Research and Learning of the McGovern-Dole School Meals Program in Africa

Key Takeaways—Executive Summary

USDA-FAS Administered
with funding from USAID

Recipient Organization:
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Initial research study period: April 1, 2021 – September 30, 2021
Current research study period: April 1, 2021 – May 31, 2022 (No-Cost Extension period added)

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May, 2022

Acknowledgement

The "Research and Learning of the McGovern-Dole School Meals Program in Africa" report was prepared by Mississippi State University, funded by the United States Department of Agriculture (USDA) - Foreign Agricultural Service (FAS) with the support of the United States Agency for International Development Africa Bureau (USAID/AFR). Mississippi State University research effort was led by the Social Science Research Center, in collaboration with the Department of Agricultural Economics, and the Department of Food Science, Nutrition and Health Promotion. All three units are affiliated with the Mississippi State University – Mississippi Agricultural and Forestry Experiment Station (MAFES) The report includes three sections developed by corresponding MSU research teams and units. We would also like to extend a special thanks to Mr. Abiola Adeyemi, Program Point of Contact, USDA-FAS, the McGovern-Dole team, and others at USDA-FAS, and the USAID Africa Bureau team members for their support in this research efforts.

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Introduction

The benefits of School Feeding Programs

Many pre-school and school-age children living in low-income, food-insecure countries are at risk of experiencing malnutrition, poor health, and poor sanitation, all of which impact their cognitive, motor, and social-emotional development (Grantham-McGregor, 2007). Worldwide, there are 149 million children under 5 years of age experiencing stunted growth and 45 million experiencing wasting (UNICEF, WHO & WB, 2021). These overlapping conditions arise from multiple factors with poor-quality diet being the most common among them. Investments in child and maternal nutrition are critical to reducing hunger and improving food security in developing countries. International financial institutions emphasize the importance of ending malnutrition as a means to improve economic and human development outcomes as they relate to better health, education, and overall long-term human capital (Shekar et al., 2017, Horton & Steckel, 2013). Nutrition interventions targeting children also yield high returns on investments for development activities (Alderman et al., 2017; Horton and Hoddinott, 2014). Moreover, improving child nutrition can contribute to improvements in other development targets like increasing school attendance and completion, enhancing cognitive development and learning, reducing poverty among children and adults, and increasing a country's overall wealth (Shekar et al., 2017). Therefore, programs that aim to eradicate child and maternal malnutrition, including school feeding programs, are critical to improving health and education outcomes in developing countries and further increasing their human capital potential.

School feeding programs in developing countries have become a tool to complement interventions that seek to address problems of malnutrition among school-age children. In 2020, 388 million children benefitted from school feeding programs worldwide, 53 million of those in Sub-Saharan Africa (WFP, 2021). School feeding can improve educational outcomes, including but not limited to enrollment, attendance, and literacy (Verguet et al., 2020). School feeding programs are also safety net tools critical to addressing high levels of poverty and food insecurity (Bundy et al., 2009). Another contribution of these programs is the capacity to impact gender equality by creating incentives for families to encourage girls to attend school (e.g., meal provision; water, sanitation and hygiene [WASH] targeting girls). These incentives help minimize cultural barriers to female access to and retention in the educational system. At the community level, the use of the Home-Grown School Feeding (HGSF) framework (FAO & WFP, 2018) promotes the connection between the local agricultural system and school meal provision. Globally, school feeding programs can contribute to ensuring gains on sustainable development goals (SDG) #2-ending hunger, #4-equitable access to quality education, and #5-gender equality.

> In 2020, 388 million children benefitted from school feeding programs worldwide, 53 million of those in Sub-Saharan Africa.
> (WFP, 2021)

The US Government, through the McGovern-Dole Food for Education and Child Nutrition (MGD) program, has allocated resources to carry out comprehensive food for education programs in high poverty, high food-insecure countries. The goal of the program is,

> "To reduce hunger and improve literacy and primary education, especially for girls. By providing school meals, teacher training and related support, McGovern-Dole projects help boost school enrollment and academic performance. At the same time, the program also focuses on improving children's health and learning capacity before they enter school by offering nutrition programs for pregnant and nursing women, infants and pre-schoolers." (USDA-FAS, n.d).

Given the relevance of school feeding programs worldwide and the need to improve learning about the MGD program, USDA-FAS has partnered with USAID Africa Bureau to award Mississippi State University (MSU) a cooperative agreement to conduct research and learning activities from the implementation of the MGD projects in Africa, revolving around three sets of questions from the MGD Learning Agenda (USDA, 2016), as follows:

1. Partnerships: What kinds of partnerships with the private sector and/or host country governments are the most effective at ensuring program sustainability? Among successful partnerships, who are the key players, and what are their roles? In what contexts do private sector and/or government partnerships work best, and which contexts may be more challenging?

Table i.1. Summary of case selection per research question

Research Questions	Countries of Interest					
	Kenya	Rwanda	Senegal	Burkina Faso	Sierra Leone	Tanzania
Q1. Partnerships	Implementer: World Food Programme	Implementer: World Food Programme			Implementer: Catholic Relief Services	Implementer: Project Concern International now known as Global Communities
Q2. Procurement Analysis	Implementer: World Food Programme	Implementer: World Food Programme		Implementer: Catholic Relief Services		
Q3. Nutrition-Educational Outcomes			Implementer: Counterpart International			Implementer: PCI/GC Implementer: Project Concern International now known as Global Communities

2. Economic analysis of MGD programs: How do the impacts of local procurement models and other community and nationally sourced models compare with those that rely on international food sources?

3. Nutrition effects on educational outcomes: How do school meal interventions and the nutritional aspects of these meals in pre-schools and primary schools influence educational outcomes in students?

Researchers from MSU used existing performance data provided by USDA from active or recently completed MGD and Local and Regional Food Aid Procurement Program[1] (LRP) project activities in six African countries: Burkina Faso, Kenya, Rwanda, Senegal, Sierra Leone, and Tanzania to address these research gaps. MSU also established communication with MGD and LRP implementing partners in each country of interest and was able to access and further analyze more detailed monitoring and evaluation datasets. In addition, MSU incorporated primary data collection procedures by conducting semi-structured interviews that helped inform the analysis of the research questions but were specifically used to address research question #1 on partnerships.

In agreement with USDA and USAID, a sub-set of countries was selected to address each research question. Research question #1 used MGD and LRP implementation information from Kenya, Rwanda, Sierra Leone[2], and Tanzania. Research question #2 prioritized LRP implementation in Burkina Faso, Kenya, and Rwanda. MGD implementations in Senegal and Tanzania were selected to address research question #3. The table below summarizes the set of research questions and cases, as well as the name of the organization (i.e., Private Voluntary Organization (PVO); or the World Food Programme (WFP)) leading MGD and LRP implementation in each country.

