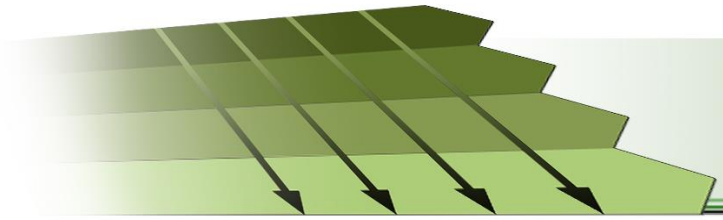

CORE
Public Health Functions for BC

Evidence Review:
Food Security

Population and Public Health
BC Ministry of Health

September 2013 (update from May 2011)

This is a review of evidence and best practice that should be seen as a guide to understanding the scientific and community-based research, rather than as a formula for achieving success. This review does not necessarily represent ministry policy, and may include practices that are not currently implemented throughout the public health system in BC. This is to be expected as the purpose of the Core Public Health Functions process—consistent with the quality improvement approach widely adopted in private and public sector organizations across Canada—is to put in place a performance improvement process to move the public health system in BC towards evidence-based best practice.

This Evidence Review should be read in conjunction with the accompanying Model Core Program Paper.

Evidence Review prepared by:
Hollander Analytical Services Ltd

Evidence Review accepted by:
Provincial Public Health Committee (March 2014)

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EXECUTIVE SUMMARY

Introduction

In March 2005, the Ministry of Health released *A Framework for Core Functions in Public Health* (Core Functions Framework), which clearly defined the core functions of the public health system and identified a comprehensive set of core public health programs intended to improve health and well-being, and/or reduce disease, disability and injury. This policy work formed the foundation of *Promote, Protect, Prevent: Our Health Begins Here. BC's Guiding Framework for Public Health* (Guiding Framework)—the 10-year directional document for the public health system released in March 2013. The Guiding Framework reinforces Core Functions as the framework for public health program and service delivery in the province, provides a strong foundation for all current public health efforts, and builds on the critical elements necessary to consider when identifying future priorities.

Food security is a core public health program, which is aligned with the Healthy Living & Healthy Communities goal in the Guiding Framework. Each core public health program is supported by an evidence review and model core program paper, quality improvement tools that help the Ministry of Health and health authorities ensure that public health policies, programs and services are based on evidence and best practice.

This evidence review is an update of the food security evidence review completed in 2011. The aim of this Food Security Evidence Review is to describe the evidence on public health interventions that address food security at the individual, household, and community level, within the context of provincial and national policies. It is intended to identify effective measures for improving access to, and availability of, healthy, culturally appropriate food within communities.

Community food security, the major focus of this paper, is defined as "when all citizens obtain a safe, personally acceptable, nutritious diet through a sustainable food system that maximizes healthy choices, community self-reliance and equal access for everyone".[1] At a household/individual level, a lack of food security is measured as "the inability to acquire or consume an adequate diet quality or a sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so".[2] Food security is a complex issue as it includes: food production; food affordability; the impact of climate change; economic and environmental issues related to food exports and imports; and issues related to the built environment, such as access to, and availability of, healthy foods in lower socio-economic neighbourhoods. Food security is a primary/primordial prevention strategy as well as a prerequisite for many secondary and tertiary prevention strategies.

Food security is an important public health issue as it aims to address matters that impact both the general population and vulnerable groups. With respect to vulnerable groups, challenges include the following.

- There is a clear linkage between income levels and food security, with the prevalence of food insecurity rising to almost 50% in the lowest income group.[3] Some 8.4% of British Columbians have moderate or severe food insecurity.[4] This is slightly higher than the national average of 8.1%.[5]
- The most vulnerable groups for food insecurity are: families headed by single females; aboriginal peoples; marginally housed and homeless people; and new immigrants.[6,7]
- Households experiencing a lack of food security are more likely to report poor or fair self-rated health, poor functional health, restricted activity, and multiple chronic conditions.[8,9] For example, low-income people experiencing food insecurity in BC have higher rates of diet-related chronic diseases such as heart disease, diabetes and cancer compared to higher income earners (based on analysis of the Canadian Community Health Survey).[10]
- Those who are food insecure also tend to be more overweight and obese than the general population.[7]

There has been considerable progress in food security programs since the core public health program on food security was established in 2006 by the Ministry of Health and the health authorities in British Columbia. This work has helped to leverage and add credibility to existing grass-roots, community based work occurring around BC, which, in turn, supports further development and expansion.

As food security is an emerging field and much of the activity has, of necessity, occurred at the local level through involvement of community stakeholders, there is limited scientifically rigorous research available on the clinical significance and causal pathways of food security initiatives with respect to human health. However, there are a number of program evaluations and case studies available, as well as a growing body of theoretical analysis, planning documents and guides prepared by experts in the field which help to inform understanding of the field. Evidence for the various strategies have been rated using the following grading system:

- *Limited Investigation* – where there are no effectiveness studies or theoretical grounds.
- *Evidence is Contra-indicative* – where there are inconsistent or null findings.
- *Warrants Further Research* – where operational specifics of the delivery format are not resolved.
- *Evidence for Implementation* – where there is a sound theoretical basis, sound delivery format, and acceptance within organizations and target populations.
- *Evidence for Outcome Effectiveness* – where positive outcomes are consistently published for well controlled interventions.
- *Evidence for Effective Dissemination* – where there are published reports of effective impacts for large-scale programs delivered by government bodies or other large service delivery agencies.

National and International Approaches to Food Security

The United Nations (UN) is promoting comprehensive and inter-sectoral approaches to address issues related to food security in response to considerable research documenting potential risks to the global food system.[11] Analysis at the international level regarding hunger, poverty, food security and sustainable food production has focused not only on developing countries but (increasingly) on developed countries as well. Analysis by the UN has identified several key factors that may contribute to or ameliorate the severity of food security now and in the future. These include:[11]

Contributing factors

- The serious implications of climate change are anticipated to have an increasing impact on food production, food transportation, food safety and food prices.
- The global nature of the food system has resulted in the dependency of many countries on imports for balanced food diets, and/or on food exports to support economic and agricultural sustainability.
- The economic and political instability facing many countries has the potential to impact food prices, fuel and transportation costs, and the import and export markets.

Potential solutions

- Environmental sustainability, related land use, and agricultural policies have the potential to mitigate some of the effects of climate change and related food production challenges.
- The integration of health, economic, agricultural, ecological and social sectors can build support for 'closer-to-home' production which improves access to healthy foods and builds partnerships and networks to strengthen the social fabric.

These solutions, recommended by a high level UN task force of experts, highlight the need for a unified response to the challenge of achieving global food security, including a twin-track approach to address immediate needs as well as longer term structural needs through the participation of governments, civil society, businesses and researchers at both the international and regional levels.[11]

There is growing concern about healthy food supplies and governance in a number of developed countries and provincial/state governments are in the process of developing formal food security strategies. Plans developed by the Canadian government and the governments of the United Kingdom, United States and Australia are described briefly to provide a larger context for considering action to strengthen both community and individual/household food security in British Columbia.

Fundamental Elements in Regional and Community Food Security

Fundamental strategies and considerations in the development of regional and community food security are discussed, including the importance of community capacity building, the need for collaboration and advocacy at the community level, appropriate targeting related to community groups, and the use of evidence based approaches in the planning process.

Networking and community capacity building are key to the successful development of food security initiatives. The health sector can be involved in engaging stakeholders in cross-sectoral partnerships, networks and strategies to share information and best practices, align programs and priorities, and build a broader understanding of food systems issues.

Academic research on the impact of community capacity building on health is lacking, but multiple case studies documented in the grey literature suggest community capacity building is highly effective, as does research in related areas, such as community empowerment. Technical papers prepared for World Health Organization's health promotion conferences have concluded that community capacity building with empowered and capable communities, in collaboration with other key players, may be the most powerful instrument available for the future of health promotion.[12] (*Evidence for Outcome Effectiveness*)

Regional and Local Government Food Security Policies and Strategies

Regional and municipal governments can incorporate food security initiatives into a variety of community strategies, development plans/permits, land use policies, and community development processes, as well as a range of incentives or restrictions that encourage access to, and availability of, healthy food. Although the health sector does not manage these initiatives directly, it can play an important role in advising and supporting regional and local governments in these efforts. This role is rooted in a population health approach which aims to improve the health of the entire population and reduce health inequities by considering the wide range of social, economic, physical and environmental determinants that contribute to health.

Strategies that have been adopted by regional and local governments and viewed generally as being helpful in increasing food security in communities include:

- Food policy coalitions/councils to provide advice, leadership, advocacy, coordination, networking, education, and research. (*Evidence for Implementation*)
- Community assessment and mapping of healthy food sources and food access resources in the community as a basis for identifying and assessing community strengths and weaknesses. (*Evidence for Implementation*)
- Increasing availability of, and access to, healthy foods by facilitating establishment of grocery stores in low-income neighbourhoods, stocking healthy foods in a range of local food outlets (e.g., convenience stores, mobile food vendors, etc.), and the use of development permits, zoning bylaws, regulations, subsidized permits and other incentives. (*Evidence for Implementation*)
- Policies and guidelines on the provision of healthy foods in public service venues. (Evidence for Implementation)
- Mechanisms to support farmers' markets, farm-to-cafeteria programs and other means of direct food purchase from farms. (*Evidence for Implementation*)
- Transportation policies to enable people to easily access health food stores. (*Evidence for Implementation*)

In addition:

- There is considerable, consistent evidence that better access to healthy food corresponds to the likelihood of healthier eating, healthier weights and reduced rates of diabetes.[13] (*Evidence of Outcome Effectiveness*)
- Strong research evidence has demonstrated that reducing the cost of healthier foods increases their purchase (where subsidies or other mechanisms have lowered food costs).[14] (*Evidence for Outcome Effectiveness*)

Community-level Food Security Programs and Services

Community food security programs have become increasingly common although few of the initiatives have been evaluated in terms of their impact on population health. A number have been the subject of program evaluations (limited/moderate evidence) many of which indicate positive effects in terms of enhanced knowledge of healthy nutrition, food skills, intake of fruits and vegetables, and awareness of the food system. They include the following.

<u>Programs that support immediate/short-term food relief</u>

- Charitable food programs such as food banks, soup kitchens and meal programs provide short-term relief (although they do not address the root causes of food insecurity). (*Evidence for Implementation*)
- Food recovery programs such as gleaning and encouraging donations of perishable food to charitable food programs can potentially increase the availability of healthy food. (*Evidence for Implementation*)
- Nutritional support programs for low-income pregnant women have shown positive health outcomes. (*Evidence for Effective Dissemination*)
- School meal programs for low-income children have also shown effective outcomes. (*Evidence for Outcome Effectiveness*)

<u>Programs that support longer term food security</u>

- Programs on food skills, including planning and preparing food and the use of community/collective kitchens, indicate positive outcomes and are generally considered promising practices. (*Evidence for Outcome Effectiveness*)
- Urban agriculture has demonstrated promise in improving nutrition and strengthening neighbourhoods. (*Evidence for Implementation*)
- Farmers' markets can improve access to healthy foods in the community while also supporting local farmers and the sustainability of local food supplies. Subsidies for low-income people in the form of coupons and vouchers for use at farmers' markets in combination with knowledge and skill building programs have had a positive impact on participants' food knowledge and healthy eating. (*Evidence for Implementation*)
- Farm-to-school programs have, in combination with teacher knowledge and attitudes as well as students' knowledge, attitudes and behaviours, positively contributed to healthier dietary choices. (*Evidence for Implementation*)

- Good food boxes of fresh fruits and vegetables and community-supported agriculture (e.g., membership fees to a farm for a share of the harvest) are considered to be helpful mechanisms for facilitating access to nutritious foods. (*Evidence for Implementation*)

Cultural Food Security

Cultural food security is an important issue for people of aboriginal ancestry as well as for other ethnic and socio-cultural groups. Certain population groups may have food skills limited to a particular ethnic cuisine or their diet may have religious, spiritual or ethical implications.

Food sovereignty is a relatively new movement that has grown internationally as well as in Canada. It focuses on the right of people to define and control their own food and agricultural systems, recognizes cultural and indigenous food systems, and supports a just and ecological food and farming system with fair prices for farmers.

Access to traditional foods and the use of traditional harvesting methods are important nutritionally, culturally, and economically for the well-being of First Nations people; a decrease in their use has adversely affected First Nations' physical, emotional, social and spiritual health. The shift away from the use of traditional foods due to colonization and residential schools has resulted in a loss of traditional knowledge and skills and gradual erosion of cultural values. Increased migration to urban centres, changes in lifestyles, and the high cost of equipment and transportation have also contributed to the shift away from traditional foods.

A number of First Nations communities have taken steps to improve diet quality and food security by establishing community gardens, food banks, community kitchens, lunch programs and educational programs regarding traditional food harvesting and food preparation. Although these programs have not been evaluated, they may provide examples to address barriers to traditional food access and may enhance the accessibility and availability of traditional foods for First Nations people.

Similarly, new immigrants experience a higher rate of food insecurity than individuals/ households in the general population. The issues are not only related to physical and economic access to food, but also to the religious and cultural adequacy of food accessible within the food environment. The availability of appropriate food may be an essential requirement to religious beliefs and/or it may represent a feeling of home and a level of acceptance in their new country. Researchers have suggested a need for broader multicultural policies at the regional government level to respond to the needs of immigrant groups.

