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Theme Guide: Food Insecurity

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Introduction

Food plays an essential role in well-being. It is a basic human need and right, and one of the primary determinants of health (1, 2). Over the last two decades, the prevalence of undernourishment has fallen from 18.7 to 11.3 percent for the world as a whole, and from 23.4 to 13.5 percent for developing regions (3). The 2003 World Food Summit target of reducing the number of undernourished people by half by 2015, however, has not been reached (3, 4). According to the latest Food and Agriculture Organization of the United Nations estimates, about 805 million people around the world were chronically undernourished between 2012 and 2014 (3). Substantial additional efforts are still required to conquer the challenge of food insecurity.

Food security can be defined as "a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (5). This definition highlights the complexity of food security, as well as the four dimensions of food security: availability, access, utilization and stability (6).

- Food availability refers to "the availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid)" and relates to food supply through its production, distribution, and exchange (6, 7).
- Food access is defined as "access by individuals to adequate resources for acquiring appropriate foods for a nutritious diet" and refers to food allocation, its affordability for individuals and households, as well as their individual preferences (6, 7).
- Food utilization focuses on contextual factors, such as knowledge around food preparation and nutrition, that play a role in the ability for individuals to "reach a state of nutritional well-being where all physiological needs are met" (6).
- Food stability requires that there be "access to adequate

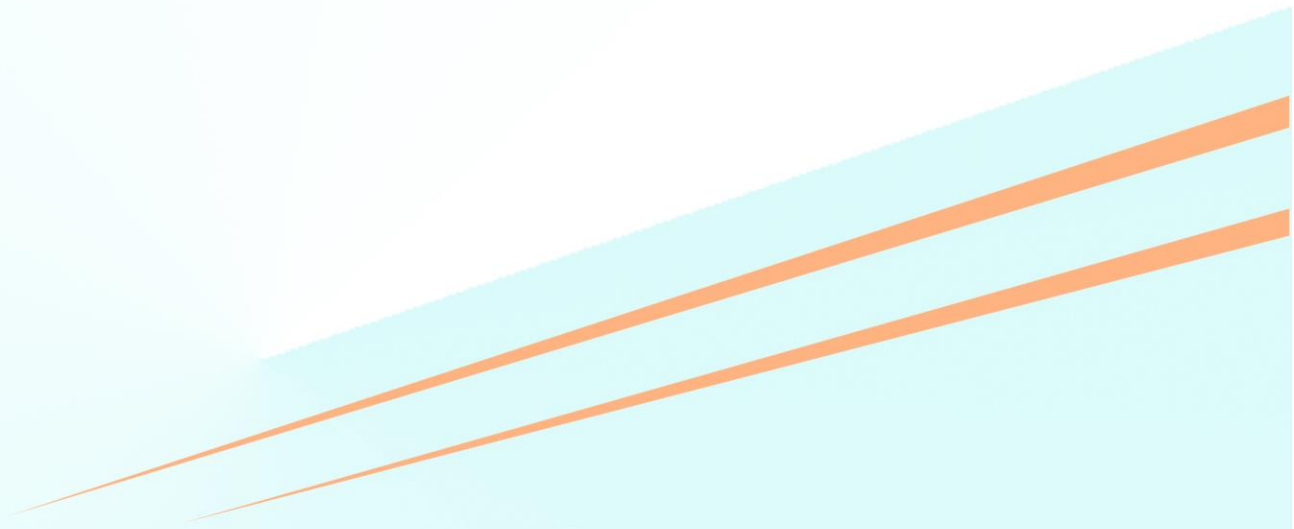
food at all times" (6), and takes into consideration the risk for an individual, household or population to be subject to reduced food access or availability at some point in time.

Food insecurity occurs whenever one or more dimensions in the food security definition are unachievable, limited or uncertain (8). Food insecurity leads to adverse health and developmental outcomes in children and adults (9). Malnutrition, one of the consequences of food insecurity, refers to both the over- and under- intake of macro- and micro- nutrients (10), and is common in both developing and developed countries, particularly among low-income households. Current economic and political instability in many countries, including armed conflicts and refugee crises, further exacerbate the issue of food insecurity by limiting the availability of food and increasing food prices, again at the greatest detriment to households at the bottom of the economic ladder (11).

