

The triple burden of malnutrition

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Today's nutrition crisis is a manifestation of the broader malfunctioning of our global food system. The specific factors linking the two warrant further investigation.

The world is facing an unprecedented crisis in which overnutrition (overweight and obesity), undernutrition (stunting, wasting and underweight) and micronutrient deficiencies (often referred to as 'hidden hunger') coexist within the same population. This triple burden of malnutrition is a major public health challenge. The numbers speak for themselves: 51% of the world's population over five years of age is predicted to be obese or overweight by 2035 if the status quo is maintained while, paradoxically, one in five children under the age of five years is stunted.

Connecting overnutrition, undernutrition and micronutrient deficiencies is the food system's inability to provide equitable access to healthy diets for all. A recent analysis of anthropometric and demographic data from 55 low- and middle-income countries has shown that economic globalization is associated with the simultaneous occurrence of overnutrition and undernutrition, particularly among the poorest households of poorer countries (Seferidi, P. et al., *Lancet Glob. Health* **10**, E482–E490; 2022). Factors such as non-resilient food supply chains, persistent food loss and waste, economic crises, conflicts and extreme weather events pose additional threats. At the same time, the increasing accessibility of ultra-processed foods at lower prices than processed or unprocessed foods widens the gap in access to a healthy



diet between high-income and low-income individuals.

Scientific evidence on the above factors and their interplay is key to support food system change towards ending malnutrition in all its forms. This issue of *Nature Food* features five primary research articles that aim to contribute to this goal.

Fadnes et al. [use](#) prospective population-based cohort data to show that sustained dietary changes can increase life expectancy by up to 10 years. The study reveals that the largest gains are associated with increased consumption of whole grains, nuts and fruits and reduced consumption of processed meats and sugar-sweetened beverages.

While these are considerable health gains, implementing dietary changes at the population level remains a challenge, given that the determinants of food choice are multifactorial – including, among others, culture, religion, personal preferences and economics (G. Lenget al., *Proc. Nutr. Soc.* **76**, 316–327; 2017). Recognizing that, in this issue, Grummon et al. [propose](#) an approach based on simple and actionable dietary substitutions that are more likely to be incorporated into people's daily habits and benefit the health of the global population.

The responsibility for malnutrition lies on individual as much as collective choices. Relying solely on the former, without due consideration of what needs to be transformed in the food environment, might constrain progress towards better diets. Effective policies that make healthy food and water universally accessible while disincentivizing the consumption of unhealthy foods are essential to address these concerns on a global scale. A systematic scoping review by Alvarado et al. in this issue [summarizes](#) existing evidence on sugar-sweetened beverage taxation, an important contributor to overweight and obesity.

In addition to the obesity epidemic, micronutrient deficiencies of minerals (iodine, zinc and iron) and/or vitamins (vitamin A, vitamin B₁₂ and folate) have health consequences throughout the life cycle and not just in children. Based on a production–consumption–nutrition model, Wang et al. [show](#) that the food domestically available for consumption is insufficient to meet people's needs for 9 different micronutrients in more than half of the 156 countries studied.

Finally, although biofortification of staple crops is a necessary strategy to increase accessibility to nutritious food, the latter can't be achieved without ensuring the retention of micronutrients in food at the point of consumption. Huey et al. [present](#) an online interactive micronutrient retention dashboard that provides an overview of the retention of provitamin A, iron and zinc in food across crop processing methods. This new resource will benefit households, regulatory entities and implementers of biofortification programmes.

We hope you enjoy reading!

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