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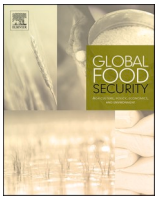

Elaborating the science of food choice for rapidly changing food systems in low-and middle-income countries

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ABSTRACT

The world's food systems and environments have been changing dramatically, concomitant with changes in over- and undernutrition. We elaborate the science of food choice to better understand, analyze, and respond to relationships between changing food environments and food choice. The science of food choice is concerned with generating knowledge about causal drivers of food choice decision making processes and behavior within immediate food and social environments. Three fundamental and interconnected questions undergird this science; 1) what do people eat from the options available and accessible?; 2) how do people interact with food environments?; and 3) why do people decide to acquire, prepare, distribute, and consume foods as they do? Not all food choice behavior is rational, reflexive, or discrete, but is embedded in wider activities of daily lives. The science of food choice involves understanding influences from multiple systems that drive food choice for deriving sound, actionable policy, and programmatic recommendations.

Global food systems are altering local food environments that serve as the contexts of food choice. Food choice is defined as the processes by which people consider, acquire, prepare, store, distribute, and consume foods and beverages (Sobal et al., 2009). Globally, food systems are changing in response to broad and rapid social, technological, and environmental shifts (Global Panel on Agriculture and Food Systems for Nutrition, 2016; HLPE, 2014, 2017) including emergence of complex global trade systems, establishment of new markets in previously unreached settings and contexts, and involvement of multinational private sector actors. These changes alter the type, quantity, price, and healthfulness of foods available to and chosen by consumers (HLPE, 2017; Holdsworth and Landais, 2019; Pinstrup-Andersen and Watson, 2011). Food system changes do not occur in a uniform linear fashion across countries, and both developed and developing countries have experienced and responded to these changes in different ways (Lusk and McCluskey, 2018; Ruben et al., 2019). Complex and unprecedented food system changes present unique challenges for the promotion of sustainable healthy diets in low- and middle-income countries (LMIC) that will require context-specific and adaptable policies and other actions (Swinburn et al., 2013; Turner et al., 2018; Willett et al., 2019). There is little evidence on how best to improve food choice in LMIC experiencing food systems changes. An understanding of causal linkages between food systems, food environments, and food choice is essential to develop actions that improve food choice for sustainable healthy diets. In this commentary we elaborate the science of food choice to provide a common language and constructs for research on the causal linkages between food systems, food environments, and food choice in LMIC.

The global middle class that has some discretionary spending power is an increasing proportion of the world population (Fengler and Kharas, 2017; Kharas, 2010; Kharas and Hamel, 2018). Total expenditures on foods and beverages often rise when discretionary income increases, and spending expands to foods prepared away from home, beverages, and snacks. Historically, many of these items were seldom or not consumed but are more available due to the transformation of retailing and proliferation of modern retail outlets. Changes in spending power are linked with changes in livelihood and lifestyle (women working outside the home, changes from extended to nuclear family households, longer commutes, changes from agricultural to industrial or service employment, etc.). Increased income often occurs with new time constraints. Through new and far-reaching modes of communication and with more options available, food choice has become more complex, guided not only by local traditions, growers, and energy needs, but also by

Abbreviations: DONE, Determinants of Nutrition and Eating; LMIC, Low- and middle-income countries.

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aspiration, assimilation, adaptation, and expression of group identity (Kravets and Sandikci, 2014).