1.0 Overview/ Setting the Context

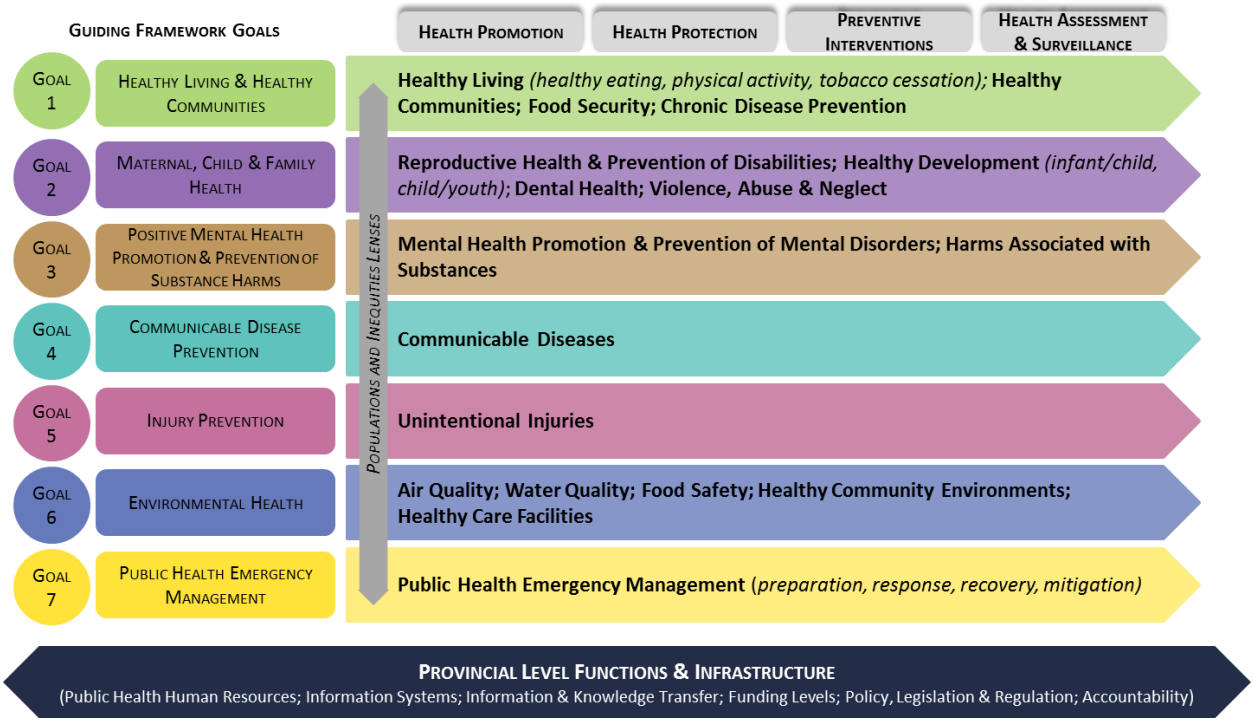
1.1 The Core Functions Framework

In March 2005, the Ministry of Health released *A Framework for Core Functions in Public Health* (Core Functions Framework) that clearly defined the core functions of the public health system and identified a comprehensive set of public health services, based on the best available evidence and best practices. This policy work formed the foundation of *Promote, Protect, Prevent: Our Health Begins Here. BC's Guiding Framework for Public Health* (Guiding Framework)—the 10-year directional document for the public health system released in March 2013.[15] The Guiding Framework reinforces Core Functions as the framework for public health program and service delivery in the province, provides a strong foundation for all current public health efforts, and builds on the critical elements necessary to consider when identifying future priorities (See Figure 1).

The original Core Functions Framework has been revised to reflect the alignment with the Guiding Framework. It outlines the 20 core public health programs within the seven goal areas that health authorities provide as they seek to improve the overall health of their populations. Four strategies (health promotion; health protection; preventive interventions; and health assessment and disease surveillance) are used to guide implementation.

Food security is a core public health program, and it is aligned with the Healthy Living & Healthy Communities goal (Goal 1) within the Guiding Framework.

Figure 1: Core Functions Framework



Each core public health program is supported by quality improvement tools that help the Ministry of Health and health authorities ensure that public health policies, programs and services are based on evidence and best practice.

- An *evidence review*, which identifies and ranks the evidence of effective public health interventions related to the core public health program.
- A *model core program paper,* which identifies the core elements of a comprehensive program, including goals and objectives, principles, key components, best practices, and indicators and potential performance measures. The information in the evidence review provides the foundation for the main components and best practices outlined in the model core program paper.

Health authorities are expected to use these quality improvement tools to inform planning, policy development and delivery, and support ongoing quality improvement. Specifically to

- Ensure programs and services are evidence-based and address health inequities.
- Develop and implement new public health priorities, as identified by the Guiding Framework and other public health directional documents.
- Educate and inform internal and external stakeholders of the evidence and support them in implementing evidence-based practices.

1.2 Introduction to the Core Public Health Program of Food Security

This document is an update of the evidence review on food security completed in May 2011. This evidence review identifies recent evidence on effective food security policies, programs, and initiatives to provide a basis for renewing the core public health program.

1.2.1 Linkages with Other Core Public Health Programs

Because of the wide range of issues involved in food security, this core public health program overlaps and links with a number of other core public health programs. In addition, the nature of health improvement means that it can be difficult to divide initiatives entirely into different categories. Thus, in considering food security, it is important to recognize linkages with the following core public health programs:

- A number of health improvement core public health programs highlight the importance of healthy food, such as Healthy Living (which includes healthy eating), Reproductive Health, Healthy Infant and Early Childhood Development, Healthy Child and Youth Development, and Healthy Communities.
- The environmental health core public health programs, including Food Safety, Water Quality, Healthy Community Environments, and Emergency Preparedness, all have a link to Food Security. Food safety in particular is a key element in food security as it can be an important consideration for both local and imported food sources.

- The prevention of disease, injury and disability core public health programs include a number of factors associated with food security, including the Chronic Disease Prevention and Dental Health programs.

While many core public health programs are linked to some of the food security goals, there is no attempt in this paper to duplicate the initiatives they include. It is suggested that other core program papers be referenced for additional information on related topics. For example, although food safety is touched on briefly in this paper, it is generally assumed that discussion of healthy food implies safe food; specific initiatives to ensure food safety are described more fully in the core public health program on food safety.

1.2.2 Background on Food Security

In 2010, the Provincial Health Services Authority (PHSA) noted that, based on the evidence of the relationship between food security and health, food security is a key public health priority in British Columbia.[7]

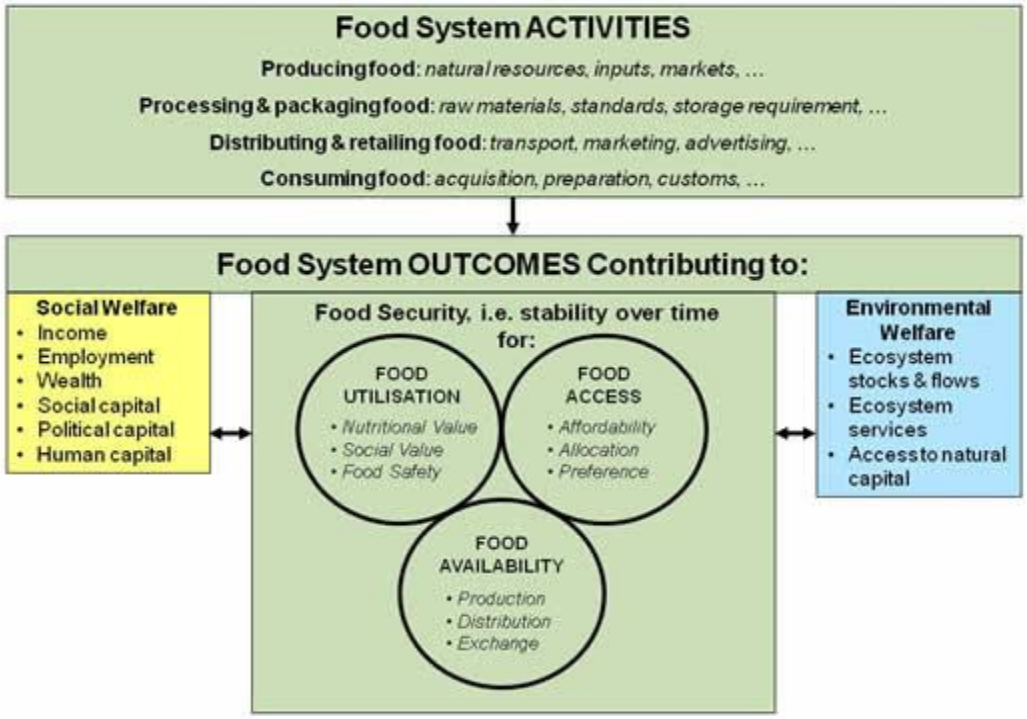
According to the Food and Agricultural Organization of the United Nations "food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life."[16] Community food security, the major focus of this paper, exists "when all citizens obtain a safe, personally acceptable, nutritious diet through a sustainable food system that maximizes healthy choices, community self-reliance and equal access for everyone."[1] Household/ individual food insecurity is defined as "the inability to acquire or consume an adequate diet quality or a sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so."[2]

Food security is a complex issue that recognizes the importance of human health and social equity, environmental health and sustainable food production, and economic vitality for both producers and consumers.

The population health role requires examination of factors both inside and outside the health care system recognizing that at every stage of life, health is determined by complex interactions between social and economic factors, the physical environment, and individual behavior. This requires a focus on partnerships and inter-sectoral cooperation, finding flexible and multi-dimensional solutions for complex problems, and public involvement and community participation.[17]

Figure 2 identifies food security inputs and outcomes.

Figure 2: Food Security Inputs and Outcomes



Source: Global Environmental Change and Food Systems.[18]

The outcomes identified in the figure could also be considered from the perspective of objectives or causal pathways to health. Members of the Working Group for this Evidence Review noted that these include: adequate and appropriate nutrition; equitable access; environmental sustainability; social connectedness; cultural connections; individual and community capacity building; and economic viability of the agricultural sector.[19]

What is Food Security? Food Security means that all people at all times have physical and economic access to adequate amounts of nutritious, safe, and culturally appropriate foods, which are produced in an environmentally sustainable and socially just manner, and that people are able to make informed decisions about their food choices.

Low income, especially among vulnerable people (e.g., families headed by single females, Aboriginal peoples, homeless individuals and new immigrants) is one of the key contributing factors to the lack of individual and household food security. In the larger context of community food security, many additional factors impact the population as a whole, including food quality, food availability and accessibility, and multiple issues that impact the sustainability of the food system itself. Because of the broad and complex range of these factors, a collaborative, multi-factorial approach is necessary not only at the regional and local levels but also at the provincial, national and international levels. While community food security is the primary focus of this paper (as this is the area where public health can have the greatest influence), an

overview of wider policy and strategic considerations underway at other levels is also presented to provide a context for planning purposes.

1.2.3 Goals for the Core Public Health Program on Food Security

The overall goal of the core public health program on food security is to increase food security for the population of British Columbia. The objectives of this "health improvement" program are as follows:

- To create policies that support food security initiatives on all levels, thereby enhancing access to affordable, high quality foods (using environmentally sustainable production and distribution methods).
- To strengthen community action by increasing community capacity to address local food security.
- To create supportive environments that will increase accessibility to, and the availability of, healthy foods in a sustainable and dignified manner.
- To increase food knowledge and skills by providing information and education resources.
- To facilitate the services and resources that communities and individuals require for increasing the accessibility, availability and affordability of healthy foods.
- To partner with other sectors and levels of government in addressing barriers to food security for all communities and citizens in the province.

These goals provide a context for considering the evidence and a foundation for renewal of the Model Core Program Paper on Food Security. The model core program presents strategies and programs chosen for implementation in British Columbia. It also includes a Program Schematic, or Logic Model, including short and long-term outcomes to summarize the program and provide the basis for assessing and evaluating the effectiveness of the strategies.

In BC, the primary focus of dental health is on the period from birth to 6 years of age. Thus, this document emphasizes dental health in pregnant women, new mothers, and children in the early childhood period. For completeness, the document also examines evidence related to dental health in school-aged children and adolescents, and in various population groups (such as individuals with chronic conditions and those in vulnerable populations).

2.0 METHODOLOGY

Evidence published in English since 2006 has been used in this paper, where it was available. Quality research studies have been cited, where available. However, observational studies, program evaluations, and expert opinions have also been included when these were the only evidence available on a specific issue.

A number of specialized electronic databases were searched to identify relevant studies and reviews. A literature search was completed using the PubMed database and the Academic Search Complete/EBSCO host (which includes the Academic Search Complete, Academic Search Premier, Medline and CINAHL databases). Key words included "community food security," "food insecurity," "the built environment," and "food access/accessibility." Additional search terms, such as "global food security," "food insecurity," "food security policies," and "food security" were used to search documents published by the World Health Organization (WHO), other key international organizations and national governments in developed countries. Evidence was also searched on "food security" in relation to specific topics such as "immigrants," "food sovereignty," "food councils," "food skills" and a variety of initiatives such as "community gardens" and "community kitchens." A number of resource documents prepared by the Provincial Health Services Authority (PHSA) provided valuable literature sources and analysis, as did reviews published by PEN Global Resource for Nutrition Practice, the Public Health Agency of Canadian Best Practices Portal, and Dietitians of Canada and BC.

This evidence review is a summary of the research literature in the field. It highlights available studies as well as analysis and perspectives of experts in the field. As food security is an emerging field and much of the activity has, of necessity, occurred at the local level through involvement of community stakeholders, there is a limited amount of scientifically rigorous research available. However, there are a number of program evaluations and case studies as well as a growing body of theoretical analysis, planning documents and guides prepared by experts in the field (including international and national agencies).

2.1 Strength of Evidence

Although randomized control trials (RCTs) are commonly considered the gold standard in evaluating health-related practices, many experts in the field acknowledge that RCT designs may not lend themselves to evaluation of the effectiveness of many complex public health interventions, such as those involving communities and socio-political (including organizational) "interventions."

Aside from achieving random allocation in practice, there are situations in public health in which the use of a randomized control design would be unethical. In other cases, the cost of such a design may be prohibitive. In these cases, a non-randomized design may be more appropriate.[20] As a result, public health initiatives tend to be evaluated using quasi-

experimental designs and qualitative methods to assess community capacity, the impact of social determinants of health and/or the impact on structural change.

