

REVIEW

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# The association of food insecurity and school absenteeism: systematic review

Dessalegn Tamiru<sup>1,2\*</sup> and Tefera Belachew<sup>1,2</sup>

## Abstract

Household food insecurity not only affects normal physical growth of young children, but also adversely affects their intellectual capacity and social skills. Studies showed that household food insecurity has a significant association with students' poor school attendance. The aim of this review was to systematically identify, appraise and synthesise the best available evidence on the association between food insecurity and school absenteeism. All relevant papers for this review were searched using various databases and search engines with initial keywords/search terms: ("Absenteeism" OR "school attendance") and ("food security" OR "food insecurity") from the databases of PubMed, Hinari, Google Scholar and CINAHL using relevant keywords and search terms. All papers which were selected for review was subjected to a rigorous and independent appraisal analysis. All results were subjected to double data entry and heterogeneity was assessed using Chi-square test. Finding of this review showed that students from food secure households were 57% less likely to be absent from school (OR 0.43, 95% CI 0.36, 0.51) than students from food insecure households. The test for overall effect showed a high statistical significance at conventional levels ( $P < 0.00001$ ) and there was no heterogeneity ( $\chi^2 = 3.50$ ,  $df = 3$ , [ $P = 0.32$ ]) among the included studies for review. Generally, the results of this review indicated that household food insecurity has a strong linkage with students' school absenteeism. Therefore, the impacts of household food insecurity should be taken into consideration in national nutrition policy formulation and there is also a need of strengthening programs like school feeding.

**Keywords:** Absenteeism, Students, Food insecurity, School, Attendance

## Background

Food insecurity is a common public health problem and major constraints of educational attainments among school children and adolescents in developing countries [1, 2]. Studies also indicated that students from food insecure households are more likely absent from school compared to their peers from food secure households due to an exposure to infectious disease and socio-emotional difficulties [2–11].

Household food insecurity results from lack of access to sufficient and nutritious foods for healthy and active life in socially acceptable ways due to economic constraints and other natural and man-made disasters. Findings of various studies also showed that household food

insecurity has strong linkage with family socio-economic status like educational background, household income status and having assets like land and livestock [2–7].

In low-income countries like Ethiopia, household food insecurity is a predisposing factor to poor school attendance and social interactions when compared to students from food secure households. Studies also showed that students from food insecure households score low grade and more likely repeat the same grade compared to their peers from food secure households. Findings from some studies also shown that students from food insecure households have low intellectual stimulation, poor physical growth and most of the time they suffer from long-lasting conditions such as obesity and anxiety disorders [4–8].

According to World Health Organization report, about 126 million of children are living in countries where the minimum requirement for life is not fulfilled. The future economic growth and development of low-income

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countries largely depends on having the future adults who are economically fruitful and educated [1, 2]. Household poverty has a significant association with lack of maternal education, maternal depression and stressful conditions linked to gender based violence, housing conditions and lack of overall services which can affect the overall students' school attendance and academic achievements [4–9]. Adolescence is the second most important chance to intervene the nutrition and nutrition related problems. It is also a stage of friendliness to a new thought and a point when the lifestyle choices determine an adolescent's life course. Therefore, for optimal cognitive and mental developments of young children and adolescents, there is a need for access to a food rich in nutrients which can meet the dietary demands of these vulnerable group populations [5–7, 9].

Nutritional problems especially during the adolescence have been largely ignored by national nutrition policies and programs of low-income countries. Generally, household food insecurity not only affects an individual life, but also the economic developments of a country [4, 5, 8]. Therefore, the main objective of this review was to systematically identify, appraise and synthesise the best available evidence on the association between food insecurity and school absenteeism.

## Methods

This review included studies on school students regardless of their gender, ethnicity and country of residence. The main focus of this review was to search the association between food insecurity and school absenteeism with available data sources. The following search strategy was modified for the various databases and search engines with initial keywords/search terms: (“Absenteeism” OR “school attendance”) and (“food security” OR “food insecurity”). Searches of the PubMed and other databases showed there is no existing or on-going systematic review of this topic. The review included observational analytical studies (longitudinal studies and cross-sectional studies) from both published and non-published data.

