

# The Role of Nutrition Education in Double Burden Malnutrition Prevention: Lessons from African and Global Contexts

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## Abstract

The double burden of malnutrition (DBM), or the coexistence of under-nutrition and overweight/obesity, has emerged as an urgent global health dilemma, especially in Africa where stunting, micronutrient deficiencies, and increasing non-communicable diseases (NCDs) coincide. This paper explores the potential role of nutrition education as a preventive and corrective measure to tackle DBM, learning from African experiences and international best practices. Evidence recognizes that school-based, maternal, and community-based education initiatives have a positive impact on dietary knowledge, behavior, and health outcomes, and nutrition education is a proven "double-duty action." Possibilities exist in Africa through school feeding programs, teacher-led interventions, and maternal health initiatives, although constraints in the form of limited resources, low capacity, and inadequate implementation are ongoing. Global case studies of Brazil, Thailand, and Mexico showcase the effect of nutrition education when supported by enabling food policies and environments. The review underscores that nutrition education alone is insufficient without enabling systems, healthy foods at low costs, ultra-processed food policies, and digital innovations to reach adolescents and vulnerable groups. Nigeria's policy environment shows sensitivity to nutrition education, yet long-term rollout and sustainability deficits limit impact. The study concludes that harmonization of nutrition education within multi-sectoral approaches linking health, education, and agriculture is central to combating DBM, advancing equity, and accelerating progress towards the Sustainable Development Goals.

## I. INTRODUCTION

Double burden of malnutrition (DBM) refers to the co-existence of under-nutrition and overweight/obesity among families and populations. This condition has become more frequent in African countries as well as low-and-middle-income countries (LMICs) in general. It is also now common in high-income countries, constituting a complex public health problem. Stunting, wasting, and micronutrient deficiencies persist on one hand, while rising obesity and diet-related non-communicable diseases (NCDs) are threatening national health systems on the other.

According to the World Health Organization (2017), over 2.3 billion people globally suffer from at least one form of malnutrition, and most countries have coexisting burdens. It affects economic development, schooling, and health. For Africa, the issue is particularly acute with the incidence of traditional hunger which has ravaged the continent coupled with fast-paced urbanization and diet change contributing to obesity.

Nutrition education has been recognized as a "double-duty action" to address under-nutrition and overweight at the same time (WHO, 2017). By empowering individuals, families, and communities to embrace the skills and knowledge to make informed diet decisions, nutrition education builds resilience against the DBM and allows populations to transition to healthy food intake patterns through the life course.

## II. GLOBAL PERSPECTIVES ON THE DOUBLE BURDEN

The world's nutrition scenario has changed over the past thirty years. Under-nutrition has gone down, but overweight and obesity prevalence is up even in LMICs where there's still high rate of hunger. The State of the World's Children 2019 report (UNICEF, WHO & World Bank, 2019) highlights that at least one out of every three children across the globe are overweight or undernourished. Africa and Asia together account for more than 70% of all undernourished children, yet the same regions are experiencing the steepest growth in child obesity.

➤ *Several Forces are behind This Global Trend:*

• *Food Transition:*

The prevalence of packaged and ultra-processed food which are rich in fats, sugars and salt, and reduction in consumption of traditional and natural foods which are rich in nutrients and vitamins (Hawkes & Fanzo, 2018).

• *Urbanization and a Lack of Exercise:*

It has become a growing trend as more and more families relocate to cities where food environments are majorly dominated by fast-food outlets, and physical activities like effective physical exercises which is of immense benefit to the health decline (World Bank, 2020).

• *Globalization of Food Markets:*

The contemporary cities are saturated with massive food manufacturing and processing companies that spend big to aggressively market unhealthy foods and beverages to children, hence, unhealthy diets have quickly swept across the world (UNICEF, 2020).

From the perspective of global health, DBM control requires convergent strategies. Nutrition education emerges as a fundamental pillar because it enables populations to critically navigate food environments, generate demand for healthier options, and sustain preventive practices. Without education-centered interventions, policy reform at the structural level may not necessarily change consumer practice (Wells et al, 2024).