Nutley et al[21] stated that there is no simple answer to the question of what counts as good evidence as it depends on what one wants to know, for what reason, and how the information will be used. Although it is common to base hierarchies of evidence on study design, this can present a number of challenges. For example, hierarchies based on study design tend to underrate the value of good observational studies, the use of such hierarchies to exclude all but the highest-ranking studies from consideration can lead to the loss of useful evidence, and hierarchies based on study design may pay insufficient attention to the need to understand what works, for whom, in what circumstances, and why.[21]

With respect to food security, the application of traditional hierarchies of evidence poses challenges. Food security is an emerging field characterized by innovative multi-pronged strategies adopted at a community level through collaboration among stakeholders responding to unique community characteristics and needs. Many activities and interventions are not evaluated in a scientific manner, and they are seldom measured in relation to whether the shifts in participants" knowledge, attitudes, behaviours, nutrition and health translate into population level impacts. The complexity in assessing whether an intervention has a population level impact is often beyond the scope of community based projects.

At the same time it is important to note, as PHSA suggests from a review of the literature, that the relative success or failure of individual activities and approaches has as much to do with the community context of the activity and the associated infrastructures than with the individual merits of the specific activity itself.[22] That is, mediating factors related to community capacity (such as the existence of a "mixed portfolio" of activities and projects, the availability of infrastructure and institutional supports, and the history of these activities within the community) have a significant impact on whether an initiative will achieve success.

While the evidence may be limited, it is important that health authorities ensure relevant evidence is brought to the table and interpreted appropriately to maximize the chance that interventions will be successful in achieving desired outcomes. Health authorities can also advise on how best to evaluate interventions to ensure that the knowledge base is developed and continual quality improvement is supported.

The BC Core Programs Steering Committee supports the evidence scale presented in Table 1. This scale considers both theoretical and empirical studies as well as other factors of relevance in population level health interventions. The scale was used to rate the level of evidence available for the various topics covered in the current document.[a]

[a] The symbols presented in Table 1 are provided for completeness only. They were not used in presenting the level of evidence in this document.

Table 1: Evidence Scale

Symbol	Evidence Rating	Definition
0	Limited investigation	No relevant effectiveness studies were located and there were no empirical or theoretical grounds suggesting the intervention might potentially impact the outcome. The evidence may also be inconsistent or contradictory.
☒	Evidence is contra-indicative	The evidence for the use of the strategy to prevent the targeted outcome is contra-indicated; consistent null or negative findings were obtained in well-controlled evaluation studies.
⚑	Warrants further research	Strategies appeared theoretically sound or have some promising evidence for their implementation or outcome, but the operational specifics of the delivery format are not clearly resolved or have been investigated only in small scale or inadequately controlled studies. Policies and programs utilizing these strategies might be priority targets for future research funding.
★	Evidence for implementation	Published studies reported a sound theoretical rationale, a clearly specified service delivery format, acceptance within service delivery organizations, target population recruitment on a scale sufficient to usefully contribute to population health impacts, and adequate consumer approval measured using indicators such as program retention. The proportion of positive demonstrations of impacts on risk factors, protective factors or outcome behaviours was reported. Although this rating requires a clear service delivery format, in some cases, not all other criteria are satisfied. Policies and programs utilizing these strategies might be supported for implementation where there are few costs and obvious benefits. In other cases, wider implementation may await rigorously controlled outcome evaluation to better establish benefits.
★★	Evidence for outcome effectiveness	Positive outcomes were consistently published in well controlled interventions. Interventions were required to be of sufficient scale to ensure outcomes within the constraints imposed by large-scale population health frameworks. Policies and programs utilizing these strategies might be carefully monitored for their impacts while being supported for wide-scale dissemination.
★★★	Evidence for dissemination	Published reports of impacts where programs were delivered on a large scale, not by research teams, but rather by government auspice bodies or other service delivery agents. Evidence for dissemination was only sought for strategies demonstrating evidence for outcomes. Policies and programs utilizing these strategies might be accorded some priority for dissemination. Initial Canadian dissemination trials should monitor for impacts. Where possible, cost-effectiveness has been considered for programs using these strategies.

3.0 BACKGROUND

3.1 Health Implications of Food Insecurity

Without consistent economic access to sufficient nutritious food, healthy eating cannot be achieved, increasing the risk of poor health. With decades of research and current monitoring of food insecurity in Canada, there is now an understanding of the associated health impacts at the individual and household levels.

- Food insecurity is associated with being overweight and obese.[7]
- Individuals experiencing food insecurity are more likely to report poor or fair self-rated health, poor functional health, restricted activity, and multiple chronic conditions.[8,9]
- People with lower incomes who are experiencing food insecurity in BC were found to have higher rates of diet related chronic diseases, including heart disease, diabetes and cancer compared to higher income earners (based on analysis of Canadian Community Health Survey data.[10]
- Individuals with a diet related chronic disease are also more likely to face challenges managing their health condition when experiencing food insecurity:
    - A US review found food insecure people with diabetes were 40 per cent more likely to have poor glycemic control and almost twice as likely to have hypoglycaemia compared to their counterparts who were food secure.[23]
    - Food-insecure people with diabetes have also reported reducing the amount of medication they take in order to have enough money for food, or going hungry to afford medication.[23]
    - A Canadian study found that people with diabetes who were food insecure were more likely to have unhealthy behaviours (e.g., poor diet, physical inactivity and smoking), psychological distress, and poorer physical health compared to those who were not food insecure.[24]
    - Aboriginal people may be particularly vulnerable to the impact of food insecurity because of the higher rates of diet related diseases such as diabetes in this group.[25,26]
- Food insecurity also impacts psychological well-being and leads to anxiety and feelings of hopelessness and helplessness.[9] It is associated with poor social support, stress, and major depression.[9]
- Children who are experiencing food insecurity and/or food insufficiency (a closely related condition) have poorer cognitive, academic, and psychosocial development compared to those who are experiencing food security and food sufficiency.[27]
- A recent longitudinal survey of data spanning a 10-year period found that among children, food insecurity was associated with poorer general health. Youth who experienced hunger were found to have higher rates of chronic conditions and asthma compared to their counterparts who did not experience hunger.[28]
- Over the short term, compromised food intake may have few consequences for a healthy adult. However, when nutritional needs are higher and/or when reduced intake

is sustained, health can be compromised. For example, during pregnancy, inadequate nutrition along with other factors can contribute to a low birth weight baby (which may result in an increased risk of morbidity and mortality).[29]

- Parents often restrict their own food intake so that their children might eat better.[30]
- In food insecure families, the quality and quantity of women's food intake deteriorates as household incomes dwindle.[31]
- Poor nutrition in seniors can lead to muscle wasting, a weakened immune system, and increased risk of infection.[8]

3.2 Rates of Food Insecurity

The Canadian Community Health Survey (CCHS), which uses self-reported responses, found that

- In 2007-2008, 7.7% or 961,000 households experienced food insecurity over the year prior to the survey. Of these, 5.1% experienced moderate food insecurity and 2.7% experienced severe food insecurity.[6]
- In 2011, 12.3% of Canadian households were food insecure. Of these, 5.6% experienced moderate food insecurity; 2.5% experienced severe food insecurity.[5]
- By comparison, some 5.2% of British Columbians experience moderate food insecurity and 3.2% experience severe food insecurity.[4]

The CCHS survey does not include people who are homeless or of Aboriginal ancestry living on-reserve. Both of these groups have been identified as particularly vulnerable to food insecurity.[32,33,34,35] Thus, all estimates of food insecurity based on the CCHS data likely under-represent the problem.

3.2.1 Vulnerable Populations

The groups who are most vulnerable for food insecurity are: families headed by single females; aboriginal peoples; marginally housed and homeless people; and new immigrants.[6,7] There is a clear linkage between income levels and food security, with the prevalence of food insecurity rising to almost 50 per cent in the lowest income group.[3] Among low-income groups, food insecurity is experienced disproportionately by some population subgroups. The 2007-2008 CCHS found that

- People in the lowest income decile had quadruple the rate of food insecurity compared to the national average (of 7.7%); 56% of those receiving social assistance and 25% of those receiving workers' compensation/employment insurance were food insecure.
- Approximately 21% of Aboriginal people living off-reserve experienced food insecurity.
- Some 13% of recent immigrants experienced food insecurity.
- More households with children reported food insecurity compared to the average household (9.7% versus 7.7%). Those with young children and greater than three children at home were most affected (11% and 14% respectively).

- Some 25% of households led by female lone parents were food insecure which was twice the rate of households led by male lone parents (11.2%) and four times the rate of households led by couples (6.3%).[6]

Furthermore,

- It is estimated that 130,000 to 260,000 homeless people live in Canada, primarily in urban areas.[36] In addition to having lower incomes, the homeless may also face additional barriers to food security as they have limited facilities to store, prepare and cook food in shelters and fewer opportunities to purchase food in downtown cores. They may also have difficulty accessing safe food or the resources needed to handle food safely.
- Using questions which were similar to those in the CCHS Household Food Security Module, a 2008/09 survey of 1,103 Aboriginal adults living on-reserve in 21 BC communities found food insecurity affected 41% of First Nations households (34% experienced moderate food insecurity and 7% experienced severe food insecurity). Rates varied from 13% to 47% across eco-zone/culture areas and affected 25% of households with children.[25]
- Other studies of on-reserve Aboriginals estimated even higher rates of food insecurity among this group. In 2001 and 2002, surveys by Lawn and Harvey[32,33,37] found that the rate of food insecurity at the household level ranged from 60% to 83% in different isolated Aboriginal communities located in Ontario, Nunavut and Nunavik.

3.3 Factors Influencing Food Security

While studies in Canada have primarily focused on food insecurity at the household level and its associated health impacts (see Section 2.1), food security at the community level includes a broad set of economic and physical factors, such as the environment and food system, that can impact food access and food availability.

3.3.1 Food Affordability

Low income has consistently been found to be the best predictor of food insecurity. Low-income households have a much higher rate of food insecurity compared to those in higher income brackets.[38] The prevalence of food insecurity rises to almost 50% in the lowest income group.[3] Measures of household food insecurity are essentially measures of the manifestations of acute financial insecurity on diet.[38]

Health Canada developed the National Nutritious Food Basket to estimate the cost of a basic nutritious diet for a variety of individuals and family groups.[b] Dietitians of Canada, BC Region

[b] The basket does not include household or personal care supplies nor does it take into account travel costs associated with its purchase.

noted in their annual 2012 cost survey of the Food Basket that "food costs have risen significantly over the past decade".[39]

3.3.2 Climate Change

In recent decades, BC's climate has experienced changes in temperature and precipitation. Extreme weather conditions have become more common and it is likely that even if greenhouse gas emissions are reduced there will continue to be frequent fires, floods, rising sea levels, and more diseases affecting both plants and animals. Extreme weather changes are also expected to impact agricultural areas outside our borders which can in turn affect the food security of BC communities.[7] If global warming continues unabated, worsening climatic conditions in BC are likely to adversely impact food security through: physical degradation of land and water used in agriculture; biological changes such as increased plant and animal pathogens in staple crops; and destabilization of communities through degradation of local agriculture and lost jobs and incomes, directly reducing the ability to purchase food.[7]

Lemmen[40] notes that BC's agricultural sector faces both positive and negative impacts from climate change. Changes in precipitation and water supply, more frequent and sustained droughts, and increased demand for water will strain the adaptive capacity of most forms of agriculture. Growing conditions may improve in some regions for some crops, although the ability to expand agricultural regions will be constrained by soil suitability and water availability.[40]

Food miles have been raised as an issue with the potential to impact food security.[7] Dependency on foreign food sources and the environmental sustainability of the current food system are particular areas of concern. Others question the value of using food miles as a measure of environmental impact (specifically with regards to greenhouse gas emissions from transport)[41] and note the importance of a sustainable global food supply and the importance of imports/exports in supporting a diversified food system and supply chain to support global food security. For example, Australia's national food plan aims to foster a sustainable, globally competitive, resilient food supply that supports access to nutrition and affordable food.[42]

3.3.3 The Built Environment

The built environment is defined as encompassing "a range of physical and social elements that make up the structure of a community",[43] including "housing form, roads and footpaths, transport networks, shops, markets, parks and other public amenities and the disposition of public space."[44] Research indicates a relationship between poor diet and low nutritional status of people in lower socio-economic neighbourhoods that have few retail outlets with affordable healthy foods.[7] These issues include

- Transportation – Access to affordable and nutritious food can result from the absence of reliable transportation options in both rural areas and lower income urban

neighbourhoods underserved by public transport.[45] The problem is more acute in rural areas, in northern communities, and among aboriginal peoples living on reserves.[37,46]

- Food Deserts – Urban "food deserts" are socially distressed neighbourhoods with relatively low average household incomes, a lack of transportation and poor access to healthy food. More and more large-format supermarkets are erected on suburban lands, and smaller grocers in older central-city neighbourhoods seem to be rapidly disappearing leaving potential food deserts in their wake.[47] These communities often experience both obesity and poverty.
- Food Swamps – Food swamps are areas which have an overabundance of high-energy, low nutrient foods provided mainly by fast food outlets. A 2012 study found that in lower income urban neighbourhoods, there are nearly twice as many fast food restaurants and convenience stores than in wealthier neighbourhoods, more than three times as many corner stores per square mile, and in some areas, many supermarkets.[48] (With respect to the supermarkets, the study noted there are food deserts in some impoverished neighbourhoods but this is not a consistent pattern.) Some experts suggest the strong link between obesity and poverty in low-income urban areas may not be caused by minimal access to healthy options but rather a culture that is over exposed to the marketing of junk food and a lack of nutrition education as well as adequate income.[49]

3.3.4 Food Production

The Canadian food system includes all the products produced as well as processes and activities carried out to put food on tables at home and in restaurants and to provide food products for export. Commercial food production is governed by legislation and regulations on health standards and food safety. Non-commercial food sources encompass activities such as gardening, hunting, fishing, and harvesting of wild foods. They are also governed by a variety of regulations that may allow/disallow certain activities.[50]

There has been considerable interest in the global diversion of grains from the food system to produce biofuels. In 2006, Canada contributed almost 600 million litres, or just over 1% of the global production of ethanol. In Canada, ethanol is made from wheat in the western provinces and from corn in Ontario and Quebec. Production of ethanol in Canada in 2006 required about 2% of the total production of wheat and 11% of the total production of corn.[50]

3.4 Context

A number of new initiatives have been developed in BC as well as nationally and internationally to address food insecurity. These are noted briefly to provide a context for considering the evidence on regional and municipal initiatives in the following sections.

