

## Social Aspects of Food and Nutrition: An Overview

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### Abstract

*This article explores the multifaceted social aspects of food and nutrition, examining how cultural, economic, and social factors influence dietary habits and health outcomes. It discusses sociological perspectives, including structural functionalism, conflict theory, and symbolic interactionism, highlighting their relevance to food and nutrition. The article also addresses food as a social problem, focusing on issues such as food safety, biotechnology, and dietary disorders, and the role of public health policies in managing these concerns. Cultural influences on food and nutrition are analyzed with examples from various societies, illustrating how traditional foods, religious beliefs, and globalization shape dietary practices. Social influences on eating behavior, including family, peer, and societal norms, are explored, emphasizing their implications for nutritional interventions. The article delves into socio-economic inequalities in nutrition, discussing barriers to healthy eating faced by low-income populations and proposing strategies to address these disparities. Finally, the emerging field of nutritional epigenetics is examined, considering its social and biological implications for long-term health outcomes.*

**Keywords:** *Nutritional Epigenetics, Socio-Economic Inequalities, Dietary Habits, Public Health Policy, Cultural Influences.*

### Introduction

Food and nutrition research explores the social, cultural, political, and economic aspects of human life, therefore transcending the simple biological necessity for survival. Clearly healthy food is a physiological need and necessity for health; nevertheless, we cannot overlook the social value of food and eating. Though they are omnivores, all civilizations seek to restrict the spectrum of foods by guidelines regarding what is edible and inedible. Stories of French people eating frogs and horses still cause questions in the UK. We are also aware of Muslims and Jews avoiding pork. While in Vietnam chicken is seen as poisonous for pregnant women and in Tibet as dirty as chickens consume worms, moreover chicken is a basic meal in the UK. Though they seem random and illogical, these guidelines help to set groups distinct and hence confirm group membership. Such guidelines can be connected to the hierarchy of meals daily, weekly, and annually. Breakfast is the least significant meal symbolically; dinner is the most essential; Sunday lunch especially so with Christmas topping the bill (Douglas, 1975). For instance, whilst still following their cultural tastes for supper, immigrants to the UK have developed the practice of eating breakfast cereal (Bradby, 1997).

Not simply a source of energy and nourishment, but also a basic component of social identity, cultural expression, and economic activity, food shapes human life. The social dimensions of food and nutrition cover a broad spectrum of subjects, including how dietary practices are influenced by society values and norms, the function of food in social stratification, and the effect of food policy on public health. Different social elements entwine food and nutrition with other elements to define access to food, dietary decisions, and nutritional results. For example, what individuals eat and how they cook their food is much influenced by their culture customs and beliefs. These cultural standards might range greatly between nations and even among subgroups of the same nation. Furthermore, socioeconomic level determines a person's access to healthy food; lower-income groups usually suffer more from food insecurity and accompanying health problems (Murcott, 2002). Dealing with public health issues and advancing better eating habits depend on an awareness of the social elements of food and nutrition. Many times, public health campaigns concentrate on personal behavior modification without thinking through the larger societal environment influencing eating habits. Nonetheless, according to sociological points of view, successful dietary interventions have to deal with the fundamental social interactions and structures influencing eating behaviors (Robinson et al., 2013). This paper attempts to give a thorough review of the social elements of food and nutrition together with an exploration of several sociological ideas and their consequences for public health. It aims

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to underline the need of an interdisciplinary approach combining nutritional science with sociological insights to better grasp and handle food-related social problems.

### *Sociological Perspectives on Food and Nutrition*

Using a sociological perspective helps one to understand food and nutrition by looking at how social structures, economic systems, cultural values, and society norms affect eating patterns and nutritional results. Sociological theories offer a structure for investigating the intricate interaction between people and society in forming attitudes and behavior connected to food. Structural functionalism is one of the fundamental sociologically ideas pertinent to the analysis of food and nutrition. According to this view, society is a complicated system made of several elements cooperating to provide social order and stability. Within this perspective, food and nutrition are considered as fundamental elements of social life that help society to run. For instance, the family as a main social institution is very important in passing down eating habits and nutritional information from one generation to the next. Meal preparation and consumption rituals and customs support family ties and societal cohesiveness by means of their repetition (Mcintosh, 2013). Structural functionalism also tackles how food and nutrition related social conventions and values are upheld and spread in society. For example, personal eating preferences and actions might be influenced by society standards on what qualifies as a "proper" diet. Cultural customs, religious beliefs, and public health advice all help to establish these expectations by themselves forming a normative framework that directs eating patterns. According to the idea, deviations from these standards—such as bad eating habits—can be considered as disturbances to social order and call for intervention by means of policy projects and education.

