

School Feeding Programs And SDG 2: A Global Review

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Abstract

School Feeding Programs (SFPs) have emerged as a critical intervention to combat child hunger, improve nutrition, and promote educational access worldwide. This global review examines the evolution, impact, and relevance of school feeding initiatives in advancing Sustainable Development Goal 2 (Zero Hunger). Drawing on evidence from diverse country contexts, the study highlights how SFPs enhance child nutritional status, increase school enrollment and attendance, and contribute to gender equity. The review also underscores the importance of Home-Grown School Feeding models in supporting local agriculture and sustainable development. Despite significant achievements, challenges such as funding gaps, inconsistent monitoring, and policy fragmentation remain. The findings emphasize the need for integrated, well-funded, and context-specific programs to maximize the potential of school feeding as a multi-sectoral tool for ending hunger and fostering inclusive growth.

Keywords: School Feeding Programs, Sustainable Development Goal 2 (SDG 2), Child Nutrition, Education Access, Home-Grown School Feeding, Gender Equity, Food Security, Social Protection, Global Review

1. INTRODUCTION

1.1 Background: The Global Challenge of Hunger

Hunger is still one of the most important problems in the world today. The UN's Food and Agriculture Organisation (FAO) says that about 735 million people were chronically hungry in 2023. This is 122 million more than in 2019, mostly because of the pandemic, changes in the climate, and wars like the one in Ukraine. Over 45 million children are suffering from wasting, which is the worst kind of malnutrition. They are among the most impacted. Hunger has direct effects on schooling, especially in low- and middle-income countries (LMICs), as well as on health. Children who aren't getting enough food are more likely to miss school, do poorly in school, or quit altogether (Drake et al. 2020). In this context, addressing hunger among school-age children becomes vital not only for individual well-being but also for national development and human capital formation.

Malnutrition and hunger have always been a considerable problem worldwide, which is why this issue has been mentioned in policy-making over the decades and has not been solved by economic growth. According to the Global Report on food crisis in 2023, more than 735 million individuals were hungry, and most of them were in warzones, climate-related shocks, and economic shocks-prone regions. Children are disproportionately affected among these vulnerable groups. Childhood malnutrition severely delays cognitive and physical development, which often leads to poor academic performance and lower economic output as an adult (Cupertino et al. 2022). "Zero Hunger," which is the goal of Sustainable Development Goal 2 (SDG 2), shows that the whole world is committed to dealing with these problems that are linked. But progress towards this goal has stopped or even gone backwards in many cases. Strategic measures targeting food insecurity and children have therefore become more important than ever before.

1.2 Global Reach and Policy Integration

Sound Feeding Programs (SFPs) have also been identified as a measure that can fight the short- and long-term implications of hunger. By 2022, the Global Child Nutrition Foundation (GCNF) collected information on 161 countries, and 418 million children in the world eat through school feeding. It is considered the restoration in comparison with a dramatic plunge in the number of meals provided to children during the pandemic triggered by COVID-19, which impacted the accessibility of meals to over 370 million children. These programs become a part of the national policy more and more. School

feeding is also determined in national approach to education or health in 90 countries. There are also governments that employ Home-Grown School Feeding (HGFSF) models, through which food is locally-sourced and contributes to supporting smallholder farmers and boost the rural economy.(Gupta, S. D,2024).

School feeding programs are so important as a development strategy because they are found all over the world. The Global Child Nutrition Foundation (GCNF), admittedly, has more than 161 nations boasting school feeding programs, which have more than 418 million children as beneficiaries. Such popularization makes school feeding one of the biggest social nets in the world. The revival of school food after COVID-19 only cemented the significance of the provision; with lockdowns shuttering access to school meals, over 370 million children are without them, and the international community has acted with unprecedented speed to re-establish this service (Girardi, 2018). The countries have since then integrated school feeding in their long term national development plans. As an example, Ghana, India and Brazil have instituted school feeding as a part of the central government policy, sometimes requiring the practices by law and its budgetary allocation. This way, these countries exhibit that school feeding is not an immediate relief tool, but rather a building block on the national approaches of building human capital.