3.4.1 Provincial Level

Across Canada, provincial and territorial governments have developed unique approaches to create food secure communities, many of which have been established in the last five years.

The document *Provincial Approaches to Food Security* provides a description of specific initiatives.[51] The document includes a review of activities of several ministries that contribute to food security in BC (in addition to the BC Ministry of Health, which is detailed below); these are also discussed in the Food Security Model Core Program paper.

There are also a number of non-government organizations that have actively promoted food security at the community, provincial and national levels (e.g., BC Food Systems Network and Food Secure Canada).

3.4.2 BC Ministry of Health

The BC Ministry of Health has established the food security program as a core public health program delivered by all regional health authorities across the province. A key approach for delivery of the core public health program is the Community Food Action Initiative (CFAI), a health promotion initiative of the provincial government which is intended to increase food security for all British Columbians. The CFAI is a collaborative effort of BC's health authorities and the BC Ministry of Health. It is funded by the Ministry of Health, coordinated by the PHSA and implemented by the regional health authorities in communities across the province.

The objectives of the CFAI are

- To increase awareness about food security.
- To increase access to local healthy food.
- To increase food knowledge and skills.
- To increase community capacity to address local food security.
- To develop and use policy that supports community food security.

Healthy Families BC, a major public health initiative launched in 2011, is a key strategy in delivering core public health programs across the province. Funded by the Ministry of Health, it encompasses healthy eating, healthy starts, healthy communities and healthy lifestyles. There is a Healthy Eating Strategy and Action Plan which includes the following priorities: to advance food security and food safety as foundational components of healthy eating; and to conduct food costing in order to monitor and report on the cost of purchasing a healthy diet according to Health Canada's National Nutritious Food Basket data collection tool The PHSA, in collaboration with the five regional health authorities, collects and analyzes the food cost data across BC in collaboration with Dietitians of Canada (BC region) and uses this information to raise awareness of populations vulnerable to food insecurity and the affordability of a nutritious diet for BC residents.

A number of other innovative BC government-funded food security programs have been implemented, often through coordinated approaches with non-profit organizations and community groups. These include the following:

- *Food Skills for Families* emphasizes healthy eating and cooking skills. Delivered through the Canadian Diabetes Association, the program provides skills and knowledge to help families select and prepare healthy food and increase their consumption of vegetables and fruit. It is targeted to populations most at risk for chronic diseases (e.g., Aboriginal, new immigrants, low-income families, seniors, etc.). It also aims to increase capacity within communities.
- The *Farmers' Market Nutrition and Coupon Program* (FMNCP) involves a collaborative partnership between the Province of BC and the BC Association of Farmers' Markets. Weekly coupons are provided to low-income families, seniors and pregnant women participating in cooking and skill building programs. Coupons are redeemed for fresh produce, meat, fish, eggs, dairy, nuts and herbs at local participating farmers' markets. The program, which began as a three year project (conducted between 2007 and 2010), was shown to have a positive impact on healthy eating behaviours. In 2012 the program was reinstated with a $2 million investment.
- The *Produce Availability Initiative* (PAI) was a 3-year program (which concluded in 2012). The initiative focused on improving the year round availability and quality of fruits and vegetables, built community capacity, and created a sustainable supply of produce in 24 remote communities. Community gardens were started or enhanced in 17 First Nations communities and projects to increase the availability of produce were established in others.
- The *Food Systems in Remote First Nations Project* involves a collaboration between the BC Ministry of Health and the Heart and Stroke Foundation of Canada (BC &Yukon Division). The initiative is designed to build long-term vegetable and fruit production in 15 community gardens previously established through the Produce Availability Initiative. The project focuses on community engagement workshops and training in agriculture and food preservation. It is hoped that communities will have the tools needed to continue the gardens on their own as part of a community food plan.

HealthLink BC is an existing resource that helps to promote food security. HealthLink BC provides non-emergency health information and services to British Columbians. The accessibility of HealthLink BC allows for provision of support to the most vulnerable population groups within BC, including those who are food insecure. Service is offered by phone, email, and internet to all residents of BC as well as health professionals, schools, non-governmental organizations and industry. Translation services are provided for more than 130 languages.

Dietitian Services at HealthLink BC provides free, up-to-date, evidence based nutrition information, counseling and advice on many aspects of food security, including

- Factors affecting food security.
- Eating well on a limited income.
- Food safety.
- Meal programs and services in BC.
- The cost of eating in BC.

- Guidelines for food and beverage sales in BC schools.
- Healthier choices in vending machines in BC public buildings.
- The BC School Fruit and Vegetable Nutritional Program.

Dietitian Services also contributes to food security work by preparing background reports and evidence reviews, supporting the planning and implementation of provincial nutrition programs and initiatives, and authoring healthy eating content on the Healthy Families BC blog. Development of The Meaning of Healthy Eating document has provided a common understanding of healthy eating, and includes the integral concept of food security. Dietitian Services also coordinates provincial healthy eating resources to facilitate consistent messaging province-wide.

3.4.3 Federal Level

The federal government has developed several initiatives to support food security planning including the following:

- A web-based Food Security Knowledge Initiative was established to support knowledge development, exchange, and dissemination of income-based food security research. The project is currently under review as many of the research findings were based on self-reported, anecdotal information involving small samples of respondents.
- A food security module was included in the 2007-2008 CCHS (and selectively in 2009-2010 based on the decision of each province). It focused on characteristics of income related food security to collect standard measures and data to support food security planning and development initiatives.

The federal government also coordinated development of Canada's Progress Report on Food Security in response to the World Food Summit Plan of Action. The fourth progress report[52] as well as the recent fifth progress report[53] noted that Canada is committed to creating an enabling environment for achieving food security goals; reducing poverty to improve access to safe and nutritious food; supporting sustainable agriculture; encouraging trade; and addressing emergency prevention and preparedness related to Canada's food supply. There has been strong criticism of Canada for the lack of action on food security for the poor and "denying the human right to food."[54]

3.4.4 International Level

At the international level, the UN's Food and Agricultural Organization (FAO) has held several World Food Summits on food security:

- The first Summit was held in Rome in 1996 to renew a global commitment to the fight against hunger in response to widespread under-nutrition and growing concern about the capacity of agriculture to meet future food needs. The conference produced two key documents, the Rome Declaration on World Food Security and the World Food Summit

Plan of Action. The Rome Declaration called for members of the UN to decrease the number of chronically undernourished people on earth by 50 per cent by 2015. The Plan of Action set a number of targets for governments and non-governmental organizations for achieving food security at the individual, household, national, regional and global levels.

- The second World Summit on food security took place in Rome in 2009. Although the initial international focus had prioritized food security in developing countries, it expanded to include developed countries, taking into account the global nature of food production and transportation, agricultural trends, and environmental and climate considerations.

4.0 NATIONAL AND INTERNATIONAL APPROACHES TO FOOD SECURITY

Two key approaches to understanding and enhancing food security are discussed in the literature: an anti-poverty approach which considers poverty to be the primary issue and a sustainable food systems approach which views issues within the food production processing and retailing systems as the root problem.[55] A variety of strategies have been employed to address the issues of food insecurity, both from an anti-poverty approach and a sustainable food systems approach (and sometimes both).

Comprehensive approaches have been developed by the World Health Organization (WHO) with the support and cooperation of many national governments. These strategies provide a foundation and direction for policy development, collaboration, and advocacy on a global level including both national and international levels. A brief discussion of policy development at these levels is included in this section as an overview and context for planning future directions for community food security programs. It is not intended to be comprehensive as many important international issues are beyond the scope of this paper (e.g., fair trade, tracing animals/products, food labeling, economic stability in countries that are major agricultural producers, etc.).

Because of the global nature of the food system, the wide-ranging effects of climate change, environmental and agricultural policy, and trade and transportation issues, it is necessary to consider policy issues at the international, national and provincial/state levels (as well as at the regional and local levels). This approach is rooted in population health principles that aim to improve the health of the entire population and reduce health inequities by considering and acting upon the factors and conditions that influence health, namely, the wide range of social, economic, physical and environmental determinants that contribute to health. It also reflects the principles related to building healthy public policy, a key component of the Ottawa Charter for Health Promotion.[56]

4.1 Canada

As noted earlier, the federal government coordinated development of Canada's Progress Report on Food Security in response to the World Food Summit Plan of Action.[52,53] Both the 4th and 5th progress reports focused on initiatives to achieve food security in Canada. The WHO's Special Rapporteur on food, Olivier de Schutter, strongly criticized Canada for the lack of action on building food security for those with low incomes (a Report on the Special Rapporteur's mission to Canada was presented to the Council on Human Rights in March 2013).[54]

According to Rideout et al.,[57] Canada lacks a comprehensive "joined-up" food and nutrition policy. A "joined-up" food policy requires "integration across jurisdictions, such as health, agriculture, environmental and social policy, and can offer more sustainable and equitable food policy options." Rideout et al. argue that Canada's "fragmented approach hinders rational analysis of problems and the development of effective policy."[57]

In general, the literature recommends that food security policies be integrated with the education, labour, economic development, agriculture, food, social welfare, and health sectors in order to establish a comprehensive approach involving aspects of production, distribution and consumption of food.[58] McIntrye[59] suggests that

> macro-level approaches, such as national, provincial or local level policies and programs aimed at improving access to adequate and affordable housing, education, secure employment and financial support when required, have the potential to profoundly influence the key determinants of income related food security, and to alleviate the burden on those Canadians who are most vulnerable.

In British Columbia, some components of a comprehensive food security approach have been suggested:

- The 2005 Annual Report of the Provincial Health Officer suggested a collaborative effort at the community, provincial and national levels to address low-income issues, the underlying cause of household food insecurity.[60]
- The Provincial Health Services Authority (PHSA) identified available research, resources and options to increase food and income security.[61] These included income thresholds (thresholds that qualify for social benefits and income tax concessions); minimum wage increases (increase in stages and index to the annual cost of living); earned income benefits (to augment the income of low wage earners); affordable child care (to support employment continuity); federal child benefits (combine benefits into a single refundable benefit); income assistance rates (increase and index to annual increases in cost of living rates); and the "stacking effect" (better coordination in the tax and benefit systems to ensure people with low incomes are not paying onerously high tax rates).
- PHSA[61] also suggested consideration of a wide range of food security policy issues ranging from macro level consideration of the impact of the industrialized food system, to the need for community level capacity building and community development for people who may not have the necessary nutritional knowledge, skills and capacity to make appropriate changes in their lives.

4.2 International Food Security Action

At the international level, comprehensive and inter-sectoral approaches have become an important focus with the growing recognition of, and concern about, food security.

The extraordinary rise of global food prices in early 2008 posed a major threat to global food and nutrition security and caused a host of humanitarian, human rights, socio-economic, environmental, developmental, political and security related consequences. Soaring prices stemmed from the cumulative effects of long-term trends, such as increased demands of rising world populations, a decline in agricultural investment, and more immediate supply and

demand dynamics including those related to rapidly increasing oil prices, diversion of maize to ethanol production, and responses such as hoarding, which exacerbated price volatility. The crisis exposed underlying structural problems in the food systems of poorer countries as well as serious distortions in world food markets (associated with production subsidies in rich countries and trade tariffs) that led to price spikes and problems with food availability. Climate-related events (including droughts, floods and environmental degradation) further contributed to negative effects. The global economic downturn has continued to increase the hardships of the most vulnerable in both developing and developed countries.[11]

A high-level task force on the global food security crisis was formed in 2008 by the United Nations (UN) to promote a comprehensive and unified response to the challenge of achieving global food security. Its comprehensive Framework for Action pursues a twin-track approach to address immediate needs as well as longer term structural needs through the participation of governments, civil society, businesses and researchers at both the international and regional levels.[11]

Although there have been some comprehensive food policies implemented at the national and regional/community levels, there have been relatively few formal comprehensive initiatives. Initiatives have often been encompassed within other public health initiatives (such as healthy eating, healthy child development, etc.), educational initiatives (e.g., school nutrition programs), agriculture programs (e.g., commodity subsides), and low-income financial support programs (e.g., family allowance, Canada Prenatal Nutrition Program).

4.3 United Kingdom

The United Kingdom, which has a national food policy as well as many community food security initiatives, has recently developed a public sector multi-agency program aimed at providing evidence to enable food producers and processors, retailers, consumers and government to respond to and manage the challenges facing the UK food system and related global issues, including challenges confronting the developing world.[62] The Global Food Security Programme will take inter-disciplinary and whole systems approaches to research on UK and global food supply systems from both a consumer and producer perspective. It will coordinate research by partners across UK government departments, Research Councils and the Technology Strategy Board to ensure alignment of individual activities with shared goals. Four cross-disciplinary themes will take into account the sustainability of ecosystems related to food production (including land use, biodiversity and other ecosystem services) and the overarching challenges of reducing greenhouse gas emissions and reducing losses and waste throughout the food system. The themes are as follows:[62]

- Economic resilience – including a better understanding of how poor economic resilience leads to hunger, poverty and environmental degradation and how this might be addressed.

- Resource efficiency – including water, energy, nutrients and other inputs, land use and soils (with particular focus on the sustainable use of resources), increasing competitiveness, profitability, efficiency and waste reduction.
- Sustainable food production and supply – including farming systems, food production from crops and animals (including fish), food processing, manufacture and transport.
- Sustainable, healthy, safe diets – including food safety throughout the supply chain, nutrition, consumer behaviour, food choice and accessibility.