1. LRP projects are complementary to MGD implementation and seek to implement field-based projects that provide development assistance and emergency relief using locally procured commodities. Starting in FY 2020, LRP components were included in the MGD awards to allow for up to 10% of MGD funds to be allocated to LRP activities.
2. At the time of analysis, Sierra Leone had not been awarded an LRP project component. But the most recent award, 2021-2025, included an LRP component.

The evolution and contributions of the MGD program to school feeding worldwide

Acknowledging the nutrition and education needs of people living in low-income and food-deficit countries and the potential impacts of investments to end malnutrition, the MGD fund has committed to promoting school feeding and child nutrition programs. The program helps support education, child development, food security, and nutrition by providing agricultural commodities from the US, locally and regionally procured commodities (nowadays known as the LRP component), and financial and technical assistance to support school feeding and maternal and child nutrition programs. The MGD program dates to the early 2000s, with the launch of the Global Food for Education Initiative (GFEI) pilot, which sought to enhance nutrition and promote school enrollment among school-aged children in low-income and food-insecure countries. The program was run by the USDA with the support of PVOs and the WFP. The main objective of this pilot was to provide in-kind commodities and transportation funding for school meal provision. Lessons from the GFEI pilot were later incorporated into the design of the McGovern-Dole Food for Education and Child Nutrition program, named after Senators McGovern and Dole, in recognition of their support for school nutrition in food-insecure, low-income countries. The MGD program was first authorized in the 2002 farm bill and reauthorized in subsequent farm bills to provide commodities, financial, and technical assistance for foreign preschool and school feeding programs (Nair, 2022). The bill assigned USDA the role of program lead, and today MGD falls under the USDA-FAS strategic objective 4.1. "Implement non trade-focused congressionally mandated programs." Between fiscal years (FY) 2004 and 2021, appropriations for MGD account for over $2.9 billion from Farm Bill funds and benefit 39 countries (Review of annual report to Congress – see Table 2.1 from section 2 for more details).

Currently, the MGD programmatic structure is defined by its two strategic objectives that, in turn, are the program results frameworks: *(1) to improve literacy of school age children with focus on early grade reading; and (2) to increase the use of health and dietary practices* (see appendix 1: MGD results framework 1 and 2). In the early 2010s, the USDA shifted toward a Results-Oriented Management approach which, led to the development of the two MGD results frameworks/strategic objectives and 3-year awards. From this time forward, USDA-FAS requested that implementing partners provide semi-annual performance reports (using the results framework) and shifted from measuring outputs only to also measuring outcomes through baseline, midterm, and endline evaluation efforts. The two MGD results frameworks serve as an *adaptable blueprint* for implementers to develop program activities in each targeted geographic area within selected countries. Derived from the results frameworks, the program has a series of measurements to track program outputs and outcomes (MGD indicators). Implementing partners adapt their programmatic activities to fit local needs, and track progress using the MGD standard indicators and custom measurements (when added by the implementer and approved by USDA-FAS). Implementers report program progress biannually using MGD and custom indicators as established in their Performance Management Plan (PMP). Researchers from MSU used monitoring (MGD and custom indicators) and evaluation data and reports to address the three key research questions of this study.

The landscape of School Feeding Programs worldwide

The USDA-FAS MGD is one of a series of school feeding programs in developing countries that receive donor support. Apart from the USDA, intergovernmental organizations like the WFP and PVOs also play a key role in the design and implementation of school feeding programs worldwide. The Global Child Nutrition Foundation (GCNF) continues its efforts to assess the state of school feeding by releasing a periodic report (i.e., Global Survey of School Meal Programs). In Africa, the African Union – New Partnership for Africa's Development (AU-NEPAD) has become a champion of school feeding in the region. In 2016, the Heads of State and Governments

of AU member countries adopted the HGSF decision. The AU-NEPAD has worked closely with partners like the WFP to design and promote the adoption of school feeding policies and regulatory frameworks among their associated countries.

In 2011, the WFP Center for Excellence against hunger located in Brazil (WFP Brazil CoE) emerged as a center providing school-feeding policy innovation and technical assistance to developing countries. First drawing on lessons from the Brazilian experience, the WFP Brazil CoE has become a key player in the design and implementation of government-led efforts on school feeding. The key element of the WFP Brazil CoE's approach is the linking of "school feeding initiatives to local agricultural systems." The Center accomplished this by incorporating the HGSF framework (FAO & WFP, 2018) into its policy and technical assistance efforts. Utilizing the HGSF framework, the WFP Brazil CoE helped obtain government commitments and aided in the design and implementation of school feeding programs across several countries. Overall, the WFP has become a significant player in school feeding worldwide. Lessons from the WFP work have been incorporated into MGD implementations as this organization is one of the implementers of MGD program projects. The intermingling of the WFP school feeding design framework and the presence of MGD and LRP funds continue to improve local capacity for school feeding sustainability.

SUSTAINABILITY

Five pre-conditions for school feeding program sustainability:
[1] Clear national and sectoral policy frameworks;
[2] Stable funding and budgeting;
[3] institutional capacity to implement and coordinate programs;
[4] Ensure that the design and implementation is needs-based, cost-effective, well-adapted, and contributes to the delivery of quality school feeding programs;
[5] Strong community participation.
[Bundy et al., 2009]

The sustainability of school feeding activities is integral to ensuring that donor-led efforts do not end when programmatic efforts end. Bundy et al., (2009) developed a framework that suggests that there are five pre-conditions must be met in order for school feeding programs to achieve sustainability. These are: [1] clear national and sectoral policy frameworks; [2] stable funding and budgeting; [3] institutional capacity to implement and coordinate programs; [4] ensure that the design and implementation is needs-based, cost-effective, well-adapted, and contributes to the delivery of quality school feeding programs; and [5] strong community participation. Through the analyses presented in this work, we show that the implementation of MGD program projects in Burkina Faso, Kenya, Rwanda, Senegal, Sierra Leone, and Tanzania, have provided useful evidence that continues to inform sustainability frameworks that feed into school feeding programming.

MSU Research highlights

The MSU research effort used data from the implementation of MGD projects in six African countries and is divided into three sections that address three research components: [1] partnerships for school feeding; [2] analysis of local procurement models; and [3] nutritional components and effects on educational outcomes. This extended summary presents some reflections and key lessons learned from the work conducted by MSU on MGD school feeding programs.

