

PERSPECTIVE

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Look beyond production

Malnutrition is the new normal. Addressing it will require changes across the entire food system, says **John Ingram**.

Food-security challenges will not be met by simply increasing primary production. Many — mostly poor people living in developing countries — do need more calories and nutrients, and increases in production are required to satisfy this need. But a significant proportion of these people are becoming wealthier, and if the concomitant changes in diet towards the consumption of more energy-dense foods continue, the nutritional status of this rapidly increasing group will probably diminish, even as its calorific intake grows.

The current status of global nutrition is far from satisfactory. According to the Food and Agriculture Organization (FAO) of the United Nations, 795 million people are hungry — they are unable to access enough food to meet their daily minimum dietary energy requirements. Given the challenges of determining such a precise number, and the fact that it does not include people who meet the minimum on average over a year, but fall below it at certain times, the number of people who often have to cope with insufficient calories may well be about one billion. Estimating the number of people who do not get enough nutrients is even harder, but between 2 billion and 3 billion (see go.nature.com/2msvaxx) is likely. Too little iron, vitamin A, iodine and zinc are the most prevalent deficiencies. Paradoxically, at least 2 billion people consume excess calories (M. Ng *et al. Lancet* **384**, 766–781; 2014), many of whom also do not get enough nutrients. Malnutrition is often taken to mean too little nutrition, but really it means poor nutrition.

This correct interpretation is captured by the word ‘sufficient’ in the widely used definition of food security that stemmed from the 1996 FAO World Food Summit: “Food security exists when all people, at all times, have physical, economic and social access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” That is, people have neither too little nor too much.

The failure to consistently recognize that it is not only people who are hungry but also those who have too few nutrients and those who overconsume calories who can be malnourished challenges efforts to address the problem comprehensively. It is essential to increase the supply of food for people who are hungry. There are, however, growing concerns about the health consequences of overconsumption, particularly in the form of ‘empty calories’ from foods that contain solid fats or added sugars that supply energy, but little or no other nutrition. Nearly every country in the world faces serious health problems linked to the consumption of either too little nutrient-rich food or too much energy-dense food. About half the global population is affected by either one of these categories; the multiple burdens of malnutrition are the new normal and poor diets constitute the number-one driver of the global burden of disease.

Malnourishment is related to consumption patterns of calories and nutrients, rather than food production. Major determinants of consumption include food preference (for example, taste and appearance),

allocation (such as who eats first in a household), cultural norms (such as excluding certain foods for religious reasons), cooking skill and convenience. But, arguably, the most important is affordability. This is dictated by both the price that results from the chain of enterprises involved in processing, packaging, trading, shipping, storing, advertising and selling food, and people’s ability to pay. It is the increased availability and affordability of processed, high-energy foods for the emerging global middle class (those who earn US\$6,000–30,000 a year) coupled with the aspirations of many to consume a more-Western diet that is making malnutrition a global problem.

Most international efforts to improve food security focus only on hunger and undernutrition, and hence push to increase food production. But this productionist approach will not solve all forms of malnutrition. More emphasis should be placed on changing consumption patterns — identifying problems at the consumer end of the supply chain, and working backwards to the producer from there. This will not only help to identify the root causes of malnutrition, but also send a signal to producers about the nature of foods needed to address malnutrition.

Even with a greater emphasis on consumption, solutions will be far from straightforward. Each actor involved in the food system — from primary producer to retailer — has their own motivations and modes of interaction. This presents a highly complex picture that makes it challenging to enact effective policy, practice and social interventions to reduce malnourishment. Any intervention brings winners and losers, not just in the food system, but also for societal goals such as employment, political capital and the environment. Synergies and trade-offs need to be considered at different

times, and across different geographies and jurisdictions. A food-systems approach identifies, maps and analyses the interactions between the actors and their drivers, including each actor’s activity, the outcomes of this activity and the possibilities for, and consequences of, interventions.

This approach has many applications. Governments can use it to help formulate food policy by assessing the probable efficacy and costs of regulation, taxes and subsidies. Food businesses can instigate better practices to improve the nutrition and environmental impact of their products, while maintaining vibrant enterprises. And non-governmental organizations and civil society groups can develop stronger arguments for advocacy and lobbying. To meet the United Nations’ goal of ending all forms of malnutrition by 2030, we need to think about the whole food system. A purely productionist approach will not be sufficient — we need to manage food demand, not just meet it. ■

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