The program will support cooperation among the funding partners regarding effective translation of research findings into practical application, and policy will be central to the program from the outset. These will be achieved by promoting improved interactions and partnerships among the research community and with users (including the relevant sectors of industry and consumers, policy makers and international partners).[62]

4.4 United States

In the United States, an action plan on food security was prepared in response to pledges at the 1996 World Food Summit to create national plans of action to reach the goal of cutting the number of undernourished people in the world by half by 2015.[63] As well as the international commitment, the US set out a plan to tackle domestic hunger and food insecurity and to reduce these by 50 per cent by 2015. The plan focuses on attempts to move beyond short-term emergency assistance to create conditions necessary to ensure that all people are able to provide food for themselves. It addresses economic stability, competitive markets, enhanced community food security, trade and investment liberalization, food security research and education, expansion of safety nets and food assistance programs for vulnerable populations, and enhancement of the ability to identify and target food insecure populations.

The US Department of Agriculture (USDA) established the National Institute of Food and Agriculture to address food security through: research, education and extension work; grants to colleges and universities; federally funded state nutrition education programs; grant programs for private non-profits to address community food security issues; and partnerships across the USDA. It provides funding for a National Clearinghouse on Hunger and Community Food Security and a Food Security Learning Center.[64] Many state, regional and municipal governments are actively involved in supporting food security.

US agencies and programs are exploring a collaborative approach to food policy and food security and considering a central commission on chronic disease prevention and food security which can develop overarching food policies. The range of involved agencies provides an overview of the many topics and issues involved in food security on a government level:

- Department of Agriculture – commodity subsidies, farm loans, organic farming research, community food projects, impact of USDA programs, agricultural marketing services,

resource conservation, meat and dairy safety, food stamp program, healthy infants and children program.
- Department of Education – School Nutrition Programs, *No Child Left Behind Act*.
- Department of Transportation – commuter choice program, livable community initiatives, innovative financing.
- Department of Homeland Security – National Bio and Agro Defense facility.
- Food and Drug Administration – food safety.
- Centre for Disease Control and Prevention – food-borne disease surveillance, food safety.
- Federal Trade Commission – consumer protection, and self-regulated advertising restrictions.
- Environmental Protection Agency – land preservation, healthy communities, *Energy Policy Act*, pesticide control, community pollution reduction grants.

4.5 Australia

The Australian Government is developing Australia's first national food plan to help ensure that the government's policy settings are right for Australia over the short, medium and long term.[42] Public consultation on the proposal concluded in September 2012. The aim of the national food plan is to foster a sustainable, globally competitive, resilient food supply that supports access to nutritious and affordable food. The objectives are:

- To identify and mitigate potential risks to Australia's food security.
- To contribute to global food security.
- To reduce barriers to a safe and nutritious food supply that responds to the evolving preferences and needs of all Australians and supports population health.
- To maintain and improve the natural resource base underpinning food production in Australia.
- To support the global competitiveness and productivity growth of the food supply chain, including through research, science and innovation.
- To reduce barriers faced by food businesses to access international and domestic markets.
- To contribute to economic prosperity, employment and community wellbeing in regional Australia.

In addition, a number of Australian states have developed strategies and are building knowledge, skills and capacity on a range of complimentary food security issues. For example, the state of Victoria is doing the following:[65]

- Advocating with communities and local, state and federal governments to enhance food security.
- Addressing the social and equity impacts of climate change.

- Supporting local governments to identify barriers to local food security, develop strategies, and work towards improvements in "whole of population" food security.
- Integrating food security into land use planning to enhance environmental sustainability.
- Addressing transportation issues through training and collaboration with non-governmental organizations and state and local governments.

In New South Wales, the state government has developed policy and practice options for food security interventions.[66] These include the following:

- General strategies – food policy coalitions or councils, research /monitoring/ evaluation, advocacy, subsidies and incentives schemes, community development and grants.
- Interventions to improve food supply – education about food and nutrition, strategies focused on enhancing food production, food processing, food transport, food retail outlets, food aid and subsidized meals.
- Interventions to improve access to food – integrated services and referral systems, income support, transport to food suppliers, storage and kitchen facilities, health education and life skills.

An Australian analysis of climate change, food insecurity and chronic diseases notes that climate change has had a significant impact on the Australian food environment in recent years.[67] This has affected the availability and price of food; shifted Australia from a grain-exporting country to a grain-importing country; and increased the price of vegetables by 33 per cent and fruit by 43 per cent. The drought-prone and long-term drier weather conditions in Australia (and in other regions around the world), combined with higher temperatures, rising sea levels, increased frequency of flooding, and acidification of oceans, contribute to impaired yield, quality and affordability of food. It is noted that all stages in the food system produce greenhouse gases and therefore contribute to climate change, along with associated deforestation and land-use changes that account for about 29 per cent of global emissions. Actions to mitigate climate change are therefore actions that prevent the growth of food insecurity and the associated disease burden. It is proposed that environmental sustainability be placed at the heart of food policies to avoid further climate change and related implications on the type and costs of foods available in Australia.[67]

4.6 Other Countries

Norway's policy framework related to regional agricultural development and food self-sufficiency has become well-known and respected. It encourages a health-promoting diet, reliance on domestic food, and agricultural development. During the 20 years following adoption of the policy, total fat consumption dropped by over 40 per cent and deaths from heart disease decreased.[68]

In Finland, following establishment of a national food policy in the 1970s, vegetable consumption doubled, fruit consumption increased, and consumption of saturated fats decreased. A 55 per cent decline in coronary health disease occurred among males.[68]

4.7 Summary

There has been considerable analysis at the international level regarding issues that threaten food security around the world. The global nature of the food system, as well as the state of the economic and physical environment has prompted many respected organizations and governments to express concern about the potential for significant continuing food supply problems which may potentially impact people in both developing and developed countries.

A comprehensive and inter-sectoral approach is being promoted by the UN as the key to coordinating the development of initiatives to raise awareness about food security and the need to place a higher priority on its importance. Recommendations are based on substantial documentation on risks to the global food system and potential related impacts on food security. They highlight the need for a unified response to the challenge of achieving global food security, including a twin-track approach to address both immediate and longer term needs through the participation of governments, civil society, businesses and researchers at both the international and regional levels.

International and national activities in a number of developed countries provide a broad context for considering food security action at the community and individual/household levels. Policy and system level approaches at the provincial and federal levels can be instrumental in developing multi-sectoral and multi-level collaborations. They may also act as a catalyst for encouraging and enhancing community food security.

Some research has looked at the evidence base for the integrated health promotion strategies that are called for in the Charters. A technical paper presented at the Bangkok Conference examined the evidence on what is known about the effectiveness of the Ottawa Charter health promotion strategies.[69] It noted that

- The investment in building healthy public policy is a key strategy.
- Supportive environments need to be created at the individual, social and structural levels.
- Personal skills development must be combined with other strategies to be effective.
- Interventions employing multiple strategies and actions at multiple levels are most effective.
- Certain actions are central to effectiveness, including: inter-sectoral action and inter-organizational partnerships at all levels; community engagement and participation in planning and decision making; the creation of healthy settings (particularly focusing on schools, communities, workplaces and municipalities); political commitment; funding and infrastructure; and awareness of the socio-environmental context.

5.0 FUNDAMENTAL ELEMENTS IN REGIONAL AND COMMUNITY FOOD SECURITY

5.1 Introduction

This chapter discusses fundamental strategies and considerations in the development of regional and community food security, including the importance of community capacity building, the need for collaboration and advocacy at the community level, appropriate targeting related to community groups, and the use of evidence-based approaches in the planning process.

The literature addresses three types of strategies to address food security:[55,70]

- Short-term or relief strategies are meant for those individuals who are most food insecure. Recognized as temporary solutions, they include initiatives such as food banks, soup kitchens and food programs for children.
- Capacity building strategies focus on the development of skills and strengthening organizational structures and community resources. They are primarily community based and include initiatives such as community/collective kitchens, community gardens and cooperative buying clubs.
- Redesign strategies recognize the structural causes of food insecurity by addressing the roots cause through policy change at the organizational and government levels.

The evolution in food security thinking from the household to community level has resulted in an expansion in community-based developments that focus on networking, capacity building and skill development.

5.2 Networking and Community Capacity Building

Networking and community capacity building are considered key to the successful development of food security initiatives.

The health sector can be involved in engaging stakeholders in cross-sectoral partnerships, networks and strategies to: share information and best practices; align programs and priorities; and build a broader understanding of food systems issues. Engaging a wide range of stakeholders in the food system can be critical for success in endeavours to build and sustain community food security. Stakeholders bring unique perspectives and experiences that help to conceptualize food issues and generate strategies and solutions while increasing the likelihood communities will accept and extend new interventions.[71]

To engage stakeholders in planning a community food program, McCullum et al.[72] have identified a need for a number of strategies:

- Engagement of a large number of disenfranchised stakeholders during the formative stages of community-based projects.
- Involvement of peer groups to neutralize actual or perceived status and power differences.
- Provision of time to incorporate reflection of power processes during planning processes.
- Development of facilitation, negotiation, and conflict resolution skills for community members.

Freedman et al.[73] found that creating a community-engaged food security coalition required time, much of which involved raising consciousness about the concept of food insecurity. They realized that people power is paramount in coalition work as was increasing their size over time and building networks that are as diverse as possible. In this case study, Freedman et al.[73] highlighted the role of participatory planning, collaboration among coalition actors, and the importance of financial and political support (which was enhanced by local media connections and through university evaluations that helped to legitimize their work).

An evaluation of community capacity activities funded through the Community Food Action Initiative (CFAI) in the Vancouver Coastal Health Authority[74] noted that

- Capacity building activities have included food forums, public speaking events, movie nights, garden tours, community kitchens, cooking classes, food skills workshops, gardening and seed saving training, harvest calendars, local farm maps, festivals, school projects, community gardens, intergenerational/cross-cultural meals, and more.
- The types of capacity building included: capacity of residents to grow and process their own food; capacity of stakeholders to develop and strengthen networks: capacity of CFAI-funded organizations and coordinators to organize and lead food security programs; spin-off programs that were inspired by CFAI work to provide food security programs of their own; and leadership development.
- The estimated total value of leveraged funds exceeded $1.1 million, nearly matching the $1.2 million invested in the CFAI since 2005.
- It was concluded that although capacity building activities were contributing to local food security, they were not yet sustainable without external support, and that capacity building takes time to create sustainable infrastructure and leadership.

A report on enhancing the sustainability of Vancouver's neighbourhood food network movement (which is funded through the CFAI) suggested the following actions:[75]

- Increase collaboration among neighbourhood food networks.
- Build and bridge social and food systems capital (e.g., connect people, organizations and infrastructures through city-wide coordinated networking forums, gatherings, celebrations, events, etc.)

- Communicate about the neighbourhood food network movement (e.g., develop and coordinate city-wide communications, encourage engagement through workshops, etc.).

5.3 Vulnerable Populations

Food security policies and programs are generally targeted to vulnerable individuals and households, recognizing that people with low socio-economic status are the most vulnerable to a lack of food and food-related resources. However, many other people are impacted by a lack of access to and availability of healthy food. This may arise from limited food skills and knowledge, physical limitations (e.g., in seniors and children) and population level environmental factors outside their control (e.g., transportation, isolation, food deserts/food swamps, impacts of climate change, etc.).

Food security programs recognize a continuum of needs while also acknowledging the importance of universality in structuring policies and plans. The Human Early Learning Partnership[76] suggests the use of "proportionate universality" defined as "programs, services and policies that are universal, but with a scale and intensity that is proportionate to the level of disadvantage." They suggest that the principle of proportionate universality is a way to create and maintain a platform of universal services that would eliminate barriers to access that affect populations with the highest need. This approach recognizes the "social gradient in health" and the strong relationship between a person's social position (often described in terms of social-economic status) and their health: the lower a person's social status, income, and/or education, the poorer are health outcomes on average.[77]

5.4 Evidence for Community Food Security Strategies

As noted earlier, many food security interventions have not been evaluated in a scientific manner as the complexity in assessing whether the interventions have a population level impact is often beyond the scope of community based projects. As well, the merits of individual activities and approaches may have as much to do with the community context and associated infrastructures than with the individual merits of the specific activity itself.[22] It follows that individual community-based food security strategies should be planned and supported within the context of the needs and priorities of the communities; the mix of programs that are already in place; and existing capacity within the community.

While the evidence may be limited, it is important that health authorities ensure relevant evidence is brought to the table and interpreted appropriately to maximize the chance that interventions will be successful in achieving desired outcomes. Health authorities can also advise on how best to evaluate interventions to ensure the knowledge base is developed and continual quality improvement is supported.

A number of key factors that contribute to whether a food project will work or not, have been identified as follows (see Table 2):

Table 2: Factors Affecting the Success and Sustainability of Food Projects

Factors that Facilitate	Factors that Hinder
Reconciling different agendas	Opposing agendas
Funding	Instability of funding
Community involvement	Meeting limited needs
Professional support	Lack of support
Credibility	Changing agendas
Shared ownership	Exclusively owned
Dynamic worker	
Responsiveness	

Source: McGlone et al. (1999). Food Projects and How They Work.[78]

With respect to community capacity building in particular, evidence tends to be theoretical in nature and process based with little information on direct outcomes of specific mechanisms. However, a review of global literature and case studies on community capacity building prepared for the WHO Bangkok Conference on health promotion concluded that[79]

- Academic research on the impact of community capacity building on health is lacking, but multiple case studies documented in the grey literature suggest community capacity building is highly effective, as does research in related areas, such as community empowerment.
- What is needed for health promotion in a globalized world is a balance between macro actions (e.g., policy development) and human and local scale actions (e.g., community capacity building). Action centred on empowered and capable communities, in synergistic collaboration with other key players, may be the most powerful instrument available for the future of health promotion in a globalized world.

In an editorial on this paper, de Leeuw et al.[12] concluded that the evidence of effectiveness of community capacity building is beyond doubt and that it may well be the only sane way ahead towards a sustainable, equitable and just world.

Level of Evidence: *Evidence for Outcome Effectiveness*

Overall, community capacity building is increasingly being seen by researchers as effective in contributing to the development of community food security.