Changing food environments that include greater social and marketing influences on food choice and increased incomes influence changes in dietary intake (Stok et al., 2017). Foods made inexpensive, available, and attractive are most often energy-dense, nutrient poor, and require less effort to prepare by the consumer. Changes in food environments contribute to changes in intake from traditional diets high in nutrients to diets rich in saturated fats, sodium, refined carbohydrates, and animal-source foods, often referred to as the "nutrition transition" (Popkin et al., 2012). These food environment changes have both negative (e.g., foods higher in saturated fats, refined carbohydrates, and sodium) and positive (e.g., greater access to fruits and vegetables grown in other climates) health implications, like higher risk of cardiovascular disease and greater dietary diversity, respectively (Popkin et al., 2012). In many LMIC, negative dietary changes are contributing to a multiple burden, often referred to as a double burden, of malnutrition with rising rates of diet-related non-communicable disease co-occurring with persistent undernutrition, including micronutrient deficiencies (Black et al., 2013; Haddad et al., 2015; IFPRI, 2016; Popkin et al., 2020).

Achieving sustainable healthy diets requires understanding how people make food choices in local food environments, specifically what, how, and why people eat the way they do. Food environments are changing concurrently with advancements in communication technologies and marketing techniques, which lead to broader exposure to new and sometimes confusing information, changing social norms, and new wants and preferences (Popkin, 2014; UNSCN, 2019). Large multinational food companies play a role through promotion and distribution of pre-packaged and prepared foods, promoting and marketing specific foods, establishing supermarkets, etc. (Popkin, 2014). Those products cater to the world's growing demand for convenience in food preparation. In some LMIC, promotion of more sustainable and nutritive crop production, urban agriculture, or implementation of programs that directly provide healthy foods have been presented as ways to improve the nutritional status of populations (UNSCN, 2019). In contrast, in high-income countries, emphasis on ensuring access to affordable healthy food like fruits and vegetables or use of policy mechanisms like food labeling or taxation of unhealthy foods and beverages have been employed to improve healthfulness of diets (Acton et al., 2019; HLPE, 2017; Smith et al., 2018). Evidence for impact of these food systems interventions on sustainable healthy diets is mixed (Global Panel on Agriculture and Food Systems for Nutrition, 2016; Holdsworth and Landais, 2019; Ruben et al., 2019; Willett et al., 2019). The success of any effort to promote sustainable healthy diets will hinge on ensuring access in local food environments along with healthy food choice by households and individuals (UNSCN, 2019).

Understanding of food choice provides necessary guidance for policymakers and global and country health specialists to devise nutrition and health policies that serve the rapidly changing population health needs in LMIC. While the utility of the elaborations offered by the science of food choice are not limited by geography, level of development, or economic designation, the emphasis is on LMIC experiencing more rapid changes in food systems than high-income countries. A holistic science of food choice that sheds light on the reciprocal relationships between food environments and food choice is necessary to understand, analyze, and respond to these changes. People are the key element of any food system, and their interaction with the food environment is a focal point for understanding what, how, and why people eat. The food environment both shapes and is shaped by individual food choices through the interaction of supply and demand dynamics (Turner et al., 2018; UNSCN, 2019). Viewing promotion of sustainable healthy diets through the lens of food choice ties individual perceptions and behaviors to food environments and food systems.

In this introductory commentary we elaborate the science of food choice that builds on the most promising advances in food choice research across varied disciplines to understand and respond to rapidly changing food systems. The science of food choice provides a common language and constructs for those working within and across disciplines to promote sustainable healthy diets in changing food systems, including professionals, agriculturalists, food industrials, policymakers, and scientists. The papers presented in this special issue apply the science of food choice to examine causal linkages among food systems, food environments, and food choice in LMIC. This knowledge is essential for the design of programs for community engagement and the development of effective policy-making and public-private partnerships intended to promote health and well-being.

