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Interdisciplinary research on food environments: the key to transforming unhealthy food consumption practices and unsustainable food systems

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Abstract

Since the Covid-19 pandemic, digital services such as apps for food and health have become much more widely used, especially in urban settings, where the majority of human society now resides. Therefore, the context in which food choices are made has changed significantly. We suggest that understanding food environments and their entanglements with the dynamics of digitalization, corporeality, and power relations can contribute to an improved analysis of the interrelations between food systems, public health, and sustainability. In this short communication, we call the attention of food scholars to the under-researched aspects of food environment debates and invite nutritionist medical and sustainability scientists and psychologists to engage in a concerted effort to comprehend food environments as key to transforming unhealthy food consumption practices and unsustainable food systems.

Zusammenfassung

Seit der COVID-19-Pandemie werden digitale Dienste wie Apps für Lebensmittel und Gesundheit viel stärker genutzt, vor allem in städtischen Gebieten, wo die Mehrheit der Menschen heute lebt. Daher hat sich der Kontext, in dem Lebensmittelentscheidungen getroffen werden, erheblich verändert. Wir schlagen vor, dass ein Verständnis von Lebensmittelumfeldern und ihrer Verflechtung mit Dynamiken der Digitalisierung, der Körperlichkeit und der Machtverhältnisse zu einer besseren Analyse der Wechselbeziehungen zwischen Lebensmittelsystemen, öffentlicher Gesundheit und Nachhaltigkeit beitragen kann. In diesem Beitrag lenken wir die Aufmerksamkeit der Wissenschaftsgemeinschaft auf diese wenig erforschten Aspekte der Debatten über Lebensmittelumfelder und laden besonders Ernährungsmediziner:innen, Nachhaltigkeitswissenschaftler:innen und Psycholog:inn:en dazu ein, gemeinsam Lebensmittelumfelder als Schlüssel zur Veränderung ungesunder Lebensmittelkonsumpraktiken und nicht nachhaltiger Lebensmittelsysteme zu nutzen.

Keywords food environments, food system transformation, interdisciplinarity, health, sustainability

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1. Food environment research

The importance of food environments as a determinant of individual food choices has been widely acknowledged in the academic literature. A number of definitions have shaped their study thus far. *Swinburn et al. (2013)* established the food environment model as a nutritional health monitoring framework, emphasizing the importance of the physical, economic, political, and sociocultural surroundings in shaping dietary patterns. *Downs et al. (2020)*, *FAO (2016)*, and *Herforth and Ahmed (2015)* foregrounded the critical role played by built and natural environments as well as belief systems, values, and norms in shaping food choices and subsequent diets. Building on *Turner et al. (2018)*, the *EU Group of Chief Scientific Advisors (2020)* distinguished between the external (structural) and the internal (personal) domain of food environments, linking them to the standard food security dimensions of availability, accessibility, utilization, and stability.

Further reviews and reports shed light on specific aspects of food environments. The United Nations High Level Panel of Experts (*HLPE 2017*) highlighted the significance of food environments in shaping consumer food choices in the context of globalization and urbanization. Elaborations of *IFPRI (2019)* and *Swinburn et al. (2019)* emphasized the need to address the multiple burden of malnutrition in food environments, which gives way to undernutrition, overweight, obesity, and nutrient insufficiency in the same unit of analysis. The *EAT Lancet Commission Report (2019)* underscored the importance of transforming food systems for achieving global health and sustainability goals and proposes policies and interventions that promote healthy and sustainable dietary patterns. Furthermore, case studies from Ghana, Kenya, and India (*Gavaravarapu et al. 2022*; *Konapur et al. 2022*; *Osei-Kwasi et al. 2021*) foregrounded the need for context-specific adjustments of the food environment approach. Based on our review of the existing literature, under-researched areas became visible, especially regarding the topics of digitalization, corporeality, and power relations.

Digitalization has rapidly transformed the way we access and consume food, from online grocery shopping to cloud kitchens and food delivery apps. However, there has been limited research on the impact of digitalization on food environments and consumption practices. For example, the ease and convenience of online food ordering (*Chakraborty 2022*) may lead to

increased consumption of unhealthy foods while the use of social media to share images of food in lifestyle settings (*Lim et al. 2022*) could perpetuate unrealistic standards of beauty and contribute to disordered eating habits.

Another point is the limited attention paid to corporeality in relation to food environments and dietary patterns. Our bodies play a crucial role in how we experience and interact with food, and our bodily experiences shape our food preferences and choices (*Muth and Park 2021*). Despite this, there has been little research on the ways in which our bodily experiences of food are shaped by food environments. For example, the physical sensations of hunger and fullness are important signals that influence our food choices, but these bodily experiences may be overridden by environmental cues such as food availability or social pressures to eat or not to eat.

A third issue is the limited discussion of the socioeconomic and socioecological effects of recent changes in urban food environments. So-called platform economies have become ever more decisive when it comes to the question of what we eat and how we produce it, with significant impacts on labor markets and sustainability in both urban and rural markets (*Talamini et al. 2022*). So far, however, there has been little research on how present-day food environments are interlinked with platform economies, and how food delivery services and online retail are changing the prevalent power relations in cities as well as in the food system as a whole.

