Household Food Insecurity – Lived Experience and Strategy Effectiveness

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Alberta Health Services

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This report has been prepared by Nutrition Services, Alberta Health Services

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Executive Summary

See ***Household Food Insecurity in Alberta: A Backgrounder*** for a current state summary of household food insecurity for Albertans, including prevalence, health impacts and at-risk populations.

Purpose

This report summarizes the findings of the research on:

- What are the nutrition beliefs, knowledge, and practices of households at risk of food insecurity?
- What is the effectiveness of nutrition-related strategies used with households at risk of food insecurity?

Methods

- A multi-step process was used for article search, retrieval, selection, critical appraisal, and synthesis.
- 1575 potential articles were found from the database search and 18 additional articles from the hand search. A total of 175 full-text articles were considered for final review and critical appraisal; 65 articles met the inclusion criteria.

Lived Experience Findings

Barriers to healthy eating
Inadequate finances is the primary reason for difficulty eating healthy foods.

Nutrition knowledge and food purchasing decisions
Households want to eat healthfully and know how to do so, but food prices and financial constraints, which are the most significant influencers of food purchasing decisions, often prevent this from occurring.

Food shopping and food skills
Households know and use "thrifty" food shopping and preparation practices to reduce food expenditures.

Spending reduction strategies
Many economizing strategies are used when a household is running short of money. Mothers report reducing their food intake to provide more food for children.

Views of program providers vs participants
A disconnect exists. Providers thought participants needed/ wanted better nutrition skills, knowledge and attitudes. Participants reported wanting regular access to quality food and finances.

Key Findings

Community Food Programs

Programs studied included: collective kitchens, gardening, farmers' market incentive programs, food box programs, free medical and home-delivered meals and grocery store gift cards.

- **No change in household food insecurity status** related to program participation. The exception was participants in free medically tailored meal programs that provided all meals.
- **Consuming an increased variety of vegetables or fruit** was the most commonly reported nutrition improvement during participation in free and cost-subsidized programs. Grocery store vouchers increased overall spending power and provided control in food choices at conventional grocery stores.
- **Low participation** rates were found in community food programs from households experiencing or vulnerable to food insecurity. Many households reported multiple barriers to participation (lack of program fit and time, location and cost challenges).

Nutrition Education Products
Programs largely targeted individuals/households at risk of food insecurity and intended to increase healthy eating knowledge or behaviour and food-related financial management skills.

- No change in **household food insecurity** was found; most programs did not measure food insecurity.
- **Nutrition education or counselling** using tailored messages and personalized approaches had small, positive changes in nutrition-related behaviours. Interactive group nutrition education with planned, hands-on food components reported small improvements in nutrition knowledge and behaviour.

Income Policy
Policy measures studied included federal and provincial income transfers and poverty reduction strategies that included income policy.

- **Household food insecurity prevalence rate decreases** were associated with using Canadian universal income-based policy approaches (e.g. Old Age Security, Guaranteed Income Supplement, Child Care Benefit) and provincial income-policy approaches.

Implications for Program Planning and Practice in Nutrition Services PPH

Financial constraints are the biggest influencers of food choices for households at risk of food insecurity, not a lack of knowledge, food skills, or the desire to eat healthfully
Avoid assumptions about the food skills, knowledge, and attitudes towards healthy eating for those at risk of household food insecurity in program development. Nutrition Services products and tools need to reflect and acknowledge financial constraints as the key barrier to healthy eating.

Tailored and personalized approaches to education may lead to small, positive changes in nutrition
Interactive group nutrition education approaches and interventions using tailored messages and personalized approaches to education reported small positive changes in nutrition-related behaviours, most often improvements in attitudes and knowledge. Ensure approaches are combined with actions to address financial inadequacies and financial constraints in the development of interventions.

A policy approach that addresses income inadequacy is associated with reduced food insecurity
Canadian income-supplement-based policy approaches (i.e. OAS, GIS, child benefits) are associated with reductions in the prevalence of household food insecurity. Researchers indicate the need to design policies that ensure predictability, stability and continuity of these income supplements. Ensure Nutrition Services approaches to poverty reduction, health equity and household food insecurity align with this evidence.

Evidence of effectiveness is lacking for many commonly used approaches
Educational programs on financial management, budgeting or grocery shopping are not found to improve household food insecurity or nutrition status. Community food programs do not provide households with protection from food insecurity or result in a significant change in nutrition-related behaviours beyond the temporary, sporadic and unpredictable consumption of healthy foods offered during the program. Increase knowledge that household food insecurity cannot be addressed by food-based programming.

Summary and Recommendations

Reducing household food insecurity requires an income approach
When working with households at risk of food insecurity or when educating community stakeholders:

- Incorporate the following understandings into product development:
  - financial constraint is the key barrier to healthy eating.
  - poor nutrition knowledge, food skills or food-related financial management skills are not the cause of food insecurity. One cannot assume knowledge and skills are lacking in households experiencing food insecurity.
- Incorporate tailored messages and personalized approaches into nutrition education that ensure:
  - use of targeted messages with the flexibility to respond to the specific needs of participants.
  - development in partnership with individuals with lived experience of food insecurity.
- Support approaches that improve income (including a proxy for income).
- Develop resources that assist in redirecting discussions about food insecurity away from hunger and food-based solutions to income and health equity solutions.

Background

Household food insecurity is a significant public health issue that impacts the physical, mental and social well-being of Canadians. Household food insecurity is defined as inadequate or insecure access to sufficient food, due to financial constraints.[1] In Alberta, 12.9% of households reported some level of food insecurity in the 2017-2018 Canadian Community Health Survey data collection cycle.[2] The levels of impact are substantial; in Alberta 6.1% of households are classified as moderately food-insecure, indicating compromises in the quality and/or quantity of food and 3.2% experienced severe food insecurity.[2] Severe food insecurity is characterized by missing meals and reduced or no food intake, in addition to compromises in food quality and worry about where the food will come from.[3] Providing effective nutrition interventions for households that are food-insecure is a challenge for health care providers. Dietitians have expressed a need for more understanding and information on what strategies are effective, and ineffective, to support this population's nutrition-related health.
For further information on food insecurity prevalence, health impacts and populations most at risk in Alberta, refer to *Household Food Insecurity in Alberta: A Backgrounder*.