Addressing issues of food insecurity at the community, regional, national and international levels is a top priority for many governments, public organizations and private sector initiatives. The World Health Organization (WHO) is one of leading authorities working towards food security, the elimination of hunger and malnutrition (particularly in women and children in developing countries), the prevention of overweight and obesity, and the promotion of knowledge around food safety and foodborne illnesses. Other important stakeholders often working in collaboration with the WHO, include the United Nations World Food Program, the Food and Agriculture Organization of the United Nations, the International Fund for Agriculture Development, and the International Food Policy Research Institute.

A problem as complex as food insecurity cannot be solved by one country, sector or stakeholder alone. Coordinated approaches and strategies coupled with the necessary political commitment and integrated leadership are required to tackle this issue. The latest Food and Agriculture Organization report points out that accelerated, substantial and sustainable hunger reduction is possible with the requisite political commitment (3). Coordinated approaches to the reduction of food insecurity should include: “public and private investments to raise agricultural productivity; better access to inputs, land, services, technologies and markets;

measures to promote rural development; social protection for the most vulnerable, including strengthening their resilience to conflicts and natural disasters; and specific nutrition programmes” (3).



Sub-Theme 1: Food Insecurity in Developing Countries

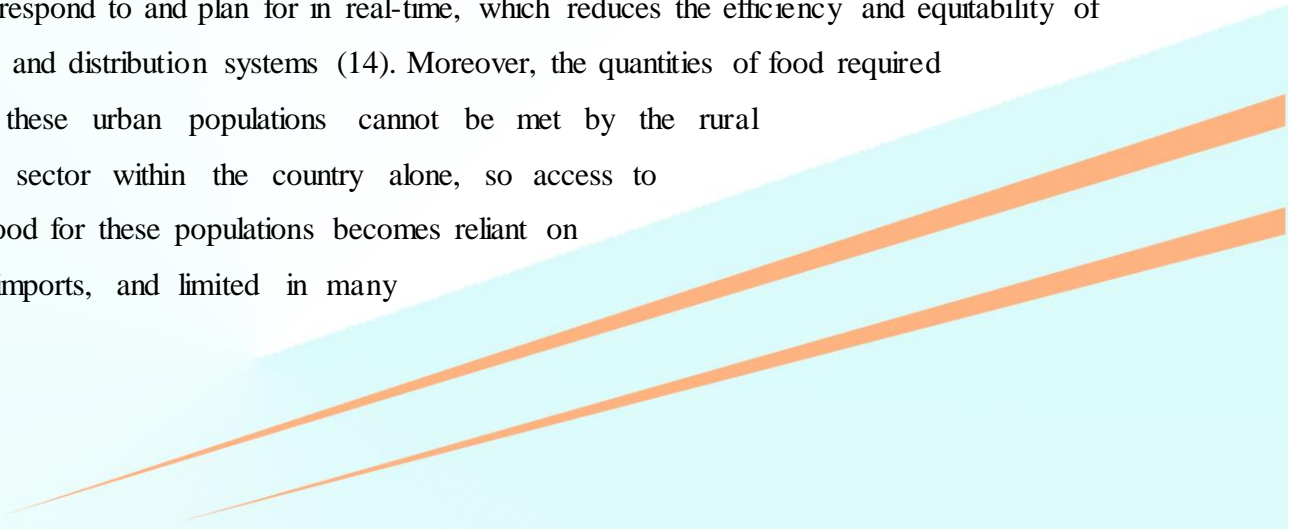
1.1 Availability Problems

From 2006 to 2008, the price of food imports increased dramatically across the globe. This increase especially affected small import-dependent countries, such as those in the horn of Africa, as they did not have the reserves or means to sustain their populations (12). In an attempt to protect their own populations and economies, larger, more developed countries, such as China, tightened their trade policies (12). In doing so, the international market not only worsened, but the health of smaller, less developed countries' citizens decreased dramatically. The undernourishment rate in Africa increased by 8% between 2007 and 2008, with almost 240 million individuals not receiving an adequate amount of nutrients (12).

Not only does lack of access to nutritious food have an effect on the level of nourishment that a population is able to attain, but in order to cope with the high prices of available food, individuals tend to reduce dietary diversity and spending on essentials such as education and health care (13). During times of crisis, diet tends to shift away from micronutrient-rich foods, such as milk, meat, fruits and vegetables, towards cheaper foods including grains, which do not contain all the nutrients required for an active human being (13). This trade-off between food and other necessities, such as education and health care, perpetuates a negative cycle of health for low-income individuals (13).

