



**WFP EVALUATION**



**World Food  
Programme**

**SAVING  
LIVES  
CHANGING  
LIVES**

# **School feeding programmes in low- and lower-middle-income countries**

A focused review of recent evidence from impact  
evaluations

**April 2021**

# Acknowledgements

This review was conducted by Adetoun Dapo-Famodu during the summer 2020, while working on a summer capstone experience at the World Food Programme's Office of Evaluation (OEV). Direct technical guidance and quality assurance support was provided by Simone Lombardini and Jonas Heirman. Overall professional and strategic oversight provided by Michael Carbon and Andrea Cook. We wish to acknowledge the efforts of Silvio Galeano and OEV's Comms Unit in providing copy-editing support.

Special thanks to the WFP School-based Programmes Division (SBP), especially Edward Lloyd-Evans and Nail Lazrak from the Research and Policy team and Niamh O'Grady, Evaluation Officer for their roles in providing information and technical documentation on school feeding programmes' design, implementation and evaluation within WFP and globally.

We are very grateful to the DIME team at World Bank – Serge Adjnon, Chloe Fernandez, Florence Klondylis - whose critical feedback resulted in a much stronger review. We wish to specially thank Dahyeon Jeong for peer-reviewing the paper.

Finally, we acknowledge Massachusetts Institute of Technology's Department of Economics and the Abdul Latif Jameel Poverty Action Lab (J-PAL) for facilitating the placement of the main author with WFP, as part of the summer capstone experience requirement of their Data, Economics, and Development Policy master's program.

## Disclaimer

The opinions expressed are those of the evaluation team, and do not necessarily reflect those of the World Food Programme. Responsibility for the opinions expressed in this report rests solely with the authors. Publication of this document does not imply endorsement by WFP of the opinions expressed.

The designations employed and the presentation of material in the maps do not imply the expression of any opinion whatsoever on the part of WFP concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

## Photo Credits

WFP/Antoine Vallas

# Key personnel

## MAIN AUTHOR

Adetoun Dapo-Famodu

Monitoring Consultant

## OFFICE OF EVALUATION

Andrea Cook

Michael Carbon

Jonas Heirman

Simone Lombardini

Director of Evaluation

Senior Evaluation Officer

Evaluation Officer (Impact Evaluation)

Evaluation Specialist (Impact Evaluation)

## WORLD BANK – DEVELOPMENT IMPACT EVALUATION (DIME)

Dahyeon Jeong

Economist

# Contents

<b>Executive summary .....</b>	<b>i</b>
<b>1. Introduction .....</b>	<b>1</b>
1.1 Purpose of paper and methodology .....	1
1.2 Literature search methods and eligibility criteria .....	1
<b>2. School feeding – a brief history .....</b>	<b>4</b>
2.1 Theory of change .....	5
<b>3. Measuring the impact of school feeding programmes.....</b>	<b>7</b>
3.1 School feeding modalities .....	7
3.2 Study population and duration .....	7
3.3 Outcomes and impact measures .....	7
3.4 Measurement .....	8
<b>4. Evidence for the impact of school feeding in critical areas.....</b>	<b>10</b>
4.1 Education .....	10
4.2 Health and nutrition.....	12
4.3 Household economy and social protection .....	15
4.4 Agriculture and local economy .....	15
4.5 Gender and other socially vulnerable groups .....	16
4.6 Cost, cost-benefit and cost-effectiveness analysis .....	16
4.7 School feeding in emergencies .....	16
<b>5. Conclusions and recommendations for future research and programme design .....</b>	<b>18</b>
<b>Appendices.....</b>	<b>20</b>
5.1 Appendix A: List of databases searched .....	20
5.2 Appendix B: Summary of school feeding intervention modalities evaluated in included studies .....	22
5.3 Appendix C: Outcome areas and impact measures reported by included studies .....	25
5.4 Appendix D: Tables of effect sizes and significance levels .....	27
5.5 Appendix E: Annotated bibliography of included studies .....	36
<b>References.....</b>	<b>44</b>