Purpose

The purpose of this evidence review is to inform work within Nutrition Services, Population and Public Health (NS PPH) about effective strategies and approaches to addressing individuals and households who are experiencing HFI. It is an update of the food insecurity evidence review completed in 2010 by Alberta Health Services (AHS) Nutrition Services. This report intends to:

- Share key findings based on updated evidence
- Inform strategy and program planning
- Guide dietitians and other health care provider practice
- Provide recommendations and implications for practice

Scope

The primary audience for this report is NS PPH. A secondary audience for the report includes AHS clinical dietitians, other AHS staff and programs (e.g. Population, Public and Indigenous (PPIH) and PPIH Strategic Clinical Network) to help inform their work. Some Canadian populations are disproportionately impacted by household food insecurity. Most notably, the realities of Indigenous peoples' cultures, beliefs and political systems are vital to the development of appropriate interventions to reduce household food insecurity among this vulnerable group. Further exploration of the literature is needed; however, its unique complexity requires exploration beyond the capacity of this review.

Core Questions

What are the nutrition beliefs, knowledge, and practices of households at risk of food insecurity?

People's views and lived experiences need to be considered in combination with studies evaluating intervention effects.

What is the effectiveness of strategies used with households at risk of food insecurity?

Effectiveness of strategies to improve nutrition knowledge, dietary intake or food insecurity status.

Methodology

Search Strategy

Knowledge Resource Services (KRS), AHS supported the development of a search planning tool and completed the database searches. The search planning tool identified keywords, synonyms for each keyword, and distinct keyword search strings. Evidence review searches were completed between 2015 and 2018 and annotated bibliographies were generated in RefWorks/Proquest. Details of the search planning process, databases searched and criteria are provided in *Appendix A*.

Eligibility Criteria and Study Selection

Articles were reviewed for inclusion/exclusion at the title, abstract and full-text reading stages, using defined criteria noted in *Appendix B*. A minimum of two reviewers screened and determined the articles for inclusion at each step in the process.

A total of 1575 potential articles were retrieved from the database search. An additional 18 articles were identified through hand search strategies. A total of 175 full-text articles were considered for final review and critical appraisal with a final 65 articles meeting the inclusion criteria.

Classifying Articles

Articles were classified into two groups: i) those that described the lived experience of those living in households classified as food-insecure, low-income, low socio-economic status or living in poverty; and ii) those that evaluated the effectiveness of strategies on health, nutrition (dietary intake, nutrition knowledge) and food insecurity status. Articles evaluating strategies were further categorized as either community food programs, nutrition education products or policy.

Critical Appraisal

Standard public health evidence appraisal tools were used to critically appraise articles. Tools used included:

- Health Evidence Quality Assessment Tool – Review Articles.[4]
- Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies.[5]
- Critical Appraisal Skills Program (CASP) Qualitative Checklist.[6]

A minimum of two reviewers independently appraised the articles. The final appraisal rating was determined by consensus.

Data Extraction

Research data was extracted using an instrument developed by Nutrition Services. Extraction included: author, year of publication, study design, country, objective, intervention description, methods, outcomes and limitations. Article summary tables in *Appendix C* provide key study information from included research papers.

