

Guiding Nutritious Food Choices

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For the food system to become more sustainable and nutritious, the environment in which consumers' choices are shaped and informed has an important influence on their diet. Health-positive policies and regulations can support investment and increased intake of fruits, vegetables, legumes and whole grains, as well as mandating these foods to form part of institutional feeding programmes such as national school nutrition programs. Efforts to regulate the marketing of commercial products and services can be highly controversial, but they have been shown to be effective in driving food choices.

Keywords: food choices ; nutritious foods ; diets ; food system ; supply chain

1. Introduction

Fueled by an emerging middle class, growing urban populations, with parallel increases in per capita incomes, are triggering dietary changes ^[1]. Growing per capita incomes lead to noticeable dietary changes, including diversification away from starchy staples, although it may have supplied a disproportionately large share of energy, and towards higher-value perishable products like dairy, meat, and horticulture as well as an increased demand for convenience and processed foods ^[2].

In order to address broken food systems, there is an urgent need for transformation in both food production and consumption. To start with, it is essential that agriculture need to produce nutritious foods in a sustainable manner. The postharvest handling systems must endeavor to preserve nutrition quality and safety of the food through the application of appropriate technologies. Poor postharvest handling and subsequent food loss and waste not only affects access and availability of nutritious foods but their quality and safety. Transformation of food systems also implies a change in the food environment including policy interventions, advertising, food choices and behaviour.

The aim of the present paper is to present and discuss current knowledge on food systems, as well as to identify research gaps. This article does not pretend to cover all aspects of the food system related to nutritious food choices and diets but focuses mainly on guidance towards attainable transformations within a short to medium timeframe. In the article, we will not focus on a very important part of the food system, namely the movement of food globally. However, we acknowledge the fact that this is part of the complexity of what the food system delivers and that it can either contribute or not to sustainability.

The international literature was reviewed, analysing different databases, and case studies to provide a synopsis of current knowledge and viewpoints on food systems transformation. Given the nature of the topic, a broad search approach was used. Scientific databases were searched starting with the search string: "food systems", with "food production", "post-harvest practices", "food choices" and "nutritious diets" as secondary search terms. Additionally, websites of international organisations linked to food systems research, including the World Health Organisation, Food and Agricultural Organization, Global Panel on Agriculture and Food Systems for Nutrition, Global Nutrition Report, High-Level Panel on Food Security and Nutrition of the Committee on World Food Security and the International Panel of Experts on Sustainable Food Systems were interrogated. Food systems are complex because they comprise all activities and stakeholders involved in feeding a population—from growing, harvesting, processing, packaging, transporting, trading, marketing, consumption, to the disposal of food and food-related items—and can consequently be analysed from many different angles.

2. Burden of Disease

The most recent global estimate for 2019 shows that prior to the COVID-19 pandemic, approximately 1 in 11 people were undernourished. The COVID-19 pandemic may add an additional 83 to 132 million people to the ranks of the undernourished in 2020, increasing the global estimate to 1 in 9 people to be undernourished. An ever-rising number of

people have reduced the quantity and quality of the foods they consume. In 2019, 25.9% of the world's population (two billion people) did not have regular access to nutritious and sufficient food or they experienced hunger [3]. Food insecurity not only affects the quantity of food consumed, but it also affects the quality of the diet. Low-income countries rely more on energy-dense staple foods and less on nutrient-dense fruits, vegetables and animal source foods than high-income countries, inducing an excess intake of energy and deficient intake of micronutrients. When energy intake chronically exceeds requirements, overweight and obesity results. More than one-in-three adults globally is overweight or obese, increasingly so over the past two decades [3]. Even though overweight and obesity provide the false picture that food is readily available and consumed, poor quality diets cause persistent undernourishment and micronutrient deficiencies. Thus, an individual can be obese but at the same time have a micronutrient deficiency. Micronutrient deficiencies have often no noticeable signs except in extreme cases, and are for this reason often termed "hidden hunger." Multiple cases of malnutrition during a person's life course, such as the co-occurrence of stunting as a child and becoming an overweight and eventually obese adult who suffers from micronutrient deficiencies, are increasingly reported. Not only is it more than a coexistence, but it also has a life-long effect [4]. This double burden of malnutrition, defined as the concurrent incidence of both undernutrition and overweight and obesity, affects individuals in most low- and middle-income countries (LMIC).

Modifiable risk factors such as unhealthy diets and physical inactivity are major causes of unhealthy weight gain, which can lead to the development of overweight and obesity. The increase in the incidence of overweight and obesity is mainly due to rapid changes in the food system, particularly the availability of inexpensive ultra-processed food and high sugar beverages in LMICs, and major declines in physical activity at work, transportation, home, and even leisure [5]. As incomes rise and populations move to cities, traditional diets high in complex carbohydrates and fibre transform into more energy-dense, nutrient-poor diets high in saturated fats, sugars and/or salt. This global dietary transition is accompanied by a demographic transition that is a shift in reduced fertility rates and increased life expectancy. At the same time, disease patterns move away from communicable and other nutrient-deficiency diseases towards higher rates of childhood obesity, cardiovascular diseases, and some types of cancer. However, since the recent global advent of the COVID-19 pandemic, the importance of nutrition in the management of not only NCDs but also communicable diseases is once again highlighted.