6.0 Regional and Local Government Food Security Policies and Strategies

Regional and local governments are uniquely positioned to take action to improve food security: they are close to their constituents' needs and are able to be responsive in addressing concerns. Efforts in community food security typically include support for local and diverse food production; environmental sustainability; widespread access to healthy food; food-based economic development; advocacy for adequate incomes for consumers and producers; and social cohesion.[38] Food security and healthy eating initiatives can be integrated into a variety of community strategies and plans, development permits, housing options, transportation and urban health policies, land use policies, and community development processes.

While this chapter discusses policies, strategies and other mechanisms to facilitate food security, it is recognized that regional and local governments also have a key role in encouraging and facilitating community food security programs and services. Some initiatives such as farmer's markets and urban agriculture may involve land use policies and permits, as well as program development processes involving a wide variety of stakeholders and community-based organizations.

The health sector can play an important role in advising and supporting regional and local governments to recognize opportunities for improving access to healthy food for all residents.

6.1 Food Policy Coalitions/Councils

The health sector can support the work of local food coalitions or councils by sharing information and best practices; helping to align programs and priorities; and building a broader understanding of food system issues.

Food policy councils or coalitions have been established in some Canadian communities and in many other countries. They are inter-sectoral working groups that aim to improve a community food supply and to enhance food security. They generally have a diverse broadly representative membership and a strong focus on developing and implementing policies. Their roles may also include leadership, advocacy, coordination and networking, education and research.

Food policy council outcomes and impacts have not been evaluated and there is no direct evidence regarding their effectiveness. However, viewpoints on the value of food policy councils include the following:

- Food policy councils provide a consistent and persistent voice for advocacy and are a resource for supporting action thus helping to ensure that food security remains a regional and community priority.[80]
- Councils have the potential to engage influential stakeholders and to provide a forum to negotiate changes to many aspects of the local food and nutrition system.[66]

- In jurisdictions with food policy councils, substantial and significant outcomes have been achieved.[80]

Others note that establishing and maintaining a food policy council can be challenging and should only be undertaken as a long-term initiative considering the funding, skills and commitment that are required. The sustainability of food policy councils depends on: rigorous maintenance of the working group; attention to democratic processes, particularly when developing policy; accommodating the political nature of inter-sectoral actions; and finding appropriate ways to overcome political, organizational and structural barriers to change.[66]

Level of Evidence: *Evidence for Implementation*

Food policy council outcomes and impacts have not been evaluated and there is no direct evidence of their effectiveness even though they are generally considered to be very helpful in raising awareness and support for action.

6.2 Community Assessment and Mapping

Community assessment toolkits have been developed to measure and assess various indicators of community food security. The toolkits offer a menu of options recognizing that different communities will have differing priorities and differing resources available.[c]

Mapping the location of resources can be one factor in the assessment to help local governments determine land or building locations for grocery stores, community gardens, local agriculture and farmers' markets. For example, in examining the links between the community nutrition environment and socio-economic status in different neighbourhoods, the following factors can be taken into account: the spatial distribution and number of grocery stores, supermarkets or fast-food outlets; availability of high-quality foods, particularly fruits and vegetables; clustering of negatively valued food outlets (fast-food restaurants and grocery stores carrying limited produce); and the affordability of high quality foods, including fruits and vegetables.[7]

A study that examined the development of municipal land use inventories in Portland, Oregon and in Vancouver, BC, revealed a number of helpful processes that led to positive outcomes:[81]

- Ensuring public involvement by creating participatory mechanisms in the design and implementation of the inventory.
- Drawing on the expertise of institutional partners including universities.
- Increasing institutional awareness and political support for urban agriculture.
- Aligning urban agriculture with related sustainability goals.

Level of Evidence: *Evidence for Implementation*

[c] The BC Community Food Action Initiative has a step-by-step resource guide for conducting assessments on the Provincial Health Services Authority website (www.phsa.ca).

6.3 Mechanisms to Increase Availability and Access to Healthy Food

6.3.1 Enhance Healthy Food through Grocery Stores and Local Food Outlets

A variety of mechanisms have been used by communities to enhance the availability and accessibility of healthy foods through retail outlets. Policymakers can support and promote innovations emerging at the grassroots level and help expand and scale up innovative programs through public policy. Regional/local government mechanisms include the following:

- The use of tax incentives and other financing mechanisms to attract food businesses to low-income neighbourhoods and enhance the number of vendors that supply healthy foods.[82]
- Requirements for inclusion of a full-service grocery store as part of a development permit application.
- Subsidies on permits and fees for retail outlets offering healthy food, such as re-stocking convenience stores.[82]
- Location regulations to promote operation of grocery stores in underserved neighbourhoods.[82]
- Health and nutrition regulations regarding the location and type of food that can be sold from carts.[83]

Overall, research studies have provided considerable evidence indicating that greater access to nearby supermarkets is associated with healthier eating behaviours.[84] The US Center for Disease Prevention and Control recommended this approach in 2009 based on a review of the evidence.[85] For example:

- Researchers in Indianapolis found that adding a new grocery store to a neighbourhood translated into an average weight loss of three pounds for adults in that community.[86] Another study found that African Americans living in a census area with a supermarket are more likely to meet guidelines for fruit and vegetable consumption, and for each additional supermarket, to increase consumption of produce by 32%.[87]
- A multi-state study found that people with access to only supermarkets or to supermarkets and grocery stores have the lowest rates of obesity and overweight; those without access to supermarkets have the highest rates.[88] Similarly, in California and New York City, residents living in areas with higher densities of fresh food markets (compared to convenience stories and fast food restaurants) have lower rates of obesity. In California, obesity and diabetes rates are 20% higher for those living in the least healthy food environments.[88]
- Increasing the number of supermarkets in underserved neighborhoods has resulted in increased real estate values, increased economic activity and employment, and lower food prices.[89]
- A survey of produce availability in New Orleans' small neighbourhood stores found that for each additional meter of shelf space devoted to fresh vegetables, residents eat an additional 0.4 servings per day.[88]

- Mobile food vending has improved healthy food accessibility in low-income US neighbourhoods where healthy food is often limited. A study of mobile food programs in 12 cities across the US identified several regulatory components that helped the programs meet the goals of increasing healthy food access for vulnerable populations.[83]
- Examples of mobile food vending initiatives include the following:[90]
    - The Central Detroit Christian Community Development Corporation operates a Produce Truck, which travels through the streets, stopping to sell fruits and vegetables to area residents.
    - New York City uses a combination of incentives and restrictions to get green produce carts in areas of the city with the least access to fresh fruits and vegetables.
    - Vendors in Kansas City who sell healthy foods pay a reduced permit fee. The City also lists recommended and excluded products for public vending in the city's parks and recreational centres.

In addition, improving access to healthy food can bring economic benefits. A large full-service supermarket creates between 100 and 200 full- and part-time jobs, and there is some emerging evidence that a grocery store can increase local tax revenues and stabilize or even increase local home values.[91]

Level of Evidence: *Evidence of Outcome Effectiveness*

Overall, there is considerable, consistent evidence that better access to healthy food in neighbourhoods corresponds to the likelihood of healthier eating, healthier weights and reduced rates of diabetes.[13] In addition, strong research evidence has demonstrated that reducing the cost of healthier foods increases their purchase (where subsidies or other mechanisms have lowered food costs).[14]

6.3.2 Create Healthy Food and Beverage Environment in Public Service Venues

Hospitals, schools and other public venues (e.g., after-school programs, child care centres, recreational facilities, city buildings and prisons/detention centers) can create healthy food environments and food retail outlets including cafeterias and vending machines.

An evaluation of the BC Healthy Food and Beverage Sales in Recreational Facilities and Local Government Buildings initiative found that the project provided a feasible approach to enhancing healthy eating environments in recreation centres. The evaluation examined 10 programs over a six-month period and found they achieved their goals through a significant improvement in healthy vending products and an increase in purchases of healthy products between baseline and follow-up. The researchers noted the importance of gaining buy-in from decision makers such as city managers, recreation boards and facility managers, industry and the public.[92] (The program is now The Stay Active Eat Healthy® program.)

British Columbia has implemented a number of guidelines to support healthy eating environments in public venues, including:

- Stay Active Eat Healthy® (SAEH), a program of the BC Recreation and Parks Association that encourages recreation facilities and local government buildings to make the healthy choice the easy choice for community members purchasing food or beverage products where they live, work, learn and play. The initiative also encourages a collaborative approach between industry and site managers to provide and promote a wider range of healthy choices. Recreation centres are supported in becoming a "Healthy Choice Facility" through seed grants for planning and implementing healthy food and beverage options and planning tools and resources (in the form of a comprehensive toolkit that helps facilities identify and take action on planning, implementation and evaluation). Some activities include carrying out a facility audit of their healthy food and beverage choices using the Brand Name Foods List and initiating an action plan. The Stay Active Eat Healthy® website (www.stayactiveeathealthy.ca) is designed to provide easy access to a full range of information, tools and resources for industry, site facility managers and consumers.
- Nutritional Guidelines for Vending Machines in BC Public Buildings requires that vendors provide healthy food choices in vending machines located in all provincially funded public buildings across the province (i.e., buildings owned or leased by the Province, provincial public bodies, health authorities, public post-secondary institutions and Crown corporations).
- The Guidelines for Food and Beverage Sales in BC Schools require food and beverages sold in public schools to meet minimum nutrition standards. The guidelines support healthy eating in BC schools by increasing students' access to healthier options. The School Meal and School Nutrition Handbook uses the guidelines to help support the provision of healthier food and beverages in school meal programs that target vulnerable children.
- Eat Smart Meet Smart provides guidelines on planning meetings, events and conferences that are healthy for participants. It includes ideas on making healthy food choices and encouraging healthy choices while at work.
- The Brand Name Food List website (www.brandnamefoodlist.ca) helps schools and public buildings determine which items are approved for sale. The site classifies packaged and franchised foods and beverages into categories that align with the nutrition standards developed for BC public schools and public buildings.

Level of Evidence: *Evidence for Implementation*

The evidence is clear that increasing access to healthy food increases healthy eating.[85]

6.3.3 Improve Availability of Mechanisms for Purchasing Foods from Farms

Mechanisms for purchasing food directly from farms include farmers' markets, farm stands, community-supported agriculture, pick your own, and farm-to-school initiatives. Khan et al.[85] suggest these mechanisms have the potential to increase opportunities to consume healthier foods by reducing costs of fresh foods through direct sales, making fresh foods available in areas without supermarkets, and harvesting fruits and vegetables when ripe (rather than at a time conducive to shipping) which can improve nutritional value and taste.

British Columbia has several farm-to-cafeteria programs that facilitate bringing healthy, local, sustainably produced foods into public agencies. They include the Farm to School, the Farm to Campus, and the Farm to Hospital programs. Early studies indicate that students are eating more fresh fruits and vegetables and a greater variety of foods.[93] Hospital food service staff note there is less food waste when local food arrives at the patient's bedside.[93] Farmers are diversifying their market and enjoying a modest reliable increase in income.[93] An evaluation of 33 Farm to School Salad Bar programs across the province noted that children, parents, school staff, farmers and whole communities benefit through broader knowledge and experience in growing, harvesting, preparing and tasting fresh local greens.[94]

Level of Evidence: *Evidence for Implementation*

Although little evidence is available on direct outcomes of purchasing foods from farms, there is evidence that increasing physical access to healthy food increases healthy eating. As well, BC farm-to-school salad bar programs have resulted in enhanced knowledge of healthy nutrition and increased consumption of vegetables.

6.3.4 Transportation Planning

Inadequate public transit or a lack of other transportation options can reduce access to healthier food choices, especially for people in rural areas, the elderly, and people living with disabilities. Transportation policies have been utilized to enable residents of underserved communities to easily make trips to stores in other parts of town.[95] Improving transportation options to and from food sources (such as supermarkets and farmers' markets) increases a community's access to healthy foods. Transportation improvements may include increasing bus routes to food retailers and supermarket-sponsored shuttle services.[96] Research from Australia suggests that access to adequate transportation has a greater effect on food access than did physical proximity to food stores.[97]

There are a number of sources for further information on transportation and food access.[98,99,100,101,102]

Level of Evidence: *Evidence for Implementation*

6.4 Summary

Regional and local governments can incorporate healthy eating and food security initiatives into a variety of community strategies and development plans and permits, including land use policies, community development processes, and a range of specific incentives or restrictions that encourage the availability and accessibility of healthy food. Regional and local government strategies considered helpful in increasing community food security include the following:

- Food policy coalitions/councils to provide advice, leadership, advocacy, coordination and networking, education, and research. (*Evidence for Implementation*)
- Community assessment and mapping of healthy food sources in the community as a basis for identifying and assessing community assets, opportunities, resources and priorities. (*Evidence for Implementation*)
- Increasing availability and access to healthy foods through facilitating establishment of grocery stores in low-income neighbourhoods; stocking healthy food in a range of local food outlets (e.g., convenience stores, mobile food vendors, etc.); and the use of development permits, zoning bylaws, regulations, subsidized permits and other incentives. (*Evidence for Implementation*)
- Creating and supporting healthy food environments in public venues. (*Evidence for Implementation*)
- Mechanisms to support direct food purchase from farms to increase healthy food access. (*Evidence for Implementation*)
- Transportation policies to enable people to access healthy food. (*Evidence for Implementation*)

Although the health sector does not manage these initiatives directly, it can play an important role in advising and supporting regional and local governments to recognize opportunities for improving access to healthy food for all residents. This role is rooted in a population health approach which aims to improve the health of the entire population and reduce health inequities by considering the wide range of social, economic, physical and environmental determinants that contribute to health and which are necessary for effective health promotion.

Note: The Provincial Health Services Authority has developed a resource guide (*A Seat at the Table*) for local governments to promote food security.[103] Healthy Families BC's document *Harvesting Change in BC's Remote Communities*[104] supports local governments to improve healthy food access in remote and rural communities based on findings from the Produce Availability Initiative.