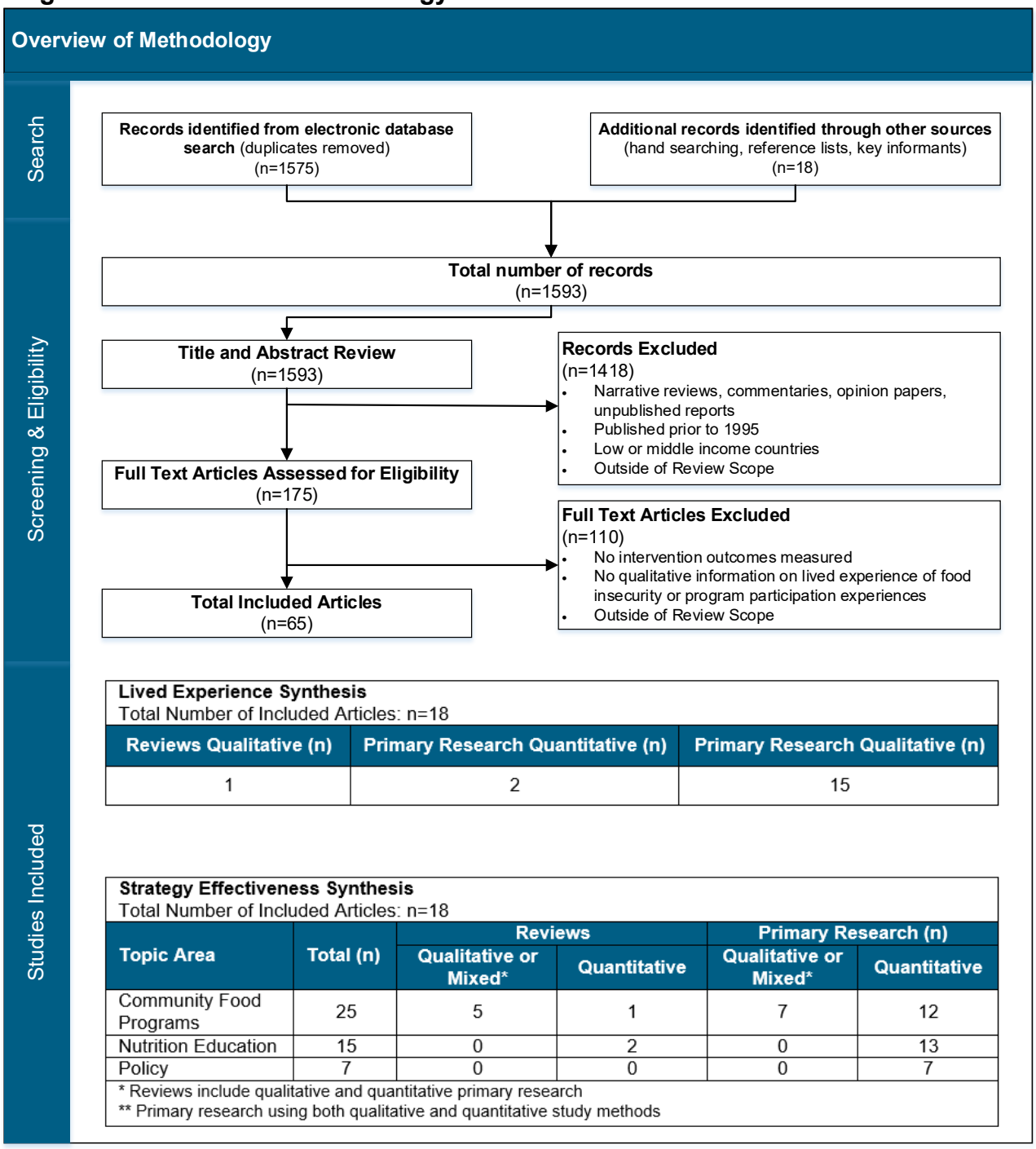
Synthesis

Synthesis was completed for the two groupings of articles. Literature synthesis relevant to:
Question 1: “What are the nutrition beliefs, knowledge, and practices of households at risk of food insecurity?” is presented under the heading of “lived experiences.”

Question 2: “What is the effectiveness of strategies used with households at risk of food insecurity in improving nutrition knowledge, dietary intake or food insecurity status?” are presented under the headings of “community food programs,” “nutrition education”, and “policy.”

An overview of the methodology process is presented in Figure 1 on the following page.

Figure 1. Overview of Methodology



Lived Experience Synthesis
Total Number of Included Articles: n=18

Reviews Qualitative (n)	Primary Research Quantitative (n)	Primary Research Qualitative (n)
1	2	15

Strategy Effectiveness Synthesis
Total Number of Included Articles: n=18

Topic Area	Total (n)	Reviews		Primary Research (n)	
		Qualitative or Mixed*	Quantitative	Qualitative or Mixed*	Quantitative
Community Food Programs	25	5	1	7	12
Nutrition Education	15	0	2	0	13
Policy	7	0	0	0	7

* Reviews include qualitative and quantitative primary research
** Primary research using both qualitative and quantitative study methods

Findings

The findings in this report are based on the synthesis of nine reviews and 56 primary research articles. A total of 18 articles inform the "Lived Experience" section and are described in Table 1. The "Strategy Effectiveness" section is supported by 47 articles, described in Table 2.

Table 1

Nutrition-related themes, subthemes and evidence sources informing the "Lived Experience" findings

Total Number of Articles: 18 (1 review; 17 primary research)

Theme	Sub-theme or Strategy	Evidence Source
Lived Experience	• Barriers to healthy eating • Nutrition knowledge and food purchasing decisions • Shopping and preparation strategies used to reduce food expenditures • Procurement strategies used to reduce food expenditures • Parental behaviours • Cooking skills and practices • Financial strategies and understanding • Perceptions of those working with food-insecure participants	• 18 articles: 1 review; 17 primary research • 2 analytical cross-sectional surveys of national data • 15 qualitative, descriptive studies. The majority (n=10) used semi-structured interviews; the remainder (n=5) used focus groups, self-administered surveys and a variety of qualitative methods • The studies were conducted in: Canada (n=8); the U.S (n=6), the U.K (n=1); Australia (n=1) and New Zealand (n=1)

Table 2

Nutrition-related themes, subthemes and evidence sources supporting the "Strategy Effectiveness" findings

Total of 47 articles - 8 reviews and 39 primary research

Theme	Sub-theme or Strategy	Evidence Source
Community Food Programs	• Community kitchens • Gardening • Farmers' market incentive programs • Food box or community-supported agriculture • Grocery store gift card/voucher • Free home-delivered medically-tailored meals	• 25 articles: 6 reviews; 19 primary research • 6 reviews: 1 quantitative, 1 mixed (qualitative and quantitative) and 4 qualitative • 19 primary research: 3 quantitative including 2 RCTs; 4 qualitative and 2 mixed qualitative and quantitative • The studies were conducted in: the U.S (n=14), Canada (n=7), New Zealand (n=1); with three review articles including studies from multiple countries

Table 2 Nutrition-related themes, subthemes and evidence sources supporting the "Strategy Effectiveness" findings Total of 47 articles - 8 reviews and 39 primary research		
Theme	**Sub-theme or Strategy**	**Evidence Source**
Nutrition Education	• Systems or community level nutrition education • Tailored nutrition education/counselling • Interactive group nutrition education • On-line and computer-based nutrition education • Nutrition education programs with a financial management component	• 15 quantitative research articles: two systematic reviews; 13 primary research articles (1 cross-sectional analytic, 7 RCTs and 5 cohort designs) • The studies were conducted in the U.S (n=10), Australia (n=3), Canada (n=1) and England (n=1)
Policy	• Universal federal income transfers • Provincial income transfers and policy reduction strategies	• 7 quantitative research articles • All 7 studies were conducted in Canada

The majority of the research participants were households, families, and individuals identified as either food-insecure and/or having characteristics associated with household food insecurity (e.g. low-income, identified as living in poverty, and households reliant on income support). For the purposes of this paper, participants with these characteristics are collectively referred to as "**households at risk of food insecurity"(HRFI)**.