1.2 Access Problems

Developing countries are for the most part characterized by densely populated and rapidly expanding cities, resulting in an increase in levels of urban poverty (14). Rapid urbanization is difficult to respond to and plan for in real-time, which reduces the efficiency and equitability of food supply and distribution systems (14). Moreover, the quantities of food required to sustain these urban populations cannot be met by the rural agricultural sector within the country alone, so access to nutritious food for these populations becomes reliant on expensive imports, and limited in many



less developed nations as a result (14).

Due to the laws of supply and demand, access to nutritious food is difficult for large populations of the urban poor (15). In places such as India, 21.25% of the population lives on less than US\$1.90 per day, and the bottom 10% of the population accounts for just 3.6% of the total consumption expenditure, while the top 10% accounts for 31% (15). In a context of already high levels of inequality and social exclusion, only those with the financial means have access to nutritious foods, further increasing disparities in health and overall quality of life (15).

1.3 Utilization Problems

In many developing countries, the way that food is used and prepared on a day to day basis is just as important as whether nutritious food can be obtained in the first place. In order to receive the full benefits of food, it must be prepared in ways that does not diminish its nutrition or introduce health complications.

In countries such as Ethiopia and Somalia, the tradition of eating raw meat as a delicacy is fairly widespread. The preferred meat is that of the ox, but goat and sheep can be prepared and eaten raw as well (16). Curious about the bacteria being consumed by a vast majority of the population in these countries, researchers conducted a study in which they found pooled estimates of Salmonella-contaminated goat carcasses, beef carcasses, minced beef and milk to be 3.86%, 4.53%, 8.34% and 10.76% respectively (16). Consumption of these meats raw often results in Salmonella poisoning, which not only causes illness but may also lead to death. However, for a large portion of the population, there is a lack of awareness that this is an unsafe practice, a problem not just isolated to countries like Ethiopia and Somalia, but also present in other developing countries around the world.

1.4 Stability Problems

Rapid urbanization in developing countries results in diminishing areas of farmland in periurban areas, where the majority of food tends to be produced. In Shanghai, China, 60% of vegetables and 90% of milk and eggs come from urban and periurban areas

(14). To avoid food insecurity, some people grow food in urban areas, but this can be dangerous due to a lack of regulations and pollution in the cities. As urban populations increase, the amount of local farms decreases, putting the population in danger of food shortages and higher food prices (14). This is a long-term problem that requires investment.

A large portion of farms in developing countries are small family farms. These farms are often inefficient because some still use traditional methods for growing crops and tending to animals. This puts local farmers at a disadvantage in competing with imported food. Thus, family farmers are one of the poorest congregations of society.

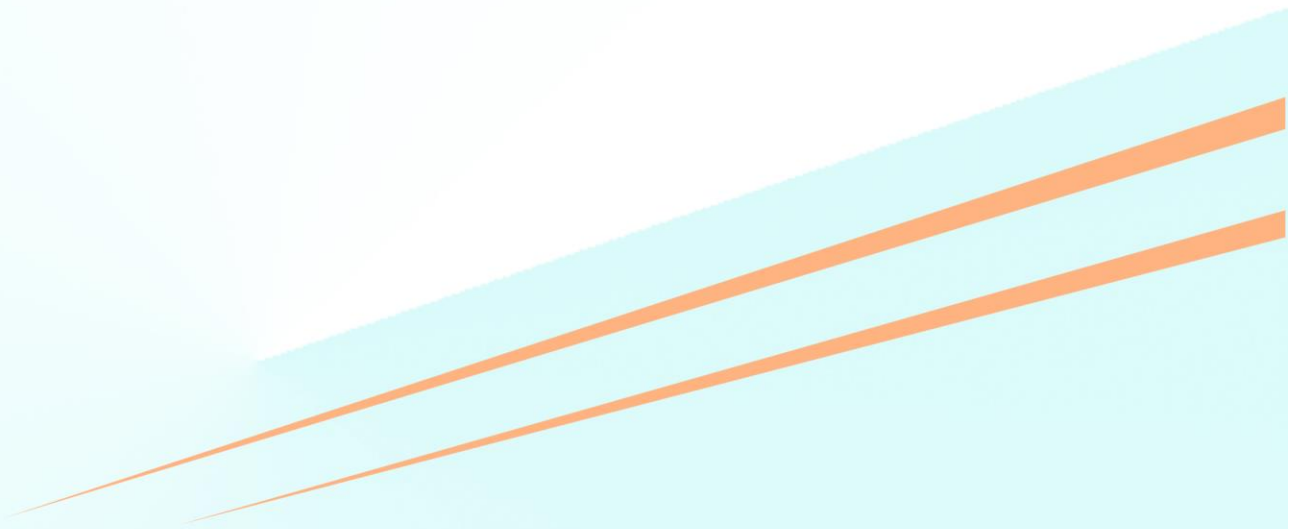
Seasonal migrations of farmers have been observed due to lack of work in certain months of the year (17). In the circumstance of seasonal migration, farms are not able to produce and sell food due to a deficit of workers, and the remaining workers are left without a salary. This results in potential food shortages and poverty due to high food prices (especially among farmer families and urban poor) in unfruitful months. Even short periods of soaring food prices can have negative long-term effects. For example, a farmer may sell livestock for a cheap price to get the money needed in the short term, but this can lead to his decline into poverty in the long term. Children from low-income families may be put at risk of malnutrition due to higher food prices, which can have long-term developmental effects. Putting children at risk of malnutrition is not only inhumane, but also has negative impacts on the future economy, which will rely on the next generation for its growth (12).