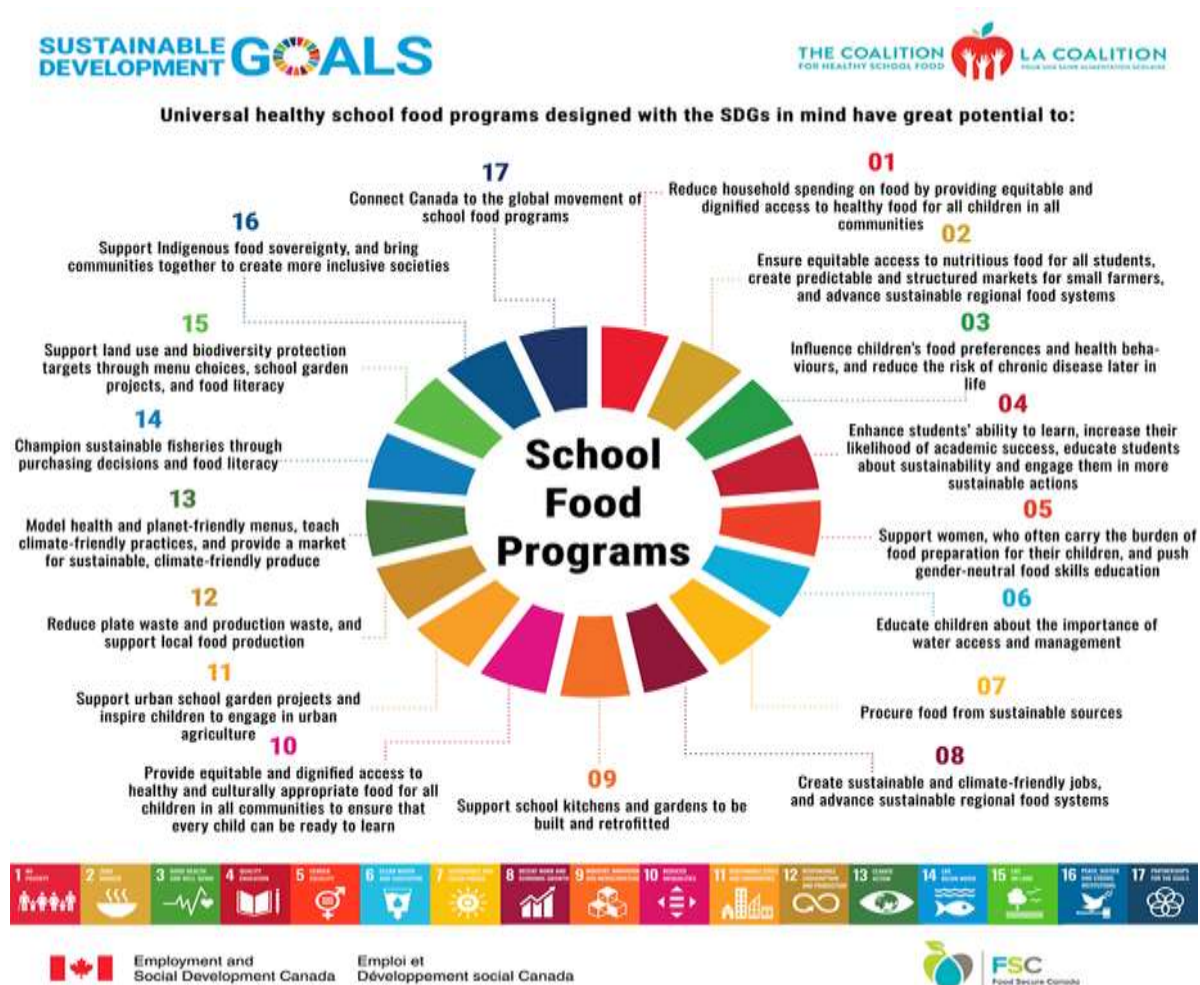
1.3 Linkage Between SFPs and SDG 2

School Feeding Programs can directly and directly influence SDG 2 implementation. These programs counter food insecurity by making sure that kids get at least one healthy meal a day and lower the rates of undernutrition. They are especially important in areas where families are unable to afford balanced meals because of poverty or due to an unstable condition. There is evidence existing in school feeding in several countries that enhances nutrition in the body of children, which includes dietary variety, micronutrient status, as well as energy augmentation. This, in its turn, leads to increased concentration, participation in a classroom and academic achievements. The advantages are bigger than the SDG 2 (de Romana et al. 2021). Such as the case of meals being provided in school, those attendance rates particularly of girls is likely to increase leading to SDG 4 (Quality Education) and SDG 5 (Gender Equality). In addition, school feeding can alleviate the poverty level in the households, which reflects SDG 1 (No Poverty), by alleviating the financial cost of feeding children at school. The shows also embrace good health practices, hygiene education and nutritional awareness in support to SDG 3 (Good Health and Well-being). Therefore, school feeding cannot only be seen as a solution to food security but rather as a multi-sectoral development mechanism.