➤ *Nutrition Education as a Preventive and Corrective Strategy*

Education has been found to be one of the most effective measures for prevention and control of the double burden of malnutrition. Compared to narrowly targeted clinical interventions, education allows individuals and communities to make sustained modifications in their diets and lifestyles that are favorable for the prevention of under-nutrition as well as management of obesity.

The Food and Agriculture Organization (2020) emphasizes that school food and nutrition education programs are among the strongest double-duty interventions because they engage children early, establish food choices, and impact household behaviors. Similarly, a systematic review by Nkosi et al. (2023) of sub-Saharan African primary school-based interventions found that structured nutrition education significantly improved knowledge, attitudes, and children's eating habits.

Besides schools, maternal and community education programs are also indispensable. Nankumbi et al. (2021) demonstrated that maternal nutrition education in Africa promoted infant feeding practices, reducing stunting risks and micronutrient deficiencies as well as promoting balanced diets to avert childhood overweight.

Therefore, nutrition education serves not only as a remedy for current malnutrition but as a preventive system that fosters resilience against the changing food

environments driving obesity and NCDs. As Bhutta et al. (2019) contend, interventions that promote dietary knowledge and behavior have the potential to both enhance child growth outcomes while lowering diet-related chronic disease risk.

➤ *African Context: Challenges and Opportunities in Nutrition Education*

Africa has a different context for the double burden of malnutrition. While hunger and micronutrient deficiencies remain at high levels, obesity and NCDs are growing very rapidly, particularly in urban centers. Food systems on the continent are changing very rapidly, with increased consumption of processed foods and reduced consumption of traditional and natural, nutrient-dense diets (Popkin et al., 2020).

Low levels of integration of nutrition education into the formal and informal systems are one of the main issues. Although there are school feeding programs in some African countries, they are more aimed at caloric sufficiency than at balanced nutrition education (GCNF, 2021). In Nigeria, for example, the National Multi-Sectoral Plan of Action for Food and Nutrition (FGN, 2021) acknowledges the importance of nutrition education but identifies gaps in teacher, health worker, and community mobilizer capacity.

Conversely, possibilities do exist. Studies such as Amadi et al. (2020) indicate that sub-Saharan African school programs can be adapted to local contexts and yield measurable improvements in dietary quality. Teacher-led programs also hold promise and with adequate training, teachers become good agents of healthy eating in low- and middle-income settings (Abrahams et al, 2023).

Accordingly, even as resource constraint, low capacity, and competing policy agendas pose challenges, the African context equally offers rich grounds for scaling up nutrition education through schools, community-based programs, and maternal health platforms. Optimal leverage of such opportunities would have a significant impact of controlling the continent's double burden of stunting and obesity.

### **III. CASE STUDIES OF SCHOOL-BASED AND COMMUNITY NUTRITION EDUCATION PROGRAMS**

Evidence from both African and global environments documents that nutrition education interventions implemented in schools and communities have measurable impacts on food consumption, nutritional status, and ultimate health status.

The BMC Public Health trial protocol outlines a cluster-randomized intervention to introduce food and nutrition education into school curriculums (Steyn et al, 2024). The model not only addresses improving the children's learning but also behavior through action-oriented classroom and community activities. Similarly, Abizari et al. (2023) reported that a nutrition education

package implemented at the school level in low- and middle-income nations improved children's dietary diversity and reduced unhealthy snacking.

Community-based activities are also encouraging. The FAO's collection of good practices (2020) indicates some efforts in Kenya and Ghana that link nutrition education with agricultural training to enable families to grow nutrient-rich foods while learning on balanced diets. Such programs illustrate that double-duty actions may be locally based on food systems, and therefore sustainable.

Considered in aggregate, these case studies show that school and community programs are affordable, reproducible vehicles for bringing nutrition education into daily life. But their success depends on good teacher training, frequent monitoring, and cultural adaptation to include knowledge of the local food environment.

