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## Timeline

2015-2018

## Sample Size

1,333 children

## Research Implemented by IPA

Yes

## PLOS ONE

### RESEARCH ARTICLE

## Household food insecurity and early childhood development: Longitudinal evidence from Ghana

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### Abstract

The burden of food insecurity is large in Sub-Saharan Africa, yet the evidence-base on the relation between household food insecurity and early child development is extremely limited. Furthermore, available research mostly relies on cross-sectional data, limiting the quality of existing evidence. We use longitudinal data on preschool-aged children and their households in Ghana to investigate how being in a food insecure household was associated with early child development outcomes across three years. Household food insecurity was measured over three years using the Household Hunger Score. Households were first classified as "ever food insecure" if they were food insecure at any round. We also assessed persistence of household food insecurity by classifying households into three categories: (i) never food insecure; (ii) transitory food insecurity, if the household was food insecure only in one wave; and (iii) persistent food insecurity, if the household was food insecure in two or all waves. Child development was assessed across literacy, numeracy, social-emotional, short-term memory, and self-regulation domains. Controlling for baseline values of each respective outcome and child and household characteristics, children from ever food insecure households had lower literacy, numeracy and short-term memory. When we distinguished between transitory and persistent food insecurity, transitory spells of food insecurity predicted decreased numeracy ( $\beta = -0.176$ , 95% CI:  $-0.317$ ;  $-0.035$ ), short-term memory ( $\beta = -0.237$ , 95% CI:  $-0.382$ ;  $-0.092$ ), and self-regulation ( $\beta = -0.154$ , 95% CI:  $-0.326$ ;  $0.017$ ) compared with children from never food insecure households. By contrast, children residing in persistently food insecure households had lower literacy scores ( $\beta = -0.243$ , 95% CI:  $-0.436$ ;  $0.009$ ); no gender differences were detected. Results were broadly robust to the inclusion of additional controls. This novel evidence from a Sub-Saharan African country highlights the need for multi-sectoral approaches including social protection and nutrition to support early child development.

### OPEN ACCESS

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**Data Availability Statement:** The data used for this study are publicly available in the World Bank data repository at the following URL: <https://data.worldbank.org/financesharingquality/preschool-impact-evaluation-2017>

# Household Food Insecurity and Early Childhood Development in Ghana

## Abstract

Household food security, defined as stable access to sufficient and nutritious food, is critical in the early years to meet a child's developmental needs. In Ghana, researchers used longitudinal data on preschool-aged children and their households to investigate how household food insecurity was associated with early childhood development outcomes across three years. Children that experienced spells of household food insecurity, had lower literacy, numeracy and short-term memory on average.

## Policy Issue

Household food security, defined as stable access to sufficient and nutritious food, is critical in the early years to meet a child's developmental needs. The preschool years are a period of rapid growth in cognitive, social, and emotional skills, and a sensitive period for a child's development. Food insecurity and malnutrition during early childhood can have detrimental long-term and intergenerational effects on health, education, and income later in life.

The burden of food insecurity is large in Sub-Saharan Africa, yet evidence on the relationship between household food insecurity and early childhood development in this context is limited, though food insecurity is widespread. Understanding if food insecurity is associated with child development during preschool and the first years of primary school may have important implications for how early childhood educational services are structured, such as providing school feeding or other nutritional services alongside educational inputs. Food insecurity can come in short-term transitory spells or be persistent. This project contributes to the literature by investigating long-term relationships between household food insecurity and early childhood development in lower primary school.

## Context of the Evaluation

In Ghana, as many as 1.2 million people are food insecure, and an additional two million people are considered extremely vulnerable to food insecurity.<sup>1</sup> Furthermore, one-quarter of children under-five are chronically malnourished.<sup>2</sup> With regards to child development, recent estimates suggest that one-third of three- and four-year-old children in Ghana do not meet basic developmental milestones, including following directions, working independently, avoiding distraction, getting along with others, and avoiding aggression.<sup>3</sup> Yet, little research has examined how indicators of socioeconomic status and food insecurity are associated with these outcomes.

## Details of the Intervention

*[Note: This study is not a randomized controlled trial.]*

Researchers used longitudinal data on preschool-aged children and their households in Ghana to investigate how being in a food insecure household was associated with early childhood development outcomes across three years. Data from this study came from the Quality Preschool for Ghana project, an impact evaluation of a teacher in-service training and parental awareness program in six districts in the Greater Accra Region. The data used for this study were collected at three time points: September 2015, May 2017, and May 2018.

Child development was measured across literacy, numeracy, social-emotional, short-term memory, and self-regulation domains using the Early Grade Reading Assessment (EGRA) and the International Development and Early Learning Assessment (IDELA). Children's caregivers were also surveyed to measure household food insecurity using the Household Hunger Scale (HHS).

## Results and Policy Lessons

Overall, children that experienced spells of household food insecurity, had, on average, lower literacy, numeracy, and short-term memory.

Approximately 84 percent of children were never food insecure at home, while 13 percent of children experienced transitory spells of food insecurity (once during the three waves) and 3 percent of children experienced persistent food insecurity (two or three times during the three waves).

Both transitory and persistent food insecurity had negative impacts on early childhood development. Transitory spells of food insecurity resulted in decreased numeracy, short-term memory, and self-regulation. Children residing in persistently food insecure households, meanwhile, had lower literacy scores.

This evidence shows that even transitory spells of food insecurity can have longer-term negative implications on child development and highlights the need for multi-sectoral approaches including social protection and nutrition to support early child development.

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