Another important sociological point of view, conflict theory, presents a distinct picture by emphasizing power relations and inequities inside the food system. This thesis contends that constant conflicts between many factions vying for resources and power define social existence. Conflict theory emphasizes in the framework of food and nutrition the differences in access to good food and the consequent nutritional inequalities. Often to the disadvantage of underprivileged and low-income areas, it underlines how political and economic power structures impact the allocation of food resources (Maurer and Sobal, 1995). Food insecurity—that is, the absence of consistent access to enough reasonably priced, nutritious food—is a fundamental idea in conflict theory. Often resulting from economic inequities, food poverty disproportionately affects low-income people and families. Arguing that their profit-driven goals may lead to labor exploitation, environmental damage, and the marketing of unhealthy food items, this theory also questions the part of multinational companies and agribusinesses in regulating food production and distribution. Examining these power disparities helps one to see the social factors of nutritional health and support more fair food systems by means of a critical lens.

Emphasizing the micro-level interactions and meanings people attach to food and eating habits, symbolic interactionism provides still another viewpoint. According to this view, daily encounters and symbols individuals use to transmit help to create social reality. Symbolic interactionism investigates in the framework of food and nutrition how social interactions and personal identities shape eating habits and food choices. For example, while food preferences reflect personal interests and cultural identities, the act of sharing a meal may be a potent emblem of social connection and belonging (De Garine, 1972). Food rituals—that is, the routines and behaviors connected with food preparation and consumption—are a fundamental idea in symbolic interactionism. Reflecting many meanings and values associated to food, these rituals can vary greatly throughout several civilizations and social groupings. A family supper, for instance, may strengthen ties among members and transmit stability and tradition. Likewise, cultural events such religious fasting or celebration feasts can help to transmit common values and reinforce group identification. Analysis of these rituals clarifies the symbolic meanings and social purposes of food in daily life by means of symbolic interactionism.

Closely linked to symbolic interactionism, social constructionism stresses how collective social processes shape social events including food and nutrition. From this vantage point, institutional activities and social interactions help to shape and preserve knowledge and ideas about food. For instance, public health regulations, scientific research, and cultural standards all help to form the idea of a "healthy diet" rather

than any one, objective reality. Social constructionism also looks at how food-related discourses and narratives affect individual and group actions, including the stigmatizing of obesity or the encouragement of particular dietary rules (Robinson et al., 2013). Feminist theory offers a useful prism through which one may examine the gendered aspects of food and nutrition. From this vantage point, food-related jobs and obligations are sometimes split along gender lines, with women typically carrying the most responsibility for food preparation and caring. Feminist philosophy also challenges the way women's interactions with food and their bodies are shaped by society expectations and beauty standards. For women, for example, the cultural focus on diets and thinness can cause disordered eating patterns and body dissatisfaction. Feminist theory draws attention to the necessity of more inclusive and fair methods of food and nutrition by analyzing these gender dynamics (Murcott, 2002).

Another pertinent perspective examining how race and ethnicity interact with food and nutrition is critical race theory. This viewpoint looks at how institutional and historical racism affect food access, eating habits, and health results for many different racial and ethnic groups. For instance, systematic impediments like economic inequality, residential segregation, and food sector prejudice cause African American and Hispanic populations in the United States to have greater rates of food insecurity and diet-related disorders. In order to provide fair access to nutritious food for all people, critical race theory supports food justice and addressing of systemic inequities (Landecker, 2011). Examining how events and changes during an individual's life impact eating patterns and nutritional status, life cycle theory provides a longitudinal view of food and nutrition. This thesis stresses throughout time the combined influence of social, financial, and environmental elements on health. Childhood food insecurity, for instance, can have long-lasting consequences on nutritional health and development, therefore impacting dietary patterns and results of health in adulthood. Furthermore emphasized by life course theory are the important times when dietary interventions can significantly affect long-term health, including pregnancy and early infancy (Edwards, 1983).