All relevant published literature searched at the beginning using databases of PubMed, Hinari, Google Scholar and CINAHL using relevant keywords and search terms from 2000 to 2016. Finally, the reference lists or bibliographies of all identified reports and articles were checked manually for articles of interest. Manual searches were also done additionally for different books related to topic. Only English language studies fulfilling the inclusion criteria were considered for review.

In this study, food insecurity refers to the limited or uncertain availability of nutritionally adequate and safe foods, or the limited and uncertain ability to acquire

acceptable foods. School absenteeism is defined as any illegitimate absence from school for at least a day or within the last semester which do not include formal school closure days (national holidays or religious days).

All papers selected for the review was subjected to a rigorous and independent appraisal. Standardised critical appraisal instruments from the Joanna Briggs Institute Review-Analysis of Statistical Assessment was used. Quantitative data were extracted from papers included in the review using the standardised data extraction tool from JBI-MAStARI. Heterogeneity was assessed using the standard Chi-square and effect size with their 95% confidence intervals.

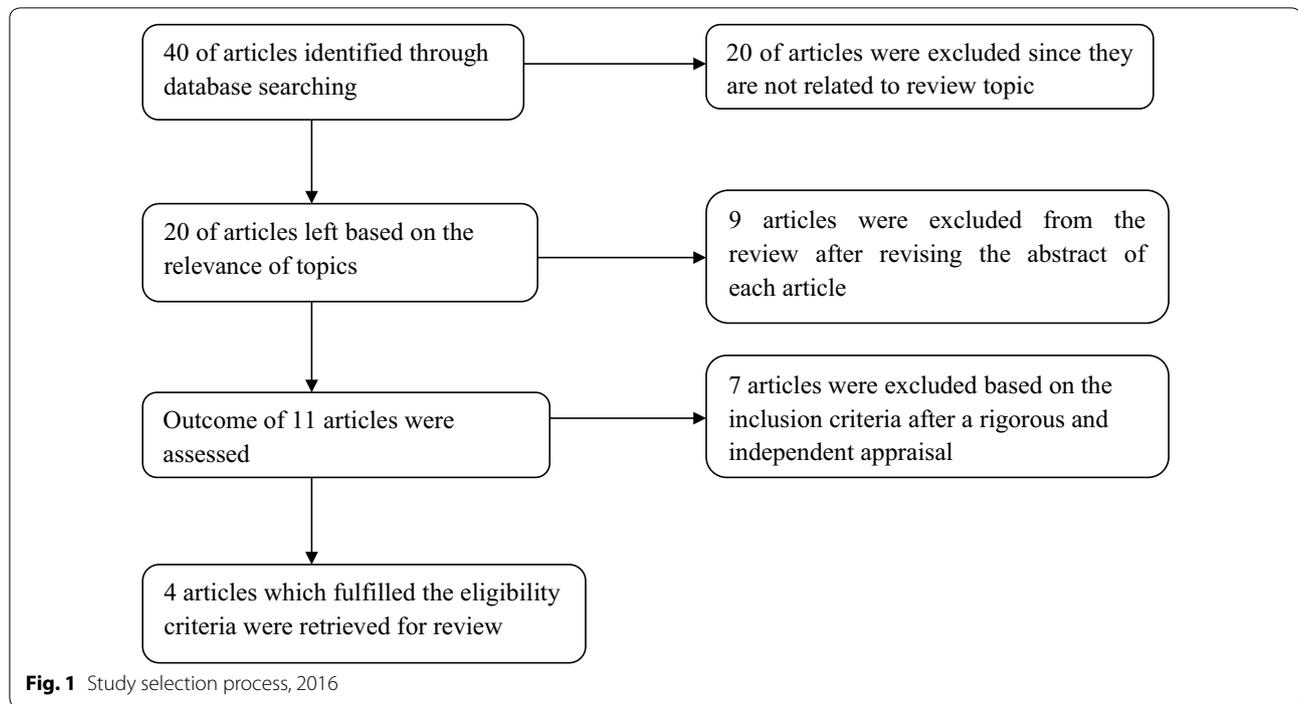
## Results

A total of 40 relevant articles were identified and 20 of them were excluded since they are not related to review topic. Following review of titles and abstracts against the objectives and inclusion criteria, 9 titles were excluded. Finally, after detailed evaluation and methodological quality assessment of 11 articles, 7 articles were excluded (Fig. 1).

A total of 2866 students were involved in the review analysis. Findings of this analysis showed that students from food secure households were 57% less likely to be absent from school (OR 0.43, 95% CI 0.36, 0.51) compared to students from food insecure households. Studies included for analysis were homogenous (heterogeneity test:  $\chi^2 = 3.50$ ,  $df = 3$ , [ $P = 0.32$ ]), and the test for overall effect also showed a high statistical significance at conventional levels ( $P < 0.00001$ ) (Table 1).

## Discussion

The finding of this review is consistent with different studies where household food insecurity has a significant contribution to school absenteeism or poor school attendance in low-income countries. Different studies showed that students from food insecure household are unable to go school because of an exposure to different disease, lack of access to health service and food provision at breakfast [1, 2, 4, 11, 12]. According to reports from some studies, students from food insecure households had also low grade score