Not having access to diverse foods in some months can lead to malnutrition. Even though one may consume enough calories to survive, they might not consume enough vitamins and other nutrients, which can result in malnutrition (18).

Developing countries that are not very involved in international trade are at higher risk of having seasonal food shortages than countries that trade because they have slower economies. Countries involved in trade have a faster growing economy than those that don't. A slowly growing economy results in stagnation of development in the agricultural sector, so farmers that do not have modern technology will continue to lack it, and efficiency of food production will not

be improved. Although most developing countries have been opening up to trade, the world has room to improve in making trading easier and more beneficial for developing countries (19). This includes lowering import and export tariffs.

Non-self-sufficient, small countries that are greatly dependent on imports are also at higher risk of unstable food prices because amounts of imports change with the global political and economic situation. For instance, small African countries were greatly affected by the global economic crisis of 2008, whereas larger, more self-sufficient, countries were able to withstand the crisis much better (12). Global economic crises can also have a negative impact on food security in developing countries.



Sub-theme 2: Food Insecurity in Developed Countries

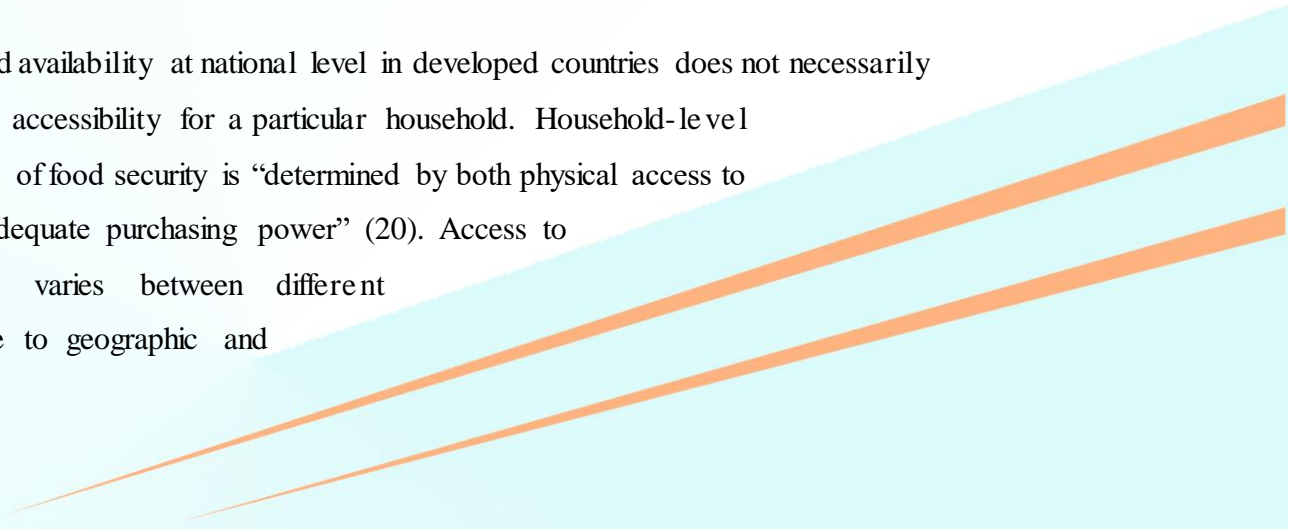
2.1 Availability Problems

Food insecurity prevail in both developing and developed countries, however the nature of food insecurity is different in those countries in several ways. Food insecurity in developed countries is less obvious, as food budget is the most discretionary of all essential expenditures and it is often associated with obesity and chronic diseases due to dietary preferences and lack of access to nutritious food (1).