With an eye on how food production, distribution, and consumption affect ecological sustainability, environmental sociology studies the interaction between food systems and the environment. Emphasizing the requirement of sustainable eating practices to guarantee the health of people and the earth, this point of view shows the interdependence of social and environmental systems. Industrial agriculture, for instance, may cause climate change, loss of biodiversity, and environmental damage that influences food security and nutritional quality. Sustainable food systems that advance ecological balance and social fairness are advocated by environmental sociology as means of achieving this (Germov and Williams, 2016). Understanding the larger social and economic elements influencing nutritional health also depends on a knowledge of the social determinants of health framework. This method investigates how factors like money, education, job, and social support influence eating habits and results on health. Higher socioeconomic level people, for example, frequently have greater access to nutrition education and health care services as well as may afford better dietary choices. On the other hand, those of lesser socioeconomic level might encounter obstacles such food deserts, limited financial resources, and ignorance of nutrition, which would result in worse eating behavior and health effects (Mcintosh, 2013).

Network theory investigates how social networks could influence nutritional outcomes and eating patterns. This point of view emphasizes how people's social relationships—that of family, friends, and peers—affect their eating patterns and food choices. Social networks, for instance, can help nutritional knowledge and standards to proliferate as people frequently follow the eating habits of others in their close social circles. Strong social links give emotional and pragmatic support for good eating habits, hence network theory also investigates how social support might affect nutritional health (Maurer and Sobal, 1995). Introduced by Pierre Bourdieu, cultural capital theory offers understanding of how social and cultural elements shape eating patterns and nutritional condition. This theory holds that people have several kinds of capital—financial, social, and cultural—that affect their way of life and spending habits. Food choices and eating habits are influenced by cultural capital—that which comprises knowledge, skills, and cultural competencies. Higher cultural capital persons could, for example, have easier access to nutrition instruction and be more likely to follow good dietary guidelines. On the other hand, persons with less cultural capital might have trouble finding and using nutritional knowledge (Robinson et al., 2013). Food political economy

studies how political and economic institutions affect food distribution, manufacture, and consumption. From this viewpoint, the food system is shaped by government policies, business practices, and market forces rather than only by Agricultural subsidies, trade regulations, and food marketing techniques, for instance, can impact the availability and cost of various kinds of food, therefore affecting dietary patterns and nutritional health. The political economics approach also questions the privatization of food, contending that profit-driven corporate goals might result in bad environmental and health effects (Landecker, 2011).

### *Food as a Social Problem*

Food is not just a fundamental human requirement; it is closely related to many social, cultural, and financial aspects as well. Viewing food as a social issue calls for tackling various important problems like food safety, biotechnology, dietary disorders, and the part public health and politics play in controlling these issues. Within the larger conversation on food as a social issue, food safety is very important. It covers food handling, preparation, and storage done correctly to stop foodborne diseases. With millions of recorded cases yearly worldwide, foodborne infections continue to be a major public health concern (Bhaskar, 2017). From farm to table, contaminants including pesticides, viruses, and bacteria can enter the food chain at any moment and seriously compromise health (Rather et al., 2017).

Another divisive topic within the field of food safety and societal effect is biotechnology in food production. Proposed for its ability to raise production, improve nutritional value, and offer resistance to pests and diseases is genetic modification (GM) of crops. Public concern about the ethical and safety issues of genetically modified organisms is still strong, nevertheless. Critics contend that GM crops might endanger the environment and human health by means of possible allergenicity and the inadvertent transgenes dissemination to wild plant populations (Kamthan et al., 2016). Another aspect of food as a societal concern are dietary diseases include obesity, malnutrition, and eating disorders. Driven by elements like poor eating habits, sedentary lifestyles, and socioeconomic inequalities, the global incidence of obesity has approached epidemic proportions. Among the several health problems linked to obesity include diabetes, cardiovascular illnesses, and several malignancies (Ng et al., 2014). On the other hand, in many low- and middle-income nations malnutrition—which includes undernutrition as well as micronutrient shortages—remains a major problem. Particularly in young children, malnutrition stunts physical and cognitive development and raises vulnerability to infections and chronic disorders (Black et al., 2013).