1. Reflections and Lessons Learned from the Analysis of Partnerships for School Feeding in four African countries

The different MGD project components (i.e., education and literacy, nutrition and health, WASH, value chain) offer opportunities for implementers to partner with local and non-local stakeholders. Under MGD programming efforts, partnerships with diverse actors are critical to building the organizational, technical, and financial capacity needed to ensure sustainable short and long-term school feeding outcomes. The underlying assumption of the MGD program is that its school feeding activities will be handed off to local stakeholders (i.e., usually the national government with the support of local and regional authorities) to lead and manage. In order to successfully transfer program ownership and ensure sustainable school feeding programming, partnerships are critical. In this section of the report, researchers collected a series of examples of MGD's best practices in school feeding partnerships and demonstrated how these practices contribute to program sustainability. Specifically, this research seeks to address the following learning gap in reference to partnerships: *What kinds of partnerships with the private sector and/or host country governments are the most effective at ensuring program sustainability? Among successful partnerships, who are the key players and what are their roles? In what contexts do private sector and/or government partnerships work best, and which contexts may be more challenging?*

To address this research gap, the MSU-prepared report provides case study results from the analysis of MGD and LRP related partnerships in four countries where MGD implementers have participated and engaged in the school feeding landscape: Kenya (Case Study #1), Rwanda (Case Study #2), Sierra Leone (Case study #3), and Tanzania (Case Study #3). These case-by-case analyses provide an examination of school meals partnerships, as leveraged by MGD implementers in each selected country. Individual case studies are structured as follows: [1] the ***Institutional framework for school feeding*** provides high-level information about the socio-economic context in each country of interest, as well as the national policy framework for school feeding; [2] a summary of ***MGD implementation*** presents the key programmatic changes and outcomes to further connect these with partnerships; and [3] the ***analysis of partnerships*** for school feeding resulting from MGD presence in a given country. These cases build on findings from primary (interviews with implementing partner staff) and secondary data (program performance data and reports) analysis. In this report, partnerships are categorized as follows: (i) public; (ii) private; (iii) non-profit; and (iv) community-level. These categories are not mutually exclusive but served as analytic groupings to create a better understanding of the types of relationships that implementers entered into and developed during MGD implementation. Key highlights from the partnerships component are presented below.

Policy and Regulatory Frameworks for School Feeding

The first section of the case-by-case analyses included a brief on the socio-economic conditions of each country, followed by a synthesis of the national policy and regulatory framework for school feeding. In the national-level policy sphere, findings reveal that national strategic plans -at times advised by international organizations (e.g., the World Bank, the International Monetary Fund), propose a set macroeconomic efforts to improve economic growth and human development. National strategic plans target human development goals in education, health and nutrition, and overall improvement of population living conditions. Under these human development working areas, efforts on the educational sector expect to increase access to primary education (or even achieve universal access to education) and to improve learning outcomes.

School feeding activities are part of a larger set of efforts to improve access, retention, and reduce student dropouts; this, by providing school meals and take-home rations to children from low-income and food

insecure households. The underlying assumption of this policy approach is that, by tackling hunger at the school level, children and families will [1] have an incentive to ensure school attendance; [2] children would have access to nutritious meals which improve their attentiveness and learning capacity; [3] when children and families learn about the short and long-term benefits of education, they would make efforts to ensure children stay in the educational system, and [4] the increase demand and market created by school feeding programming would encourage and improve community participation in education and boost local economies. Strategic goals on school meal provision expressed in national strategic plans, further translate into sectoral policies, such as the education, health, nutrition and more recently, the agricultural sector. Although school feeding policies build on a multisectoral approach, in the four cases analyzed here the head of the education sector, the Ministry of Education (with some variations in the name), is the entity responsible for the coordination of school feeding related activities, including cross-sector collaborations.

As countries continue expanding their knowledge on school feeding through the implementation of donor-led programs, governments commitment towards school feeding increases, as illustrated by the four cases. At the time of this analysis the four countries have some form of a national school feeding policy in place. Below is the school feeding policy document for each country of interest in the report, and the release year:

- **Kenya**: National School Meals and Nutrition Strategy 2017–2022 (2018)
- **Rwanda:** National Comprehensive School Feeding Policy (2019) and Rwanda School Feeding Operational Guidelines (2021)
- **Sierra Leone:** National School Feeding Policy – Integrated Home-Grown School Feeding Program (2021)
- **Tanzania:** Tanzania School Feeding Operational Guidelines (2021)

The review of national school feeding policies presented in the report shows that the governmental approach to school feeding rely heavily on the leadership of the educational sector, with cross-sector collaboration and multi-sector engagement. The policy goals are expressed in terms of improved educational outcomes, enhanced school-aged children health and nutrition, increased community engagement in education, and use schools to expand local markets for smallholder farmers. This approach is utilized to build capacity for transition to national ownership of the programs. The school feeding policy documents emphasize the need for stable funding for school feeding, and in some cases, they mention the inclusion of a budget line item in the national budget; however, there is limited knowledge about the resource mobilization strategy that would support the program after the transition. Under the financing of school feeding section, some policy documents mention that they will continue relying on donor partners (e.g., Sierra Leone), others that there will be some reliance on community contributions to ensure availability of school meals (e.g., Rwanda). In Rwanda, for example, the school feeding guidelines established that the national school feeding program would rely on parent contributions for meal provision (60% provided by parents and 40% by government subsidies). That could be problematic in communities with high levels of socio-economic vulnerability, because it can decrease their possibilities and interests in participating in school meals programs.

In all the cases analyzed by MSU under the partnerships section, the MGD implementer collaborated in some form with the government in the policy design. The cases of Kenya and Rwanda, where MGD implementation is led by the WFP provide evidence of the effects of a close collaboration between the government and the WFP program in the policy design and implementation stages. By being a United Nations (UN) agency, the WFP has been able to gain trust from the Kenyan and Rwandan governments, has leveraged resources (i.e., financial, technical, human capital etc.) from other UN agencies, international non-profits, and other government and non-

government donors, and importantly, has used the MGD programmatic effort to support the design of the national school feeding activity. This close collaboration allowed the WFP to become the lead partner in school feeding in these two countries, and facilitated the adoption of the HGSF model in the design of the national school feeding program. The WFP has played a key role in the development of school feeding programs across Africa, they hold a strong partnership with the African Union, which has contributed to the adoption of the HGSF framework in the design of the government owned and administered programs. The use of the HGSF framework is evident in the cases of Rwanda and Kenya. In Sierra Leone, the WFP presence in country, contributed to the school feeding policy development which calls for an Integrated Home-Grown School Feeding Program.