Most of the developed countries are somewhat dependant on import and export (20). As such, availability of diverse, nutritious foods is dependent on multiple factors (e.g., agriculture, environmental factors, climate and climate change, trade, as well as national and international politics). In this situation, food availability at suppliers' level, effective trading system and stable politics situation become essential to ensure food availability in importing countries. Country's ability to import sufficient amounts of food highly depends upon its commercial import capacity, which reflects major economic and financial parameters, such as total export earnings, foreign exchange reserves, the value of non-food import necessities and debt service obligations. For example, the Czech Republic, which is currently ranked as one of the countries with good performance according to the Global Food Security Index (21), is highly dependent on other European countries for their food because most of their crops consist of grains (22). In case of a political dispute with the European Union and the ceasing of trade, the Czech Republic would be at risk of an increase in food prices due to the need to trade with different countries, or at risk of having less diversity in the available food.

2.2 Access problems

Food availability at national level in developed countries does not necessarily ensure food accessibility for a particular household. Household-level accessibility of food security is “determined by both physical access to food and adequate purchasing power” (20). Access to food often varies between different regions due to geographic and



regional variation in availability of food and its cost. In Canada, one of the best performing countries according to the Global Food Security Index (21), on average about 8% of households experienced food insecurity, however, in Nunavut specifically, this rate is over 4 times higher (36%) (23). Moreover, food accessibility is often limited due to lack of access to food stores with a wide range of healthy foods and availability of personal transportation for individuals and household (24).

In the United States over 20 million people do not have access to a supermarket within a mile of their home and/or do not have access to various food or several types of food (24, 25). Disparities in access to grocery stores with fresh and healthy food are also often associated with living in a low-income neighborhoods and/or an ethnic community (26). It was shown that disparity in access to fresh and healthy food influences individual food preferences and purchasing behaviour (lower consumption of inaccessible food) and is associated with higher rates of obesity and obesity-related chronic diseases (24, 27)). Limited individual or household purchasing power is another common factor resulting in access problems. Even on developed countries, some household types, such as lone-parent families with children under 18 reported, Couples with children under 18 and unattached individuals are especially vulnerable food insecurity (23).

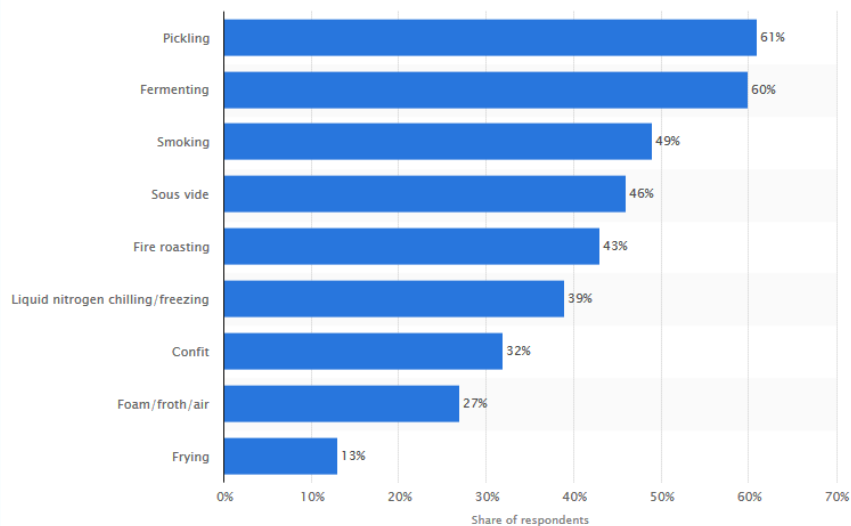


Image from <http://www.statista.com/statistics/293966/leading-trends-in-food-preparation-methods-on-restaurant-menus-us/> © Statista 2016

2.3 Utilization problems

Although economic instability is usually less of a problem in developed countries, unhealthy eating habits result in health problems such as malnutrition, obesity, heart conditions, and other health issues associated with an unbalanced diet. Some of the biggest

food utilization problems developed countries face include food preparation methods and sustainable waste management systems. Dietary guidelines also have room to improve in their effectiveness on people's choice of food.