Throughout the review, the voices of those experiencing household food insecurity are provided to build a narrative portrait of their nutrition beliefs, knowledge, and practices

Lived Experience

Research that described the lived experience of the study population provided important insights to help understand the motivation behind participants' nutrition-related behaviours and to uncover barriers related to healthy eating. Quantitative analysis of national survey data indicated that nutrition knowledge cannot be assumed to have the same positive impact on health in food-insecure households as it does in food-secure households. There was no indication that food-insecure households have poorer shopping or food skills than food-secure households.

- Nutrition knowledge was associated with decreased health risks in food-secure households but not in food-insecure households.[7]
- Self-rated cooking competence (food preparation skills or cooking ability) was similar in food-insecure and food-secure households.[8]
- Shopping with a budget was more common among adults in food-insecure households.[8]

Based on the findings, study participants' experiences of living with or facing food insecurity were themed as follows: Barriers to Healthy Eating; Nutrition Knowledge and Food Purchasing Decisions; Shopping and Preparation Strategies Used; Procurement Strategies Used to Reduce Food Expenditures; and Parental Behaviours. Study participants included those for whom food insecurity status was measured and HRFI. Table 3 provides detailed findings for each theme area.

Table 3. Lived Experience Findings

	Summary Statement	Reported Findings
Theme	**Main Finding**	**Sub-themes**
Barriers to Healthy Eating	Inadequate finances were reported as the primary reason why respondents had difficulty eating healthy foods	**Barriers Participants Reported:** • Financial constraints, related to inadequate income to pay for basic living expenses or emergency situations[9–16] • The cost of healthy food,[9,11] especially vegetables and fruit[9,11,12,15,17] • Inadequate kitchen equipment, including large and small appliances (i.e. toaster, blender) and pots and pans,[15] or storage space for foods[12] • Lack of transportation to access food stores[11,13,15,18,19] • Time constraints,[9,10,12,15,20] which may be related to working,[12] sometimes more than one job,[10] going to school,[12] and/or the increased work that comes with being a single parent[10]
Barriers to Healthy Eating Nutrition Knowledge and Food Purchasing Decisions	Despite the knowledge or desire to eat healthy, food price was reported as the most significant influence on food purchases for HRFI	**Nutrition Knowledge:** • Participants understood healthy eating principles and wanted to eat healthily to reduce disease[7,9–12,15–17,21] • Food price rather than preference, quality or health was the most significant influencer of food-purchasing decisions,[11,19] especially as the severity of food insecurity increased[21]

Shopping and Preparation Strategies Used to Reduce Food Expenditures	HRFI reported employing "thrifty" food shopping and food preparation strategies	**Food Shopping and Preparation Practices Reported:**
		• Multiple food shopping practices that included:
		  ○ shopping at discount supermarkets or stores[18–20]
		  ○ buying[10,12,15,19,21] or stocking up on sale items[18] or buying in bulk[10,12,19]
		  ○ following a grocery budget[11,21] and creating shopping lists[12,15,21]
		  ○ using coupons[12] and comparing costs[21]

	Summary Statement	Reported Findings
Theme	**Main Finding**	**Sub-themes**
Shopping and Preparation Strategies Used to Reduce Food Expenditures *(continued)*	HRFI reported employing "thrifty" food shopping and food preparation strategies *(continued)*	○ purchasing cheaper alternatives, such as less expensive cuts of meat[12,21] ○ limiting food purchases to items readily accepted by the family[19] ○ limiting food variety[12,19] ○ relying on convenience foods[12,19] • Multiple food preparation strategies that included: ○ cooking from scratch[18,21] ○ cooking in bulk[12] ○ using left-overs[12,18,21] ○ freezing food for later use[10,12,18] ○ modifying recipes to reduce or substituting unaffordable ingredients;[12] using inexpensive fillers, such as noodles and potatoes[12,13,21]
Procurement Strategies Used to Reduce Food Expenditures	HRFI reported using many strategies when running short of money	**Food Procurement Strategies Reported:** • In rural locations, grew produce,[9,10,12,18,22] hunted and/or fished,[18,22] canned/preserved homegrown foods[12,18] and foraged[12,18,22] • Ate with[19] and/or obtained food from[10,11,13,18,19] friends or family during times of food scarcity • Sending children to eat a meal with friends or relatives [(14)] • Used charitable food programs such as emergency food[9,11,12,16,22] and charitable meals[13]
Parental Behaviours	Within HRFI, parents restricted their food intake to provide more food to children during times of food scarcity	**Parental Behaviours Reported:** • Adults,[12] particularly mothers,[11,13,15,18,19] reduced their own food intake to increase food availability for their children • Parents in families experiencing severe food insecurity were more likely to adopt structured eating practices to conserve food and prevent waste, such as limiting grazing on food throughout the day and not allowing meals in front of the television.[22]

Qualitative analysis found differences between the perceptions of those working with food-insecure participants (e.g. community workers, managers and agencies) and the individuals using community-level services.

- 51% of the stakeholders (community workers, managers and agencies) interviewed suggested that individuals with food insecurity lacked the desire, skill, or knowledge to eat healthfully, while this "issue" was only identified by 5% of the food-insecure participants.[16]
- Program participants emphasized the need for quality food, regular/sustainable access, and the ability to participate in social roles (such as having guests over for a meal), while program providers emphasized the need for a basic quantity of food to prevent hunger.[16]
- While financial resources were emphasized by both the stakeholders and the program participants, more than half of the stakeholders expressed a perception that program participants would need extra learning to improve their food situation. This view was seldom expressed by the program participants.[16]

> We're going to have chicken tonight, chicken salad tomorrow, chicken soup, and then you can even throw in a 4th day and make it a stew[18]

Community Food Programs

This section summarizes research on food programs offered in the community and their effectiveness to improve participants' food insecurity status, intake of food and interest in participating in the program. The interventions include: collective or community kitchens, home or community gardens, farmers' market incentives, food box or community-supported agriculture, grocery store gift card/voucher, and free home-delivered and medically-tailored meals. Most research in this area focused on outcomes related to food insecurity; food or nutrition-related behaviour, such as dietary intake or cooking skills; and program participation levels, including underlying reasons for lack of participation. The research findings for each type of program are summarized under these outcomes, although some programs did not report research on all three outcome areas. The research in this section was largely self-reported and did not measure or confirm improvements in food intake, variety or quality.