7.0 REGIONAL AND COMMUNITY FOOD SECURITY PROGRAMS AND SERVICES

This chapter discusses evidence on food security programs and services and is divided into two sections – programs/services for immediate food relief and programs/services aimed at building longer term food access and availability. Immediate food relief encompasses charitable food programs, food recovery programs, nutritional support for pregnant women, and school meal programs. Programs aimed at longer term food security focus on the development of food knowledge and skills, support for breastfeeding, urban agriculture, farmers' markets, and food purchasing initiatives.

7.1 Programs for Immediate Food Relief

7.1.1 Charitable Food Programs

Food banks, pantries, soup kitchens and charitable meal programs are food resources available to people experiencing income related food insecurity in communities across Canada. They focus on temporary food relief and are viewed as important for food assistance rather than as a solution to food insecurity, as they do not address poverty, the root cause. Services often have a limited supply of food, funding, and volunteer labour.[105,106]

Variability in the quality and quantity of available food hampers makes it difficult to assess the impact of food banks on nutritional intake, and the results from limited studies are inconsistent. Barriers to accessing food banks such as transportation to the facility, stigmatization, and policies that limit the frequency of assistance can contribute to decreased participation.[107]

Centralized food donation distribution programs such as the Kamloops FoodShare, Vancouver Food Runners and Quest Food Exchange have facilitated the distribution of food donations to charitable food programs in BC and may be promising practices for increasing the quantity and quality of food available to programs. Fresh food (which would otherwise be wasted) is recovered from food wholesalers, restaurants, airlines, freight lines, supermarkets and farmers and donated to the food assistance programs for immediate use.

Studies on the effectiveness of charitable food programs have concluded that community based initiatives need to continually assess their objectives and relevance for vulnerable groups. For example:

- A 2009 Toronto study found that not only were rates of participation in food banks or children's food programs surprisingly low (involving less than a third of those experiencing food insecurity) but they had no bearing on household food security status.[106] It was noted that there was a need to engage vulnerable target groups in the development and design of interventions and to incorporate advocacy to ensure adequate resources.

- Vancouver Coastal Health found that residents in Vancouver's Downtown Eastside had difficulty accessing food on weekends, holidays and at night when food programs were closed.[108] Another study found that although food assistance was widely available for persons living with HIV/AIDS in the Downtown Eastside, provider regulations, inadequate housing, and drug addictions were significant barriers to food access for this group.[109]
- A 2008 study found that community workers, organizations administering assistance, and donor agencies did not always assess the realities of their food insecure clients. The authors suggested that training and systematic evaluation is needed to enable programs to respond effectively to households' needs.[34]
- The stigma associated with food bank use has also been identified as a deterrent to their use by those experiencing food insecurity. Food-insecure parents of young children surveyed by the Regina Qu'appelle Health Region reported that the strategies they often used to feed their children, such as using food banks "made them feel bad, embarrassed, guilty or depressed".[110]

Level of Evidence: *Evidence for Implementation*

Food banks and other charitable programs are the only source of short-term food relief currently available for those otherwise unable to eat. Food programs need to be continually assessed by providers and supported with a longer systems approach to address the underlying needs of food-insecure service users.

7.1.2 Food Recovery Programs

A number of practices have been adopted by organizations to collect perishable excess food from manufacturers, distributors, retailers, restaurants, hotels and other venues and redistribute the food to people in need through food banks, shelters and other social service agencies. One such organization in Ontario, Second Harvest, reports that it has diverted more than 70 million pounds of food since 1985. Several provincial governments have enacted legislation (e.g., BC's *Food Donor Encouragement Act*, 1997, Ontario's *Donation of Food Act*, 1994) to protect those from liability who in good faith, donate or distribute donated food, if consumption of that food accidentally results in injury or death. This assurance is intended to encourage those with excess edible food to donate it for redistribution to those in need without fear of legal repercussions.[111]

In BC, some health authorities have used documents developed by Food Banks Canada, Quest, and the BC Centre for Disease Control to tailor a set of guidelines to encourage and promote charitable food donations by demonstrating they are following recommended food safety guidelines.

Gleaning is another form of food recovery. When farm crops are harvested, significant amounts of produce are often left behind for various reasons (e.g., harvesting technique, quality or

aesthetic standards, etc.). Some crops may not be harvested at all due to market conditions. Approximately 25 million pounds of food are estimated to remain in farm fields post-harvest in Ontario each year. Gleaning is the act of collecting and using leftover crops that would otherwise be ploughed under, composted, or allowed to go to waste. In many places, volunteers collect fresh produce left behind on farm land and redistribute the food to those in need.[111]

Level of Evidence: *Evidence for Implementation*

Food recovery programs have not been evaluated but there are a variety of models that appear to be implemented in a manner that have become stable, recognized and well-accepted.

7.1.3 Nutritional Support for Pregnant Women

A 2010 summative evaluation of the Canada Prenatal Nutrition Program found that 97% of prenatal programs offer food supplements, vouchers or coupons to pregnant women. Preterm births were 40% less likely to occur with food supplements, 27% less likely to occur with participation in group nutrition counseling, and 19% less likely to occur with lifestyle counseling without food supplements.[112]

Level of Evidence: *Evidence for Effective Dissemination*

There is strong evidence to support recommendations for public health population-based programs and policies to provide pregnant women with access to high quality, nutritious food.[113]

7.1.4 School Meal Programs

In BC, the Ministry of Education provides annual funding to school districts to improve the educational performance of vulnerable students through the Community LINK (Learning Includes Nutrition and Knowledge) program. Although school districts are not required to use these funds for school meals, most districts use a portion of their allocation to support school meal and nutrition programs. The Ministry of Education and the Ministry of Health have developed a *School Meal and School Nutrition Program Handbook: A Resource for Administrators of School Meal and School Nutrition Programs*[114] to help ensure the nutritional quality of foods served. In the United States, such programs are federally funded and mandated.

In Canada, the Chief Public Health Officer's 2008 *Report on the State of Public Health in Canada* observed that

> when children go to school hungry or poorly nourished, their energy levels, memory, problem-solving skills, creativity, concentration and behaviour are all negatively impacted. Studies have shown that 31% of elementary students and

> 62% of secondary school students do not eat a nutritious breakfast before school. Almost a quarter of Canadian children in Grade 4 do not eat breakfast daily and by Grade 8 that number jumps to almost half of all girls. The reasons vary – a lack of available food or nutritious options in low-income homes, to poor eating choices made by children and/or their caregivers. As a result of being hungry at school, these children may not reach their full developmental potential – an outcome that can have a health impact throughout their lives.[115]

In the US, a literature review by researchers at Harvard University concluded that

> more than 100 public research articles provide the scientific basis for concluding that the [US] federal School Breakfast Program is highly effective in terms of providing children with a stronger basis to learn in school, eat more nutritious diets, and lead healthy lives both emotionally and physically… [and] significantly improve their cognitive or mental abilities, enabling them to be more alert, pay better attention and to do better in terms of reading, math and other standardized test scores. Children getting breakfast at school also are sick less often, have fewer problems associated with hunger, such as dizziness, lethargy, stomach aches and ear aches, and do significantly better than their peers who do not get a school breakfast in terms of cooperation, discipline and interpersonal behaviors.[116]

Some researchers have noted that school meals provide only short-term food relief and their impact on long-term food insecurity is limited.[117] The Canadian Council on Social Development suggests more evidence is required to avoid creating adverse consequences such as dependency or stigmatization.[118]

Level of Evidence: *Evidence for Outcome Effectiveness*

Overall, there is evidence for outcome effectiveness for school meal programs.

7.2 Programs Aimed At Longer Term Food Security

The evolution in food security thinking beyond providing immediate food assistance has resulted in an expansion in actions, often at the community level, that focus on capacity building and skill development to improve food access and availability over the longer term. Community food security strategies include: community kitchens (groups meet regularly to cook healthy meals); food skills workshops; community gardens; alternative food distribution systems such as food buying coops, and community-supported agriculture. These community-based responses aim to be an alternative to the charitable model by providing healthier, better quality food and preserving participants' dignity by requiring their participation, time, and often some investment of financial resources.[38]

7.2.1 Food Knowledge and Skills

Nutrition knowledge and food skills are key elements for healthy eating and a common focus of community based food initiatives such as collective/community kitchens and cooking classes. One study found that those with poorer self-rated cooking skills were eight times more likely to be food insecure than those with higher levels of cooking skills.[119] Strengthening food related knowledge, skills and behaviour is generally recognized as one element in improving healthy eating for individuals with limited resources.[120,121] Skills and knowledge related to growing/producing food (e.g., gardening, urban agriculture) may also help improve healthy food access and consumption at the household level. Examples include the following:

- Studies of collective kitchens in Saskatoon, Toronto and Montreal found they were an important source of food related knowledge and skills. Participants increased the variety of foods in their diets and vegetable consumption and decreased fat consumption.[122,123]
- An evaluation of FoodShare Kamloops' community kitchens found program participants reported using new foods, considered nutrition more often in meal planning, increased food variety, and had improved cooking, shopping and budgeting skills. Barriers to accessing the program included time, money and transportation.[124]
- Vancouver's Cooking Fun for Families program increased participants' food preparation skills, knowledge, and awareness of healthy eating. It also contributed to improved nutritional well-being and food security. Success was attributed to the availability of facilities, secured funding for a kitchen coordinator, the availability of child care, and the support of local businesses, long-term corporate sponsors and volunteers.[125]
- BC's Food Skills for Families has been profiled as a promising practice.[126] The program, which focuses on promoting wellness and preventing chronic diseases through healthy eating and cooking, targets Aboriginal populations, new immigrants, low-income families, and seniors. A 2012 evaluation showed that it had a positive impact as participants reported: eating more fruits and vegetables each day; having a significantly higher level of knowledge about healthy foods; cooking more meals from scratch; having a significantly higher level of confidence in cooking and preparing healthy foods; applying food safety procedures; and understanding nutrition facts on food labels.[127]
- Community kitchen participation may also enhance coping skills and provide valuable social support and resources in a dignified way.[128] The self-help nature of collective kitchens make programs less stigmatizing than other charitable programs although most require financial subsidies.[123]

Health Canada conducted an evidence review of the most common potential challenges related to the development of successful strategies or interventions to enhance cooking and food preparation skills within the context of families. They found that time, individual/familial food choices and the diminished value placed on cooking from scratch and/or traditional cooking skills were major negative influences.[129]

In addition, there was a lack of clear evidence describing the characteristics of successful intervention strategies for specific age and population subgroups. However, available evidence and experience indicated that programs/interventions specifically designed for children and having some involvement of adults/parents are helpful, and have the following characteristics:

- Opportunities for experiential/hands-on learning to promote and build self-confidence and self-efficacy through skill development encourage children and youth to become involved in food preparation within the home environment.
- Parents are involved, either actively or as intermediaries depending on the age of the child, in program implementation and evaluation.
- Programs are community based and tailored for specific population groups, giving consideration to the social context of food choices and cooking practices.
- Programs demonstrate that healthy, cost-effective foods and meals can be planned, prepared and served in limited time.
- Programs are longer versus shorter in duration.[129]

Health Canada followed up with a subsequent document entitled *Improving Cooking and Food Preparation Skills: A Profile of Promising Practices in Canada and Abroad*.[126] The document described 13 Canadian programs and two promising or successful programs and provided insights from experts in the field based on their experience developing, implementing and evaluating cooking and food preparation skills programs. In addition to enhancing food knowledge and skills, experts suggested there is a need to support storage, processing facilities, and equipment to reduce barriers for individuals who do not have the means to store/prepare healthy foods. They noted that support for seniors and people with disabilities who lack the physical and/or mental capacity to shop and/or prepare food on their own is also an important consideration.

Level of Evidence: *Evidence for Outcome Effectiveness*

Studies on food knowledge and skills programs indicate they are effective when they involve a number of strategies in addition to personal skills development.[69] Efforts to reduce barriers for specific population groups also appear to be necessary.

7.2.2 Breastfeeding Programs

A recent survey and evidence review prepared for the Ministry of Health found compelling evidence regarding the benefits of breastfeeding, including reduced risk of disease and enhanced social, emotional and cognitive development both in the short term and over the life span for infants and mothers.[130] It also indicated economic benefits for mothers, families and the health care system. There was a clear indication that policies in support of the WHO's Baby Friendly Initiative are key to improving services and support for breastfeeding women.

Level of Evidence: *Evidence for Effective Dissemination*

7.2.3 Urban Agriculture

Urban agriculture is recognized by public health professionals, urban planners, community organizations and policy makers as a valuable tool for economic development, preservation of green space and improvement of food security.[131] Urban agriculture includes community gardens, school gardens, entrepreneurial gardens, edible landscapes, urban fruit trees, rooftop gardens, and personal backyard/balcony gardens. Several reports affirm positive aspects of urban agriculture including: decreased transportation costs; positive physical aspects for individuals; positive psychological features for individuals and communities; and leadership development and community organization.[131] These outcomes also build the social capital of the community and enhance its food security.

One example is Kamloops' strategy to promote urban agriculture. Their 2007 report, *The Best Practices Review for Urban Agriculture* outlined considerations for municipal policy development, planning, land management, and infrastructure to support urban food production.[132] Recommendations included developing a land use inventory, exploring funding and partnerships, and amending zoning regulations to support community gardens. This led to an expansion of the program in 2010.[133]

In general, community gardens have demonstrated promise in terms of improving community nutrition, increasing leisure time physical activity, providing environmental and economic benefits, and strengthening neighbourhoods. At the same time, it is acknowledged that they may have limited scope in terms of their capacity to address issues of food insecurity for those living in severe poverty. So far, community gardens have reached a relatively small proportion of those in need, and it appears there is an increased need to ensure these programs are structured to provide the maximum benefit possible to the most vulnerable members of the community.[134]

The BC government implemented the Produce Availability Initiative to improve year-round availability of quality fruits and vegetables. The program helped build community capacity and a sustainable supply of produce by supporting the establishment or enhancement of community gardens in a number of communities across the province.

