

Smart Food: An Introduction

Matthew N. O. Sadiku¹, Tolulope J. Ashaolu², Sarhan M. Musa¹

¹Roy G. Perry College of Engineering, Prairie View A&M University, Texas

²College of Food Science, Southwest University, Tiansheng Road Beibei, Chongqing, China

ABSTRACT

Smart technology is an important part of the solution to food challenges. Smart technologies are already being used by urban food projects but the two concepts are not well connected. Smart Food has been introduced as approach to provide a personalized, mobile, on-site counseling service for food-allergic people. Smart food focuses especially on foods that can be eaten as staples. This paper provides a brief introduction to smart food.

KEYWORDS: smart food, complementary food, Smart Food Movement

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INTRODUCTION

Food consumption has impact on many areas of our life, including body size, health, culture, behavior, and preferences. The food problem in the developing nations have been analyzed as the socio-political construction and scientization of food security through nutritionism. The food systems face multiple challenges including population growth, increasing urbanization, and the emergence of a larger middle-class, with changing consumer attitudes directed toward food quality and safety.

Smart food technologies have emerged as an ideal way to involve the corporate sector in public-private partnerships. It was the "experts" from government, universities, international donor organizations and the food industry who pushed for fortification rather than ordinary citizens. Smart food technologies recognize the important role of technology-orientated innovations. There are other applications of smart technology to improve food chain performance in terms of energy use during distribution, improving logistics systems, and improving food waste management. Smart agriculture technologies resonate with smart food technologies [1].

Some crops are called Smart Food because they fulfill the criteria of being good for individuals (nutrition and health), for the planet (environments) and for the farmer (nutrition, health and income). Smart Food is a global initiative that aims at diversifying staples. The focus on staples can lead to major impacts with respect to alleviating malnutrition and ensuring better on-farm diversity. The Smart Food approach

is majorly driven from the consumer end, aiming to identify acceptability and build demand when working along the whole value chain back to the farmers to ensure that benefits are maximized [2].

SMART FOOD CHOICES

Most Americans are overfed and undernourished. In spite of abundance of food, exceptionally broad choices, and a revival of food culture and culinary skills, we are a nation deeply troubled by food. It all depends on our choices of the food we take.

You may need to make some changes in your food and beverage choices to achieve a sound health. Smart food choices the sensible way to tilt the odds in favor of good health. A smart food choice is one that delivers significant quantities of health-promoting nutrients at a relatively low caloric cost [3]. Making smart food choices can help you lose weight and keep your blood sugar levels on target. Check the ingredient list when buying grain. Check food labels. Add up your total calories for a day [4]. How many calories you need per day is shown in Figure 1[5]

Foods to choose more often include eating more whole grains (such as breads, cereals, crackers, pasta, etc.), eating more vegetables and fruit (such as broccoli, spinach, collards, kale, carrots, squash, peppers, etc.), and choosing heart-healthy fats that can help lower your cholesterol (such as olive oil, canola oil, corn oil, soybean oil, sunflower oil, safflower oil, etc.).

Foods to cut back on may include foods with saturated fat (such as whole milk, ice cream, full-fat cheese, lard, etc.), foods with trans fat, high-cholesterol foods (such as egg yolks, organ meats such as liver, high-fat dairy products, and high-fat meat and poultry). Cut back on calories if you need to lose weight. Cut back on salt (sodium).

We may conclude that a “healthy” food is one that contains one of six key nutrients (protein, fiber, vitamins A and C, calcium, or iron), is low in fat, is low in saturated fat, is low in cholesterol, and is low in sodium. We can move toward a healthier eating pattern by making shifts in food choices as illustrated in Figure 2 [6].

SMART FOOD POLICIES

Prevention of obesity and other diseases requires policies that work. The following four mechanisms for food-policy actions, illustrated in Figure 3, could be expected to work [7].

1. Providing an enabling environment for healthy preference learning. Food preferences refer to whether someone likes a food and how much and how often they want to eat it.
2. Overcoming barriers to the expression of healthy preferences. Barriers to availability of nutritious foods are widespread areas where the quality and quantity of available foods varies substantially between neighborhoods.
3. Encouraging people to reassess existing unhealthy preferences. People should be encouraged to make choices that satisfy long-term preferences for health instead of following unhealthy preferences for short-term gratification.
4. Stimulating a positive food-systems response. This policy helps to induce systemic dynamic positive feedback responses in the food system.

These policies can help the management of diet-related diseases like obesity, diabetes, and cardiovascular diseases.

SMART FOOD MOVEMENT

Smart Food is also regarded as a movement. The key to the Smart Food movement is its focus on staples. Vegetables, for example, have a big focus and are extremely healthy, but they are not staple food. We have to change peoples' eating habits.

Without that there will be no changes in global diets that are needed, both nutritionally and environmentally and for farmers' sakes.