1. The science of food choice

The science of food choice builds on important work from multiple disciplines and fields including nutritional sciences (Birch et al., 2007; Contento, 2011; Drewnowski and Specter, 2004; Sobal et al., 2009), psychology (Leng et al., 2017; Oliver et al., 2000; Rozin, 2008; Shepherd et al., 1995), sensory sciences (Gibson, 2006; Meiselman and MacFie, 1996), marketing (Esch et al., 2004; Grunert, 2002, 2006), anthropology (Armelagos, 2010; Jerome et al., 1980; Pottier, 1999; Stone, 2016; Weaver et al., 2019), sociology (Halkier and Jensen, 2011; Oosterveer, 2013; Ray, 2018; Wertheim-Heck and Spaargaren, 2016), agricultural economics (Becker, 1965; Costanigro and McCluskey, 2010; Gouel and Guimbard, 2019; Grunert, 2005; Hanemann, 1982; Hensher et al., 2005; Randall and Stoll, 1980; Reid, 1934), and behavioral economics (Ammerman et al., 2017; Bucher et al., 2016; DiClemente and Hantula, 2003; Just et al., 2008; Samson, 2014; Olander and Thogersen, 1995). Studies of food choice from differing perspectives have informed the development of individual dietary change interventions (Greaves et al., 2011) and population-level strategies to promote healthy diets with variable success. The Determinants of Nutrition and Eating (DONE) framework provides an interdisciplinary perspective on drivers of food choice across the multiple interrelated levels from biology through policy (Stok et al., 2017) and a starting point to establish priorities for intervention in developed countries but provides limited insight into the interrelationships among determinants. Across disciplinary traditions, models portray varied causal factors (e.g., taste, habit, culture, cost) for dietary intake at different levels of influence (e.g., personal, community, market) that posit differing explanatory value of agency and structure. These differing perspectives provide important, yet incomplete, information about why people eat the way they do. Further, most of these models are based on research in high-income countries and may not reflect drivers of food choice in LMIC. Reconciling what is known about food choice across disciplines is often difficult. While many disciplines and fields of inquiry have contributed to understanding of food choice, each taken alone is insufficient to provide the knowledge needed to understand and respond to the global changes that are impacting health and well-being. To aid in reconciling these perspectives to inform effective policies and programs for the promotion of sustainable healthy diets, we elaborate the science of food choice.

The science of food choice is concerned with generating knowledge about causal drivers of food choice decision-making processes and behavior within immediate food and social environments that result in dietary intake. The science of food choice is guided by three dynamic questions rather than a static model of food choice drivers (Table 1). The science of food choice is aligned most closely with the "pragmatic realist" paradigm where inquiry is driven by the question (Cornish and Gillespie, 2009). The science of food choice focuses on the overarching question: "how and why do people eat what they do?" and three interrelated questions, each of which needs to be addressed to bridge insights into food choice: 1) **what** do people eat (dietary intake) from the options available and accessible in the environment (sociocultural and physical)? 2) **how** do people interact with social and physical environments to acquire, prepare, distribute, and consume food? and 3) **why** do people decide to acquire, prepare, distribute, and consume foods as they do? The first two questions addressing the "what?" and "how?" provide

Table 1
The science of food choice requires answering three inter-related questions of how and why do people eat what they do.

Inter-related questions	Insights yielded
What do people eat (dietary intake) from the options available and accessible in their environment?	• Dietary intake; could include food groups, dietary diversity, macro- and micro-nutrient intake, etc. • Foods available in the local environment • Description of available food type, quantity, cost, and quality • Individual role and related roles of other household and community members in relation to food choice
How do people acquire, prepare, distribute, and consume the food they eat?	Behaviors to: • acquire food though growing, gathering, or purchasing • store and prepare acquired foods • serve, distribute, share, or present foods to others and • consume foods and beverages including information about frequency, timing, and food combinations
Why do people make the food choices that they do?	• Decision-making processes for what and how to consume foods • Underlying logics for food choice to identify causal drivers of these choices

essential descriptive information to answer the question "why?" people eat what they do.