Collective or Community Kitchens

Collective and community kitchens describe small community groups who pool their resources and skills to prepare large quantities of food together at the same time.[23,24]

Key Findings

Food Insecurity

There was limited published research that explored the impact of collective kitchens on the household food security status of participants.

- One study reported no significant change in measured food insecurity status over baseline, for participants in alternative food support programs, which included collective kitchens.[25]
- Engler-Stringer,[23] in their review of published research on collective kitchens in Canada, did not find evidence that collective kitchens impacted low-income participants' food resources. An emergent theme of the qualitative articles included in the review was that participants viewed collective kitchens (with the cost of food often subsidized) as a tool for avoiding using a food bank or other means of coping with inadequate finances. This review included the qualitative study of ten community kitchens by Tarasuk and Reynolds,[26] where participants cooked once or twice a month and had subsidized food costs (no cost or up to one dollar per food portion). Fully subsidized programs were found to minimally offset household food costs, having a limited impact on food insecurity for the family.[26]

Nutrition

Program participants reported improved nutrition-related benefits from taking part in a collective kitchen.

- A systematic review[24] of predominantly qualitative articles studying the impact of community kitchens on low-income participants found program participants reported an increased intake of nutritious food. Improvements were described as increased variety, increased diversity of vegetables and fruit purchased and eating fast-food less often.[24]
- Other benefits reported in the review by Iacovou[24] included increased enjoyment in cooking and eating, improved shopping skills, enhanced cooking skills and confidence.

Participation

HRFI had low participation rates in community kitchen programs and experienced many barriers to participation, including a lack of program fit to their schedules, interests and needs.

- Only one in 20 families used a collective kitchen program, in a study of low-income families residing in high-poverty Toronto neighbourhoods.[27] Two-thirds of the families in this study were food-insecure.
- A qualitative follow-up study by Loopstra[28] found that primary reasons expressed by families not participating were a lack of program accessibility (unsure how to access the program, inconvenient program locations) and lack of program fit (not suited to busy schedules, interests or needs).
- Other qualitative research indicated that collective kitchens may provide social support networks and help socially isolated participants recognize that others have similar hardships.[23,24]

Home or Community Gardens

A community garden is a shared space where people grow vegetables and sometimes fruit.[29] A home garden refers to a small portion of land managed by a single household on owned, rented or borrowed property that is located close to the primary residence.[30]

Key Findings

Food Insecurity

There was little information in the literature regarding the impact of home or community gardening on preventing or alleviating food insecurity. Canadian research did not indicate that gardening for food provided households with protection from food insecurity.

- One study reported no significant change in measured food insecurity status over baseline for adults participating in alternative food programs, including community gardens.[25]
- An analysis of Canadian national survey data found no association between participation in home or community gardening and protection against household food insecurity.[8] Furthermore, adults who garden for food are not more likely to live in a food-secure household than those who do not garden for food.[8]
- A small rural U.S. garden study reported participants experienced reduced worry about running out of food immediately post-harvest,[31] however, this effect was measured only once during the post-harvest time period. The families involved in the study were provided with regular, ongoing support, including education and resources.

Nutrition

Research based on self-reported data suggested home or community gardening possibly enhanced vegetable and fruit access, and increased vegetable or fruit intake and variety, but only while individuals participated in the gardening program.

- Qualitative reviews of community garden programs in the U.S. found participants' self-reported increased variety and consumption of vegetables and fruit during the harvest season.[32,33] The participants were not limited to low-income populations.
- In the U.S., low-income urban[30] and rural[31] home gardening program participants reported improved access to healthy vegetables and increased vegetable consumption.

Participation

HRFI had low participation rates in community and home gardening programs and experienced many barriers to participation.

- Low participation levels among HRFI were reported in research on community garden[8,27,28] and home gardening[30,31] programs. Reasons include a lack of time, program fit and knowledge about how to participate,[28] as well as moving out of program geographical boundaries or housing loss.[30]
- Motivations reported for participation in gardening included: to consume fresh foods,[29,30] to enhance family[30] and social relationships,[29,31] to improve health,[29,31] and to save money.[29,30,33] Food insecurity as a reason for involvement was not mentioned by study participants.

Farmers' Market Incentive Programs

Farmers' markets are retail marketplaces at fixed locations where consumers can interact directly with producers selling fresh vegetables, fruit and other food and non-food products.[33] Incentives for purchasing at the farmers market were given in different forms including vouchers, gift cards, and coupons.

> … Transport's taking up too much and just that extra bit can go into food rather than into transportation costs … [if] they want bus money, then I have to pull that out of the food budget. Well, everything comes out of the food budget …[13]

Key Findings

Food Insecurity

There was an overall lack of research on the impact of farmers' market incentive programs on food insecurity. Research that provided participants with monetary vouchers of low value did not show a positive impact on food insecurity status.

- A review that included one study[33] where participants received a one-time voucher worth eighteen dollars to use at a farmers' market found no difference between participants' and nonparticipants' household food security status.
- One intervention[34] provided participants with farmers' market vouchers worth $40.00 per month for four months and placed no restrictions on what participants could purchase. Post-intervention, 40% of participants reported an increase in their worry or stress about providing food for their families.

Nutrition

Participation in free farmers' market coupon programs may have contributed to enhanced variety and increased consumption of vegetables and fruit while participating in the program, among HRFI.