Overweight in mothers is also correlated with overweight and obesity in children. Rapid weight gain early in life may also predispose these children to have long-term weight excess [6]. Ultra-processed food consumption has been linked to the risk of overweight and obesity and the prevalence of non-communicable diseases. Preliminary evidence shows that the consumption of these foods during the first 1000 days (pregnancy and infancy) could also be linked to growth retardation or stunting, highlighting the complexity of the problem [6]. This finding, along with environmental and social influences, is increasingly agreed upon as important drivers in the global burden of malnutrition across the life course. The identification and understanding of the drivers of the food system shift as well as the endorsement of effective policies and programs that address the challenges of the double burden of malnutrition are urgently needed [6].

Every human being has the right to food under national and international law, which protects the right of human beings to access food and feed themselves, either by producing their own food or by buying it. The right to food is linked to one's right to life and dignity. However, realisation of this right will not be accomplished without more sustainable food systems that support healthy and sustainable food choices and ensure food and nutrition security for all.

3. Food Systems Are Broken and Therefore Guidance on Nutritious Food Choices and Diets Are Required

Policy interventions also need to consider the accessibility of nutrient-rich food to all by ensuring foods move along food supply chains more efficiently, reducing food losses and food waste, and by lowering the cost of food production. Trade mechanisms such as formal trade agreements, tariffs, and food safety regulations can be used to shift the mix of foods available domestically, as well as their prices [7]. Accessibility can be improved especially in rapidly growing urban centers, by investing in hard and soft infrastructure such as roads, cold storage, electrification, and access to credit. These mechanisms can help move perishable nutrient-rich foods along the supply chains quickly and more efficiently, preventing food losses and waste, and increasing profitability for smallholder farmers and small and medium-sized enterprises (SMEs) in particular.

Ultimately, postharvest losses (quantitative and qualitative) not only affect access and availability of nutritious food but also make them unaffordable, especially to the ever-increasing vulnerable populations. Therefore, reduction of food loss and waste in a food system focused on nutrition outcomes can significantly contribute to improved nutrition security.

Food environments set the context within which food acquisition occurs, including availability, accessibility, affordability, desirability, convenience, marketing, as well as characteristics of food sources and products. Food environments influence consumer choices and have an influence on global food system shifts in food production, transportation, storage, transformation and retail [8]. Food environments both restrain and prompt food choices because food environments determine what foods are consumed at any given time, at what price and with what effort and convenience. Pharmacological, educational and behavioural interventions have limited overall success in the prevention and treatment of nutrition-related non-communicable diseases and malnutrition in all its forms. A novel and a longer-term approach would be to transform the environments that promote high energy intake and sedentary behaviour into more sustainable food systems.

The internationally accepted definition of a food label is “any tag, brand, mark, pictorial or other descriptive matter, written, printed, stenciled, marked, embossed or impressed on, or attached to, a container of food. Food labeling includes any written, printed or graphic matter that is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal”. Pre-packaged food shall not be described or presented on any label or in any labeling by words, pictorial or other devices in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character in any respect or be confused in such a manner as to lead the purchaser or consumer to suppose that the food is connected with such other product [9].

4. Conclusions

The consumers of today do not instinctively make healthy food choices. In fact, despite the growth in disposable income and improved access to food diversity through the penetration of supermarkets into rural areas, urbanisation and prepackaged food, people are consuming less dietary fibre, fruits and vegetables. Instead, they increasingly choose to eat food that is high in salt, sugar and trans fat, or combinations thereof. The response of the food system up-to-date was to continue to provide these combinations or recombinations of the same ingredients based on consumer demand.

For the food system to become more sustainable and nutritious, the environment in which consumers' choices are shaped and informed has an important influence on their diet. Health-positive policies and regulations can support investment into fruits, vegetables, legumes and whole grains and increase intake such as mandating these foods to form part of institutional feeding programmes such as national school nutrition programs. Efforts to regulate the marketing of commercial products and services can be highly controversial, but they have been shown to be effective in driving food choices. In addition, policy and economic instruments can be effective in favouring production of nutrient-rich foods and making them available and affordable to all, especially in the vulnerable populations. Although efforts have been made to increase production of nutritious foods, focus must shift towards better postharvest management to preserve nutritional quality and safety through application of innovative practices and technologies across all stages of the supply chain. A key consideration for all these responses is the need for systematic approaches, engaging stakeholders across all levels of policy and parts of the food system in collaborative transformative action. These should consider the social aspects of food, shifting of social norms, political will, economic implications including trade liberalisation, and cultural influences sensitive to current dietary habits of ethnic groups, communities and countries. Shifting dietary habits will include interventions to change supply and demand and will require actions from governments, businesses, and individuals that go beyond information and education programmes. It is also crucial that there is increased transparency, disclosure, and awareness of industry strategies, and that mechanisms to address and manage industry influence are strengthened in a country. The food industry should refrain from using practices that may delay the adoption and implementation of globally recommended public health policies.

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