# Executive summary

1. Human capital is considered the most important component of a country's wealth. Although human capital development continues over a lifetime, the most important phase is the first 8,000 days of a person's life, when the critical aspects of physical, cognitive and socio-emotional development occur. Well-designed school feeding interventions can potentially have multiple benefits for schoolchildren, their families and their communities, and contribute to achieving eight Sustainable Development Goals, especially in developing economies.
2. With the primary purpose of providing an evidence base for the impact evaluation initiatives of the World Food Programme's school feeding programmes, this review explores recent research on school feeding interventions. It synthesizes the evidence from 20 publications on school feeding, including 12 randomized experiments and quasi-experiments, conducted in low- and lower-middle-income countries, published in the past ten years. This review presents a broad summary of the evidence, describing the school feeding modalities evaluated, the outcome measures used in the studies and the reported impact in the key outcome areas.
3. The studies that evaluated the impact of school feeding between 2009 and 2019 in low- and lower-middle income countries were significantly different in terms of context, design – including duration and implementation modalities, and even outcome measures assessed. In the reviewed literature, the most researched areas were the impact of school feeding on health and nutrition outcomes, followed by the impact on education outcomes. Not much research was conducted on economic and social outcomes. Enrolment and absenteeism were the most reported impact measures for education; haemoglobin concentration, anaemia prevalence and anthropometry measures were the most reported for health and nutrition. Aside from child labour, the indicators reported for household economy and social protection varied widely among studies, and most studies used education or health and nutrition indicators as proxies.
4. A qualitative assessment of the included publications showed a relatively consistent positive impact of school feeding interventions on school enrolment, learning outcomes and micronutrient status of participating children. However, it was equivocal on the effect on school attendance, physical growth and body composition, the prevalence of malnutrition, and measures of household and local economy and social protection. Interestingly, the interventions appear to clearly benefit socially disadvantaged children and seem to deliver better results when bundled with other school-based interventions, such as deworming.
5. This review suggests possible research questions focused on the design and implementation of school feeding impact evaluation. Suggested research questions include exploring the potential complementarities between school feeding programmes and other interventions such as deworming; investigating the effect of school feeding interventions on social inequalities; comprehensive cost-effectiveness and cost-benefit analysis; and examining the impact of school feeding interventions in humanitarian settings.



# 1. Introduction

1. A strong positive and cyclical relationship undoubtedly exists between countries' economic development and their human capital.<sup>1</sup> Measured as the value of earnings over an individual's lifetime, human capital is considered the most important component of a country's wealth (Lange *et al.* 2018). Improving people's health, knowledge, resilience and skills – human capital – can make people more productive, innovative and flexible (World Bank 2018). Although the development of human capital can take place over a lifetime, the foundations are created in childhood and adolescence, specifically the first 8,000 days of life when most of the physical, cognitive and socio-emotional growth and development occurs (Bundy *et al.* 2018). Therefore, it is essential for any country that intends to cultivate an optimally productive future workforce, with higher-order cognitive and socio-behavioural skills, to invest in the health, education and development of children and adolescents (World Bank 2019). With the potential capacity to have multiple benefits for schoolchildren, their families and local economies, investments in well-designed school feeding programmes (SFPs)<sup>2</sup> can yield excellent returns in human capital development, especially in low- and middle-income countries (LMICs) (Bundy *et al.* 2018).

## 1.1 PURPOSE OF PAPER AND METHODOLOGY

2. In 2019, the World Food Programme (WFP), through its Office of Evaluation (OEV), launched a new WFP Impact Evaluation Strategy to guide the organization in the generation and use of evidence from rigorous impact evaluations for learning, accountability and policymaking (WFP Office of Evaluation 2020a). As part of the strategy, OEV is trying out impact evaluation “windows”, which are OEV-led initiatives to coordinate a portfolio of rigorously designed impact evaluations on WFP programmes in priority areas. Each window is guided by a window-level evidence review followed by the development of a concept note and a pre-analysis plan. As at the time of this review, WFP had launched two windows, and the plan is for the next window to focus on school-based programming, including school feeding (WFP Office of Evaluation 2019). To this end, the purpose of this document is to present a targeted review of the rigorous evidence on school feeding interventions in the past decade (2009–2019) in low- and lower-middle income countries.