Solving the social issues related to food depends much on public health and policy. Different approaches are used by governments and health groups to guarantee food safety, advance good eating, and control dietary problems. For instance, avoiding foodborne diseases depends critically on laws like food labeling regulations, safety inspections, and hygienic standards (Unnevehr and Grace, 2013). Furthermore, crucial in preventing obesity and malnutrition are public health efforts targeted at teaching the people about nutrition and good lifestyle choices. Low-income people and families receive food aid from programs such as the Supplemental Nutrition Assistance Program (SNAP) in the United States, therefore lowering food insecurity and enhancing dietary quality (Coleman-Jensen et al., 2019). Policy interventions cover biotechnology's regulation as well. Governments have to strike a balance between ethical issues and societal worries versus the possible advantages of genetically modified organisms. Clear labels of GM foods and open risk assessment procedures will assist to increase public confidence and enable wise consumer decisions (Macnaghten and Habets, 2020). Furthermore addressing the worldwide character of food production and commerce depends on international collaboration and standardization of food safety criteria.

### *Cultural Influences on Food and Nutrition*

Dietary habits and nutritional practices are much shaped by culture. It affects what, how, and when individuals eat; these cultural eating practices are frequently firmly ingrained in history, religion, and social mores. Traditional meals and cooking techniques are among the most important ways culture influences eating. Many times passed down through generations, traditional cuisines reflect the geography, history, and values of a society. For example, the agricultural and climatic circumstances of the Mediterranean area

produce the diet high in fruits, vegetables, whole grains, and olive oil. Among the several health advantages connected to this diet include lower risk of cardiovascular disorders (Willett et al., 1995). In Japan, too, the traditional diet consists in great quantities of fish, seaweed, and soy products, which are thought to help to explain the low rates of heart disease and population lifespan (Craig, 2010).

Furthermore, greatly influencing eating patterns are religious views. Many faiths have certain dietary rules their adherents observe. For instance, Muslims fast from dawn till sunset during the month of Ramadan and Islam forbids eating pork. These behaviors influence not just the kinds of food eaten but also the timing and style of eating (Shatila et al., 2021). Vegetarianism is promoted in Hinduism because of the non-violence toward animals concept, which results in a diet sometimes heavy in fruits, vegetables, legumes, and dairy products (Sharma and Majumdar, 2009).

Still, ethnic eating customs can sometimes have bad nutritional effects. For example, certain societies value high-fat, high-sugar diets, which raises obesity and related illness rates. Traditionally, the Southern United States diet consists in numerous fried and processed foods, which has been connected to increased incidence of diabetes and cardiovascular disease (Mokdad et al., 2003). Likewise, the westernization of diets in many underdeveloped nations has resulted in a change from traditional diets to those heavy in processed foods, hence fueling growing rates of obesity (Popkin, 2001). Globalization and immigration add much more complexity to the link between culture and cuisine. Maintaining their previous eating habits while adjusting to new culinary situations is a difficulty for immigrants. This can lead to dietary acculturation, in which people adopt eating patterns from their new nation, occasionally leading to bad health effects owing of intake of more processed and convenience foods (Satia-Abouta, 2003). On the other side, globalization has resulted in the availability of many foreign cuisines and the development of varied cooking techniques thereby enabling individuals to include healthy nutritional ingredients from many civilizations into their diets.

### *Social Influences on Eating Behavior*

Eating behaviors, food selections, meal patterns, and general dietary practices are much shaped by social factors. These factors have important consequences for public health policies and dietary treatments as they come from different social conventions and settings including family, friends, and more general society trends. The familial surroundings are among the main social settings affecting eating habits. Through modeling and the kinds of meals kept available at home, family members—especially parents—play a vital influence in forming children's eating patterns (Scaglioni et al., 2011). Another strong social determinant influencing eating behavior is peer influence, particularly in young adults and teenagers. Often motivated by the need for social approval and conformity, social contacts with peers can cause changes in food tastes and eating habits (Salvy et al., 2012). Studies have indicated that people are more inclined to mimic the eating habits of their peers, whether healthy or unhealthy, demonstrating that peer groups can dramatically influence dietary decisions (Larsen et al., 2015). Furthermore very important in determining eating habits are more general society standards and trends. Individual eating choices are influenced by cultural standards on what is deemed appropriate or desirable to consume. For instance, many Western countries place great focus on fast food and convenience, which could lead to bad eating habits (Stead et al., 2011). Media and advertising support particular meals and dietary habits, therefore augmenting these society standards. Increased intake of high-calorie, nutrient-poor meals—especially among children—has been related to the widespread marketing of such items (Boyland and Halford, 2013).