Against this background, there are critical questions that need to be addressed by future research. Some key questions are: What are the effects of digitalization on food environments and how do delivery services and online retail transform current patterns of food purchasing and eating? How do food environments write themselves into consumers' bodies and how does this process lead to changes in bodily sensations of hunger and fullness, and to changes in individual decision making? How do platform economies transform present-day food environments and what are the socioeconomic and socioecological consequences?

2. Toward interdisciplinary food environment research

To answer these questions adequately, we suggest that interdisciplinary research is imperative. To make this interdisciplinary research possible, we recommend that geographers work closely with nutritionist medical and sustainability scientists as well as psychologists to understand food environments as key to transforming unhealthy food consumption practices and unjust as well as unsustainable food systems. The outreach for such interdisciplinary cooperation promises success when it comes from geographers, given the fact that geography combines social and natural sciences within the boundaries of its own discipline. This combined understanding within one branch of knowledge is an excellent precondition for coordinating food environment research beyond disciplinary boundaries.

While geographers emphasize mapping food environments in terms of available services and prevalent consumption practices, and can help us understand their underlying power relations, the other above-mentioned disciplines can help deepen geographical knowledge in different respects. Psychologists can reveal the choice architecture in current food environments and the emotional background to food choices. Nutritionist medical scientists can help us understand the effects of poor diets on human health and unravel interdependencies between diets, physiological parameters, and decision making. Finally, sustainability scientists can use available datasets to provide a clear link between specific diets and their socioeconomic and socioecological effects. Together, these four disciplines will enable us to answer the most pressing questions in current food environment research.

In order to find a common language between these disciplines, it is essential to develop and implement a shared set of methods for measuring food environments and dietary patterns. This would involve standardized assessment tools that comprise surveys with practice-related (e.g. food shopping and eating practices), nutritional (e.g. food frequency recalls), and psychological (e.g. mood diaries) questions as well as medical assessments (e.g. height and weight, overall fitness) to be used across different populations and settings. These standardized methods would then be contextualized with qualitative methods such as in-depth interviews or participant observations. The in-

terdisciplinary data generated could then be synthesized in a geospatial analysis with the aim of locating food consumption practices in real-world contexts.

Due to their inherent dynamism, we see emerging markets as specifically promising focus regions for conducting such interdisciplinary research. South Asia, for example, is home to a diverse range of food cultures and diets, with rapid economic development and urbanization leading to changes in dietary patterns and health outcomes. Latin America is another important focus region because of its economic inequalities, high rates of malnutrition, and a growing burden of diet-related chronic diseases (*FAO 2022*). Studies in these regions could address the complex interactions between food environments, cultural norms, and individual consumption practices. They could explore the impact of food advertising and marketing on conventional diets and food cultures, as well as the potential of innovative interventions such as food labeling to improve health outcomes. An interdisciplinary team could explore the effectiveness of community-based interventions, such as the promotion of urban fruit and vegetable markets to increase demand for sustainable diets, as well as the potential of social media and mobile applications for promoting healthy food choices.

3. From research to transformation

The collaboration of geographical, nutritionist medical and sustainability scientists and psychologists can help create a more nuanced and comprehensive understanding of food environments and dietary patterns, which is essential for transforming unhealthy consumption practices and unsustainable food systems. Nutritionist medical sciences can provide insights into the physiological effects of diets, while psychologists can aid understanding of how emotions affect food-related decision making. Sustainability scientists can link prevalent consumption practices to larger socioeconomic and socioecological patterns and systems while geographers can assist with unravelling the contextuality of food environments and food choices. By bringing these four disciplines together, the ground is prepared for understanding both the physical nature and the social construction of present-day food environments.

Examples of such interdisciplinary food environment research include the projects INFORMAS, NutriAIDE,

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and Feast2030. The INFORMAS network is currently studying food environments and corresponding policies in 56 countries (www.informas.org). NutriAIDE is an Indo-German project researching unhealthy and unsustainable urban food environments with a scientifically-tailored mobile application (www.nutriaide.org). Lastly, Feast2030 analyzes geographical differences when it comes to enabling and restricting factors of food environments among European countries and co-creates tools to promote informed food choices (www.feast2030.eu).

Before an interdisciplinary food environment approach could lead to transformative action, scientists need to partner with local stakeholders and communities. This could involve collaborating with retailers to identify barriers to providing access to healthy food in certain areas and developing targeted interventions that address the specific needs of these stakeholders. Furthermore, this may imply engaging local communities in a collaborative and participatory approach to take ownership of their food environments and transform them according to their needs, with the support of their municipalities. To take the leap from research to transformation, we invite researchers to participate in this multidisciplinary and participatory approach to boost healthier consumption practices, reduce the burden of diet-related chronic diseases, and contribute to building equitable and sustainable food systems.

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