021; Agarwal *et al.*, 2022). In Central Lombok, Indonesia, while statistical associations between HFI and toddler

anthropometry were not significant, nearly half of the undernourished children were from food-insecure households, suggesting an important contextual overlap (Abdi *et al.*, 2024).

Wasting and underweight
HFI was consistently associated with wasting and underweight (Abdurahman *et al.*, 2016; Sufyan *et al.*, 2022). In Nepal, the prevalence of underweight among children below 24 months was 25%, higher than the national average of 16.3%. Key determinants of underweight included disadvantaged ethnicity, maternal occupation in agriculture, younger maternal age at first childbirth, older infant age (6–24 months), and recent diarrhoeal illness (Nyaupane *et al.*, 2023).

Dual burden of malnutrition
Evidence from Pakistan suggested that food insecurity doubled the risk of dual burden of malnutrition, where undernutrition and overweight or obesity coexisted in children under five (Sultan & Iram, 2023). The high prevalence of both stunting (34.8%) and overweight or obesity (16.1%) in the same urban poor cohort from a recent study in Malaysia suggests an emerging double burden of malnutrition that requires targeted interventions (Hamid *et al.*, 2024).

Role of dietary diversity
Dietary diversity repeatedly emerged as an important determinant. In Ethiopia and South Africa, low dietary diversity was associated with stunting and wasting (Chakona & Shackleton, 2018; Nkoko *et al.*, 2023). In Central Lombok, Indonesia, poor dietary diversity was strongly correlated with food insecurity and suboptimal child nutrition (Abdi *et al.*, 2024). However, other evidence suggested that dietary diversity did not always mediate the relationship between HFI and child growth (Disha, Purnima & Rahul, 2013).

COVID-19 pandemic
The COVID-19 pandemic exacerbated HFI through income losses, disruptions to the food supply chain, and changes in child-feeding practices (Nguyen *et al.*, 2021; Thinagar *et al.*, 2021). In Malaysia and India, income shortage significantly reduced food consumption (Ibrahim & Othman, 2020; Abedi *et al.*, 2021). In Central Lombok, Indonesia, the prevalence of food insecurity was higher compared to other Indonesian provinces during the pandemic, reflecting regional disparities in vulnerability (Abdi *et al.*, 2024).

DISCUSSION

This scoping review synthesised evidence on the relationship between HFI and child nutritional outcomes across low- and middle-income settings. Stunting and wasting remain the most studied indicators of undernutrition because they serve as sensitive, objective biological markers of long-term and acute nutritional stress. The mechanism linking HFI to these outcomes is often twofold: decreased caloric intake and poor dietary quality. In food-insecure households, families often shift spending towards low-cost, energy-dense but nutrient-poor staples (the 'nutrition transition'), leading to hidden hunger or micronutrient deficiencies that stunt physical growth even if caloric requirements are met.

Household food insecurity and child nutrition

The review highlighted that children in food-insecure households face a heightened risk of undernutrition. Across Ethiopia, Rwanda, and India, moderate to severe food insecurity was strongly associated with stunting (Belayneh *et al.*, 2021; Agarwal *et al.*, 2022). In Central Lombok, Indonesia, although the statistical association between HFI and child anthropometry was not significant, nearly half of the undernourished toddlers were from food-insecure households (Abdi *et al.*, 2024). Utilising validated metrics, such as the Household Food Insecurity Access Scale (HFIAS) and the Household Food Security Survey Module (HFSSM), researchers identified that as households transition from mild to moderate or severe insecurity, the risks of chronic and acute malnutrition intensify significantly (Agho *et al.*, 2019; Betebo *et al.*, 2017). Specifically, children in severely food-insecure households face progressively higher likelihood of stunting and severe stunting compared to those in food-secure environments (Agho *et al.*, 2019; Burman *et al.*, 2022). Furthermore, moderate and severe HFI serve as potent predictors for underweight and wasting, with the most profound growth deficits recorded among children experiencing the highest levels of food deprivation (Abdurahman *et al.*, 2016; Chakona & Shackleton, 2018). Even marginal or transient insecurity has been linked to longitudinal fluctuations in growth metrics like body mass index, underscoring that any degree of food access instability can compromise a child's physical development (Burke *et al.*, 2016).

Dietary diversity as a mediating factor

Dietary diversity emerged as a recurring theme in the literature. Limited dietary diversity was consistently associated with undernutrition in Ethiopia and South Africa (Chakona & Shackleton, 2018; Nkoko *et al.*, 2023). In Central Lombok, Indonesia, low dietary diversity was strongly linked to poor food security and nutritional outcomes (Abdi *et al.*, 2024). However, evidence from other studies suggested that dietary diversity alone may not fully mediate the relationship between HFI and child growth (Disha *et al.*, 2013). These findings suggest that while dietary diversity is important, it must be complemented by interventions addressing poverty, maternal education, and household food environments.