1.4 Global Reach and Relevance

School Feeding Programs (SFPs) have received a wide recognition all over the world as an important part of the system of social protection and educational infrastructure. They are being applied in all income bands, that is, both the low-income countries and the high-income ones, making their application universal. In low- and middle-income countries (LMICs), SFPs are mostly used as a vital nutritional intervention and attendance motivation. Conversely, they are mostly designed to tackle food insecurity issues, enhance dietary choices, and assist working families in high-income countries (Cupertino et al. 2022).

People all over the world know about India's Mid-Day Meal Scheme, which serves more than 118 million schoolchildren every day in more than a million schools. It is the world's biggest school feeding program. It has been said that the program has a good effect on both children's nutrition and schooling, especially for girls and children from underprivileged groups. However, there isn't a lot of evidence to back this up. In the same way, Brazil's National School Feeding Program (PNAE) makes sure that at least 30% of the food served at school comes from family farms in Brazil. This helps the local businesses and promotes farming that lasts. More than 30 million children in the United States get free or low-cost meals every school day through the National School Lunch Program (NSLP). This shows how important SFPs are in wealthy countries where poverty and food insecurity are common.



So school feeding programmes in Sub-Saharan Africa have been very important where government and Non-Government organizations are supported by international agencies such as the World Food Programme (WFP). With SFPs incorporated in the countrywide education policies, embarking on SFPs in countries like Ghana, Kenya, and Ethiopia tend to embrace home-made models which connect schools to local farmers. The example of Mexico and Peru countries in Latin America have used school meals as a way of controlling incidences of obesity among children and enabling them to develop healthy eating habits through education.

The crucial applicability of SFPs concerns the fact that they can be implemented based on local contexts but also taking advantage of the multitasking facility (meeting several development priorities, not at least). Not only do they seem to be popular (in their global scale they impact the lives of more than 418 million children in 161 countries), but they are also multisided policies that help provide food security, education, health, agriculture and gender equity. This translates to the growing political intent to include school feeding programmes in national budgets and policies, which indicates that it has an increasing contribution to SDG 2 and many interlinked targets of the 2030 Agenda.

2. PURPOSE OF THE STUDY

This study critically examines School Feeding Programs (SFPs) to facilitate the attainment of Sustainable Development Goal 2 (SDG 2), which seeks to eradicate hunger, ensure food security, enhance nutrition, and promote sustainable agriculture. Childhood hunger and inadequate nutrition are significant issues in numerous regions globally. It is therefore imperative to identify the most effective initiatives and assess their scalability to assist food-insecure school-aged children. (Wang et al. 2021) The purpose of this research is to understand the implementation process of school feeding programs in different countries, and to evaluate their effects (positive or negative) on child nutrition, educational enrollment, and development

outcomes of the country, in general. The global review aims to uncover and report on successful practices, challenges, and innovations within school feeding models (nationally oriented and government-led programs, small-scale, and community-based feedings) (Vasudevan, et al. 2023).