3. This review is not intended to be an in-depth systematic review or meta-analysis. Instead, it is meant to provide a broad summary of the available recent evidence from rigorous experimental or quasi-experimental research on SFPs, including the modalities evaluated, the outcome measures used and the reported impact in key areas. The paper is organized into five sections. The introduction provides a summary of the review's objectives and methodology, and there is a brief overview of the background to SFPs, including a broad outline of the theory of change in the second section. The third section explores the school feeding modalities evaluated in recent research and the outcome measures used. The fourth section presents a review of the evidence of the impact of SFPs across different development areas, including gender and costs analysis, while the fifth section concludes and identifies potential areas for future SFP research.

## 1.2 LITERATURE SEARCH METHODS AND ELIGIBILITY CRITERIA

4. The review process started with an extensive literature search across 16 electronic publication databases and trial registries, including PubMed, ClinicalTrials.gov, EconPapers and the Cochrane Library. Although not a systematic review, the search strategy and the quality criteria for inclusion of publications in this targeted review were guided by the *Cochrane Handbook of Systematic Reviews of Interventions* and the Cochrane Effective Practice and Organisation of Care (EPOC) resources for review authors (EPOC n.d.; Higgins *et al.* 2019). The search was conducted from June to July 2020, and the search terms used in the databases were “school feeding” and “school meal(s)”. Where available, in-built search filters in the database were used to further limit the search results to potentially relevant articles. The full list of the databases searched, including weblinks and the search limits, is contained in Appendix A.

5. The titles and abstracts of the publications in the returned search results were screened to identify potentially relevant articles. Then, an in-depth review of the full text of the potentially relevant articles was conducted, and studies that met the eligibility criteria were included in the review. A manual search was conducted through the references lists of pertinent publications, to identify additional eligible studies. The literature search was limited to

---

<sup>1</sup> According to the World Bank, human capital consists of “the knowledge, skills, and health that people accumulate over their lives, enabling them to realize their potential as productive members of society. It has large payoffs for individuals, societies, and countries” (World Bank 2018a: 14).

<sup>2</sup> Defined as the provision of meals, snacks or take-home incentives through schools, conditional on the enrolment or attendance of children in school.

peer-reviewed journals or working papers published in English within the past ten completed years (2009–2019), whose full text is freely accessible online or via regular institutional electronic library access.<sup>3</sup> Eligible studies must have been conducted in a country classified by the World Bank to be at a low- or lower-middle-income level when the study was implemented.<sup>4</sup> Potentially relevant publications were restricted to articles that reported quantitative evidence from the impact evaluations of school feeding interventions; those that used mixed methods – i.e. both quantitative and qualitative designs – were also considered for inclusion. In addition, comprehensive systematic reviews and meta-analysis of studies that explored the impact of school feeding programmes, or provision of fortified or unfortified supplementary meals, snacks or rations to school-age children or adolescents through schools, were included in this review. Figure 1 provides an overview of the screening and study selection process.<sup>5,6</sup>

6. Eligible study designs were rigorous experimental or quasi-experimental designs that captured the causal effect of school feeding interventions. Specifically, the study designs considered for inclusion in this review were studies that randomly assigned individuals or clusters into clearly stated intervention(s) and comparison groups, ex-ante (randomized controlled trials (RCTs)) or well-designed studies that used exogenous variations in treatment allocation or appropriate statistical methods to construct credible counterfactuals (quasi-experimental). Difference-in-differences, multivariate regression analysis, instrumental variables, statistical matching, regression discontinuity design and interrupted time series were the common quasi-experimental designs considered for inclusion. Quasi-experimental studies that used pre-post or simple difference methods were excluded. Also, included studies must have clearly stated empirical strategies, conduct baseline balance check on observables and use appropriate methods to control for imbalance or confounders (as necessary).

7. Included studies must experimentally compare the provision of school feeding (either as fortified or unfortified onsite provided school meals, snacks or dry take-home rations (THR)) to non-provision of school feeding or provision of other school health and nutrition or social assistance interventions. Efficacy, or clinical biology studies of specially designed meals (e.g., peanut paste), established food groups (e.g., milk, meat and egg) or local food items (e.g., guava, crickets) were excluded. Eligible studies must have investigated the effect of SFPs on at least one outcome measure at the child, household or population level in the areas of education, health and nutrition, household economy and social protection, and agriculture and local economy. Included studies must provide at least a basic description of the data collection and estimation methods used for the quantitative metric and report the estimated effect size with the associated statistical significance level to allow for informed comparison of effect sizes.