In the case of Tanzania, PCI's implementation of MGD in the Mara Region allowed them to develop a framework of reference on school feeding. This model was scaled-up to inform the design of the Tanzanian school feeding operational guidelines released in 2021. This effort relied on evidence provided by the implementation of MGD, where the local communities supported by PCI, became key players in the implementation of school feeding activities. In Sierra Leone, CRS through the implementation of MGD, supported the policy development process (as stated in the policy document), and continue leading efforts to ensure the sustainability of the school feeding activity in the country. The most recent phase of the MGD program in Sierra Leone has placed an emphasis on collaboration with the government to aid the transition to the Integrated HGSF model, and is expected to contribute to the sustainability of the school meals activity. The analysis of the MGD program activities revealed that the focus on local capacity building for ownership and administration of school feeding increases in the latest phase of the implementation, while the provision of school meals slowly drops until MGD no longer provides commodities for school meal or take-home ration provision.

MGD Partnerships for school feeding

Public Partnerships. MGD implementers have successfully identified and managed relationships with relevant public sector partners. Public agencies working with MGD implementers often demonstrated willingness to work and cooperate with the program; the results of MGD-public sector collaboration are reflected in the depth of MGD contribution in shaping school feeding policies. MGD programming has strengthened their efforts to include capacity building activities targeting staff from relevant agencies, and collaboration with local government entities and schools. The program has also contributed to the provision of educational infrastructure through the improvement and building of kitchens and food storage facilities, and facilitating access to drinking water, sanitation and hygiene (WASH) infrastructure in schools. Although there is mutual benefit of working with public partners, MGD's relationship with the public sector agencies and departments has been significantly shaped by the flow of resources (i.e., technical, human capital), mainly from MGD to these public agencies. This aspect of the interaction could create a situation of overreliance on MGD resources and could delay the strengthening of the public sector capacity to own and administer school feeding. The partnerships between MGD and public agencies further positioned these public agencies to support MGD implementing organizations, but had limited possibilities to act as co-implementers (Bovaird & Loeffler, 2012; Boyle & Harris, 2009), limiting their opportunities for learning while implementing. Placing public agencies as co-implementers in the program's early stages could foster faster ownership of the program by relevant government partners.

Private Sector Partnerships. The potential of private sector participation to provide the needed resources to scale-up MGD school feeding programs in beneficiary countries is significant; however, this research found limited private sector participation in school feeding activities except for Rwanda. MGD conception and definition of private sector partners and their potential role within school feeding activities remain limited, a weakness that constrained how

private sector actors are engaged in the program. However, learnings from this research show that the value-chain for the provision of school meals is a key place for private sector engagement with school feeding program. The LRP activities implemented along MGD projects (and more recently the inclusion of an LRP component under MGD) has proven some successes in private sector engagement. Few examples of the Rwanda and Kenya case provide lessons about the type of work and form of engagement with the private sector:

1. The implementation of LRP project activities in Rwanda nourished private sector engagement, by connecting smallholder farmer cooperatives and buyers from the Farm to Market Alliance (FTMA), farmers increased output and sales, and enhancement of port-harvest practices.
2. Although fortification regulated by the central government, it offers opportunities for private sector engagement. The WFP in Rwanda has well established connections with the few agro-processors that exist in the country and are located in Kigali (i.e., AIF, MINIMEX, and SOSOMA Industries Ltd.), because they are an important source of their procurement for their programs in country. The WFP was able to leverage this relationship, through the identification of agro-processors commodity needs, to inform smallholder farmer capacity building efforts. This arrangement helped strengthen the supply chain for school meals provision.
3. The Rockefeller Foundation provided funds to carry out a pilot to test the usage of a nutrition-rich wholegrain fortified flour among school-aged children in Rwanda to reduce the usage of highly refined flour in school meals in MGD schools. In collaboration with private sector partners, the 1-year pilot intended to develop a nutrient-rich wholegrain maize flour (instead of refined maize flour) to prepare school meals for 15,000 school children in the Southern Province of Rwanda. "The pilot aimed to increase nutrition in primary school meal programs while educating children, their families, and the wider school communities about the nutritional benefits of consuming fortified wholegrain flours" (Rasmussen, 2021). According to interviewees for this study, the goal of the pilot was to explore how the local private sector could play the role of maximizing school feeding as a platform for nutrition, optimizing supply and demand, and finding nutritious alternatives with local commodities.
4. In Kenya, a partnership with DSM, supported access to sachets of Micronutrient Powder (MNPs), that helped to meet micronutrient needs of children, especially in the most food insecure areas.

Nonprofit Sector Partnership. The nonprofit sector has a long history and remains the pioneer in school feeding in all the MGD beneficiary countries. These organizations have thus amassed decades of relevant experience in implementing school feeding programs. MGD's partnership with the international and local nonprofit organizations appears productive. These nonprofit organizations often share a similar mission and tend to directly co-invest their material resources alongside MGD to further the program's objectives. The program's engagement with local and international nonprofit organizations remains critical in implementing the MGD program and the school feeding activity in general. The nonprofit sector plays a critical role in developing capacity for transition to government-owned and administered school feeding programs by ensuring that there is technical capacity transfer to local entities that will be responsible for program management. Despite the relevant role nonprofit organizations play in school feeding programming, their activities are closely reliant on the availability of financial resources for effective functioning.

Community Partnerships. Across MGD beneficiary countries analyzed in the partnerships section of the report, policies on school feeding emphasize the critical role of community members and farmers in the transition to a home-grown (government-owned and administered) school feeding program. MGD's partnership with community organizations and members adopts a co-production approach where the communities who are the direct beneficiaries are required to

co-invest in the program. All the cases, but especially the work of PCI in Tanzania and CRS in Sierra Leone offer important learnings about the critical role of community participation in school feeding through activities like community contributions (e.g., labor, foods), creation of SILC groups to empower community members, community engagement in nutrition interventions, and accountability of school feeding activities. This co-production approach has shown positive outcomes for each program. Even though the co-production approach to partnership with beneficiary communities has yielded immediate positive results and increased community participation, it needs to be examined carefully in the transition to government owned and administered school feeding programs, for unintended adverse effect especially in deprived settings. Demands for community contributions can affect availability of household resources and has the potential to exacerbate household vulnerability to shocks and food insecurity. Furthermore, community contribution to the MGD program is gendered as it demands women-centered and women-controlled resources (e.g., food items, species, water, labor, cooking skills, fuelwood). The gendered nature of community contribution and its potential to reduce material resources increases household susceptibility to gender inequality and could work to exclude vulnerable households from the program.

MGD in Kenya, Rwanda, Sierra Leone, and Tanzania have successfully identified and gained the trust of key government institutions; this relationship positioned MGD implementing organizations to influence policy, government commitment, and budget allocation for school feeding.