Designing successful dietary treatments and public health campaigns depends on an awareness of these social factors. Especially successful are interventions using social conventions and settings. School-based initiatives involving peer leaders in advocating healthy eating, for example, can take advantage of peer group power to inspire better eating among students (Van Lippevelde et al., 2011). Likewise, family-based programs including parents in meal preparation and teaching about good eating can help the dietary habits of the whole house (Waters et al., 2011). Moreover, public health efforts gain from challenging society expectations. Over time, campaigns opposing bad food marketing and advocating good eating habits might help to change society expectations. Programs like the "5 A Day" campaign, which promotes daily intake of at least five servings of fruits and vegetables, have proven effective in increasing awareness and changing

eating habits, for instance (Pollard et al., 2008). Policies controlling food marketing to children and requiring accurate nutritional labeling can also assist to foster an atmosphere encouraging better eating options (Swinburn et al., 2011).

### *Socio-Economic Inequalities in Nutrition*

Dietary habits and health effects are strongly influenced by socioeconomic level (SES). Lower SES individuals and families can have more obstacles to access nutritious meals, which results in worse nutritional quality and negative effects on their health. Often referred to as food deserts, poor availability to wholesome meals is linked to lower socioeconomic level. Particularly in low-income urban districts and rural areas, these are places where reasonably priced, healthful food alternatives are few (Walker et al., 2010). Convenience stores and fast-food restaurants, which usually provide high-calorie, nutrient-poor cuisine, may be relied upon by residents in these neighborhoods. The scarcity of fresh fruits, vegetables, and whole grains fuels diets heavy in fats, sweets, and processed foods, hence contributing to greater incidence of obesity, diabetes, and cardiovascular illnesses (Darmon & Drewnowski, 2008). Dietary decisions can much depend on economic limitations. Often more costly than processed and quick foods are healthy foods include fresh fruit, lean meats, and whole grains (Drewnowski and Specter, 2004). The more expensive healthful meals are, the more of a barrier low-income families face in choosing less expensive, less nutritious choices. Further aggravating poor dietary outcomes is financial instability, which can lead to food insecurity—where people lack continuous access to enough food for an active, healthy life (Gundersen and Ziliak, 2015).

Furthermore, contributing to dietary inequities are educational differences. Often associated with less awareness of good eating behaviors and worse understanding of nutrition is lower educational attainment (Wardle et al., 2000). Dealing with socioeconomic differences in nutrition calls for all-encompassing plans aiming at the underlying reasons of these variations. Policy interventions help to improve access to nutritious meals, so one efficient strategy is Supermarkets and farmers' markets opening in underprivileged regions might be encouraged by governments to boost the availability of fresh, wholesome goods. Furthermore, helping low-income families afford better alternatives by subsidizing nutritious meals or offering financial aid, such the Supplemental Nutrition Assistance Program (SNAP) in the United States, can help (Hoyne et al., 2011). Furthermore, more general socio-economic measures addressing poverty and income disparity might help to indirectly enhance nutritional results. Policies that raise the minimum wage, offer reasonably priced homes, and enhance healthcare access can assist to reduce some of the financial strains causing bad eating habits (Marmot, 2005).

