





Perceptual blindness in nutrition: We are in a critical time to be connected

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Funding information

National Agency for Research and Development, Grant/Award Number: 72200061; Marato Foundation, Grant/Award Numbers: 201943-30, 201943-31; Miguel Servet II, Grant/Award Number: CPII20/00009; Ministry of Economy and Competitiveness, Grant/Award Number: PID2020-114921RB-C21; CIBERFES, ISCIII; Icrea Academia 2018; European Social Fund [ESF]

Abstract

Our health and well-being are affected by our food systems. The new nutrition reality has been linked to complex food systems, interrelated with several pathways and determinants, including physical, socioeconomic, environmental, and ecological, and lately, has been strongly associated with population health, the increase in chronic diseases, and climate change. We briefly comment on four pillars, namely food environments, food security, food supply, and safety and nutritional epidemiology, all of which are key determinants of food systems. We overview some highlights, challenges, and methodologies with a view to advancing food and nutrition science as an integrated field of research. By modifying food systems, we are able to improve the aging and well-being of populations and the health of the planet. Trusted science, nutritional education, new scientific-public communication, integrated policy, investment, food availability, and cultural strategies are all essential for creating better food systems. Perceptual blindness in nutrition must be transformed.

INTRODUCTION

Malnutrition, the double burden of malnutrition, and, specifically, obesity and overweight have been labeled a silent, ongoing pandemic and together probably comprise the most critical challenge in the 21st century for public health. Furthermore, the progress and effort made toward preventing or reducing these conditions were adversely impacted by the COVID-19 context and its multiple impacts on lifestyle behavior and the economic situation, among other things [1]. There are

multiple forms of malnutrition that overlap in different ways and in different places, especially in low- and middle-income countries; however, this new nutrition reality has been linked to, and considered a consequence of, current food systems [2]. An important driver is the availability of low-cost ultraprocessed food and beverages, which are characterized by higher energy density and lower nutrient density, among other things (e.g., reductions in physical activity).

For instance, several chronic diseases, including diabetes and hypertension, are preventable with healthy diet because we can

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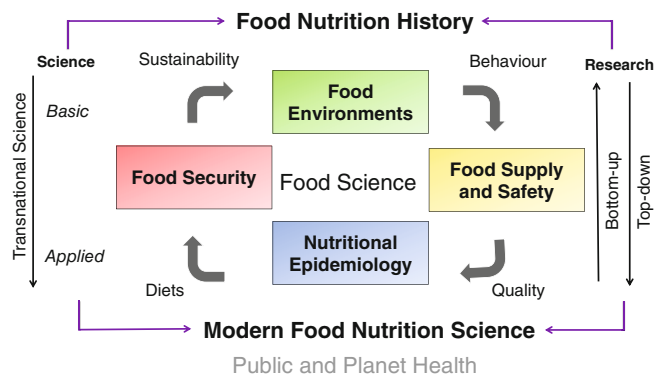


FIGURE 1 Pillars and key determinants of food systems [Color figure can be viewed at wileyonlinelibrary.com]

modify the main risk factors (e.g., lifestyles); commonly, they are characterized by late diagnoses and treatments, long asymptomatic periods, and reduced short-term fatal risk (e.g., silent myocardial ischemia) [3]. Moreover, the exacerbated burden of diseases in aged populations can promote less productivity and negatively affect global health and life expectancy, as well as lead to a poorer quality of life and reduced happiness, a field that has not been fully explored. Thus, why are current strategies not working? What are we missing or not seeing? Who is not connected or aware?

In recent decades, real change and adherence to a healthy lifestyle have required a comprehensive strategy, including multilevel and multifaceted policy and laws, an appropriate education system, a regulatory environment, and alignment with all stakeholders [4]. Therefore, more than ever, we need to move together on the pillars and key determinants of food systems to improve them and prevent nutritional diseases. To succeed, we need to manage our food and nutrition challenges, which we have hypothesized as a perceptual blindness condition adapted to the field of health and nutrition, due to the failure to notice a fully visible framework.

First, for a complete understanding, it is necessary to see the whole picture (Figure 1) and identify the key events in the history of nutrition, along with their implications for science, policies (food, agriculture, and health), and clinical practice guidelines. Unfortunately, the last Economist Intelligence Unit's Democracy Index found a decline related to the COVID-19 pandemic and financial and internal conflicts that could become more acute with the Russia-Ukraine war and directly influence/weaken nutrition at a global level (e.g., malnutrition), as well as the progress of nutrition science. We will only present an overview of some pillars of food systems, while being aware of the interconnectedness of several internal and external factors, such as the intake of thousands of nutrients/compounds in the diet.

FOOD ENVIRONMENT

Dietary patterns involve more than the primary food groups and nutrient intakes. They show how eating habits are individual and collective

behaviors that influence the human relationship with food in sociocultural and environmental contexts, responding to the chrononutrition concept about the frequency or time of meals, cooking processes, etc. For example, dietary restriction types and the longevity diet are ongoing hot topics. "Dietary restriction" is a broad term describing a reduction in some dietary components or in the amounts of food provided, and the longevity diet follows a diet composition or feeding regimen designed to achieve healthy longevity. These have been recommended and widely linked to improving metabolic pathways and increasing health benefits and life expectancy, but do they have long-term adherence these days? [5] At the same time, the food environment, marketing exposure, and trends have a relevant impact on eating behavior and usually contribute to unhealthy diets [6]. Indeed, social networks are a powerful tool in influencing eating behavior with misinformation/fake news, and we should actively participate in trying to counter these. Institutions, schools, or any food system with "semi-captive" people could be the best place to act.