Sometimes, unhealthy food preparation methods are culturally acceptable and widely used in an industrialized country. Deep frying is among the most popular food preparation methods in the U.S., with 13% of chefs voting for it in a national survey. (see picture) Deep frying is known to cause high amounts of cholesterol and trans fats, which are also unhealthy (28). High sodium content is also a problem in the United States. Half of all foods containing sodium exceed the healthy limit set by the U.S. Food and Drug Administration (29). High sodium intake is associated with hypertension and thus poses a significant health risk (30). Thus, some Americans are at risk of suffering from health problems associated with bad dietary habits.

People who are not following a healthy diet need to be able to get on the right track. National nutritional standards need to be available and utilized effectively for this to happen. It is important that governments set nutritional standards that are healthy and realistic to follow. For example, Canada has an official Canada Food Guide, which outlines how many portions of each type of food a person should consume in one day, customized for different ages and sexes. However, there are a number of issues with relying on this approach to eliminate unhealthy diets.

Food labelling alone does not take into consideration a person's lifestyle. For example, someone who is more physically active will need to consume more food. However, the exact amounts of nutrients one needs to consume are not obvious or intuitive, so one might be misled by labels into believing they need more or less than they actually do. In addition, products with "healthy" labels can mislead consumers into believing that they can consume an excess of that product, which is not healthy. (31) Additionally, the presence of foods that appear healthy can lead to some people to think that their healthy eating goal has been satisfied and consequentially make an unhealthy food choice. (32) To solve this problem on a case-by-case basis, individualized diets can be created with a professional's help.

Dieticians and doctors are needed to create individualized diets. In the United States, the demand for dieticians

is expected to grow in the next eight years due to awareness about diet's role in disease prevention (33). This means that once people are aware that they need help with their diet, they will be available. However, affordability of dietary specialists, doctors, and healthy diets themselves is questionable for lower-income households, which are at a higher risk of obesity, heart disease, and unhealthy diets. (34)

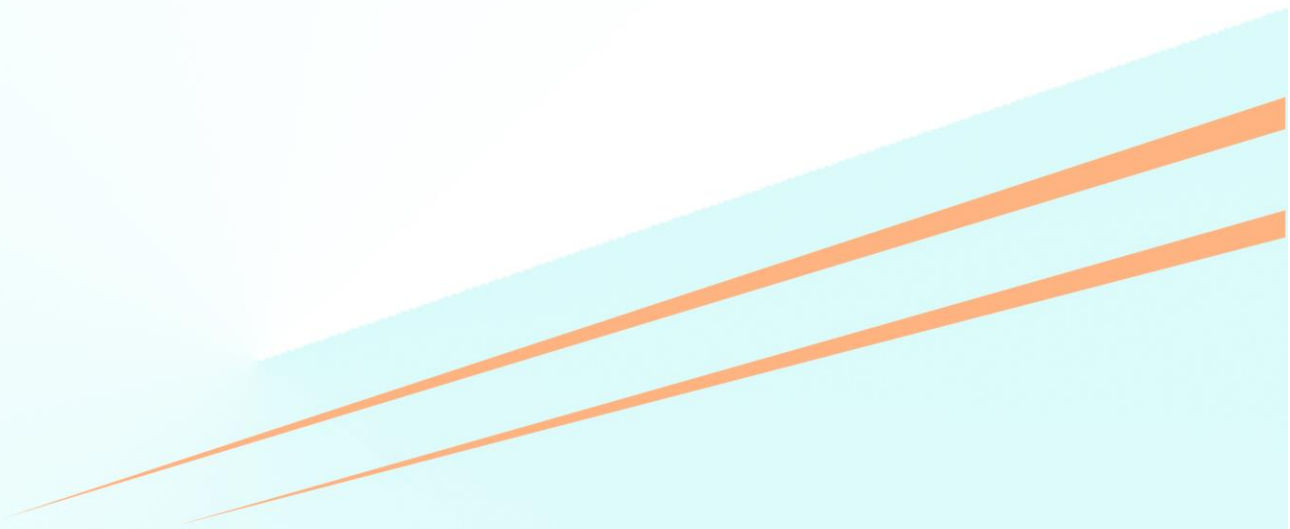
Some barriers to following a dietary restraint are cultural. People tend to use food consumption as a social event, and it can be hard to exclude oneself from the social aspect of food consumption (35). Some people consume cultural food, which can be hard for laypersons to classify based on a general standard. This problem is especially prevalent in multicultural countries such as Canada. To accommodate for some of the cultural differences in Canada, the Canadian Food Guide has a section especially for First Nations people. It includes examples of cultural food and comes in three of the most widely-used First Nations languages (36). However, such accommodations do not exist for newcomers, who come from all corners of the world. Thus, some minorities are left out of the national nutritional standard and possibly out of a healthy diet. The governing body needs to make sure that all groups of people are accommodated in their nutritional standard. Alternatively, minority groups need a different approach to guiding them to a healthy diet.

