Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Short Communication

Adopting a systems view of disrupting crisis-driven food insecurity

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ABSTRACT

Objectives: During the COVID crisis, the incidence of food insecurity worsened around the globe. We were reminded that: food insecurity existed before COVID, worsened during this crisis, and will unfortunately be a persistent phenomenon in the post-COVID world. It is evident that to counter this public health threat, systematic changes will need to happen. In this short communication, we introduce the notion of a systems-oriented framework that can guide appropriate actions for us to disrupt future food insecurity crises.
Study design: This short communication identifies preliminary observations based on relevant past studies that documented the impact of COVID-19 on food insecurity, and the researchers' conceptualization of a framework on how we may address future crisis-driven food insecurity challenges.
Methods: Systems-oriented framework was conceptualized based on preliminary observations in studies that investigated food insecurity during the COVID-19 pandemic.
Results: This short communication explores the notion of a systems-oriented framework as a guide to future action to prevent crisis-driven food insecurity.
Conclusions: The systems-oriented framework emphasizes the importance of action across macro, meso, and micro levels, and synchronization to maximize synergies.

Introduction

Worldwide, an estimated 820 million people were food insecure before the pandemic, and another 130 million were added during the crisis.[1] In the USA, the USDA Economic Research Service indicated that 89.5% (116.7 million) of US households were food insecure throughout 2020. Consequently, there has been a significant level of interest in investigating the impact of COVID-19 on food insecurity globally.[2] Evidence suggests that the COVID-19 pandemic aggravated pre-existing food insecurity.[3] It revealed the critical inequities (e.g. poverty, access to food, access to infrastructure) and health disparities that negatively impact individual and household food security.[4] It also recognized the importance of concerted efforts of a broad coalition of stakeholders to counter future food insecurity. Therefore, minimizing food insecurity during the next crisis will require coordinated efforts across the system (macro-meso-micro levels[5]) to spur social innovation that would potentially bring food to those in need. In this short communication, we explore this notion of a system-wide approach at the macro level (policies, regulations, and national programs), meso level (organizational and intersectoral), and micro level (household and individual) (see Fig. 1).

Countering food insecurity in post-COVID-19

Food insecurity is a complex problem; a crisis such as the COVID-19 pandemic can further complicate matters. In the developed economies, food insecurity remains a distribution and an affordability challenge.[2] Elsewhere in the developing world, other challenges contributing to food insecurity include a fragile food system, poverty, socio-economic conditions, high food price inflation, natural hazards, climate change, and pests.[6] The pandemic played as an equalizer where irrespective of national economic development of nations, the underserved, across economies, experienced hunger. National level programs such as federal income support, expansion of tax credit schemes, local, private and

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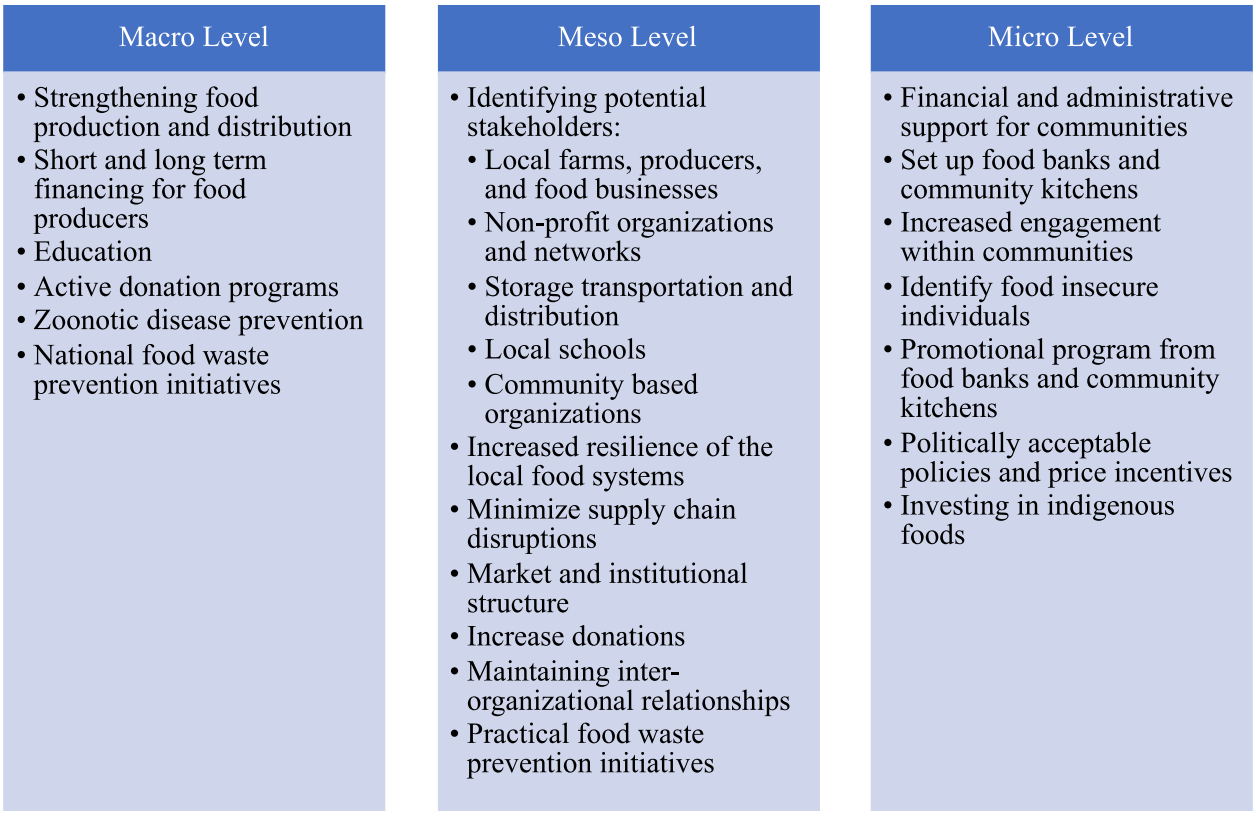

