

Addressing malnutrition in developing countries: Analysing its impact on women and children and proposing sustainable intervention

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Malnutrition remains a pervasive and devastating health challenge, particularly in low and middle-income countries (LMICs), where it disproportionately affects women and children. Its complex nature extends beyond food scarcity and includes inadequate access to nutritious food and healthcare services which perpetuate poverty and social inequities. Despite global efforts to combat malnutrition, millions of individuals continue to suffer from its adverse effects on health, well-being, and economic productivity requiring comprehensive strategies and solutions to address underlying determinants as well as negative health outcomes. This strategic analysis aims to explore the multifaceted nature of malnutrition in LMICs, with a specific focus on its impact on women and children and will examine the nature of the health challenge, discuss its context within a humanitarian framework, outline its underlying determinants, review global efforts to address these challenges and finally propose a sustainable solution supported by evidence.

Defined as a deficiency, excess or imbalance in a individuals intake of energy and/or nutrients, (WHO, 2024), malnutrition is a highly complex issue and one of the world's most serious development challenges with profound implications for human health and well-being. While the term broadly includes overweight, obesity and diet-related noncommunicable diseases, undernutrition is the main form of malnutrition in developing countries involving stunting (low height for age), wasting (low weight for height) and underweight (low weight for age). Despite some progress, the current situation remains alarming, with millions of individuals in LMICs facing the consequences of inadequate access to nutritious food and healthcare services. According to estimates, 149 million children under 5 were stunted and 45 million wasted in 2022 (FAO 2023) with half of the deaths in this age-group linked to undernutrition primarily in developing countries (WHO, 2024). Malnutrition has wide-ranging impacts on health, education, and economic productivity. It not only leads to higher mortality rates, especially among young children and pregnant women, but also increases susceptibility to illness and non-communicable diseases if experienced early in life (European

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Parliament, 2013). Furthermore, undernourished preschool children achieve lower levels of schooling and develop poorer cognitive abilities in critical areas like problem-solving (Katoch et al., 2022) which impacts their future productivity resulting in decreased earning capacities in adulthood (Nugent et al., 2020). According to the World Bank (2015), the consequences of malnutrition go well beyond the individual level with the economic toll of stunting amounting to approximately 10% of the Gross Domestic Product (GDP).

Although nutrition is an important matter of public health and economic development, it also is a fundamental human right enshrined in numerous conventions and agreements and in the Sustainable Development Goal (SDG) 2 to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture". Therefore, malnutrition is a human rights violation which requires effective international solidarity to transform food systems for all people (Antonio Guterres, 2023). While there have been multiple interventions at the local, regional, and global level, the world is not on course to meet the 2030 Agenda target of reducing the prevalence of stunting in children by 50 percent from the baseline level, as specified in Target 13.5. (FAO, 2024). There is a need for more sustainable solutions to address the underlying determinants of malnutrition and outcomes.

While the most immediate determinants of an individual's nutritional status related to poor dietary intake such as energy, protein, and micronutrients are determined by factors such as food security, healthy environments, and access to adequate healthcare, the quantity, and the quality of these resources and how they are utilised are the result of a multiplicity of co-existing political, cultural, and social factors. These include the basic level of resources available to individuals to access essential needs, the societal structures that determine access to these resources and services influenced by long-term trends and factors including globalisation and urbanisation and the forces underlying these trends such as societal norms and beliefs (Harris and Nisbet 2021). Nevertheless, poverty remains the primary underlying cause of malnutrition in children in developing countries. At the individual level, it dictates a parent's economic status and capacity to afford nutritious food, education on dietary essentials and access to clean water and sanitation facilities which can help prevent infectious diseases that lead appetite loss and difficulties absorbing nutrients.

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To address malnutrition, the UN Decade of Action on Nutrition from 2016 to 2025 represented a significant shift in global efforts including UN agencies such as the United Nations Children's Fund (UNICEF), Food and Agriculture Organization (FAO), World Health Organization (WHO), International Fund for Agricultural Development (IFAD), World Food Programme (WFP), and UN Relief and Works Agency (UNRWA), (Global Nutrition Report, 2022). Advocating for high-level political engagement in support of its objectives as outlined in the UN-Nutrition Strategy (2022–2030), UN-Nutrition has also served as a vital inter-agency mechanism to ensure that UN nutrition efforts at the global and country level are aligned and mutually supportive and that nutrition commitments made at the UN Food Systems Summit (UNFSS) and the Tokyo Nutrition for Growth (N4G) Summit are fulfilled (Scaling Up Nutrition, 2024).