The first question of "**what** do people eat (dietary intake) from the options available and accessible in their environment?" concerns the foods available in the food environment, including the sociocultural and physical environment in which these foods are accessed. Answering what is available provides information on food type, quantity, cost, and quality in the immediate environment. Information about the social environment provides insight into the individual role and related roles of other household and community members. Answering questions about what people eat provides a description of dietary intake that could include information about food groups, dietary diversity, macro- and micro-nutrient intake, or ways of measuring diet. Describing what is available and what people eat provides information necessary to link health and well-being to food choice decision-making processes and behavior and their causal drivers that may be amenable to policy and program action. Only answering "what" questions, however, reveals nothing about these decision-making processes that occur through interactions with the food or sociocultural environments. For example, it tells us nothing about food coping strategies for consumption under shocks like natural disasters or economic hardship. Only answering "what" reveals nothing about the upstream drivers of how the food got there including political, economic, trade, or foreign investment or how individual and household consumption patterns might exert a reciprocal influence on these broader food systems drivers to influence options available to consumers. Only answering "what" questions provides minimal guidance for the development of effective policy and program action. Answering "what" questions are necessary but not sufficient for understanding food choice.

The second question of "**how** do people acquire, prepare, distribute, and consume the food they eat" focuses on understanding behaviors to a) acquire food through growing, gathering, or purchasing; b) store and prepare acquired foods; c) serve, distribute, share, or present foods to others; and d) consume foods and beverages including information about frequency, timing, and food combinations. Answering the "how" question provides insight into food choice behaviors that lead to dietary intake and how people are engaging with the food environment but does not address the type, quantity, or quality of available foods, the social context of the behaviors, or dietary intake (provided by answers to "what?"). Understanding food choice behaviors does not provide insight into decision-making processes or causal drivers of these decisions. Combining the answers to the question of how food choices are enacted (behavior) with answers to the question of "what?" (environments and dietary intake) can provide a comprehensive description of the foods available and consumed with some understanding of how the behaviors of the individual or household contribute to dietary intake, but still does not link dietary intake to food choice decision-making processes or causal drivers of food choice.

The third question of "**why** do people make the food choices that they do?" yields information about decision-making processes and underlying logics for food choice that can be used to identify causal drivers of these choices. To answer the question "why do people make the food choices that they do?", information derived from "what" and "how" question described above is needed. For example, why grow, buy, gather, or sell different foods? Why buy at one shop instead of another shop? Why buy this versus that? Why buy this much? Why store food versus eat now? Why eat this food today versus another food? Why prepare this way versus another way? Why distribute food in this way versus another way? Understanding *why* involves linking information about what is available and eaten, the social context of food choices (including who makes decisions), and how food is acquired, prepared, distributed, or consumed with information about decision-making processes and their underlying logics.

Understanding why people make the food choices they do involves recognizing that not all food choice behavior is rational, reflexive, or discrete. Rather, it is routinely embedded in the wider activities of everyday life. Food choice decision-making processes are often unconscious, routine, or habitual. Choices are shaped by prior conscious decision-making, experience, culture, environmental cues, and the wider organization of daily life (Köster, 2009). Food choice decision-making processes may also involve conscious negotiation of values (e.g., money, time, taste) and corresponding tradeoffs. People make tradeoffs at every step of a decision-making process (e.g., time versus money, personal versus family preferences, health versus convenience). Understanding these tradeoffs yields information about personal priorities and values and an understanding of the causal drivers of their food choices (e.g., cost, distance to market, work schedules, cultural expectations, social structures, nutrition, and health concerns) (Sobal et al., 2009). From a procedural perspective, generating knowledge about why people make the food choices they do involves linking descriptive assessment of what is available and eaten and how people acquire, prepare, distribute, or consume food with the processes and reasons for the decisions that are made. Knowledge of why people make the food choices they do must be linked to an understanding of external influences in multiple systems that drive food choice (e.g., laws, existing policies, social networks, gender dynamics, political stability) for deriving sound, actionable policy and programmatic recommendations to improve health and overall well-being.