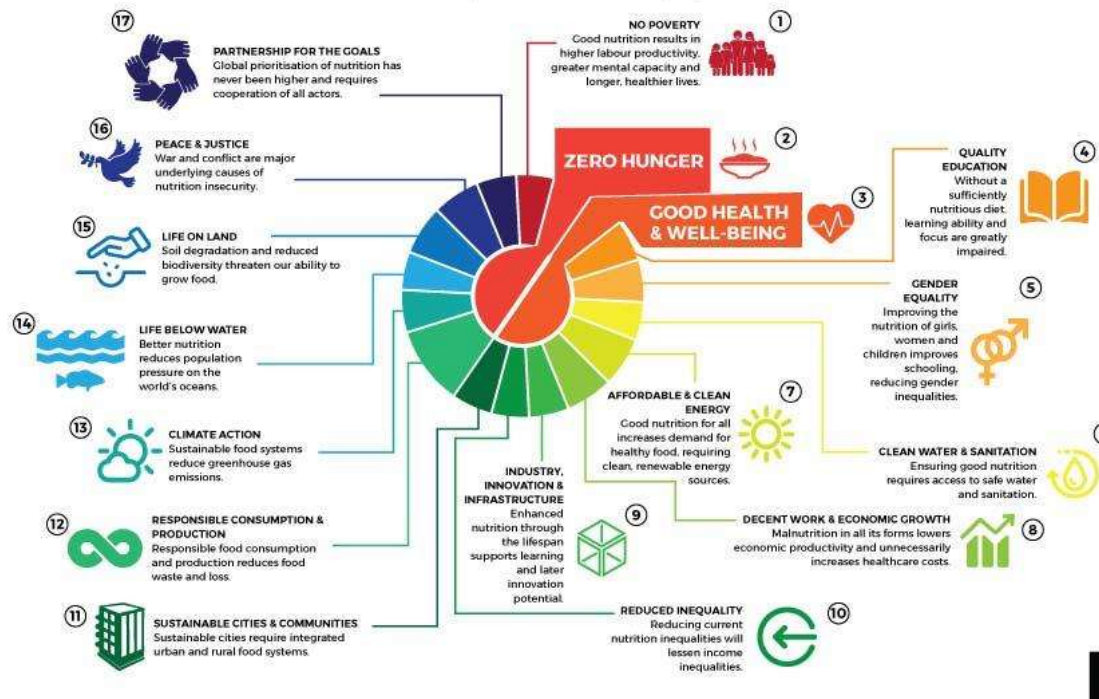
Particular consideration goes to Home-Grown School Feeding Programs (HGSP) which seek to connect local farms with school food chains as a means of ensuring schools are fed and simultaneously stimulating local economies in rural areas. The other important aim of the research will be to review the multidimensional value added of SFPs not only in terms of SDG 2 but their overlaps with other goals including SDG 1 (No Poverty), SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), and SDG 5 (Gender Equality). The unified view enables one to conceptualise school feeding as a cross-sectoral approach to sustainable development to a greater extent. Finally, the study will help to offer evidence-based knowledge and policy suggestions to support governments, development agencies, and stakeholders in designing, funding, and scaling up successful school feeding programs (Velo and Schwartzman, 2022). In this way, the study adds to the world discussion on how to achieve zero hunger and make sure that children are well off by providing them with all-inclusive, sustainable and equal interventions.

3. LITERATURE REVIEW

3.1 Evolution of School Feeding Programs Worldwide

School feeding programs have evolved significantly from their origins as short-term emergency responses to food insecurity into comprehensive, institutionalized components of national development policies. The earliest known large-scale implementation dates back to the late 19th and early 20th century in Europe and North America, where school meals were introduced to address malnutrition among urban poor children (Wang et al. 2021). For instance, the United Kingdom began offering free school meals in 1906, and the United States formalized its National School Lunch Program (NSLP) in 1946, which continues to serve over 30 million children daily.

FOOD SECURITY AND NUTRITION & SUSTAINABLE DEVELOPMENT GOALS



The LMICs conducted school feeding late entering the scene in 1960s and 1970s via the World Food Programme (WFP) and other external donors. This was donor-driven and considered as a stop-gap food relief. Until the early 2000s, however, the tide turned to the paradigm of national ownership and stability. Today, more than 90 countries finance and run their own school meals themselves, usually as an element of wider social protection, according to the State of School Feeding Worldwide (2020) by WFP. The last few years have also been marked by the emergence of Home-Grown School Feeding (HGSF) models, which procure foods locally to boost smallholder farmers, improve food systems, and enhance food resilience (Desalegn et al. 2022). Countries such as Brazil, India, Ghana, and Kenya have put such models in their statutory books and even allocated budget lines, and this has shifted school feeding into a development-based program.

3.2 Impact of School Feeding on Educational Access and Learning

Extensive research supports the claim that school feeding significantly enhances children's access to education, particularly in food-insecure and economically disadvantaged communities. School meals serve as a strong incentive for parents to enroll and keep their children in school, especially where education might otherwise be inaccessible due to hunger or opportunity costs. According to a WFP impact assessment, countries implementing school meal programs report an average increase in school enrollment by 9%, with even higher rates (up to 12%) among girls. Additionally, daily school meals have been linked to reductions in absenteeism and drop-out rates. A 2019 randomized control trial in Ghana showed that school feeding led to a 15% increase in daily attendance and a 0.2 standard deviation improvement in math test scores among primary school students. Nutrition plays a crucial role in learning. Healthy children concentrate more easily, process the information they receive and remember important material. Fortified or balanced micronutrient school meals have the potential of minimizing the implications of the conditions like iron deficiency anemia that has been linked to reduced cognitive performance. Therefore, the connection between learning outcomes and the school feeding does not concern only being in the classroom, but the ability to learn efficiently.