FOOD SECURITY

Recently, the Food and Agriculture Organization (FAO) reported on the state of food security and nutrition in the world in 2022. Compared with 2019, the latest updates showed an alarming situation, because 150 million more people faced hunger in 2021. Moreover, around 2.3 billion people did not have access to adequate food in 2021, and almost 3.1 billion people could not afford a healthy diet in 2020, in particular because of inflation in consumer food prices. Consequently, the world is not on track to achieve global nutrition targets in 2025. The main recommendations for transforming food systems related to food security are as follows: (1) agricultural producer support and fiscal subsidies for producers—the repurposing of support may not be fully equitable if some farmers cannot specialize in the production of nutritious foods; (2) to avoid trade-offs, it may be necessary to step up new fiscal subsidies for consumers; (3) where agriculture is still key to the economy and the generation of jobs, governments should spend more on a well-prioritized provision of general services; and (4) international development finance will be needed for low-income countries. This new approach could make healthy diets less costly and more affordable [7].

FOOD SUPPLY AND SAFETY

Another important topic is food processing and manufacturing (food supply), which should include more information available to the consumer. For instance, determining the role of highly processed foods in health-related outcomes would help to define their characteristics better, such as energy rate, nutrients, additives, and sensory properties. This should then lead to an appropriate food-processing and -labeling classification system, rather than just "healthy" or "unhealthy" highly processed foods. Long-term health impacts from food additives and by-products formed during the industrial

processing that is widely used in plant-based products are still unknown [8]. Enhancing food quality and design, emphasizing functional foods and their positive effects on health, following the food security and safety umbrella, and focusing on sustainable development (e.g., the Farm to Fork strategy) can create a better food system.

NUTRITIONAL EPIDEMIOLOGY


In terms of nutritional epidemiological research, the challenges are diverse. They include using comprehensive dietary approaches, avoiding bias and misinterpreting causal-inferential statements related to one food/nutrient or compound in large-scale observational studies, and moving on with developing open-access and data repositories to facilitate reproducibility and replicability processes according to a regulated policy for data sharing. Improving, innovating, standardizing, and validating dietary assessment methods should also be a priority. Furthermore, advances in omics sciences, such as the metabolomics field, could help to achieve the desired precision nutrition and they are much more feasible than decades ago. New biotechnologies-based access enables more knowledge of biological pathways and analysis of inter/intraindividuality or cluster differences in dietary responses. This is a novel tool to complement dietary assessments [9].

Different pillars predominate in other world areas according to nations' income, development, food policy, and government commitments. Thus, it is time to act and make decisions in synergy with multiple sectors, including global and community experiences and nutritional teaching across the entire education system, based on accumulated sound evidence and new perspectives on nutritional science, with a proper and continuous investment and training ecosystem. Changing the assortment of available food and beverages for leaner, greener diets requires the alignment of multiple availability and effective interventions, with significant coverage and magnitude. Currently, the global food system is a relevant source of greenhouse gas emissions, emitting ~30% of the global total [10]. Meaningful change will require action, interaction, and communication across all food pillars and key determinants of food systems.

CONCLUSION

To deal with these unseen or undeveloped areas in food nutrition science, using a multidisciplinary approach, we need to gain more connection, confidence, and strength across the entire field of research. Nutrition stakeholders must be active and responsible for promoting education, transferring and disseminating knowledge at all age stages and on all platforms, and eliminating the effects of confusing food messages or advertising.

The new focus of the combined public-private role will be to visualize the real costs and benefits associated with the area of nutrition. Government, scientific disciplines, and policymakers should commit to enhancing nutrition knowledge and move forward with policies,

guidelines, and strategies. We must promote adherence to the Menu for Action: Food Systems Delivering Better Health [11]. Finally, one of the most significant challenges is to fine-tune and spread science knowledge within society. 

AUTHOR CONTRIBUTIONS

FL, RZR, FPR, and CAL conceived and conceptualized the article. FL wrote the first draft of the article. All authors reviewed, edited, and contributed to the final version of the manuscript. All authors have agreed to the published version of the manuscript.

ACKNOWLEDGMENTS

This work was conducted on behalf of the Epidemiology of Lifestyle and Health Outcomes in Chile (ELHOC) Research Consortium.

FUNDING INFORMATION

FL receives support from the Chilean government for doing his PhD through the National Agency for Research and Development (ANID)/Food and Nutrition Doctoral Program/DOCTORADO BECAS CHILE/2019–72200061. CAL and FL acknowledge the support of CIBERFES, ISCIII, Madrid, Spain; Icrea Academia 2018; and PID2020-114921RB-C21 project from Ministry of Economy and Competitiveness (MINECO). RZR was supported by the “Miguel Servet II” (CPII20/00009) programs from the Institute of Health Carlos III (co-funded by European Social Fund [ESF] investing in your future). RZR and CAL acknowledge the support of the TV3 Marato Foundation, 201943-30 and 201943-31, respectively.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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How to cite this article: Lanuza F, Zamora-Ros R, Petermann-Rocha F, Andrés-Lacueva C. Perceptual blindness in nutrition: We are in a critical time to be connected. *Obesity (Silver Spring)*. 2023;31(2):302-305. doi:[10.1002/oby.23644](https://doi.org/10.1002/oby.23644)