The depth and breadth of systems that drive food choice are context-specific so applying the science of food choice must be tailored to the context. The application of the science of food choice begins with documentation of what is available and what is eaten, anchoring inquiry to the intersection of the food environment and individual food choice behavior. Understanding why a choice is made or not made is linked to what and how. The application of the science of food choice involves inquiry likely to expose causal paths despite contextual differences. In contrast to higher income countries, LMIC are experiencing greater and more rapid changes in many facets of life, including food systems. The need for well-informed policy and program action is more important than ever. Application of the science of food choice in LMIC can provide necessary guidance to promote sustainable healthy diets in these contexts.

2. Five characteristics of the science of food choice

First, food choice is a process (Sobal et al., 2009). Food choice is not

reducible or equivalent to dietary intake. The assessment of dietary intake provides information about what foods and beverages are consumed. Dietary intake data provide no insight into how or why the individual ended up consuming these foods. Epidemiological studies that link availability, price, or advertising to dietary intake are useful for understanding what is consumed but provide limited insight into how or why that choice was made. Understanding food choice includes study of the decision-making processes by which people consider, acquire, prepare, distribute, and consume foods and beverages. For example, including measurement of shopping behavior, consumption of food at and away from home, meal timing, food combinations, or other characteristics of eating episodes provides insight into decision making processes (Bisogni et al., 2007; Blake et al., 2008).

Second, the application of systems science and socio-ecological thinking is essential to many areas of study, including the science of food choice. Relationships between dietary intake, food and social environments, food-choice behaviors, and decision-making are not linear but involve multiple layers and feedback loops (Bandura, 1989). Epidemiological models in the nutritional sciences investigate linear causality by quantifying relationships between intake of specific nutrients, food groups, or dietary patterns with various hypothesized influences (e.g., cost, availability) (Ma et al., 2018; Perignon et al., 2017; Pollard et al., 2002). The science of food choice also emphasizes investigation of causality as causal systems of inter-related factors rather than linear paths to understand complex relationships between decision-making processes of individuals and the multiple intersecting systems in which they are embedded (e.g., interpersonal, socioeconomic, physical, and political).

Third, the science of food choice situates what, how, and why people eat the way they do in relation to optimal physical, social, economic, and environmental well-being of individuals, households, and communities, rather than only the adequacy of intake or availability. Sustainability is a central feature of a focus on well-being. This perspective contrasts with views of food and nutrition security as a question of adequacy (e.g., staple crop production yields, sufficiency of wheat imports to ensure basic caloric intake per capita, adequate dietary intake of iron) and is aligned with calls to address complex health and policy issues arising from changing lifestyles, livelihoods, incomes, and food environments (FAO et al., 2019). Achieving this alignment in research, program, and policy development at a minimum will require a focus on processes that contribute to dietary intake, application of systems thinking, and explicit statement of objectives that consider the physical, social, economic, and environmental health and well-being of individuals, households, and communities.

Fourth, the science of food choice involves triangulation of questions and methods to maximize benefits and minimize weaknesses of any single method. Food choice behavior is often not rational, reflexive, or discrete, making assessment particularly difficult. All methods have weaknesses that add to uncertainty of conclusions. Triangulation is commonly employed in many areas of study to improve certainty of conclusions. The science of food choice uses multiple methods to address why and how people eat what they do to overcome these challenges. For example, food frequency questionnaires have been criticized for their limited reliability for measurement of energy or nutrient intake quantities but provide reliable estimates for food group servings or classification of people by high versus low levels of nutrient or food group intake (Hébert et al., 2014). Yet when used alone, food frequency questionnaires provide minimal information on what people consume and very little insight into food choice. Triangulation of methods through inclusion of questionnaires, interviews, or observations about dietary behaviors improves the certainty of conclusions gathered from the food frequency questionnaires. Another important consideration when attempting to triangulate across questions and methods is the need to balance timely and scalable results with achieving improved certainty of conclusions. The trustworthiness and dependability (or validity and reliability) of results from studies that employ the science of food choice are enhanced through comparison and verification of results across methods used to address the three core questions (what, how, why).