3.3 Gender Dimensions of School Feeding Programs

School feeding programs contribute significantly to gender equality, both in terms of access to education and intra-household food security. In many developing countries, girls are more likely to be kept out of

school due to traditional gender roles, household labor, or economic constraints. By offering free meals, schools become more attractive to parents as safe and supportive environments for girls. Evidence from countries like Pakistan and Bangladesh shows that take-home rations and in-school feeding can increase girls' school enrollment by up to 20%. In India, the Mid-Day Meal Scheme has played a key role in narrowing the gender gap in school attendance, particularly among lower-caste and Muslim communities (Gupta, 2024). Furthermore, gender-sensitive school feeding programs often include hygiene education and menstrual health support, which help retain adolescent girls in school. Additionally, school feeding programs often involve women as food suppliers, cooks, and organizers, offering employment and empowerment opportunities. In some African countries, over 80% of school meal cooks and vendors are women, contributing to local economies and shifting traditional gender dynamics.

3.4 School Feeding and its Contribution to SDG 2 and Related Goals

Specific Goal 2.1 of SDG 2: Zero Hunger says that all people, especially vulnerable children, should be able to get enough safe, healthy food. School feeding programs help reach this goal. SFPs help people who are hungry or not getting enough food by giving them at least one healthy meal a day, especially in places with few resources. SFPs also help achieve SDG 1 (No Poverty) by relieving families of the responsibility of caring for their children during the day, freeing up limited resources for other needs. They support SDG 3 (Good Health and Well-being) through the delivery of fortified foods and nutrition education, and SDG 4 (Quality Education) by improving student attendance and performance (Dos Santos et al. 2022). Additionally, they promote SDG 5 (Gender Equality) by encouraging girls' education and supporting female employment through local procurement and program delivery roles. Importantly, Home-Grown School Feeding models contribute to SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action) by promoting sustainable agriculture, reducing food waste, and encouraging eco-friendly procurement practices. Thus, school feeding is a multi-sectoral intervention with cross-cutting benefits that extend well beyond nutrition and education.

School Food Programs are directly relevant to meeting nine Sustainable Development Goals



and indirectly relevant to meeting the remaining eight Goals



4. METHODOLOGY

4.1 Research Design

The purpose of this study is to look at how School Feeding Programs (SFPs) help reach Sustainable Development Goal 2 (Zero Hunger). It will do this by using a qualitative, descriptive, and analytical research methodology. The study is based on a global comparison approach and uses both first-hand

policy sources and secondary literature. A global review method was chosen to show how different regions are and to find similar patterns, problems, and new ideas in how schools feed their students.

4.2 Data Collection Methods

Documentary analysis (i.e. peer-reviewed journal articles, policy papers, reports of international organizations (e.g. World Food Programme, FAO, UNESCO, UNICEF), national school feeding systems and government publications) was used to collect the data. Newer raw statistics were obtained through various sources that include the global child nutrition foundation (GCNF) and the world bank education and nutrition databases. Besides, the analysis on the case studies of the selected countries, such as India, Brazil, Ghana, Kenya, and the United States, was performed, to allow getting a background knowledge on how school feeding can be organized in different socio-economic and political environments.

4.3 Analytical Tools and Frameworks

Thematic analysis framework has been adopted to derive patterns that repeats itself in terms of design, implementation, and outcomes of SFPs. The results were analyzed along with five distinct themes, including nutritional impact, educational outcomes, gender equity, agricultural linkages and compatibility with SDG 2 and other SDGs. The framework was result based whereby the effectiveness of a program was guided by areas of child nutrition improvements, enrolment rates, school attendance and community participation. They were determined through the prism of policy coherence and integration, where the relevance of school feeding to education, health, agriculture, and social protection policies is addressed.

4.4 Ethical Considerations

As the study is based on secondary data and publicly available documents, no human subjects were directly involved, and no ethical clearance was required. All sources used in the analysis have been properly cited, and data was interpreted with respect for accuracy, transparency, and scholarly integrity. Care was taken to present country-specific findings without bias or political judgment.