2.4 Stability problems

Long-term stability depends on how sustainable our food production and management systems are today. Pollution is a terrible spite that negatively affects food security (37). To avoid pollution in the future, industrial countries need to manage their waste well today. Sustainable diets need to be promoted to reduce amounts of livestock needed, which will reduce pollution. Effective waste management is part of the sustainable way of living that is the goal for all modern-day countries. Waste of food in general is also unsustainable. It was estimated that, in Canada, 29% of calories that were purchased were wasted or lost (38). Evidently, people need to take more care to save food and not waste it unless absolutely necessary (e.g. due to spoilage). Even spoilage can be prevented by buying or producing only as much food as necessary.

Sustainable development requires investment. The speed of this development depends on how governments prioritize sustainable agriculture and waste management. It also depends on how individuals prioritize it. Thus, the priority of sustainable development depends on many social factors unique to every country. If it is true that consumerist culture in some way results in wasting, then countries with a more consumerist ideology will waste more. However, this way of thought has flaws (see 39).

Now to turn to smaller-scale food stability problems in developed countries. There is a positive correlation between average income of a community and food security in that community, as shown by a survey in Australia. However, the most disadvantaged neighbourhood do not have the lowest food prices, which means that low-income people may be at risk of food insecurity due to high prices (40). There are other factors to consider though, such as the ability to afford healthy foods on government-sponsored low-income funds. A review of survey studies on market prices done in the USA showed that the low-income funds were enough to buy food from supermarkets and bulk stores, but often not enough to buy from small or medium stores. Thus, households that rely on these stores for their food are at higher risk of food insecurity due to low income (41). Logically, this is prevalent in small, geographically isolated communities.



References

1. McIntyre L. Food security: more than a determinant of health. POLICY OPTIONS-MONTREAL-. 2003;24(3):46-51.
2. Coutsoudis A, Maunder EM, Ross F, Ntuli S, Taylor M, Marcus T, et al. WHO Multicountry Study on Improving Household Food and Nutrition Security for the Vulnerable. 2000.
3. FAO. Food and Agriculture Organization. The state of food insecurity in the world 2014: strengthening the enabling environment for food security and nutrition. Rome, Italy: 2014.
4. Bruinsma J. World agriculture: towards 2015/2030: an FAO perspective: Earthscan; 2003.
5. FAO. Food and Agriculture Organization. The State of Food Insecurity in the World 2001. . 2002.
6. FAO. Food and Agriculture Organization. Food Safety. Policy Brief. 2006.
7. Gregory PJ, Ingram JS, Brklacich M. Climate change and food security. Philosophical Transactions of the Royal Society of London B: Biological Sciences. 2005;360(1463):2139-48.
8. Campbell CC. Food insecurity: a nutritional outcome or a predictor variable? The Journal of nutrition. 1991;121(3):408-15.
9. Wunderlich GS, Norwood JL. Food insecurity and hunger in the United States: National Academies Press; 2006.
10. King FS, Burgess A, Quinn VJ, Osei AK. Nutrition for developing countries: Oxford University Press; 2015.
11. Black RE, Allen LH, Bhutta ZA, Caulfield LE, De Onis M, Ezzati M, et al. Maternal and child undernutrition: global and regional exposures and health consequences. The lancet. 2008;371(9608):243-60.