8. Broadly in line with the “PICOS” elements of the Cochrane EPOC review guidelines (EPOC n.d.), in summary, the inclusion criteria are:

- **Population** – School-age children and adolescents in primary or secondary schools in low- and lower-middle income countries
- **Intervention** – Provision of fortified or unfortified school meals, snacks or THR using the school system
- **Comparator/Comparison** – No school feeding, different school feeding modality, different school health and nutrition intervention, or other social assistance interventions
- **Outcome** – Child, household or community-level outcome in at least one of the focus areas
- **Study design** – Rigorous quantitative experimental and quasi-experimental studies
- **Other** – Published between 2009 and 2019 inclusive, in English and readily accessible electronically.

---

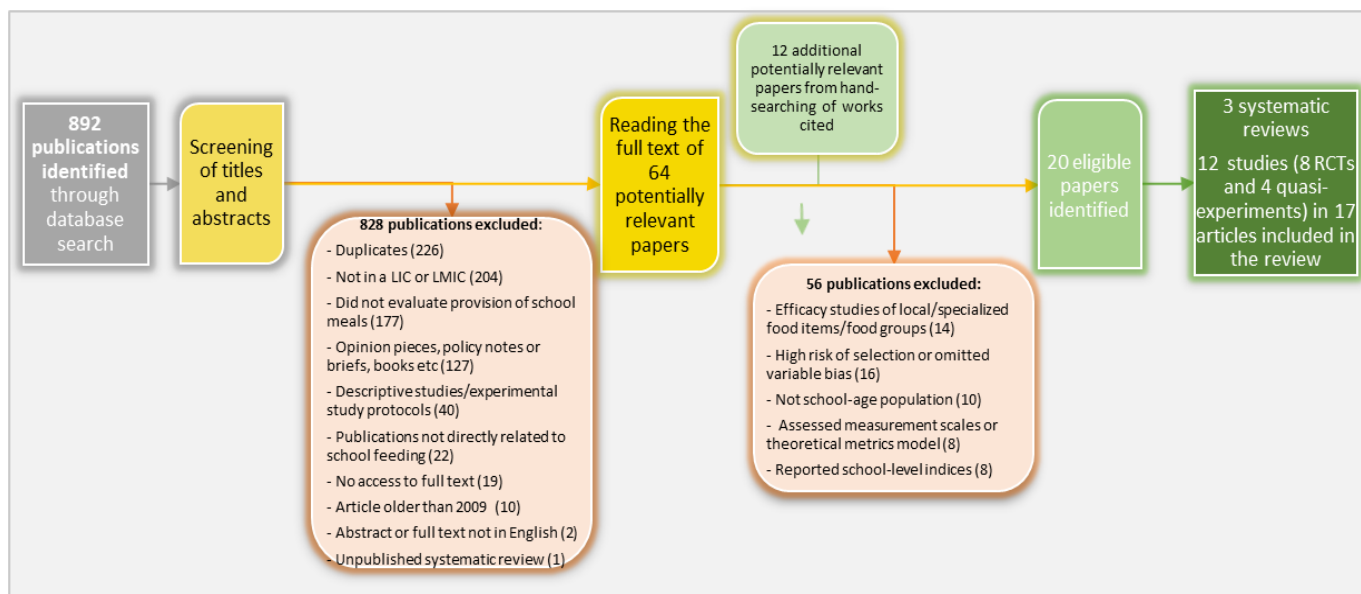
<sup>3</sup> Relevant full-text publications that required the use of inter-library lending services were excluded because of library closures resulting from COVID-19.

<sup>4</sup> Using the historical classification by income-level data from the World Bank (n.d.).

<sup>5</sup> Although articles might fail to meet more than one of the inclusion criteria, they are classified as excluded under the most basic criteria not met.

<sup>6</sup> The number of articles was more than that of studies because results from four of the included studies were published in more than one paper.

Figure 1: Chart of the screening process for eligible publications



预览已结束，完整报告链接和二维码如下：

[https://www.yunbaogao.cn/report/index/report?reportId=5\\_1819](https://www.yunbaogao.cn/report/index/report?reportId=5_1819)