- Enhanced variety and increased vegetable and fruit consumption were consistent findings reported in a review of U.S. farmers' market coupon programs.[33] Six of the studies provided different voucher amounts that were between $5.00 and $50 and were largely given only once per season. One study provided free biweekly vegetable and fruit baskets to seniors for five months.
- Participants reported that they were more likely to try new vegetables and fruit[34,35] and increase consumption of vegetables and fruit.[34–36] These changes were not substantiated by community health survey data reporting consumption levels.[36]

Participation

Farmers' markets were not frequently visited by low-income households. Barriers to accessing farmers' markets as a food outlet included the cost of fresh produce, transportation challenges, and social and personal comfort with the culture of farmers' markets.

- Food-insecure and low-income households reported lower attendance at farmers' markets compared to food-secure and higher-income groups.[37]
- Key barriers to farmers' market use identified were:
  - higher cost and lack of culturally acceptable products[38,39]
  - lack of efficient transportation[38]
  - insufficient time and misalignment with regular food shopping routines and practices[39]
  - cash-only transactions[39]
  - inconvenient locations and hours of operation[39]
  - a sense of being different or unwelcome compared to other patrons[39]

Food Box or Community Supported Agriculture (CSA) Program

A food box program aims to offer a variety of fresh produce at more affordable prices to individuals and households who struggle to afford these foods or wish to reduce expenditures.[40] In CSAs, customers pay for a 'share' of produce before the growing season begins, and farmers provide fruits and vegetables weekly throughout the season.[41]

Key Findings

Food Insecurity

There was limited research on the impact of food box programs on food insecurity status.

- At an eight-month follow-up of a food box program, there did not appear to be a difference in food insecurity status as a result of participation in the program.[40]

Nutrition

It was unclear if participation in a CSA or food box program positively influenced vegetable or fruit intake. It was possible that participants in these programs already consumed higher intakes of vegetables and fruit.

- One study of food box participants did not find that participation in the program increased fruit or vegetable intake compared to non-participants.[40]
- College-educated low-income families participating in a subsidized CSA program were found to consume more fruit and vegetables than the US median both during participation in the program and post participation.[41] Causality between participation and fruit and vegetable consumption could not be inferred; program participants were postulated to be higher than average consumers of vegetables and fruit.

Participation

Low-income populations expressed numerous concerns and barriers regarding participation in CSA and food box programs. Key concerns reported included program expense, payment expectations (e.g. pre-payment), lack of food choice and lack of program fit with needs.

- One study found that few low-income adults were aware of the CSAs and none had used them.[38]
- HRFI reported low participation in food box and CSA programs.[28,37]
- Barriers to participation in CSAs reported in the literature included:
  - lack of awareness about programs[28,38]
  - inability to commit due to finances[40]
  - unable to choose food box contents[28] and the possibility of receiving unwanted food[38]
  - lack of understanding about how the programs functioned[28,38]

Grocery Store Gift Card/Voucher

Grocery store voucher programs aim to provide additional money to individuals and households for the provision of food. Money is provided in the form of store vouchers or gift cards.

Key Findings

Nutrition

Grocery store vouchers provided to HRFI resulted in increased overall food expenditure.

- Providing more money to food-insecure households in the form of supermarket vouchers resulted in increased expenditure on food rather than non-food products.[42]
- Participants increased their consumption of vegetables and fruit when provided with 'conditional' gift cards that restricted participants' purchases to produce.[43]

Participation

Grocery store gift cards provide recipients with decision-making control in food choices at conventional food outlets.

- Grocery store gift cards recipients indicated they found the cards helped the whole family eat more healthy foods and provided them with the freedom to purchase the foods they preferred from conventional food outlets without feelings of embarrassment.[43]

Free Home-Delivered Meals for Seniors or Medically-Tailored Meals

A free home-delivered meal program provides a hot noon meal plus sometimes a cold supper, usually five days a week, to seniors who are no longer able to obtain an adequate diet without assistance.[44] Medically-tailored meal programs are designed by dietitians and provide free meals, and sometimes snacks, designed to meet participants' specific nutrition needs for management of illness or chronic disease. These programs may require the meals to be picked up or offer home delivery.[45–47]

Key Findings

Food Insecurity

Home-delivered meals and medically tailored meal program evaluations found that low-income participants reported reduced food insecurity during and after participation in the program.

- Low-income seniors who received free home-delivered meals for twelve months had a measured reduction in food insecurity status.[44] However, this study reported a drop-out rate of 80% by the end of the study.
- Low-income individuals, with HIV and/or type 2 diabetes who received non-delivered free meals and snacks (meeting 100% of daily energy and nutrient requirements) over a six month period had a measured improvement in food insecurity status.[47]
- A measured reduction in food insecurity status was found during “on meal” versus “off meal” periods among food-insecure individuals with diabetes mellitus receiving free home-delivered medically-tailored meals for twelve weeks.[46]

Nutrition

Home-delivered meals and medically tailored meal program evaluations reported that low-income participants improved their overall diet quality.

- Low-income seniors who received home-delivered meals had significantly more improvements in dietary patterns and nutrition intake than those who did not receive home-delivered meals.[44] Free home-delivered meals had a greater impact on seniors living alone, men, and individuals with poor initial nutritional status.[44]
- Food-insecure and low-income participants with chronic diseases (diabetes or HIV) who received free medically-tailored meals reported large improvements in diet quality including increased vegetable and fruit consumption and decreased high-fat food consumption.[46,47]

Participation

Little was reported about home-delivered meals and medically tailored meal program participation experiences or adherence. Programs that required participants to pick up meals and snacks instead of being home-delivered reported on possible barriers to participation rates.[47]

- One free meal and snack program found the reasons participants did not pick up their meals was because participants were too sick or injured, arrived late, had a healthcare appointment, or had transportation issues.[47]

Nutrition Education Products

This section summarizes research gathered on nutrition education products targeting individuals and households at risk for food insecurity that was designed to improve this population's healthy eating knowledge and/or behaviour and food-related financial management skills. The nutrition education interventions reported on were themed into five key areas: systems or community level nutrition education, tailored nutrition education/counselling, interactive group nutrition education, online and computer-based nutrition education, and nutrition education programs including a financial management component.