### *Nutritional Epigenetics and Social Implications*

A growing area of research, nutritional epigenetics investigates via epigenetic pathways how food affects gene expression. Epigenetics is the study of modifications in gene activity that do not change the DNA sequence but rather influence how genes are switched on or off. Many mechanisms, including DNA methylation, histone modification, and non-coding RNA interactions, help to moderate these alterations (Feil and Fraga, 2012). Nutritional epigenetics, then, investigates how bioactive dietary molecules and nutrients could change these epigenetic markers, therefore influencing the course of health and illness. One of the fundamental ideas in nutritional epigenetics is that food components can induce epigenetic changes influencing gene expression patterns. Key nutrients engaged in the one-carbon metabolic pathway, which supplies methyl groups for DNA methylation, are folate, vitamin B12, and methionine (Sharma et al., 2010). A diet lacking in certain nutrients may cause hypomethylation of DNA, therefore activating oncogenes and raising cancer risk (Kim, 2005). On the other hand, a diet high in these nutrients could guard against illness and encourage appropriate DNA methylation.

Particularly in terms of long-term health effects and the interaction between social surroundings and biological processes, dietary epigenetics have substantial societal consequences. Dietary behavior can be greatly influenced by socioeconomic level (SES), therefore epigenetic changes that might support or aggravate health differences. Those from lower SES backgrounds can have restricted access to healthy foods, which results in diets that do not promote ideal epigenetic changes. This can help chronic illnesses

such diabetes, obesity, and cardiovascular disorders (Drewnowski, 2009) to flourish. Furthermore, nutritional epigenetics emphasizes how early life diet shapes long-term health effects. Epigenetic markers created at pivotal times of development—such as in utero and early childhood—may have long-lasting impacts on gene expression and illness susceptibility (Burdge and Lillycrop, 2010). Maternal diet during pregnancy, for instance, might change the epigenetic programming of the fetus, therefore influencing the child's risk of metabolic problems later in life (Waterland and Jirtle, 2003). This emphasizes the importance of public health campaigns guaranteeing enough nutrition during these crucial times, especially in people with low socioeconomic level of living.

Furthermore implying widespread health advantages is the interaction between social and biological elements in nutritional epigenetics, suggesting that raising dietary quality at a community level might Policies that improve access to nutritious foods—such as subsidies for fruits and vegetables or the creation of community gardens—could assist to lessen the harmful epigenetic consequences of inadequate diets (Walker et al., 2010). Furthermore, educational initiatives aiming at nutritional literacy and understanding of epigenetic effects can enable people to choose better diets. Furthermore affecting individualized nutrition and precision medicine is knowledge of the epigenetic consequences of diet. Personalized food recommendations based on an individual's epigenetic profile might become feasible as scientists keep breaking apart the intricate interactions among nutrition, epigenetic changes, and health consequences. Customized to an individual's unique genetic and epigenetic composition, this might result in more successful preventive and treatment plans for diet-related disorders (Mathers, 2019).

## Conclusion

Deeply entwined with social, cultural, and financial aspects are food and nutrition, which shapes eating patterns and health effects throughout communities. To comprehend the complexity of eating practices, this essay emphasizes the need of seeing food through several sociological lenses like structural functionalism, conflict theory, and symbolic interactionism. Problems include food safety, biotechnology, and dietary disorders highlight the necessity of thorough public health policy covering these issues. While socioeconomic differences cause obstacles to obtaining nutritious meals, therefore aggravating health inequities, cultural traditions greatly influence what and how individuals consume. With long-term effects on health especially in socio-economically underprivileged populations, nutritional epigenetics shows even more how food may affect gene expression. Good nutritional interventions have to take into account these several factors and combine social knowledge with nutritional science to encourage better eating habits and thereby enhance public health results. Dealing with the more general social factors of nutrition can help us to create more fair and sustainable food systems for all spheres of life.