Fifth, the science of food choice seeks to gain knowledge through inquiry that can be applied to empower individuals, households, and communities through identification and inclusion of wants and needs in program and policy development. The science of food choice is pragmatic and not constrained by the false dichotomy of basic and applied research (Narayanamurti and Odumusu, 2016). The science of food choice adopts a model of research that is increasingly employed in other disciplines that sees discovery and invention as complementary. Seeking to understand what, how, and why people eat what they do provides an opportunity for populations to articulate their food-related wants and needs in contrast to studies that emphasize compliance with expert recommendations. The science of food choice captures wants and needs, which are communicated through negotiation of values in food choice decision-making (e.g., money versus convenience) and reflected in food-related behavior and ultimately dietary intake (Sobal et al., 2009). Wants may not always align, however, with expert recommendations (e.g., desire for added sugars, salts, or fats). Identification of wants and needs, when they are not met, and when emergent wants and needs are likely to lead to unhealthy food choices can elevate the use of experiential knowledge for program and policy development, implementation, and evaluation. Acknowledging the wider activities and considerations in the daily lives of vulnerable populations and the ways in which they seek and exercise agency with respect to food and health allows for co-creating interventions that better fit their real world. Ultimately, expert recommendations (e.g., food-based dietary guidelines and messaging) could be improved with better insights about food choice.

3. Designing studies to address what, how, and why?

Obtaining evidence to answer questions about food choice requires development and application of new and existing designs and methods in novel ways. The science of food choice, being pragmatic, uses methods to answer questions that are not specific to any one discipline or field (Cornish and Gillespie, 2009) and depend on the questions posed and the purpose of the study. Study designs draw on systems science (i.e., agent-based modeling, systems dynamics, social network analysis) and socio-ecological thinking that may involve mixed methods when understanding to inform meaningful hypotheses is limited, constructs are not well defined, measurement tools do not exist, and/or in-depth investigation is required to understand how and why food choice occurs. The science of food choice involves integrating descriptive (what) and explanatory (how and why) methods into a single study design and applying insights from descriptive (e.g., dietary intake, food availability) and explanatory (e.g., surveys of food shopping behavior, focus groups to understand decision making) methods to inform design.

The papers in this special issue use a variety of methods to understand what, how, and why people eat what they do in different LMIC contexts. These contexts reflect some of the challenges to ensure environmental, social, and economic sustainability of food systems in LMIC. The studies included in this special issue acknowledge these challenges by focusing on the nexus where individual and household food choice happens in the food environment within broader food systems changes. Girard et al. used qualitative interviews from a mixed-methods study to understand how climate change and sedentarization of pastoralists in Tanzania shape livelihood decisions and related food choice behaviors. Wertheim-Heck et al. used mixed methods, including interviews and observations in homes and markets and with multiple generations in each household, to study the organization of daily life, including food choice behaviors, in urban poor Vietnamese households in the context of urbanization and modernization. Holdsworth et al., used mixed methods including environmental observation, qualitative interviews, and quantification of dietary intake to investigate how eating practices and routines relate to unhealthy food and beverage consumption among teens in urban Ghana. Cunningham et al. used quantitative surveys with

urban and rural households in the Vijayapura distict of Karnataka, India to better understand how participants of a government food program make food choice decisions and the influence of local context. Walls et al. used quantitative surveys with households to examine how food market participation and household food production decisions varied by use of a government agricultural input subsidy program. Schreinemachers et al. conducted a randomized controlled trial of a school gardening intervention in Nepal designed to increase fruit and vegetable consumption. They examined the impact of the program on food choice behaviors from both children's and parents' perspectives.