Lessons learned from partnerships for school feeding in MGD beneficiary countries

- MGD in Kenya, Rwanda, Sierra Leone, and Tanzania have successfully identified and gained the trust of key government institutions; this relationship positioned MGD implementing organizations to influence policy, government commitment, and budget allocation for school feeding in some instances. Given the strength and importance of these relationships to the MGD mission, especially under WFP led MGD projects, MGD implementing partners need to find ways to manage the potential overreliance on resource transfer from MGD implementing partners to public agencies. This is also a way to empower the governments in the transition to a locally owned and administered school feeding program. Future partnerships with public agencies could develop a co-implementer approach early in the implementation where relevant public agencies are designated as co-implementers. This is important in fostering ownership of MGD activities by relevant sector agencies at the early stages of future programs.

- The co-production approach used in engaging beneficiary communities often requires community material contribution to the MGD program. This approach is common across beneficiary countries, and evidence exists in the four countries of interest Kenya, Rwanda, Sierra Leone, and Tanzania. Even though this approach yields immediate results, it could work to exclude vulnerable households that lack these resources and alienate children from such households from benefiting from the program.

- Because of cultural norms, education and children upbringing remains a women issue in many of the places where MGD is implemented in the four countries studied here. Therefore, community material contributions to the program is gendered, and the school feeding program tends to disproportionately demands women-centered and women-control resources, including water, food items, fuel, cooking utensils, and cooking time and skills. The reduction of women's-controlled resources could exacerbate the household's vulnerability to food insecurity and school dropout, especially for girls. Future programs could prioritize alternative community contribution that is more gender-sensitive and with a reduced risk of exacerbating household vulnerability to shock.

- Despite MGD's interest in private sector participation, the current structure of MGD limits private sector engagement and participation. The implementation of the LRP project activities and the recent inclusion of the LRP component could contribute to increase private sector participation in school feeding and can help to mobilize private resources to scale-up MGD interventions, especially in resource-constrained countries.

- MGD's partnership with other nonprofit organizations appears productive and mutually beneficial. The local and international nonprofit organization has a rich history of supporting and leading school feeding programming and thus are vital partners. However, there is a risk of duplication of efforts among nonprofit organizations due to the parallel implementation of similar interventions in beneficiary countries; an early partnership between MGD and the relevant nonprofit organization can be essential in minimizing the risk of duplication of effort by MGD, by assessing the state of nonprofit activities in country.

2. Local and Regional Procurement in MGD Programming

To understand the structure, role, and outcomes of USDA funded LRP projects under the MGD framework, the MSU research team analyzed LRP evaluation reports and performance indicator data from implementation in three African countries: Burkina Faso, Kenya, and Rwanda. Rwanda received one of the first LRP awards in FY 2016, receiving $2 million in funding. Kenya received a $1 million award the following year, and Burkina Faso received a $4.8 million award in FY 2019, the last year of individual LRP awards prior to LRP's full integration into MGD program projects. All three countries were recipients of previous MGD awards. Kenya received seven MGD awards between FY 2004 and FY 2016, totaling $101.7 million. Burkina Faso received their $1 million LRP award one year after the country's last award in FY 2017. Rwanda received three MGD awards between FY 2010 and FY 2020, totaling $59.1 million, receiving their $2 million LRP award in-between MGD grant cycles in FY 2016. Note that Rwanda's FY 2020 award contained the required 10% LRP component. Burkina Faso received three MGD awards between FY 2011 and FY 2021, totaling $70.6 million, receiving their $4.8 million LRP award in FY 2019. Burkina Faso's FY 2021 award contained the required 10% LRP component.

In theory, by supplementing international commodities with locally produced foods, school feeding programs have the capacity to provide meals at a lower cost with fewer delays in delivery of foods to schools.

Analysis of LRP Evaluation Reports

One of the primary goals shared across the LRP projects in Burkina Faso, Kenya, and Rwanda was improving the cost-effectiveness and timeliness of school food provisions. In theory, by supplementing international commodities with locally produced foods, school feeding programs have the capacity to provide meals at a lower cost with fewer delays in delivery of foods to schools. From baseline reports, we found that the local agricultural systems of each country were largely capable of satisfying LRP project commodity needs. While data issues in each country prevented a thorough analysis of cost effectiveness, we found notable issues with the quality and timely delivery of LRP commodities to schools in each of the three countries consistent with the results of existing research. Generally, these issues were the result of slow internal systems of quality control and transportation which limited the ability of LRP project to deliver commodities in a timely manner. In Burkina Faso, for example, we found that most deliveries to canteens were late, and a significant amount of commodity stocks were lost due to prolonged storage in insufficient facilities. The delivered commodities were also of lower quality than anticipated as a result of this prolonged storage. This delay was determined to be the result of three main factors: The lack of dedicated commune staff to administer orders, complexities of the local and regional procurement process, and the current quality control process used to vet commodities and approve them for consumption. If the number of testing firms and the timeliness of their quality control process were improved, the LRP project in Burkina Faso may operate more efficiently and effectively than its baseline levels indicate.

Another issue identified in the baseline report is issues with the current LRP supply chain. Some transporters were found to lack sufficient knowledge of the challenges in delivering commodities to remote locations, and in most cases, their transportation vehicles and methods were found to be insufficient for delivery to such communities. Therefore, the baseline data identifies the need for improvements to local transportation and transporter knowledge for the Faso Riibo (Burkina Faso) project to prove effective. Additionally, countries in our case study illustrated the importance of climatic events to the efficiency and effectiveness of LRP. For example, we found that unanticipated weather events led to few LRP schools in Kenya receiving their pre-determined commodities.

LRP projects were also found to have significant impacts on Small Holder Farmer (SHF) training and knowledge. In Kenya, for example, local traders and Farmer Organizations (FO) were identified for the Government owned and administered Home-Grown School Meals Programme (HGSMP) training which sought to increase awareness of the HGSMP procurement process and requirements and enable local traders and FOs to effectively and efficiently participate in the program. FO members stated that these trainings were useful, but some material was seen as too difficult for trainees with low levels of education. Significant improvements in quality monitoring were also reported, including commodity sorting and cleaning. These changes were determined to largely be the result of trainings offered by the LRP project. The end line report also identified a notable increase in the percentage of FOs aggregating and marketing member produced commodities. This change suggests that the business practices of FOs improved as a result of the LRP project's efforts.