## References

- Murcott, A. (2002). Nutrition and inequalities: A note on sociological approaches. *The European Journal of Public Health*, 12(3), 203-207.
- Robinson, E., Blissett, J., & Higgs, S. (2013). Social influences on eating: Implications for nutritional interventions. *Nutrition Research Reviews*, 26(2), 166-176.
- Douglas, M. (1975). Deciphering a meal. *Daedalus*, 101, 61-81.
- Bradby, H. (1997). Health, eating and heart attacks: Glaswegian Punjabi women's thinking about everyday food. In P. Caplan (Ed.), *Food, Health and Identity* (pp. 213-233). London: Routledge.
- McIntosh, W. A. (2013). *Sociologies of food and nutrition*. Springer Science & Business Media.
- Maurer, D., & Sobal, J. (Eds.). (1995). *Eating agendas: Food and nutrition as social problems*. Transaction Publishers.
- De Garine, I. (1972). The socio-cultural aspects of nutrition. *Ecology of Food and Nutrition*, 1(2), 143-163.
- Landecker, H. (2011). Food as exposure: Nutritional epigenetics and the new metabolism. *BioSocieties*, 6, 167-194.
- Edwards, S. J. (1983). Nutrition and lifestyle. In *Nutrition in the middle and later years* (pp. 1-16). Butterworth-Heinemann.
- Germov, J., & Williams, L. (2016). *A sociology of food and nutrition: The social appetite*. Oxford University Press, USA.
- Bhaskar, S. V. (2017). Foodborne diseases—disease burden. In *Food safety in the 21st century* (pp. 1-10). Academic Press.
- Rather, I. A., Koh, W. Y., Paek, W. K., & Lim, J. (2017). The sources of chemical contaminants in food and their health implications. *Frontiers in Pharmacology*, 8, 308465.
- Kamthan, A., Chaudhuri, A., Kamthan, M., & Datta, A. (2016). Genetically modified (GM) crops: milestones and new advances in crop improvement. *Theoretical and Applied Genetics*, 129, 1639-1655.
- Ng, M., Fleming, T., Robinson, M., Thomson, B., Graetz, N., Margono, C., Mullany, E. C., Biryukov, S., Abbafati, C., Abera, S. F., & Abraham, J. P. (2014). Global, regional, and national prevalence of overweight and obesity in children and

- adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 384(9945), 766–781.
- Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., Martorell, R., & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890), 427–451.
- Unnevehr, L., & Grace, D. (Eds.). (2013). *Aflatoxins: Finding solutions for improved food safety*. International Food Policy Research Institute.
- Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2019). *Household food security in the United States in 2018*. U.S. Department of Agriculture, Economic Research Service.
- Macnaghten, P., & Habets, M. G. (2020). Breaking the impasse: Towards a forward-looking governance framework for gene editing with plants. *Plants, People, Planet*, 2(4), 353–365.
- Willett, W. C., Sacks, F., Trichopoulou, A., Drescher, G., Ferro-Luzzi, A., Helsing, E., & Trichopoulos, D. (1995). Mediterranean diet pyramid: A cultural model for healthy eating. *The American Journal of Clinical Nutrition*, 61(6), 1402S–1406S.
- Craig, W. J. (2010). Nutrition concerns and health effects of vegetarian diets. *Nutrition in Clinical Practice*, 25(6), 613–620.
- Shatila, H., Baroudi, M., El Sayed Ahmad, R., Chehab, R., Forman, M. R., Abbas, N., Faris, M., & Naja, F. (2021). Impact of Ramadan fasting on dietary intakes among healthy adults: A year-round comparative study. *Frontiers in Nutrition*, 8, 689788.
- Sharma, M., & Majumdar, P. K. (2009). Occupational lifestyle diseases: An emerging issue. *Indian Journal of Occupational and Environmental Medicine*, 13(3), 109–112.
- Mokdad, A. H., Bowman, B. A., Ford, E. S., Vinicor, F., Marks, J. S., & Koplan, J. P. (2001). The continuing epidemics of obesity and diabetes in the United States. *JAMA*, 286(10), 1195–1200.
- Popkin, B. M. (2001). The nutrition transition and obesity in the developing world. *The Journal of Nutrition*, 131(3), 871S–873S.
- Satia-Abouta, J. (2003). Dietary acculturation: Definition, process, assessment, and implications. *International Journal of Human Ecology*, 4(1), 71–86.
- Scaglioni, S., Arrizza, C., Vecchi, F., & Tedeschi, S. (2011). Determinants of children's eating behavior. *The American Journal of Clinical Nutrition*, 94, S2006–S2011.
- Salvy, S. J., de la Haye, K., Bowker, J. C., & Hermans, R. C. (2012). Influence of peers and friends on children's and adolescents' eating and activity behaviors. *Physiology & Behavior*, 106(3), 369–378.
- Larsen, J. K., Hermans, R. C., Sleddens, E. F., Engels, R. C., Fisher, J. O., & Kremers, S. P. (2015). How parental dietary behavior and food parenting practices affect children's dietary behavior: Interacting sources of influence? *Appetite*, 89, 246–257.
- Stead, M., McDermott, L., MacKintosh, A. M., & Adamson, A. (2011). Why healthy eating is bad for young people's health: Identity, belonging and food. *Social Science & Medicine*, 72(7), 1131–1139.
- Boyland, E. J., & Halford, J. C. (2013). Television advertising and branding. Effects on eating behaviour and food preferences in children. *Appetite*, 62, 236–241.
- Van Lippevelde, W., Verloigne, M., De Bourdeaudhuij, I., Bjelland, M., Lien, N., Fernández-Alvira, J. M., Moreno, L. A., Kovacs, E., Brug, J., & Maes, L. (2011). What do parents think about parental participation in school-based interventions on energy balance-related behaviours? A qualitative study in 4 countries. *BMC Public Health*, 11, 1–1.
- Waters, E., de Silva-Sanigorski, A., Burford, B. J., Brown, T., Campbell, K. J., Gao, Y., Armstrong, R., Prosser, L., & Summerbell, C. D. (2011). Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews*, 2011(12).
- Pollard, C. M., Miller, M. R., Daly, A. M., Crouchley, K. E., O'Donoghue, K. J., Lang, A. J., & Binns, C. W. (2008). Increasing fruit and vegetable consumption: success of the Western Australian Go for 2&5® campaign. *Public Health Nutrition*, 11(3), 314–320.
- Swinburn, B. A., Sacks, G., Hall, K. D., McPherson, K., Finegood, D. T., Moodie, M. L., & Gortmaker, S. L. (2011). The global obesity pandemic: Shaped by global drivers and local environments. *The Lancet*, 378(9793), 804–814.
- Walker, R. E., Keane, C. R., & Burke, J. G. (2010). Disparities and access to healthy food in the United States: A review of food deserts literature. *Health & Place*, 16(5), 876–884.
- Darmon, N., & Drewnowski, A. (2008). Does social class predict diet quality? *The American Journal of Clinical Nutrition*, 87(5), 1107–1117.
- Drewnowski, A., & Specter, S. E. (2004). Poverty and obesity: The role of energy density and energy costs. *The American Journal of Clinical Nutrition*, 79(1), 6–16.
- Gundersen, C., & Ziliak, J. P. (2015). Food insecurity and health outcomes. *Health Affairs*, 34(11), 1830–1839.
- Wardle, J., Parmenter, K., & Waller, J. (2000). Nutrition knowledge and food intake. *Appetite*, 34(3), 269–275.
- Hoynes, H., Page, M., & Stevens, A. H. (2011). Can targeted transfers improve birth outcomes? Evidence from the introduction of the WIC program. *Journal of Public Economics*, 95(7–8), 813–827.
- Marmot, M. (2005). Social determinants of health inequalities. *The Lancet*, 365(9464), 1099–1104.
- Feil, R., & Fraga, M. F. (2012). Epigenetics and the environment: Emerging patterns and implications. *Nature Reviews Genetics*, 13(2), 97–109.
- Sharma, S., Kelly, T. K., & Jones, P. A. (2010). Epigenetics in cancer. *Carcinogenesis*, 31(1), 27–36.
- Kim, Y. I. (2005). Nutritional epigenetics: Impact of folate deficiency on DNA methylation and colon cancer susceptibility. *The Journal of Nutrition*, 135(11), 2703–2709.
- Drewnowski, A. (2009). Obesity, diets, and social inequalities. *Nutrition Reviews*, 67(suppl\_1), S36–S39.



- Burdge, G. C., & Lillycrop, K. A. (2010). Nutrition, epigenetics, and developmental plasticity: Implications for understanding human disease. *Annual Review of Nutrition*, 30, 315-339.
- Waterland, R. A., & Jirtle, R. L. (2003). Transposable elements: Targets for early nutritional effects on epigenetic gene regulation. *Molecular and Cellular Biology*.
- Mathers, J. C. (2006). Nutritional modulation of ageing: Genomic and epigenetic approaches. *Mechanisms of Ageing and Development*, 127(6), 584-589.