The Smart Food movement has chosen a couple of smart foods and dedicated resources. The selected smart foods are millets and sorghum, which used to be traditional staple foods across many countries in Africa, India, China, and other Asian countries. The selected cereals have benefits such low glycaemic index and twice as much protein as milk [7].

APPLICATIONS

Smart technologies have much to offer food system actors, including how we grow food and how it is transported to the market. The common applications of smart food include the following.

- **Smart Food Feeding:** Preparing food for one's family, particularly young children and babies, might seem like

a private experience, a realm of love, care, and intimacy. Yet the rise of smart baby food is the product of both scientific and nonscientific diagnoses involving public health science, government nutritional policies, and corporate estimates as well as women's own diagnosis of their needs and the needs of their children. The mothers are often trained on complementary feeding with nutritious Smart Food.[8].

- **Eat Smart Nutrition:** It is well known that the atherosclerotic process and major physiological risk factors for cardiovascular disease manifest during childhood and adolescence and can persist into adulthood. The Eat Smart Nutrition is an intervention program for the school food service component designed to lower the total fat, saturated fat, and sodium content of school meals. The government commodity program has traditionally provided to schools foods that are high weight to all foods offered on the menu. The impact of the intervention on the nutrient content of school lunches have been significant [9].
- **Smart Food Packaging:** Packaging is crucial to maintain the quality of food. Conventional food packaging uses materials such as plastics, glass, and metal, which are non-biodegradable and nonrenewable. Smart packaging protects food from the external environment by providing good barrier properties to the packaged food and also by providing other important functions, maintaining food quality. Smart packaging can reduce the risk of the development of the pathogen [10]. Nanomaterials can be used for smart food packaging and quality control of food. Nanomaterials can help not only to detect contamination, but it can also reduce it.
- **Energy-Smart Food:** Becoming “energy-smart” along the food chain is by reducing its high dependence on fossil fuels. This improves access to modern energy services for energy-poor subsistence farmers and fishers to provide increased food supply and security. It ensures energy inputs, from whatever sources, are used more efficiently than at present. It simultaneously enhances food security, sustainable development, climate change mitigation, and resilience by reducing GHGs. Policy development is needed to effect the transition to energy-smart food. Policy formulation regarding energy and food should be coordinated among government agencies responsible for food, health, and environment [11].

BENEFITS

We are what we eat, and what we eat plays a direct role in how we feel and whether we sustain good health throughout life. Smart food is good for you, with high nutrition and health benefits; good for the planet, being environmentally sustainable; and good for the farmer. There is a need to find solutions that focus on smart foods and develop the value chains to support them. Smart food has the following benefits [12,13]:

- It is good for you. For example, their low glycaemic index helps manage blood sugar level and prevent diabetes.
- It is good for the planet (environmentally sustainable). It serves as an adaptation and mitigation strategy for climate change.

- It is good for the farmer (viable and climate smart). It has the potential to increase yield and to grow markets globally.
- It is crucial for fighting poverty and food insecurity.

A globalized diet now exists and the trend in developing countries is that more nutritious foods like millets are not preferred. Millets lower heart disease and cancer risks; they are recommended for pregnant women.

CONCLUSION

The increasing food-related activities in cities is now making food issues crucial. Cities around the world are engaged in food and agriculture practice, as city authorities and urban social movements play increasingly important roles in food policy. It’s not too late for smart food choices and other good health habits, like being physically active, to help reduce your risk of chronic diseases. More information on smart food can be found in the books in [14-16] and journals on food such as *Journal of Food Science* and *British Food Journal*.

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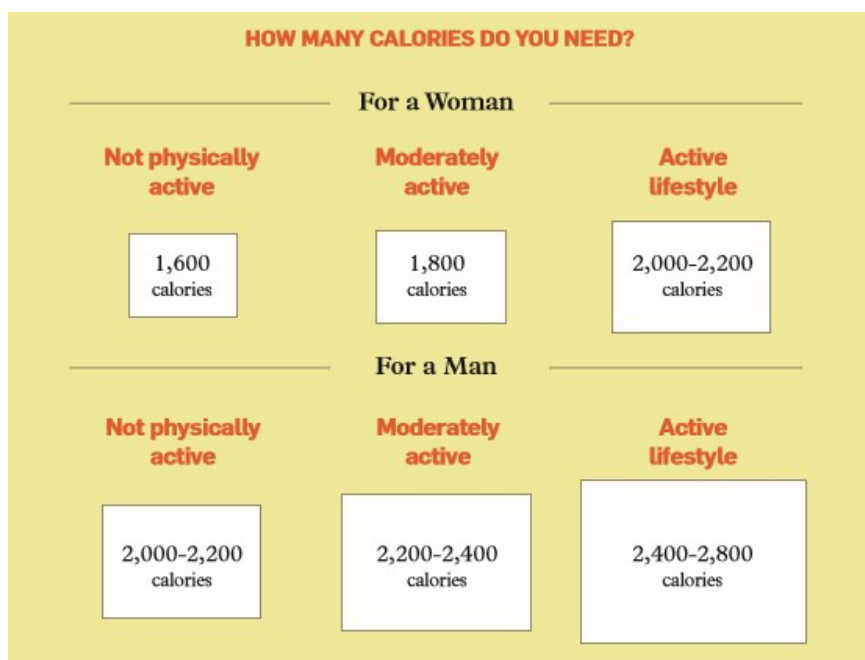


Figure1 How many calories you need per day [5].