LRP projects were found to have a significant impact on the success of SHF cooperatives, such as in Rwanda. The capacity of SHF cooperatives to sustain themselves increased across the board because of the projects. There was a significant degree of variance in cooperatives' capacities to continue operating, however, with certain cooperatives remaining in a fragile state even after the LRP project's completion. Cooperative organizations were found to have a clearer business structure at end line relative to baseline, suggesting that the LRP project's efforts helped to improve the business practices of SHF cooperatives in the four regions covered by Rwanda's LRP. At endline, buyers stated that: 1) Cooperative mentality had changed and cooperatives performed in a much more business-oriented manner; 2) There was a greater degree of trust and fewer instances of conflict between SHF cooperatives and buyer groups; 3) Cooperatives were able to deliver a greater aggregate quantity of commodities; 4) The quality of commodities delivered by SHF cooperatives increased and fewer orders had to be rejected based on quality.

Taken together, our analysis of the three countries suggests that while local agricultural systems may have the capacity to produce enough commodities to satisfy LRP, limitations to transportation, quality control, and climate resilience may lead to an insufficient provision of food to schools. For example, in Kenya, although the land was suitable for the project's four drought-tolerant crops— sorghum, cowpeas, green grams, and millet— the consumption of these commodities was relatively low in the region due to low levels of production and high market prices relative to maize and beans. Therefore, identifying and addressing these potential limiting factors through project efforts is vital for the successful design and implementation of future LRP projects.

All three LRP projects considered in our analysis targeted improving the capacity of SHFs and local cooperatives. In each country, there is evidence to suggest that the projects successfully increased the capacity of SHFs through training, direct purchases/contracts, and the facilitation of proper business practices.

Alternatively, while each of the three LRP projects included in our analysis faced challenges, we found evidence of significant benefits. The most readily apparent benefits of LRP projects identified in our case studies were to the countries' local agricultural sectors. All three LRP projects considered in our analysis targeted improving the capacity of SHFs and local cooperatives. In each country, there is evidence to suggest that the projects successfully increased the capacity of SHFs through training, direct purchases/contracts, and the facilitation of proper business practices. Furthermore, the capacity and performance of SHF cooperatives improved as a result of LRP, with improvements to cooperatives' organizational practices, and the quantity and quality of commodities produced. SHFs also gained improved access to buyer groups through the LRP projects, highlighting the capacity of LRP to build and facilitate new market connections. SHF cooperatives were viewed as stronger business partners by buyer groups, showing their newfound importance in the agricultural supply chain. These producer/buyer relationships were found to be tenuous, however, suggesting that the sustainability of identified improvements may be limited. Additional research is needed to understand the long-term impacts of LRP projects on the capacity and efficiency of local agricultural systems.

Analysis of LRP Performance Indicator Data

To further explore the outcomes of LRP in Burkina Faso, Kenya, and Rwanda, we conducted an analysis of LRP indicator data provided through the MGD's PMP. Unfortunately, differences in available indicators and indicator structure across countries limited our ability to conduct rigorous cross-country analysis. Additionally, the limited number of indicators with non-zero baselines prevented us from evaluating the LRP projects' added value in each country compared to the pre-LRP period. Nevertheless, we were able to identify several key outcomes that provide valuable information regarding the LRP projects' effects.

We find that, compared to their targeted values, the countries met their year-specific targets in 55 percent of cases. Performance was better across the projects' lifetimes, however, with 71 percent of final indicator values meeting or exceeding their targeted values. The actual number of individuals participating exceeded the target in Kenya and was just slightly above target for Rwanda; the number of individuals benefiting indirectly exceeded the target in Kenya and was nearly equal to the target in Rwanda; the number of social assistance beneficiaries exceeded the target in Kenya and just slightly exceeded the target in Rwanda; and the cost of transportation, storage, and handling was below target for both Kenya and Rwanda. The actual cost of commodities procured was above target for both Kenya and Rwanda; the quantity of commodities procured were above target for Kenya but below target for Rwanda; the value of sales, one of the few indicators with a non-zero baseline, increased during the life of the project for Burkina Faso and Kenya (baseline data not available for Rwanda), with the actual value also exceeding the target in Kenya, but coming up just short of the target in Rwanda; and the volume of commodities sold increased relative to the baseline in Burkina Faso and Kenya, with actual volumes exceeding the targets in both Kenya and Rwanda. The actual total increase in installed storage capacity was at the target level in Rwanda; the number of policies, regulations, and administrative procedures was below the target for Kenya and right at the target for Rwanda; and the number of individuals receiving short-term training exceeded the target in Kenya and met the target in Rwanda. The number of public-private partnerships was short of the target in Kenya and met the target in Rwanda; the value of new USG commitments/investments was below target for Kenya (target data were missing for Rwanda); and no target data were available for the number of schools reached.

Taken together, our results suggest that there may be significant delays in effectiveness present in earlier years of the program projects. Given adequate time, however, the LRP projects were found to satisfy the majority of their goals. This finding highlights the importance of continually evaluating the performance of LRP projects across time to identify effectiveness as projects continue to develop.

Taken together, our results suggest that there may be significant delays in effectiveness present in earlier years of the program projects. Given adequate time, however, the LRP projects were found to satisfy the majority of their goals. This finding highlights the importance of continually evaluating the performance of LRP projects across time to identify effectiveness as projects continue to develop. Therefore, while LRP projects may take some years to begin operating properly, they appear to achieve their goals, for the most part, by the end of their lifetime. If countries can continue to strengthen their LRP projects across time, the performance of later LRP program iterations will likely build on the activities conducted through earlier programmatic efforts. Therefore, comparing the results of new projects to older iterations of LRP within the same country would prove an effective way to identify prolonged effectiveness. Only three of the LRP Standard Indicators have non-zero baselines, and baseline data were missing for Rwanda. But for all cases with data, the baseline was eventually exceeded, implying an added value of the project.

Discussion

Major limiting factors in our analyses were data availability and standardization. While the evaluation data include a number of variables, they were generally not suited for our analysis due to the lack of pre- or post-project conditions. Therefore, we were not able to evaluate the LRP projects' value added relative to a non-zero baseline. Additionally, many of the included questions were not suitable for assessing the impacts of LRP projects on local agricultural systems. While we recognize that these data were not intended for that purpose, additional information related to the performance of local agricultural systems would strengthen similar analysis of future LRP projects. The performance data provided for the three countries were also limited, particularly, with only a small number of indicators included non-zero baselines, preventing us from assessing the projects' true added value. Furthermore, issues with standardization in the available data across countries limited our capacity to make across-country comparisons of LRP project effects.

To address these limitations, we recommend improved standardization of reports and timely inspection by USDA personnel to ensure data completeness. Additionally, we recommend requiring that more questions include non-zero baselines so that the endline values can be compared to a valid starting point to estimate the projects' added value. With the implementation of these changes, LRP project data could be used to evaluate the impacts of LRP on local agricultural system capacity, capabilities, and performance more rigorously.