Understanding why people make the food choices that they do requires an understanding of the causal drivers of food choice decision-making processes and relationships between concepts and reasons. Causality can be established in three ways: using study designs with features that provide plausible causal evidence (e.g., longitudinal studies, randomized controlled trials), integrating evidence of causality from multiple studies using multiple methods (e.g., systematic reviews), or gaining in-depth understanding of the phenomenon under study through examination from multiple perspectives (e.g., mixed-methods studies) (Hill, 1965). Design features that help to establish causality are a) experiments or quasi-experiments in which investigators assign conditions with or without randomization, b) use of observations taken over time to establish temporality, and c) use of structural equation modeling to capitalize on temporality and expected structural relationships among variables while incorporating information external to the system under study to study dynamic relationships and account for reverse causality or selection, unmeasured variables, and measurement error (Hill, 1965). The science of food choice combines methods to obtain evidence that is descriptive and explanatory to understand why people eat what and how they do.

Answering the question "why" (explanatory) is contingent on having adequately detailed knowledge about "what" (descriptive) and "how" (explanatory). Answering this why question usually involves multiple forms of data collection including surveys, qualitative interviews, economic experiments, and observations, and triangulation using multiple participant perspectives (e.g., household food providers, vendors, policymakers). In-depth qualitative investigations or case studies often provide deep insight into decision-making processes that are not understood well or for which there are no valid and reliable measures. For example, process tracing combines in-depth investigation using mixed methods to link descriptive and explanatory data to address complex questions about temporal decision-making processes (George and Bennett, 2004) with use of temporal sequence to infer causality (Lapping et al., 2012). Knowledge of why people eat what and how they do can be used to identify populations and groups that share similar environments and behave in similar ways for similar reasons. Knowledge of shared causal drivers of food choice are essential for developing population level programs and policies that effectively improve nutritional health and well-being.

The science of food choice provides a roadmap to understanding complex inter-related systems that influence dietary intake. Many LMIC are grappling with questions of how to promote sustainable healthy food choices that prevent development of obesity and chronic disease (Haddad et al., 2015; Popkin et al., 2020). Until recently most nutrition interventions in LMIC have only targeted undernutrition. The policies and interventions employed to address issues of deficiency (e.g., food fortification, genetic modification of crops, promotion of individual foods) are insufficient for problems of excess or imbalance that are outcomes of a food choice process (Roberto et al., 2015; UNSCN, 2019). There is a need to facilitate the development of a food system that equitably provides healthy, diverse, sustainable, and affordable foods to meet basic needs (UNSCN, 2019) while simultaneously promoting food choice for the prevention of obesity and non-communicable diseases (Haddad et al., 2015; Popkin et al., 2020). The research findings generated through employing the science of food choice, including the findings presented in this special issue, are essential for policymakers and global health specialists engaged in this work.

A major challenge facing practitioners in agriculture, nutrition, and health in the coming decades is aligning policy and program efforts to influence sustainable healthy dietary intake. Ideally, alignment across sectors would ensure the development of food environments that offer adequate dietary quality (including diversity), facilitate acquisition of necessary knowledge and skills to choose a healthy diet, and instill the desire for and motivation to apply resources, knowledge, and skills to procure foods and beverages for sustainable healthy diets of all household members. This effort is more likely to be successful if we understand why and how individuals and households make decisions about food under different circumstances.

The science of food choice elaborates on decades of research in many fields by seeking to understand what, how, and why people eat what they do. Application of the science of food choice, as exemplified by the research presented in this special issue, generates the necessary knowledge for the promotion of healthy diets in the current, rapidly changing food systems that is currently lacking. Over the past century the world's food systems have changed dramatically through increases in food production and expansion in trade and distribution, along with demographic and climate change, urbanization, and the rapid flow of information. The double burden of malnutrition is a challenge facing LMIC requiring alignment among the agricultural, health, and nutrition communities. Evidence on food choice in LMIC is needed to achieve this alignment. The science of food choice leads to integration of knowledge on how and why people eat what they do shedding light on causal mechanisms in complex food systems. Such knowledge is essential for effective policy and program development to achieve sustainable healthy diets for all.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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