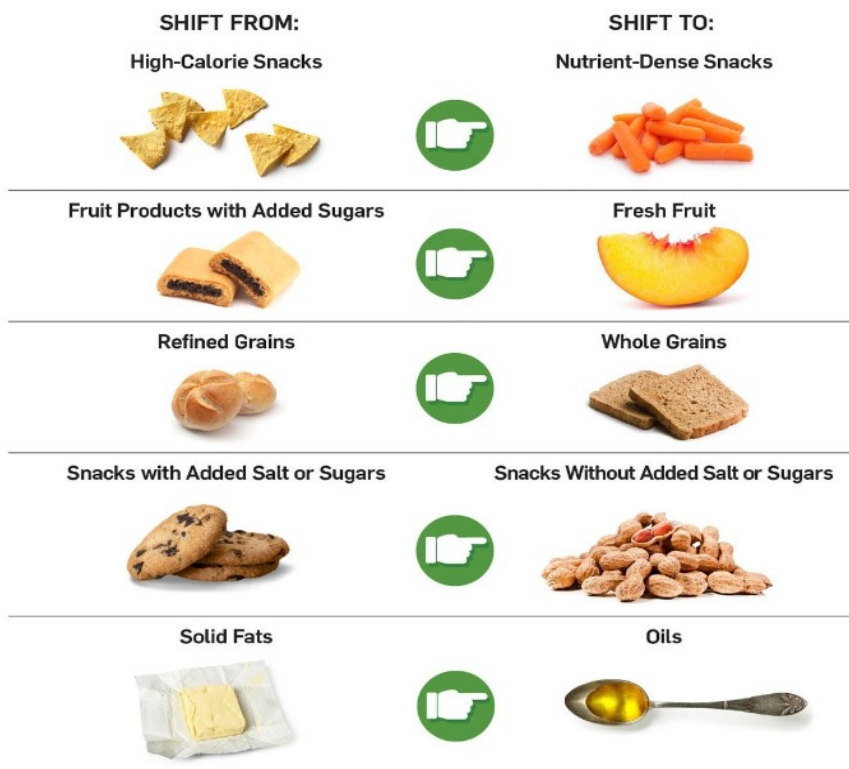


Figure2 Making shifts in food choices [6].

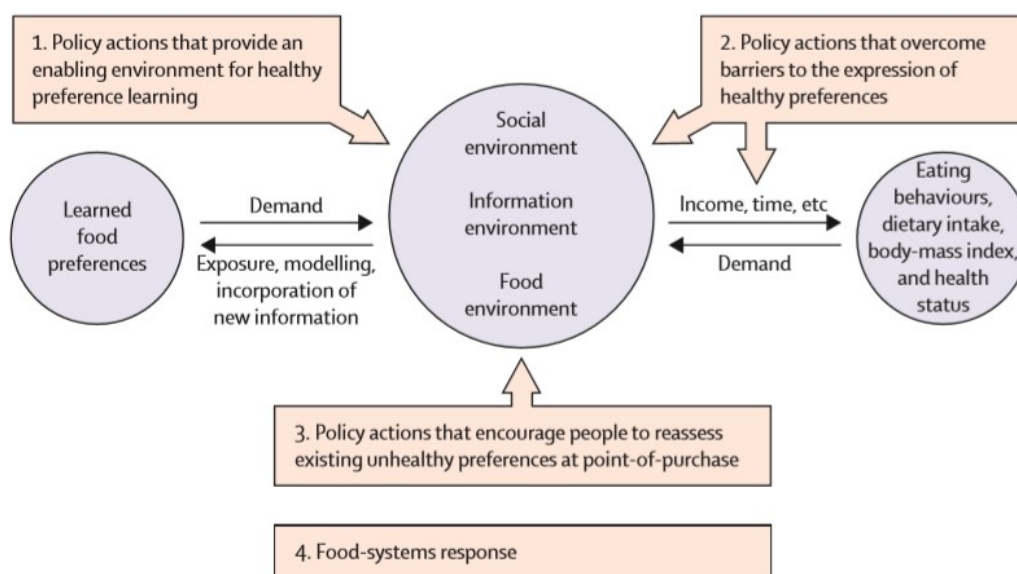


Figure3 Four mechanisms through which food-policy actions could be expected to work [7].