3. Nutritional Content of MGD Meals and Effects on Educational Outcomes

The final section of the report focuses on the nutritional content of MGD meals in Tanzania and Senegal and their effect on educational outcomes. The nutrition component of this work was divided into three broad sub-sections: sub-section 1 consisted of compiling and evaluating existing data and resources, sub-section 2 focused on evaluation of the provided meals for nutritional value and nutritional adequacy, and sub -section 3 was an evaluation of the impact of school meal programs in Senegal and Tanzania as it relates to providing adequate nutrition for cognitive development, normal growth and development, and improving educational outcomes.

Sub-section 1. Compile and evaluate existing data and resources

For sub-section 1, three in-depth desk reviews were conducted to evaluate existing evidence in the literature on the following three questions:

- *Which nutrients are important for cognitive development?*
- *What is the relative impact of school meal interventions in preschools on educational outcomes?*
- *Which nutrients are associated with stunting among children ages 2 and older in sub-Saharan Africa?*

The outcome of sub-section 1 was three systematic reviews which were each submitted for publication to peer-reviewed journals.

Our systematic review on cognitive development aimed to examine the effects of nutritional interventions on cognitive outcomes of preschool-age children. PubMed, PsycInfo, Academic Search Complete, and Cochrane Library electronic databases were searched to identify randomized controlled trials published after the year 2000. Studies assessing the effects of food-based, single, and multiple micronutrient interventions on the cognitive function of nourished and undernourished children aged 2–6 years were deemed eligible. A total of 12 trials were identified for inclusion, and eight of the twelve studies found significant positive effects on cognitive outcomes. For undernourished preschool-age children, iron and multiple-micronutrient supplementation yielded improvements in cognitive abilities. Among nourished children, increased fish consumption was found to have a beneficial effect on cognitive outcomes. On the other hand, B-vitamin, iodized salt, and guava powder interventions did not appear to improve cognitive function. Findings of this review highlight the importance of adequate nutrition during preschool years, and the crucial role sufficient nutrition plays in cognitive development.

Our systematic review on the effect of school-provided meals on educational outcomes in preschool and primary school children aimed to find if school meal programs help increase test scores, attendance, and/or enrollment rates. PubMed and Scopus were used to search for relevant studies. Studies included in this review were randomized and non-randomized controlled trials, prospective cohort studies, controlled before-after studies, and pre/post-test design studies published in the past 10 years. Studies had to have been conducted in schools in sub-Saharan Africa. Findings from the nine studies included in this review suggested a positive correlation between school feeding programs and educational outcomes. The findings suggested that although mealtime may reduce classroom time, the benefits of providing a meal outweigh the potential loss of learning time because hungry children may not learn as effectively. The findings of this review support the implementation and expansion of school meal programs starting at a young age to improve the general well-being and learning capabilities of children. We conclude with a recommendation that more research be conducted on school meal programs for preschool age children (2-5 years), because there is a limited amount of information in this area.

3. Roberts, M.; Tolar-Peterson, T.; Reynolds, A.; Wall, C.; Reeder, N.; Rico Mendez, G. The Effects of Nutritional Interventions on the Cognitive Development of Preschool-Age Children: A Systematic Review. *Nutrients* 2022, 14, 532. https://doi.org/10.3390/nu14030532
4. Wall, C., Tolar-Peterson, T., Reeder, N., Roberts, M., Reynolds, A., Rico Mendez, G. The Impact of School Meal Programs on Educational Outcomes in African Schoolchildren: A Systematic Review. *International Journal of Environmental Research and Public Health* 2022, 19 (6), 3666. https://doi.org/10.3390/ijerph19063666
5. Manuscript is under review in a peer-reviewed journal (*Maternal and Child Nutrition*).

Lastly, our systematic review on nutrients related to stunting aimed to compare dietary intake among children with and without stunting to gain a better understanding of how to best support healthy growth and development going forward for children who are already stunted. To accomplish this, we looked at specific nutrients or nutritional biomarkers of dietary intake that are associated with stunting among children ages 2 and older in sub-Saharan Africa. Twelve studies from sub-Saharan Africa met the eligibility criteria, including 11 observational studies and one randomized control trial. Nine of the 12 studies assessed dietary intake of macronutrients. Four studies found a significant association between protein and stunting. Four found that children with stunting had lower dietary fat intakes or lower blood or serum levels of certain fatty acids. Five assessed dietary intake of micronutrients or looked at serum levels micronutrients. Among these studies, children with stunting had lower intakes, or biomarkers for, calcium, phosphorous, vitamin D, vitamin B12, and choline. Overall, these studies suggest that children who are stunted tend to consume diets lower in nutrients typically found in high-quality protein foods such as essential amino acids, essential fatty acids, and micronutrients such as calcium, phosphorous, vitamin D, vitamin B12, and choline. We conclude that older children with stunting (those past the first 1,000 days of life) may benefit from school feeding programs that emphasize providing the nutrients they may be most at risk of consuming suboptimal amounts of.

STUNTING. Overall, these studies suggest that children who are stunted tend to consume diets lower in nutrients typically found in high-quality protein foods such as essential amino acids, essential fatty acids, and micronutrients such as calcium, phosphorous, vitamin D, vitamin B12, and choline.

Sub-section 2. Evaluate the provided meals for nutritional value, nutritional adequacy, and contributions to supporting increased dietary diversity

Sub-section 2 of research component #3 consisted of an evaluation of the meals provided to preschool children in Tanzania and Senegal for nutritional value, frequency of meals, adequacy of nutrient content, and contributions to supporting increased dietary diversity. The nutritional analysis was conducted using the ingredient information provided by each country. Nutritics, a software that uses data from the USDA Nutrient Database and the Branded Food Products Database, was used to calculate nutrition values. As a protocol for this review, if an option for USDA commodity information was available it was used to create the analysis. Where USDA food aid commodity products were provided, but not available in Nutritics, nutrition values were calculated manually using the USAID Food Aid Product Information Guide. This analysis was based on the dry weight of the foods. We next compared the macronutrient and micronutrient content of each school meal to WHO recommendations for energy and macronutrient content of school meals and to the Institute of Medicine's Dietary Reference Intakes (DRIs) for micronutrient intake. For preschool meals, the 4-8 age range was used for standards of intake, and for primary school meals, the 9-12 age range was used for standards of intake.