Fig. 1. Systems view of disrupting food insecurity: macro-meso-micro level perspectives.

government level food donations, and free school meals have targeted the immediate needs of the communities. This of course does not include those living in conflict and war zones. However, unless we address the systematic issues, as we witnessed during the COVID-19 pandemic, we can expect future crises to further deepen food insecurity for millions.

Preparing for the next crisis — macro level

Although different global and local food security initiatives and policies are actively applied, more ambitious and sustainable approaches should be planned. According to the Global Risk Report (2022), climate action failure and global financial crisis come as new risks after the pandemic (World Economic Forum, 2022). Strengthening food production and distribution are key to crisis preparedness. Areas such as short- and long-term financing, education, active donation programs, the next zoonotic disease prevention especially in developing countries, and effective food waste prevention initiatives must be covered. Commitment to national-level programs in these areas is needed to spur activity across the system.

Leveraging public-private-community partnerships — meso level

The food crisis calls for mapping sustained local public and private partnerships and political movements, identifying potential stakeholders. The framework tested between various sectors of production, storage transportation, and distribution will provide directions for scaling up. There should be increased resilience of the local food systems to minimize supply chain disruptions. Coordinated effort can strengthen the local food systems through organizations such as local farms, producers, and food businesses that understand the local community needs, and non-profit organizations and networks that are aware of the gaps in the market and institutional structure. Identifying crisis preparedness protocols at focal points of food access and distribution such as local schools and community-based organizations (food banks, places of worship, and others) can increase access to food for those at risk of being food insecure. As always, there is a need for education and information sharing about food insecurity, food loss and waste to support these organizations in their effort to increase donations, volunteering time, and maintaining inter-organizational relationships.

Reducing food insecurity locally — micro level

Many state and local governments aim to alleviate food insecurity by offering financial and administrative support for communities to set up food banks and community kitchens.[7] However, such programs may not be effective if food insecure individuals cannot be reached.[7] Therefore, higher engagement within communities is needed to identify the food insecure individuals. For example, community members can partner with local businesses and institutions to screen for those who are food insecure.[8] Some alternative signals (e.g., shopping frequency and significant life events) can be observed through community members to identify food insecure individuals. Furthermore, promotional programs (e.g., direct contact and marketing materials) from food banks and community kitchens can be linked to those in need to enhance the utilization of the programs. Although local initiatives are crucial, food insecurity is closely linked to regional food security challenges and income poverty. Thus, the initiatives should be supported by politically acceptable policies and price incentives to protect local and regional poor communities. Investing in indigenous foods is

likely to prevent dependency on central food production and distribution.

Another critical target population of interventions needs to be children, particularly those reliant on school meals. School closures due to COVID-19 have disrupted the normal distribution channels through which school meal programs operate and many children are without this vital source of food. School meals are a critical source of nutrition for millions of vulnerable children around the world covering over 370 million children globally, with the largest number of beneficiaries in India, Brazil, China, South Africa, and Nigeria.[9] In 2020, it was estimated globally that 39 billion in-school meals were missed during school closures by the 370 million children who were benefiting from school feeding programmes precrisis. Adapting existing programmes to use take-home rations, top-up cash transfers or food vouchers creates an important safety net. However, these are not long-term solutions. Priority should be given to targeting effective food waste initiatives, collecting and recycling untouched and unopened food packages from places that offer catering services, and delivery of nutrition more cost-effectively to yield substantial benefits in education and health outcomes to children and individuals in need.[1] Without increased efforts to bring children to school, the precrisis level of out-of-school children is likely to worsen as outcomes of the COVID-19 crisis persist. Countries can also take the opportunity to improve programme design, and address formerly neglected issues, such as the quality of diets and food-fortification options, and free meals for all school children, around the world.

Conclusions

The biggest risk is inaction. There is a critical need to re-evaluate and design the current strategies, centered around emergency preparedness, creating avenues for partnerships and community engagement. Systematic efforts need to happen across the macro, meso, and micro levels of our society. Eventually, these efforts will need to be synchronized, to avoid delicacy, and to ensure synergies, thereby maximizing the impact by leveraging available resources. We may not have the luxury of doing so sequentially as the next crisis brews to again remind us of the persistence of food insecurity on our planet.

Author statements

Ethical approval

No human subjects ethical approval was needed given that no human subjects were involved in this study.

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Competing interests

The authors do not have any competing interests to declare related to this study.

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