Given the complex nature of malnutrition, a program design for sustainable prevention and management requires a clear understanding of the aims and objectives and stakeholders, and the implementation of an evidence-based multidisciplinary strategy that aligns with health guidelines, research findings and best practices from successful nutrition programmes. Important recommendations include the UNICEF Nutrition Strategy 2020-2030 and the World Health Organisations guideline on acute malnutrition which focuses on the importance of a child centred approach, breastfeeding and access to nutrient dense home diets and the role of community health workers in providing evidence-based care (WHO, 2023). Indeed, evidence suggests that developing community-specific solutions which are integrated with health systems is essential for sustainable SAM management (Ireen et al, 2018).

Recommendations for a multidisciplinary programme to address malnutrition in LMICs

Building on global health guidelines, addressing malnutrition requires the implementation of a community-based nutrition program. This program aims to promote the dietary habits, services, and approaches that support nutrition, growth, and development in children and women. The key objectives include (i) preventing undernutrition and micronutrient deficiencies in early childhood and middle children, (ii) preventing undernutrition and micronutrient deficiencies in mothers and low birthweight in newborns, and (iii) ensuring treatment of wasting and other forms of life-threatening

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acute malnutrition in early childhood. As a community-based solution, key stakeholders will primarily include local leaders incorporating women's groups, community health workers and religious leaders to engage communities and facilitate interventions. In addition, government agencies, NGOs, and International Organisations such as UNICEF, WHO, FAO, and WFP are crucial to leverage resources and expertise in nutrition programming as well as healthcare providers to deliver healthcare and nutritional interventions and educational institutions to support nutrition education. The proposed multidisciplinary programme includes nutritional status assessment, and treatment and prevention of malnutrition through nutrition-specific interventions, education campaigns, community engagement, sustainable agricultural practices, and policy advocacy. These interventions not only contribute to targets such as eradicating malnutrition (SDG 2.2) but also reduce child mortality (SDG 3.2), ensure universal health coverage (SDG 3.8), build global partnerships (SDG 17.16), enhance policy coherence (SDG 17.14), and promote sustainable agriculture (SDG 2.4).

i. Nutrition-specific interventions

The initial phase of the nutrition program will focus on the treatment of malnutrition with the introduction of therapeutic foods which are highly effective in aiding the recovery of malnourished children particularly when compared to alternative dietary approaches (Schoonees et al., 2019). Recommended by the World Health Organisation, Ready-to-Use Therapeutic Foods (RUTFs) are energy-dense and nutrient-enriched pastes with ingredients such as oil, sugar, dried skimmed milk, and a vitamin and mineral supplement which is easily digestible and suitable for young children. (Awuchi et al, 2020). Resistant to bacterial contamination, they can be eaten without cooking and are ideal in resource-limited settings where access to traditional foods can be challenging (WHO. 2018).

ii. Education campaigns

Given the effectiveness of community-based education programs on food and nutrition in improving the nutrition status of under-five children in developing countries and subsequent maternal food choices, the second phase of the program will focus on nutrition education.

According to Majamanda et al 2014 (2014) education on the appropriate age for introducing complementary foods, frequency of feeding and the nutritional value of locally sourced food has led to significant improvements in child nutritional status with increases in weight, height, and reduction in morbidity. The program will include home visits, group meetings of caregivers and community leaders as well as cooking demonstrations which have also been shown to have successful outcomes. It's important to provide education on breastfeeding as it is one of the most effective ways to ensure child health and survival (WHO, 2024) with substantial evidence suggesting that breastfed infants are less likely to experience severe malnutrition. Moreover, numerous studies focusing on maternal education have demonstrated a significant link between malnutrition and the educational level of parents (Nisar et al., 2016).

iii. **Community engagement**

Community engagement is fundamental to the success of community-based nutrition with studies on community awareness in Indonesia highlighting the central role of local mobilisation to address SAM in children under the age of five (Bait et al, 2019). The program will tailor an approach which sensitively considers the context and rely on strong leadership from key stakeholders such as local area leaders, women's empowerment organisations, community and religious leaders, and community health workers (CHWs), to encourage local involvement. A lack of community awareness about malnutrition as a serious medical condition which requires treatment has also presented a significant barrier to addressing malnutrition and the main reason for low attendance rates at SAM screenings and limited engagement in community-based nutrition. These initiatives align closely with education and training, as while mothers are typically the primary caregivers, studies indicate that fathers as the primary decision-makers also have an important role to play and have limited knowledge and awareness of malnutrition issues.

iv. **Sustainable agricultural practices**

The impact of climate change, declining biodiversity, land and water scarcity, and environmental degradation present serious challenges to food security and exacerbates the

prevalence of malnutrition. To deliver a more sustainable approach to food security and sovereignty, the program will work with key local stakeholders to introduce Future Smart Foods (FSFs) into the local agricultural and food system given their frequent reliance on a small number of staple crops such as rice, maize, and wheat which lead to dietary imbalance, malnutrition, and vulnerability to environmental shocks (Li, X., & Siddique, 2020). Nutrient-dense, climate-resilient, and economically viable, FSFs ARE often locally available and can be instrumental in diversifying diets and enhancing food security. A key part of the implementation strategy of the program will involve engaging local authorities and organisations, running community workshops to identify and promote underutilised edible plants as well as running awareness campaigns and educating and training farmers and community members on FSF cultivation and nutritional benefits to establish new community practices. The FAO successfully implemented similar Initiatives in Asia in 2016 and found that the addition of protein and micronutrient content to rice-centred diets can reduce the prevalence of malnutrition and non-communicable diseases (FAO, 2018).