Level of Evidence: *Evidence for Implementation*

Although there are no studies that link community gardens with specific measures of household food security, studies do indicate that participation in community gardens provides numerous health benefits, including improved access to food, improved nutrition, increased physical activity and improved mental health.[38]

7.2.4 Farmers' Markets

Farmers' markets can increase community access to and availability of fresh produce while boosting incomes of local farmers.[135] There are about 100 markets in BC.[136] A 2008 Canadian

study of farmers' markets found that there was $1.03 billion in annual sales and a total economic impact of up to $3.09 billion.[137]

A study in London Ontario found that the introduction of a farmers' market in a 'food desert' increased the availability of healthy food and lowered the overall food costs for households in the neighbourhood by forcing local food retailers to lower their prices to more competitive levels.[138]

One intervention provided low-income women and low-income seniors with weekly vouchers for fruits and vegetables. Recipients not only increased their consumption of fruits and vegetables compared to a control group during the study period, but also sustained the increase for six months after the invention was concluded.[139]

The BC Farmers' Market Nutrition and Coupon Project (FMNCP) is a food security initiative involving a partnership between the province of BC and the BC Association of Farmers' Markets. Weekly coupons are provided to low-income families participating in skill building programs geared towards healthy eating. Coupons are redeemed for fresh produce, meat and dairy at local participating farmers' markets.[133] The program ran as a pilot project from 2007 to 2010 in 16 BC communities, and expanded to 20 communities in 2012. A 2012 evaluation found that through the combination of skill building initiatives (food knowledge, enhanced cooking skills, and the coupon program), participants had: increased access to food from local farms; purchased more food from local farms; increased knowledge of healthy eating and local foods; and increased connectivity to their community.[140]

The Wholesome Wave's Double Value Coupon initiative increased the value of benefits when used at participating US farmers' markets, reducing the cost of fruits and vegetables for low-income participants of federal assistance programs. Initiated in 2008, the program has expanded to more than 60 markets in 12 states and the District of Columbia. Early results from participating farmers' markets indicate a 300% increase in program participants' use of farmers' markets with the introduction of the double voucher incentive program.[141]

Level of Evidence: *Evidence for Implementation*

There is evidence for implementation to improve healthy food access. Financial assistance in the form of coupons can assist those living on low incomes to access farmers' markets.

7.2.5 Food Purchasing Initiatives

Food buying cooperatives and clubs create opportunities to pool resources to increase purchasing power to reduce the cost of healthy foods. Strong research has demonstrated that reducing the cost of healthier foods increases their purchase where subsidies or other mechanisms have lowered food costs.[92]

Good Food Box programs operate in every province across Canada. A formal evaluation of their impact on food security has not been conducted although individual program evaluations have reported improvements in vegetable and fruit intake amongst participants.[107] Evaluation of Good Food Box programs in Toronto and Saskatchewan found that participants consumed more nutritious foods, their nutrition related knowledge increased, and they were able to access healthy food in a non-stigmatizing way.[142]

Community-supported agriculture is a food marketing and distribution model in which consumers pay a membership fee to a farm at the beginning of the growing season in return for a weekly share of the harvest. Members are shareholders and share the risk with the farmer as no specific amount of produce is guaranteed.[143] This assists small-scale farmers and supports access to, and the availability of, local nutritious food.

A program in New York State provides grants to emergency food programs in poor neighbourhoods where community-supported agriculture programs have had difficulty existing because of the cost of shares. The program matches a community-supported agriculture program with two or three emergency food programs thus ensuring share prices and adequate up-front payment to the farmer while reducing community share prices and providing emergency food programs with farm fresh produce to distribute. The program has been successful and mutually beneficial for both farmers and emergency food programs.[144]

Farm-to-school programs connect schools to local farms with the objective of serving healthy meals in schools, improving student nutrition, providing education on agriculture, health and nutrition, and supporting local and regional farmers.[145] In the US, farm-to-school programs have proliferated from fewer than ten to more than 2,000 programs in the last ten years.[145] Evaluation by the US National Farm to School Network found that farm-to-school programs: influenced teacher knowledge and attitudes; contributed positively to students' knowledge, attitudes, and behaviours toward local, healthy food; promoted healthier dietary choices; and increased consumption of fruits and vegetables.

Dr. Aleck Ostry at the University of Victoria (personal communication) noted that a wide variety of mechanisms (such as crop insurance, cooperatives for food sales and diversification of product lines) could be used to promote the resilience of local food producers and the local food supply. The use of institutional food policies that promote purchase of local foods can be part of promoting resilience.

Level of Evidence: *Evidence for Implementation*

7.3 Summary

Community food security programs have become increasingly common although few of the initiatives have been evaluated in terms of their impact on population health. However, a number have been the subject of program evaluations (limited/moderate evidence) which

often indicate positive effects in terms of enhanced knowledge of healthy nutrition, food skills, intake of fruits and vegetables, and awareness of the food system. More specifically, with respect to programs for immediate food relief:

- Charitable food programs such as food banks, soup kitchens and meal programs provide short-term relief (although they do not address the root causes of food insecurity). (*Evidence for Implementation*)
- Food recovery programs such as gleaning and encouraging donations of perishable food to charitable food programs can potentially increase the availability of healthy food. (*Evidence for Implementation*)
- Nutritional support programs for low-income pregnant women have shown positive health outcomes. (*Evidence for Effective Dissemination*)
- School meal programs for low-income children have also shown effective outcomes. (*Evidence for Outcome Effectiveness*)

With regard to programs aimed at longer food security:

- Programs to build food knowledge and skills such as planning and preparing food and the use of community/collective kitchens indicate positive health outcomes such as healthy eating and social cohesion and are generally considered promising practices. (*Evidence for Outcome Effectiveness*)
- Breastfeeding programs based on the WHO Baby Friendly Initiative are important for providing information and encouragement to new mothers and enhancing public support. (*Evidence for Effective Dissemination*)
- Urban agriculture has demonstrated promise in improving nutrition and strengthening neighbourhoods. (*Evidence for Implementation*)
- Farmers' markets can improve access to healthy food in the community while also supporting local farmers and the sustainability of local food supplies. Subsidies for low-income people in the form of coupons and vouchers for use at farmers' markets, in combination with enhanced food knowledge and cooking skills, have a positive impact on participants' food knowledge and healthy eating. (*Evidence for Implementation*)
- Farm-to-school programs (in combination with teacher knowledge and attitudes, as well as students' knowledge, attitudes and behaviours) positively contribute to healthier dietary choices. (*Evidence for Implementation*)
- Good food boxes and community-supported agriculture are considered to be helpful mechanisms to facilitate access to nutritious foods. (*Evidence for Implementation*)

It is also useful to note a comment by the Provincial Health Services Authority that, if long-term sustainability is an objective, food security programs that build social capital and support community capacity building may be preferable to ones that do not contribute to that objective.[22]

8.0 CULTURAL FOOD SECURITY

8.1 Food Sovereignty

'Food sovereignty' is a relatively new term that encompasses the right of people to healthy, culturally appropriate food and in particular, the right of people to define and control their own food and agricultural systems.[146] Food sovereignty began as a movement of vulnerable people demanding that their voices be heard in the official world of UN agencies. It has grown into support for just and ecological food and farming systems that involve democratic decision-making in government and new international market cooperation aimed at fair prices (i.e., fair trade) for farmers.[147] A 2007 international forum on food sovereignty in Nyeleni, Mali developed six pillars which state that food sovereignty: focuses on food for people; values food providers; localizes food systems; puts control locally; builds knowledge and skills; and works with nature.[148]

Food sovereignty is a growing movement in Canada. There is considerable overlap in the goals of food sovereignty and food security although the language of food sovereignty is more explicit in terms of food citizenship. Food sovereignty highlights the importance of people and communities assuming responsibility in maintaining healthy relationships within food systems. It recognizes indigenous peoples as teachers of food systems that have been sustainable for thousands of years and understands that food involves relationships with the natural world that are part of the web of relationships that define culture and community.[149]

In BC, a number of food security groups (e.g., BC Food Security Gateway, BC Food Systems Networking Group on Indigenous Food Sovereignty, and Pacific Institute for Climate Solutions) have promoted information on food sovereignty. *Food Sovereignty in Canada: Creating Just and Sustainable Food Systems* was published in 2011.[150]

8.2 First Nations People

Cultural food security for First Nations and Inuit people involves the ability to reliably access important traditional foods through traditional harvesting methods, including hunting, fishing, and gathering, to ensure the survival of their cultures.[26,151] These "wild" or "country foods" are nutritionally, culturally, and economically important for their well-being. A shift away from the use of traditional foods has adversely affected the physical, emotional, social, and spiritual health of First Nations people.[25]

The 2011 First Nations Food, Nutrition and Environment Study conducted in BC found that the average amount of traditional food consumed by BC First Nations people was 98 grams per person per day.[25] This consisted of fish (which was harvested by 95% of all respondents); berries (harvested by 86% of respondents); land mammals (harvested by 84% of respondents); beach foods harvested close to shore (by 60% of respondents); root crops and greens (harvested by 26% of respondents); mushrooms (harvested by 24% of respondents); birds/fowl (harvested by 17% of respondents), and foods harvested from trees (by 9% of respondents). Over 200

different types of foods were reported to be harvested in First Nations communities in BC, with salmon, moose and berries being the most prevalent.[25]

Several studies have examined barriers for First Nations people to harvesting traditional foods. For example, the First Nations Food, Nutrition and Environment Study[25] noted that

- 91% of participants indicated they would harvest more food if it were not for a lack of equipment, transportation and time.
- 75% of participants reported significant impact from climate change in their communities and close to half reported this led to decreased availability of traditional foods in their household. (They reported that traditional foods were harder to find and predict because of changes in the growth patterns of plants and the migration patterns and mating cycles of birds and animals.)
- Samples of a number of traditional foods were tested for contaminants and most were found to pose minimal risk in the quantities commonly consumed, with the exception of heavy consumption of some wild organ meats, high mercury fish, and game meats with lead shot contamination.

A 2011 BC case study conducted by the PHSA on barriers to accessing traditional foods[152] found the following:

- A loss of traditional knowledge and land due to residential schools, colonization and assimilation.
- Lack of a skilled hunter/fisher in the family.
- A gradual erosion of cultural values related to sharing and reciprocity in some communities.
- Increased migration to urban centres.
- A change in lifestyle, with less time to hunt, fish or gather as a result of time spent in paid employment.
- Government restrictions and regulations on hunting and fishing.
- High costs of equipment and transportation.
- Contamination and species decline due to pollution and climate change.

To increase access to traditional foods, Elliott and Jayatilaka[152] have suggested a need for the following:

- Aboriginal peoples to shape public policies through political representation.
- Aboriginal leadership to empower people to claim their traditional rights.
- Inclusion of Aboriginal perspectives in government and the education system.
- (Re)building relationships with families, home communities, and urban Aboriginal peoples.
- Facilitating the transfer of traditional knowledge and sharing of food.

In BC, a number of First Nations communities have taken steps to improve diet quality and food security by establishing community gardens, food banks, community kitchens, lunch programs, and educational programs regarding traditional food harvesting and food preparation.[25] Although these programs have not been evaluated, they may provide examples of ways to address barriers to traditional food access and to enhance the availability and accessibility of traditional foods for First Nations people.

Level of Evidence: *Limited Investigation*

8.3 Recent Immigrants

As noted earlier, in 2007-2008, the CCHS found that 13% of recent immigrants to Canada experienced food insecurity (compared to 7.9% in the general population based on unpublished analysis of data from the 2009-2010 CCHS).[4] While this may be attributed, in part, to lower income levels during the early stages of integrating into a new country there are also a wide variety of cultural considerations related to food choices for new immigrants. Various individual, cultural, historical, social and economic influences shape one's food choices.[153]

The immigration process involves dealing with tensions related to adaptations in lifestyle, consumption patterns, and forms of cultural expression that have consequences for one's physical and mental health, perceptions of one's self, and relationships with others. Food security for new immigrants implies, firstly, access to sufficient, nutritious and quality food at all times, and secondly, to 'feeling at home.' It involves having access to culturally appropriate foods which represent a sense of feeling welcome, having equality and receiving recognition from others. When others acknowledge or share one's taste, this represents a symbolic welcome to new immigrants.[153]

A 2009 US study found that food insecurity is significantly higher among children of immigrants than among children of native-born parents even after taking into account parental work status and family income. Research suggests that food insecurity is higher among immigrants who have limited English proficiency, are non-citizens, or have recently arrived in the US.[154]

A case study conducted in the Waterloo region in Ontario found that the food system is largely industrial and contains major gaps in fulfilling the criteria of access, sustainability, social justice, and cultural and spiritual values appropriate to the south Asian Muslim immigrants in the area. The food system only partially met criteria based on physical and economic access to food, religious and cultural adequacy of food, and the food system's environment. Governance arrangements to address the issue of food insecurity resulted in the exclusion of immigrant populations. As a result, Khan[155] recommended a broader multicultural policy be adopted at the regional level to include food issues for immigrants.

Level of Evidence: *Limited Investigation*

8.4 Summary

A shift away from the use of traditional foods has adversely affected the physical, emotional, social, and spiritual health of First Nations people. This shift has resulted from a number of factors including a history of residential schools and erosion of traditional knowledge, skills and cultures.

A number of First Nations communities have taken steps to improve diet quality and food security by establishing community gardens, food banks, community kitchens, lunch programs, and educational programs for traditional food harvesting and food preparation. Although these programs have not been evaluated, they provide examples of ways to address barriers to traditional food access and to enhance the availability and accessibility of traditional foods for First Nations people.

New immigrants also experience a higher rate of food insecurity than the general population. Evidence indicates that the issues are not only related to physical and economic access to food, but also to the religious and cultural adequacy of food within the food system environment. The availability of appropriate food can represent a 'feeling of home' and acknowledgement of one's religion and culture.

Analysts have suggested a need for broader multicultural policies at the regional level that responds to the needs of immigrants within their respective communities.[155]

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