➤ *Nutrition Education for Mothers, Adolescents, and Vulnerable Groups*

Nutrition education is particularly critical among the most vulnerable populations to the double burden of malnutrition: poor households, mothers, and adolescents. Mothers are the primary caregivers, and their knowledge of nutrition determines infant and child feeding habits. A systematic review found out that maternal education interventions in Africa improved exclusive breastfeeding practices, complementary feeding behaviors, and child growth outcomes (Nankumbi et al, 2021).

Adolescents represent another vulnerable population, especially with greater diet modification and availability of processed foods. The review by Mwangi et al. (2024) showed that double-duty interventions among adolescents minimized the consumption of sugar-sweetened beverages and enhanced the intake of fruits and vegetables, directly addressing under-nutrition challenges and obesity risk.

For poor and vulnerable populations, access barriers remain a significant problem. It has been noted that in the absence of deliberate targeting of the poor, nutrition education can increase disparities (Global Financing Facility 2020). Responsive, culturally appropriate strategies integrated into community health programs can help surmount such barriers.

These observations highlight the reality that nutrition education must be context-specific: among mothers, child feeding; among adolescents, lifestyle and peer influence; and among vulnerable groups, affordability and accessibility of nutritious diets. In all cases, education is a preventive as well as a corrective intervention in the fight against DBM.

➤ *Policy Frameworks and Double-Duty Actions in Addressing Malnutrition*

Nutrition education is not an isolated thing; it functions optimally within broader policy environments and multi-sector programs. The World Health Organization advocated for the concept of double-duty

actions, actions that double up to address under-nutrition and overweight/obesity at the same time (WHO, 2017). Nutrition education is a perfect action because it can prevent micronutrient deficiency while it can also reduce diet-related non-communicable disease (NCD) risks.

Globally, organizations like the World Bank and UNICEF emphasizes that policy frameworks that integrates education along with food system reforms are necessary to combat the double burden. The State of the World's Children report (UNICEF, WHO & World Bank, 2019) recommends bringing together nutrition education within schools, the health sector, and community programs as a multi-pronged approach. Similarly, the Lancet Commission briefing calls upon governments to maintain double-duty strategies that deal with both forms of malnutrition simultaneously (Global Financing Facility, 2020).

In reality, countries that have managed to reverse malnutrition burdens have adopted cross-sector policies where nutrition education is mainstreamed into agriculture, health, and education sectors. This mainstreaming makes sure that nutrition education is not only knowledge transmission but is supported by enabling environments that provide accessible and affordable healthy food choices (Bhutta et al., 2019).

➤ *Nigeria's Experience: Policies, Programs, and Gaps in Nutrition Education*

Nigeria provides an interesting case study in the roll-out of nutrition education as a solution to DBM. The country continues to grapple with high rates of child stunting and micronutrient malnutrition alongside rising obesity rates, particularly urbanized areas. The National Multi-Sectoral Plan of Action for Food and Nutrition calls out nutrition education as a key intervention but remains without effective rollout (FGN, 2021).

The National Policy on Food and Nutrition outlines strategies for integrating nutrition education into schools, maternal and child health programs, and extension services (FGN, 2016). However, evaluation shows gaps in capacity, resources, and coordination within the ministries. For instance, the National Food Consumption and Micronutrient Survey sees the persistence of micronutrient deficiencies in vitamin A, iron, and zinc despite policy commitments, indicative of weak implementation of education strategy into hard outcomes (FMARD & IITA, 2022).

Existing programs, such as the school feeding program highlighted by GCNF (2021), had nutrition education components alongside meal delivery. The programs are, however, more inclined to focus on food delivery rather than behavior change, limiting their capacity to act as genuine double-duty interventions. Similarly, GAIN's policy briefs (2024) note that the food and nutrition education policies in Nigeria must be translated into a system-based approach that links schools, communities, and mass media campaigns.