Systems or Community Level Nutrition Education

Systems or community level nutrition education includes prevention or education programs delivered to a group within a system, such as a school or their community.

Key Findings

Nutrition

Community- or systems-based education programs, specifically targeting HRFI populations, did not demonstrate an impact on nutrition-related outcomes. Traditional intervention approaches to nutrition and chronic disease prevention, such as group workshops and resource distribution, were possibly less effective for HRFI populations. The question of whether or not nutrition interventions widen dietary inequalities between socioeconomic status groups was not conclusive.

- A systematic review investigating whether nutrition interventions widen dietary inequalities across socioeconomic status groups found limited but inconclusive, evidence that the interventions were less effective in the disadvantaged population.[48]
- A multi-component nutrition intervention for low-income adolescent teenaged girls (participant handbook, parent newsletters, interactive activities, text messages), found no statistically significant effects on measured dietary intake or food-related behaviours. However, the 12-month trends suggested more of the intervention group girls had improved water intake and reduced intake of sugar-sweetened beverages.[49]
- A community-wide, multi-component, cardiovascular disease prevention program (print and visual media resources, recipe contests, workshops) implemented in a low-income neighbourhood, did not find any significant program effects on diets characterized by high-fat, ultra-processed convenience foods.[50]

Tailored Nutrition Education/Counselling

Tailored nutrition education/counselling includes one or more ways in which the nutrition information is customized to the individual. The modes of delivery can include in-person education/counselling with a health care provider or peer educator, print resources or computer-based programs.

Key Findings

Nutrition

Approaches that incorporated tailored messages and/or used "Stages of Change" and personalized approaches to education may have led to small, positive changes in nutrition-related behaviours.

- A systematic review and meta-analysis of interventions, primarily behavioural counselling, with low-income groups, found small positive effects on diet behaviour. The effect size was equivalent to intervention groups eating just under half of an additional portion of vegetables or fruit each day. It was noted that larger effect sizes are found when reviewing health effects in the general population.[51]
- A program based on "Stages of Change", conducted by peer-educators, found positive self-reported nutrition outcomes, maintained beyond the program end, for low-income African-American participants at risk for diabetes. Significant changes were found in the knowledge of dietary fat, overall fat intake, and an increase in low-fat eating patterns.[52]
- Individual behavioural counselling, based on the "Stages of Change" model, was compared to standard nutrition education counselling with low-income adult participants. Both groups self-reported an overall increase in consumption of vegetables and fruit, but the intervention group reported a greater increase.[53] Findings were supported by measured changes in biochemical data.

Interactive Group Nutrition Education

Interactive group nutrition education includes nutrition education with a planned, hands-on food component such as grocery store tours or cooking.

Key Findings

Nutrition

Limited research, relying on self-reported data, was available on the effectiveness of interactive group nutrition education approaches for HRFI. Some small benefits were reported for nutrition education, offered in a variety of group settings, and with different interactive components for nutrition knowledge or behaviour outcomes.

- A behaviour change intervention (educational/skill building newsletter, behaviour change packages, dietitian-led grocery store tour) targeting low-income women led to reported increased vegetable consumption, measured through self-reported surveys, and electronic sales data. The increase in consumption was just under ½ additional serving per day, which decreased to ¼ additional serving from baseline at the six-month follow-up. There was no intervention effect on fruit consumption or vegetable/fruit purchasing.[54]
- Interactive nutrition education sessions, held with low-income women, were associated with self-reported increases in nutrition knowledge and self-reported improvements in vegetable/fruit intake and reductions in salt, sugar and fat.[55]
- A study that explored the educational impact of the USDA Expanded Food & Nutrition Education Program (EFNP) found improvements in participant-reported practices for three behavioural constructs of diet: quality; food safety; and food resource management (planning meals, comparing prices, shopping with a list).[56]
- A combination of nutrition education, cooking skills training, and free healthy food ingredients program with food bank users resulted in self-reported improvements in diet quality and cooking competence over the six-week trial. Improved cooking skills, but not diet quality, were sustained at the 30-day follow-up.[57]
- A six-week cooking program teaching plant- and olive oil-based recipes was offered to low-income adults. A component of the program included providing participants with the ingredients needed to make the recipes at home. Participants self-reported an increase in total amount[58,59] and variety of vegetables and fruit,[58] six months after the program ended, which was verified through grocery receipts.

> I hate to throw food out, so I always try to do something with it, whether it be them eating a wholly different meal and I'm eating leftovers at the table…[18]

Online and Computer-Based Nutrition Education

Online and computer-based nutrition education includes education delivered in a computer-based format that included varying interactive features (e.g., audio, video, graphics, and tailored components).

Key Findings

Nutrition

Online-based nutrition education programs were found to provide similar benefits as "traditional" in-person education delivery for low-income participants.

- Research that compared online and in-person nutrition education with low-income parents related to breakfast eating found similar positive knowledge changes reported by participants in both the control and the intervention groups. The online intervention group reported greater increases in breakfast eating frequency.[60]

Nutrition Education Programs Including a Financial-Management Component

This category includes programs that delivered nutrition education combined with specific education components with a goal of improving financial knowledge and management skills related to food resources.