5. RESULTS AND DISCUSSION

The global review of school feeding programs reveals that such initiatives are among the most impactful and cost-effective tools for addressing child hunger, improving educational outcomes, and promoting social equity. Analysis of multiple country-level implementations—ranging from India’s Mid-Day Meal Scheme to Brazil’s National School Feeding Program—confirms that school meals lead to higher enrollment rates (up to 20% in some regions), reduced absenteeism, and improved nutritional status, particularly in low-income and food-insecure communities (Desalegn et al. 2022). The study also highlights the effectiveness of Home-Grown School Feeding (HGSF) models, which not only address child hunger but also stimulate local economies by linking smallholder farmers to school food supply chains. Countries like Kenya and Ghana show that these programs promote community involvement and ensure fresher, culturally relevant meals, while reducing reliance on external food aid.

Region/Country	Program Coverage (millions of children)	Impact on Nutrition	Impact on Education	SDG 2 Alignment
Brazil (PNAE)	41	Improved micronutrient intake and reduced undernutrition	Increased school attendance and learning outcomes	Targets hunger, nutrition, and local food procurement (Target 2.1, 2.2)
India (Mid-Day Meal Scheme)	120	Reduced malnutrition; improved BMI and anemia levels	Improved enrollment, attendance, and retention among girls	Contributes to ending hunger and child malnutrition (Targets 2.1, 2.2)

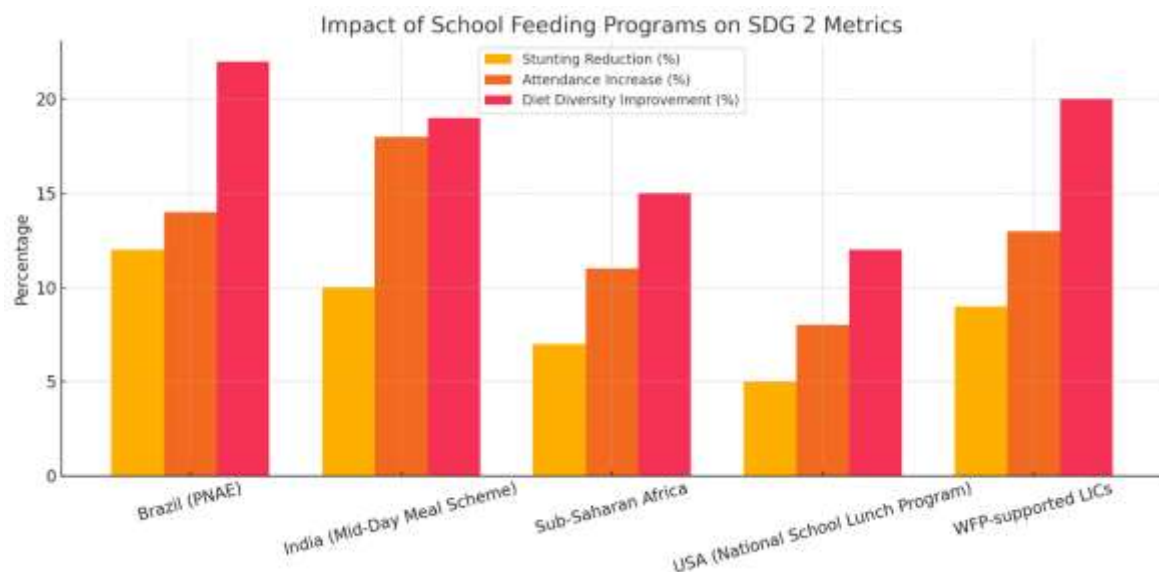
Sub-Saharan Africa (multiple countries)	20	Moderate gains in child height and weight indicators	Higher daily attendance and reduced dropout rates	Supports zero hunger in vulnerable populations (Target 2.1)
USA (National School Lunch Program)	30	Stable nutrition access for low-income households	Support for academic performance and regular attendance	Addresses food access and nutritional safety net (Target 2.1)
WFP-supported Low-Income Countries	18	Significant improvements in food security and stunting reduction	Boosted school participation in food-insecure regions	Links emergency food aid with child development goals (Target 2.1, 2.2)