12. FAO. Food and Agriculture Organization. State of Food Insecurity in the World 2011: How Does International Price Volatility Affect. 2011.
13. FAO. The state of food insecurity in the world: Economic crises-impacts and lessons learned. FAO of the United Nations Rome; 2009.
14. Argenti O, Marocchino C. Urban food supply and distribution in developing countries and countries in transition. 2005.
15. WFP. World Food Program. Countries. India. Available from: <https://www.wfp.org/countries/india>.
16. Tadesse G, Gebremedhin EZ. Prevalence of Salmonella in raw animal products in Ethiopia: a meta-analysis. BMC research notes. 2015;8(1):1.
17. Loftas T, Ross J. Dimensions of need: an atlas of food and agriculture: Food & Agriculture Org.; 1995.
18. Economic UNDo, Affairs S. World economic and social survey 2013: Sustainable development challenges 2013.
19. Fund IM. Global Trade Liberalization and Developing Countries. . 2001.
20. Sharma R. Monitoring access to food and household food security. Food, nutrition and agriculture. 1992;2(4):2-9.
21. Global Food Security Index.
22. eurostat. Population and population change statistics 2016. Available from: http://ec.europa.eu/eurostat/statistics-explained/index.php/Population_and_population_change_statistics.
23. Roshanafshar S, Hawkins E. Food insecurity in Canada. Can J Diet Pract Res. 2006.
24. Caswell JA, Yaktine AL, Council NR. Individual, Household, and Environmental Factors Affecting Food Choices and Access. 2013.

25. Ver Ploeg M. Access to affordable and nutritious food: measuring and understanding food deserts and their consequences: report to Congress: DIANE Publishing; 2010.
26. Mantovani RE, Welsh J. Authorized Food Retailer Characteristics Study: Geographic Analysis of Retailer Access. Technical Report III: US Department of Agriculture, Food and Consumer Service, Office of Analysis and Evaluation; 1996.
27. Izumi BT, Zenk SN, Schulz AJ, Mentz GB, Wilson C. Associations between neighborhood availability and individual consumption of dark-green and orange vegetables among ethnically diverse adults in Detroit. *Journal of the American Dietetic Association*. 2011;111(2):274-9.
28. Bansal G, Zhou W, Tan T-W, Neo F-L, Lo H-L. Analysis of trans fatty acids in deep frying oils by three different approaches. *Food Chemistry*. 2009;116(2):535-41.
29. Ahuja JK, Wasswa-Kintu S, Haytowitz DB, Daniel M, Thomas R, Showell B, et al. Sodium content of popular commercially processed and restaurant foods in the United States. *Preventive medicine reports*. 2015;2:962-7.
30. Laatikainen T, Nissinen A, Kastarinen M, Jula A, Tuomilehto J. Blood Pressure, Sodium Intake, and Hypertension Control: Lessons From the North Karelia Project. *Global heart*. 2016;11(2):191-9.
31. Andrea Freeman. Transparency of food consumers: nutrition labelling and food oppression. *American Journal of Law & Medicine*. 2015. 41.2(3):315-330. doi: 10.1177/0098858815591520.
32. Keith Wilcox, Beth Vallen, Lauren Block, Gavan J. Fitzsimons. Vicarious Goal Fulfillment: When the Mere Presence of a Healthy Option Leads to an Ironically Indulgent Decision. *Journal of Consumer Research*. 2009. 36: 380-393. doi: 10.1086/599219.
33. United States Department of Labor BoLS. Occupational Outlook Handbook, Dietitians and Nutritionists. 2015.
34. Yue Chen, Donna C. Rennie, Chandima P. Karunanayake, Bonnie Janzen, Louise Hagel, William Pickett, Roland Dyck, Joshua Lawson, James A. Dosman, Punam Pahwa and the

Saskatchewan Rural Health Study Group. Income adequacy and education associated with the prevalence of obesity in rural Saskatchewan, Canada. *BMC Public Health*. 2015. 15(700). doi: 10.1186/s12889-015-2006-9

38. Nordström K, Coff C, Jönsson H, Nordenfelt L, Görman U. Food and health: individual, cultural, or scientific matters? *Genes & nutrition*. 2013;8(4):357-63.

39. Martin O'Brien. Consumers, Waste and the 'Throwaway Society' Thesis: Some Observations on the Evidence. *International Journal of Applied Sociology* 2013, 3(2): 19-27. doi: 10.5923/j.ijas.20130302.02

40. Canada H. Food and Nutrition. 2012. Available from: <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/order-commander/index-eng.php>.

41. Agency EE. Food security and environmental impacts 2012. Available from: <http://www.eea.europa.eu/themes/agriculture/greening-agricultural-policy/food-security-and-environmental-impacts>.

42. Canada S. Human Activity and the Environment: Annual Statistics. Food in Canada.

43. Barosh L, Friel S, Engelhardt K, Chan L. The cost of a healthy and sustainable diet—who can afford it? *Australian and New Zealand journal of public health*. 2014;38(1):7-12.

44. Horning ML, Fulkerson JA. A systematic review on the affordability of a healthful diet for families in the United States. *Public Health Nursing*. 2015;32(1):68-80.