In summary, Nigeria's experience reflects both progress and persistent gaps. While the policy environment acknowledges nutrition education, implementation weaknesses limit its ability to solve the double burden. Strengthening capacity, continued funding, and embedding education in daily practice are key steps forward.

➤ *Comparative Insights: Lessons from Global Best Practices*

Examining global experience offers valuable lessons for enhancing nutrition education in Africa. Brazil, Thailand, and Mexico have all had effective large-scale, integrated nutrition education programs that address both under-nutrition and obesity.

In Brazil, integrating school feeding with integrated nutrition education has been a key element of its national food security strategy. Measurements suggest improvements in the diversity of children's diets and undernutrition decreases without the increase in obesity (FAO, 2020). Thailand has, however, incorporated nutrition education into maternal and child health promotion policy and obtained measurable reductions in child stunting and maternal anemia (WHO, 2017).

The Mexican experience demonstrates success and challenges. While the country has been having school-based nutrition education, aggressive promotion of sugary drinks and processed foods undermined success. This emphasizes the need to have nutrition education supported by broader regulatory and food environment shifts (Hawkes & Fanzo, 2018).

For African nations, the key implication is that nutrition education must be joined with enabling environments. Unless complementary measures e.g., policies for healthy school meals, food labeling, and restrictions on unhealthy food advertising are implemented, then education alone will not produce lasting behavior change. Global best practice is thus toward more integrative, multi-component ones where nutrition education is part of more comprehensive food and health systems.

#### **IV. FUTURE DIRECTIONS: STRENGTHENING NUTRITION EDUCATION FOR SUSTAINABLE IMPACT**

As the double burden of malnutrition grows, the role of nutrition education must change to meet evolving challenges. A prime opportunity is offered by digital media. Mobile health (mHealth) apps, social media interventions, and e-learning systems can engage young people and adults more and more influenced by web-based food environments. Global pilot projects show that nutrition education communicated through digital media can improve dietary behavior at relatively modest expense (UNICEF, 2020).

Second, capacity building in teacher and health worker training is needed in order to provide evidence-based delivery of nutrition information on a consistent basis. Without capacity building, nutrition education will be inconstant or cursory (Abrahams et al., 2023).

Thirdly, sustainability requires linking education to food system transformation. Healthy food at a reasonable price e.g., subsidies on fruits and vegetables or restrictions on ultra-processed foods policies can complement the information gained through education. This two-pronged approach guarantees that individuals not only know what they need to eat but can afford to do so (Wells et al., 2024).

In the end, future programs should also give utmost importance to monitoring and evaluation. Not enough African nutrition education programs monitor long-term impacts on obesity and under-nutrition. Having clear measures of knowledge retention, dietary behavior, and health outcomes will allow governments and agencies to better modify strategies and allocate resources (Mwangi et al., 2024).

#### **V. CONCLUSION**

The double burden of malnutrition is perhaps one of the gravest global health challenges of the 21st century, particularly in Africa, where under-nutrition is far from eradicated and obesity on the rise. This document has demonstrated that education in nutrition plays a key role in addressing both dimensions of malnutrition simultaneously. By empowering individuals, families, and communities to make healthy food choices, nutrition education is both a preventive and curative intervention.

Global evidence shows that there is ample room to enhance dietary behaviors through school, maternal, and community interventions when aided by environment and policy. There have been advancements in the African example, and in Nigeria, through policy efforts such as the National Multi-Sectoral Plan of Action for Food and Nutrition, though gaps in implementation, capacity, and sustainability need to be filled.

The future demands bringing nutrition education within multi-sector approaches connecting health, education, agriculture, and social protection. Lessons of best practices internationally educate us that education works best when integrated with structural improvements in food systems and regulatory environments.

Lastly, more than a single intervention is needed to deal with the double burden of malnutrition. It requires systemic reform on top of nutrition education. For Nigeria and other African nations, constructing robust, context-relevant education systems is an attractive option for reorienting diets, increasing health gains, and propelling progress toward the Sustainable Development Goals.

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