Senegal

The nutrient analysis for Senegal was based on information extracted from a dataset provided by an in-country CPI representative. The dataset contained four recipes for meals provided to preschool children and eight recipes for meals provided to elementary school children. The recipes contained a combination of rice, flour, oil, bulgur, split peas, or lentils. For the pre-primary school children, each meal was a total of 115 grams, consisting of 20 grams of bulgur, 10 grams of oil, 25 grams of lentils or split peas, and 60 grams of rice or flour. The average macronutrient percentages of the four meals were 65.3 percent carbohydrate, 11.6 percent protein, and 23.1 percent fat. For the primary school children, each meal was between 135 to 155 grams. The primary school meals differed from the preschool meals in that they did not contain bulgur, and instead contained different combinations of rice, flour, lentils, split peas, and oil. These meals averaged 70% carbohydrates, 11.2% protein, and 18.9% fat.

Compared to the WHO recommendations for energy and macronutrient content of school meals, the pre-school meals provided in Senegal contained 6% less energy, 34% less protein, and 17% less fat than recommended, and slightly more carbohydrates than the minimum recommendation. The primary school meals provided in Senegal also contained slightly less fat than recommended, with each of the four meals being under the recommendation for fat content by 17%. Looking at micronutrients, the meals contained at least 20% of the RDA for children ages 4-8 for vitamin A, vitamin D, vitamin K, thiamin, niacin, folate, pantothenic acid, vitamin B6, vitamin B12, iron, magnesium, manganese, phosphorous, zinc, selenium, and copper. The meals contained less than 20% of the RDA for vitamin C, calcium, and sodium for pre-primary children. For primary school children, the meals contained at least 20% of the RDA for children ages 9-13 for vitamin A, vitamin D, vitamin K, thiamin, niacin, riboflavin, folate, pantothenic acid, vitamin B6, vitamin B12, iron, zinc, selenium, and copper. The meals contained less than 20% of the RDA for vitamin C, vitamin E, calcium, magnesium, phosphorous, and sodium.

Both pre-primary and primary school meals were generally a poor source of calcium, which is essential for bone health, providing 0.67-3.6% of the RDA. The iron content was sufficient for all children, with each meal providing 42-48% of the RDA. Overall, the meals could potentially be improved by shifting their macronutrient distribution to contain slightly less carbohydrate and slightly more protein and fat to be closer in line to recommendations that WHO has published. The meals could also potentially be improved by increasing their vitamin C and calcium content. The meals generally contain an adequate amount of key nutrients for child growth and development such as iron, zinc, vitamin A, vitamin D, and B vitamins, assuming that these meals are a supplement to other sources of nutrition children consume to help them reach RDAs. However, these meals fall short of the MGD requirement to provide at least 30% of the RDA of all key micronutrients, and no analysis has been conducted to determine how children who receive school meals are eating outside of school.

Tanzania

The school meals in Tanzania consist of a ration of 120 g of maize, 30 g of beans, and 5 grams of oil per person per day. Compared to the WHO recommendations for energy and macronutrient content of school meals, the meal provided through the MGD program in Tanzania contains more energy, carbohydrates, and protein than the minimum recommendation, and 58% less fat than recommended. Looking at micronutrients, the meals contain at least 20% of the RDA for children ages 9-13 for vitamin A, vitamin D, thiamin, niacin, riboflavin, folate, vitamin B6, iron, potassium, magnesium, manganese, phosphorous, zinc, selenium, and copper. The meals, however, contain less than 20% of the RDA for vitamin A, vitamin C, vitamin E, vitamin K, pantothenic acid, vitamin B12, calcium, and sodium. Of note is that these meals do not contain any vitamin B12. Plant-based foods such as cereals and grains can be fortified with vitamin B12, though, to the best of our knowledge, the maize provided in these meals is not fortified with vitamin B12. The vitamin A and D content of the meals can be attributed to the fortified vegetable oil. However, since these meals contained only 42% of the WHO recommended fat content of a school meal, and less than 20% of the RDA for vitamin D, increasing the oil content of the meals could prove beneficial. The meals contained minimal calcium, which is essential for bone health, providing 1.9% of the RDA. Iron was sufficient for each meal, with meals providing 63.8% of the RDA. Overall, these meals could potentially be improved by shifting their macronutrient distribution to contain slightly less carbohydrate and slightly more fat to be closer in line to recommendations that WHO has published. The meals could also be improved by increasing their vitamin A, vitamin C, vitamin E, vitamin K, pantothenic acid, vitamin B12, and calcium content in order to achieve a minimum of 30% of the RDA for these key nutrients in each meal.

Sub-section 3. Evaluate the impact of school meal programs in Senegal and Tanzania

Sub-section 3 is an evaluation of the impact of school meal programs in Senegal and Tanzania as it relates to providing adequate nutrition for cognitive development, normal growth and development, and improving educational outcomes. To accomplish this, findings from sub-section 1 and sub-section 2 were compared. Conclusions and suggestions for improvement that are rooted in the findings from our systematic reviews were then provided. A few key highlights are below:

Cognitive function

Diversifying school meals to provide fish to beneficiary children at least twice a week would improve the nutritional profile of meals and further support cognitive development. Other alternatives include adding omega-3 rich oils to the school meals during the cooking process or prior to serving. The availability of such items is dependent on seasonality and the location of schools. Therefore, the implementation of meal diversification and the addition of omega-3 rich foods to school meals could be challenging to implement.

Healthy growth and development

In many LMIC communities, including those in Senegal and Tanzania, diets are largely plant-based and intakes of animal-sourced foods, particularly milk and meat, are limited. The large volume of a plant-based diet results in a lower energy intake and lower nutrient density intake. For young children who are unable to consume a large volume of food in a single meal, this can result in consuming an inadequate quantity of nutrients in a single meal. In order to best promote healthy growth and development throughout childhood and adolescence, children who are beneficiaries of the school feeding programs would benefit from increased intake of foods such as fish, meat, dairy, poultry, and eggs, as is culturally and economically appropriate, particularly children who are already stunted as findings from our systematic review indicated that stunted children ages 2 and older consume significantly fewer essential amino acids, essential fatty acids, and micronutrients such as calcium, phosphorous, vitamin D, vitamin B12, and choline.

Educational outcomes

The MGD FFE program utilizes defined indicators to measure the impact of the school meals on education and health outcomes. The indicators used by the MGD program are consistent with the indicators outlined in the broad literature. The main outcomes of focus in the literature were academic achievement, attendance, and enrollment. This coincides with data collected for MGD indicators S01, MGD 1.3, and MGD 1.3.4. When comparing available indicator data from Senegal and Tanzania to findings from our desk review, we found similar outcomes, suggesting that MGD school meal programs contribute to increased attendance and academic achievement for beneficiary children.

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