
Sustainable Food Systems for Preventative and Prescriptive Medicine

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Abstract

A growing number of medical clinicians use food as preventative and prescriptive medicine. We have an opportunity to link this development to developments in sustainable agriculture. In this abstract, we highlight opportunities to use interactive technologies to integrate sustainable food production, and present a vision of a system to support prescription and preventative medicine.

Author Keywords

Food; Sustainable Agriculture; Food Prescriptions; Preventative Medicine; Functional Food;

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous;

Introduction

Rising interest in food consumption as a method of preventative and restorative medicine have led to a clinical emphasis on fresh produce and perishables as a functional food source (i.e. foods which ensure or enhance health [4]). As this emphasis on fresh produce and perishables continues to increase, so should the relationship between clinicians, farmers, and community service providers such as food stamps and food banks.

Increases in diet related diseases such as cardiovascular diseases, obesity, and diabetes are leading experts to promote fresh and perishable food as both a preventative and restorative method of medicine [10][11]. Limited access and consumption of fresh produce and perishables directly cause diet-related diseases; this is especially true for low income areas with limited access to fresh produce and perishables [1][3][8]. As a result, a growing number of clinicians have begun to 'prescribe' food to their patients [6][13][15]. The physician's prescription can be a powerful tool to promote behavior change [5][12], and tie nutritional needs to community services that support nutritional behaviors [6][9]. Prescribing fresh food has begun to support community services such as SNAPs (food stamps) and food banks, which are increasing efforts to provide fresh produce to their community [14][15].

HCI researchers have an opportunity to engage farmers, clinicians, patients, and community service providers by introducing technical systems to enable complexity and scalability of food-based medical systems. Local farmers can play a critical role in maintaining sustainability through reduced food miles and the production of seasonal food most needed in the communities. To promote sustainable designs of these systems, we use Choi and Blevis' sustainable food framework to emphasize engagement [2]. Due to the multi-faceted nature of food-based medicine, design of these systems requires transdisciplinary engagement from technical, medical, agricultural, political, and philanthropic fields. This engagement should create holistic and value-driven systems that address the complexities of integrating sustainable food production into preventative and prescriptive food. We emphasize

value-driven technology as a way to avoid economically driven relationships, encourage community engagement, and to address changing conditions of food production due to climate change.

A vision for a food-based medicine system might entail the following: From the production side, we envision a shared database of local fresh produce for clinicians and their patients, prescription trends analysis for farmers to grow seasonal foods that match community demand, and GPS analysis of areas of high demand for prescribed food to regulate and disperse locally produced fresh food. From the patient/consumer side, we envision an interface by which a clinician and patient could discuss and agree upon acceptable dietary changes (low carb, high fiber, low sodium, etc.), a medical record by which the patient could access the dietary prescription, an online reservation system by which the customer could reserve particular quantities of produce to pick up from farmer's market, food banks, or grocery stores, nutrition trackers by which the customer could monitor their actual consumption, and other configurations such as recipe databases as CSA deliveries.

Food plays a critical yet diverse role in our populations survival. Here we have highlighted one of those roles and provided a small look into what is a very complex and transdisciplinary issue between sustainability, agriculture, and medicine. HCI researchers should continue to explore opportunities for sustainable food production and in the food-based medicine. Utilizing interactive digital systems to integrate sustainable food production with preventative and prescriptive food could provide support for each initiative, and lead to healthier people inhabiting healthier ecosystems.

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