and low cognitive developments which are common predictors of school absenteeism [13, 14]. Studies also showed that there was a significant difference in terms of monthly income and food expenditure between food insecure and food secure households which can directly affect the health and academic achievements of students. Similarly, various studies indicated that the dietary intake of school children can be results from a multi-factorial behaviour influenced by prevalent culture, religion, food eating habits and availability of livestock [12, 13, 15]. In some countries like Ethiopia, school-based nutrition



**Table 1** Meta-analysis of studies on the association of food insecurity and school absenteeism, 2016

Study or Subgroup	Food secure		Food insecure		Weight	Odds Ratio		Odds Ratio M-H, Fixed, 95% CI
	Events	Total	Events	Total		M-H, Fixed, 95% CI	M-H, Fixed, 95% CI	
Alemayehu et al. 2015	312	710	147	247	33.9%	0.53	[0.40, 0.72]	
Bernal et al. 2014	19	69	30	62	6.4%	0.41	[0.20, 0.84]	
Dessalegn et al. 2015	127	288	61	88	14.5%	0.35	[0.21, 0.58]	
Tefera et al. 2011	234	1799	115	410	45.2%	0.38	[0.30, 0.50]	
<b>Total (95% CI)</b>		<b>2866</b>		<b>807</b>	<b>100.0%</b>	<b>0.43</b>	<b>[0.36, 0.51]</b>	
Total events	692		353					
Heterogeneity: Chi <sup>2</sup> = 3.50, df = 3 (P = 0.32); I <sup>2</sup> = 14%								
Test for overall effect: Z = 9.38 (P < 0.00001)								

CI confidence intervals

programmes were fragmented and uncoordinated due to being implemented by different stakeholders. Evidences from some studies showed that that health and nutrition problems have significant association with school absenteeism. Despite these facts, the health and nutrition needs of school children have been largely ignored. However, currently there is an initiation of certain programs like school feeding to enhance school achievements among school age children [12–16].

**Conclusion**

Findings of this review indicated that household food insecurity has a strong contribution to students’ poor school attendance. Therefore, policy makers and other

stakeholders should consider the impacts of household food insecurity on academic achievements during the formulation of national nutrition policies and strategies.

**Authors’ contributions**

DT and TB searched materials and did the analysis. DT had the primary responsibility for the content and finally submitted the paper for publication. Both authors read and approved the final manuscript.

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**Availability of data and materials**

Data used for this study are available in machine readable format and can be accessed from authors.

**Competing interests**

The authors declare that they have no competing interests.

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