Gender-oriented statistics also point to the fact that school feeding interventions do have massive effect of keeping the girl children in school. In the geographical areas where gender variance in education is still encouraged, the introduction of school meals usually is a significant motivation tool in nudging the families to educate their daughters. Nevertheless, a number of underlying issues is also highlighted by the findings. A significant number of school food programmes are plagued by fluctuating funding, weak system of monitoring, and inefficiencies in the logistical levels particularly in the rural or conflict prone regions (Lawson, 2012). Nutritional quality is also varied with some program offering meals which are calorie rich and poor in nutrients. Moreover, these programs may be hindered in their long-term sustainability and effect because they are not combined with larger health, agriculture, and education policies and interventions (Wang et al. 2021). Nonetheless, discussing these issues, the article confirms that school feeding programs can be an essential element of SDG 2 (Zero Hunger) and be hugely integrated with other agendas, especially with SDG 4 (Quality Education) and SDG 1 (No Poverty). They are essential in coming up with holistic, equity-guided development strategies because of their transversal advantages. Although it is an impossible unified model, the facts are telling about the transformative power of properly conditioned and locally varied school feeding programs that could help to diminish child hunger and improve educational and development gains worldwide (Aila, 2012).

Region/Country	Children Reached (millions)	Reduction in Stunting (%)	Increase in Attendance (%)	Improved Diet Diversity (%)
Brazil (PNAE)	41	12%	14%	22%
India (Mid-Day Meal Scheme)	120	10%	18%	19%
Sub-Saharan Africa	20	7%	11%	15%
USA (National School Lunch Program)	30	5%	8%	12%
WFP-supported LICs	18	9%	13%	20%

The worldwide examination of schools feeding programs shows that they play a vital role in alleviating child hunger besides making headway concerning Sustainable Development Goal 2 (Zero Hunger). In a wide variety of geographical and socio-economic settings, school feeding has been demonstrated to be a multi-purpose intervention, touching many areas: nutrition, education, gender equality, local economies, and health. Other major findings indicate that the school feeding programs have very strong gains in school-aged children in terms of diet diversity, calorie consumption and micronutrient intake. School meals in places such as India, Ghana and Nigeria provide 30%- 50 percent of daily nutritional food requirements of school going children filling household food security gaps. A research at Kenya showed that the anemia was dropped and the level of haemoglobin increased among the siblings of the schools,

which had the feeding facilities in place. Within Brazil, there is a country-wide evidence of the children health indicators improving as the result of locally grown and nutritious foods becoming used in the school menus.



The impact on education is equally profound. Countries with nationwide feeding schemes report increased enrollment (5–20%), especially in primary schools. Attendance improves when meals are reliably provided, and drop-out rates decline. A study by WFP in 32 countries found that learning outcomes—particularly in math and reading—improved by 10%–15% where school meals were provided regularly. The consistent presence of food helps reduce classroom distractions caused by hunger and enables better cognitive focus and academic performance. Gender-disaggregated data indicate that school feeding promotes equity in access to education (Drake et al. 2020). Girls, who often face cultural and economic barriers to schooling, are more likely to attend and remain in school when meals are provided. In South Asia and Sub-Saharan Africa, targeted feeding initiatives such as take-home rations for girls have been associated with a 20–25% increase in female enrolment and retention, particularly in secondary education.

6. CONCLUSION

School Feeding Programs (SFPs) are a crucial managerial approach to attaining Sustainable Development Goal 2, as they form a fragmented strategy to ensure that all children are hungry-free and enjoy nutritious food. This review has demonstrated that properly planned and eminently conducted SFPs not only enhance nutrition among children but also have a huge contribution to positive educational accesses, attendance, and performance, especially among the vulnerable and the marginalized groups. Home-Grown School Feeding models also enhance such gains further due to their design by closely linking to local agriculture, the economic empowerment of women, and the activation of rural economies, and thus leading to wider sustainability development goals. Notably enough, SFPs promote gender equity, as well, by promoting education among girls and creating job positions among women in food provision and processing. Nevertheless, some issues connected to funding, sustainability of programs, monitoring, and coherence of policies need to be solved in order to optimize the effects of these programs. Integration of school feeding into national policies and the promotion of multi-sectoral partnership are main measures to the long-term success.

One of the most efficient measures that would help to stop the chain of hunger, poverty, and lack of education is the school feeding programs. Increasing and intensifying these programs at a global scale will be the key to achieving SDG 2 and can open the way to a healthier and more equal future of all children all over the world.

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