v. **Policy advocacy**

To effectively address malnutrition through a community-based approach, it is essential to recognise the role of sustained political commitment and effective policymaking. Michael Marmot famously highlighted the linkages between health problems in the UK and governance and argued that austerity measures in response to 2008 fiscal crisis led to cuts in public spending affecting healthcare, social services, and welfare which disproportionately impacted disadvantaged communities and exacerbated health inequalities. While Marmot's review focused on health problems in a developed country, it highlights the importance of strong governance in relation to positive health outcomes. According to Baker et al, (2019) generating political commitment to combat malnutrition is important to ensure that essential policies, programs, and resources for improving nutrition are adopted, implemented, and also sustained. It is therefore important for the program to engage with key stakeholders including government agencies, NGOs, international organisations, research institutions and community leaders and organisations to develop comprehensive nutrition policies and secure funding

from governments, donors, and partnerships. Moreover, the inclusion of an advocacy programme that incorporates public campaigns and political engagement through lobbying is essential to securing political commitment as well as monitoring and evaluation to ensure the efficacy of new policies.

Launched in 2010, the Scaling Up Nutrition (SUN) Movement, involving over 66 countries, aims to end all forms of malnutrition by 2030. Through country-led action and multisectoral coordination, the collective has achieved considerable success reinforced by its 2021-2025 strategy. Strengthening political commitment and ownership through multisectoral and multistakeholder platforms (MSPs) for nutrition, the movement has guided national nutrition plans in 55 countries, with nutrition prioritised in 84% of their national development plans. The SUN movement has also successfully advocated for the centrality of nutrition in global agendas at events such as the United Nations Food Systems and the Nutrition for Growth (N4G) summits with 71% of members formulating national food systems pathways. (Sun Movement Lead Group, 2022). As an example of the SUN Movement's success. Rwanda has a National Early Childhood Development Plan (NECDP) 2018-2024 which prioritises nutrition, has conducted capacity building for primary and secondary school teachers on health and nutrition as well as regular coaching on district planning and monitoring and evaluation. In addition, with support from SUN which promotes country leadership, Rwanda has increased domestic funding. routinely monitors the national nutrition information system (HMIS) and engages key stakeholders through meetings with the National Coordinating Entity and Nutrition Technical Working Group (SUN Country Profile: Rwanda, 2022).

Another example of a successful initiative is the learning and nutritional rehabilitation homes program known as FARN or FARNE (a French acronym for home rehabilitation services) which focuses on prevention and rehabilitation of malnutrition in children under 5 years old using locally sourced food in provinces such as Guera, Kanem, Lac and Bahr el Gazel (Frontiers in Sustainable Food Systems, 2022, Galar, 2019). Using a community-based approach, FARNE serves as a community gathering place with cooking demonstrations and awareness sessions on nutrition, health, and hygiene with trainer mothers or "Mamans lumière" working with beneficiary mothers to prepare

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balanced and nutritious meals using locally available food ingredients. Before the cooking demonstrations, a systemic screening of malnourished children is conducted in vulnerable areas with home follow-ups. The program actively involves many members of the community to ensure community engagement and support and encourages positive deviance among FARN mothers, leading to behaviour changes that reduce and prevent malnutrition in the community. The overall success of the FARNE program is measured through indicators such as improved nutritional status, reduced malnutrition rates, community contributions, behaviour change in mothers, and overall sustainability of the program.

As discussed, malnutrition remains a serious global challenge which disproportionately affect women and children in low and middle-income countries. Despite global efforts in recent years, millions continue to suffer its adverse effects on health, well-being, and economic productivity. Recognising malnutrition as a violation of human rights, international solidarity is necessary to transform food systems at the individual, regional and global level. While interventions have been implemented in recent decades, the world is not on track to meet the 2030 Agenda and highlights the need for sustainable solutions that address underlying determinants and negative health outcomes. The multifaceted nature of malnutrition requires a fully integrated community-based approach which incorporates nutrition-specific interventions, education campaigns, community engagement, policy advocacy, and sustainable agricultural practices. Key challenges to an effective nutrition programme includes policy gaps and poor governance which require sustained political commitment and effective policymaking to support ongoing community engagement. Sustainable agricultural practices and guidelines from the SUN Movement further emphasise the importance of holistic, evidence-based approaches supported by global cooperation and local empowerment to offer clear pathways to combat malnutrition.

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