Sociocultural and health determinants

A study conducted in Nepal by Nyaupane *et al.* (2023) underscored the role of sociocultural and health-related factors in shaping child undernutrition. The prevalence of underweight among children under 24 months was 25%, higher than national estimates, with disadvantaged ethnicity, maternal occupation in agriculture, and younger maternal age at first childbirth identified as key predictors. Moreover, diarrhoeal illness was strongly associated with underweight, reinforcing the need to integrate WASH (water, sanitation, and hygiene) interventions into nutrition programmes. These findings highlight that undernutrition is not solely a consequence of food access but is also shaped by maternal characteristics, caregiving capacity, and child morbidity.

Impact of COVID-19

The COVID-19 pandemic further compounded vulnerabilities, with studies reporting disruptions in food systems, reduced incomes, and adverse effects on child-feeding practices (Nguyen *et al.*, 2021; Thinagar *et al.*, 2021). In Malaysia

and India, income shocks were strongly associated with reductions in food consumption (Ibrahim & Othman, 2020; Abedi *et al.*, 2021). During the COVID-19 pandemic, income shocks acted as a catalyst for growth faltering. The sudden loss of informal-sector earnings led to immediate reductions in purchases of high-quality proteins and fresh produce. Furthermore, the disruption of school feeding programmes, a critical safety net for children in low-income households, removed a consistent source of balanced nutrition, effectively shifting the full nutritional burden back onto already strained household budgets. In Central Lombok, Indonesia, the prevalence of food insecurity during the pandemic was higher than in other Indonesian provinces, reflecting regional disparities in resilience (Abdi *et al.*, 2024). Recent evidence from Malaysia highlights that household size remains a critical factor in determining food security status among urban low-income families, particularly during a global health crisis like COVID-19 (Hamid *et al.*, 2024).

Protective and structural factors

Protective factors against child malnutrition included household participation in social safety net programmes and access to protected drinking water (Berra, 2020; Niragire *et al.*, 2022). At a broader level, poverty, limited access to healthcare, and inequities across ethnic and occupational groups (Nyaupane *et al.*, 2023) emerged as structural barriers that perpetuate food insecurity. This reinforces the need for multi-sectoral approaches that combine nutrition-specific strategies with poverty alleviation, health services, and social protection programmes.

Research gaps and future directions

Despite the extensive evidence, several gaps were identified. Firstly, most studies were cross-sectional, therefore limiting the ability to establish causal pathways between HFI and child growth status. Secondly, there was heterogeneity in measurement tools, with varying use of dietary diversity scores, HFI access scales, and anthropometric indicators, making cross-study comparisons challenging. Thirdly, limited evidence exists on the dual burden of malnutrition in food-insecure households, particularly in South Asia, where undernutrition and obesity often coexist. Future research should employ longitudinal designs, standardised tools, and explore the intersection of food insecurity with emerging nutrition challenges such as overweight and non-communicable diseases. Additionally, future scoping reviews or systematic searches should expand the scope of child development beyond physical growth status. There is a critical need to synthesise evidence on how HFI correlates with cognitive delays, emotional regulation, and academic performance, as these domains are equally vital for long-term human capital development.

Strengths of the review

Despite the limitations, this scoping review possesses several strengths. It provides a comprehensive synthesis of recent literature (2015–2025) across three major academic databases, ensuring a global perspective on food insecurity. Furthermore, by focusing specifically on the 0 to 12 age range, this review captures the most critical window of human growth, providing actionable insights for paediatric nutritional interventions and policymaking in low-income contexts.

CONCLUSION

In summary, this scoping review demonstrates that HFI has persistent and detrimental effects on child growth and nutritional outcomes, with stunting being the most consistent outcome. Dietary diversity is an important but insufficient buffer when considered in isolation, underscoring the need for integrated interventions that address both immediate dietary needs and broader structural determinants. The findings support the call for comprehensive, multi-sectoral strategies that go beyond food assistance, strengthen household resilience, improve socioeconomic conditions, and ensure sustainable child nutrition outcomes.

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Authors' contributions

Nashrah AI, conceived the research question, conducted the literature search and study selection, contributed to data charting, synthesis of findings and wrote the manuscript; Syahrul BAH, participated in screening and selecting studies, contributed to data charting and synthesis of findings, assisted in writing and revising the manuscript.

Conflict of interest

The authors declare that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

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