Key Findings

Food Security

Food resource management education programs did not appear to impact household food insecurity status. Some programs were demonstrated to improve participant-reported financial knowledge and skills. The ability to apply these skills appeared to be greater in the low-income participants who were food-secure.[61]

> What would it take for me? More money (laughter)! More money, it's really a financial problem[70]

- The potential impact on food security status of a community nutrition education program targeting low-income parents was investigated in two successive studies.[56,62] The researchers did not find an impact on food insecurity that could be attributed to the program, despite both education groups reporting improvements in food resource management skills.[56]
- Participants in an online program for low-income women, aligned with the Satter Eating Competence Model, reported improvements in food resource management skills and planning meals. Greater improvements in food budgeting were reported by the food-secure participants.[61]
- A six-week instructional program teaching plant- and olive oil-based cooking for food bank recipients, and provision of food ingredients for recipes, was associated with an improvement in food insecurity score, measured at six-month follow-up.[58,59] The researchers were unable to attribute the reported improvement in food insecurity to their program or any specific components of the program.[58]

Policy

This section examined the effectiveness of income policy approaches on household food insecurity and health outcomes. Income policy approaches included federal and provincial income transfers and poverty reduction strategies that included income policy components.

Universal Federal Income Transfers

Canadian federal income policies examined in the research include universal income benefits for seniors (Old Age Security [OAS]; Guaranteed Income Supplement [GIS]) and children (Universal Child Care Benefit [UCCB]).

Key Findings

Food Security:

Canadian research has supported universal income-based policy approaches as effective to address the issue of household food insecurity.[63–66]

- A cohort analysis of two groups of low-income (<$20,000/year), unattached seniors, found that receipt of OAS and GIS coincided with a 50% reduction in self-reported household food insecurity prevalence rates.[63]
- A marked drop in food insecurity was associated with a change in income source for low-income individuals at age 65. Income source changed from HRFI employment and conditional assistance programs (e.g. disability insurance, workers' compensation, social assistance) to seniors' benefits.[64]
- Analysis of CCHS data from 2007 to 2013 reported a much lower rate of food insecurity (almost half) for the low-income, unattached adult cohort that was age-eligible for OAS and GIS, compared to the nearly-eligible cohort of age 55 – 64 years.[66]
- The UCCB, which provides $100 per month for each dependent younger than six years, reduced the prevalence of food insecurity by more than 25% for recipient versus non-recipient households. This impact was significantly larger for single-parent families and respondents with low yearly incomes.[65]

Health

Income-policy approaches positively impacted overall health and mental health.[64]

- Age-eligibility for OAS and GIS was associated with the lower self-reported prevalence of fair or poor health and fair or poor mental health in a cohort analysis of low-income seniors. [64]

Provincial Income Transfers and Poverty Reduction Strategies

Provincial income transfers include means-tested programs (e.g. social assistance, rental assistance program). Provincial poverty reduction strategies contain multiple components, including income policies for HRFI.

Key Findings

Food Security

Provincial income-policy approaches were associated with a reduction in food insecurity prevalence. Larger effects were seen for vulnerable groups, particularly when the income-policy approach included strategies that tackled the depth of poverty and material deprivation issues.[67,68] Key aspects of income policy effectiveness included improved material circumstances, benefit stability and predictability.[67,68]

- Using a retrospective, cohort design, a one-time increase to social assistance benefits was associated with a positive short-term effect on total and moderate food insecurity among recipients. Severe food insecurity remained unchanged.[67]
- A provincial multi-component poverty reduction strategy implementation was followed by a dramatic decrease of almost half in the food insecurity prevalence rates among social assistance recipients in Newfoundland and Labrador. Key interventions included: increased income support rates that were indexed to inflation, and increased earnings and liquid asset limits.[68]

Health

Unconditional prenatal income benefits positively impacted maternal and birth outcomes.[69]

- The Manitoba Healthy Baby Prenatal Benefit provided an unconditional prenatal income supplement equivalent to approximately a 10% increase in the total household income of recipients. Receipt of the benefit was associated with reductions in low birth weights, preterm births, small for gestational age infants and an increase in breastfeeding initiation.[69]

Limitations

The challenges and limitations experienced while conducting this review included:

- Overall low quality of the evidence with the majority of articles critically appraised as weak or unable to be appraised due to elements of the study design including:
  - small sample sizes
  - lack of both treatment and control groups
  - non-blinding of participants
  - possible selection bias
  - lack of pre and post-intervention measures
  - possible research bias (e.g. assuming HRFI had poor nutrition knowledge)
- Systematic reviews that used various methods to report on the outcomes of interest, often combing both qualitative and quantitative research to report on the effectiveness of interventions.
- Use of a wide range of data collection and evaluation tools (many with no reported validity or reliability testing and often relying on self-reporting of nutrition data).

- Inconsistent definitions of and thresholds for “low-income” and “food insecurity.” Few studies used a validated version of the household food security survey module to determine household food insecurity status.
- Inconsistent definitions used to report nutrition “improvements” include “nutrition status”, “health status”, and “dietary intake.”
- Many studies were conducted outside of Canada, limiting generalizability to the Canadian context.
- Multiple search questions expanded the scope of the review and resulted in a large, diverse body of evidence which created categorization and theme challenges.

Please refer to the summary tables in *Appendix C* to find critical appraisal ratings, study designs and brief descriptions for individual articles.

Discussion

Lived Experience

> Present circumstances force me to make these difficult choices, although I would have loved to help my family eat more fruits and vegetables and milk[15]

Research consistently found that participants understood the importance of healthy eating and wanted to feed their families healthy foods;[7,9–12,15,17,21,70] however, inadequate finances prevented them from being able to afford a healthy diet.[9–16] This aligns with findings that while taste, nutritional value, cost and time are the primary factors influencing food decisions across all socioeconomic status groups,[71] for HFRI, food price is the largest influencer on their food choices.[11,19,21] Given this evidence, it is not surprising that the health benefits associated with increased nutrition knowledge were not equally found in households experiencing food insecurity.[7]

HRFI were found to employ multiple strategies to try and stretch their limited resources, such as comparing costs,[19,21,70] substituting less expensive ingredients in recipes,[12,21] using coupons[12] and stocking up on sale items.[18] There were, however, barriers to employing such strategies, including the lack of transportation to access more affordable grocery stores[11,13,15,19] and a lack of storage space to store bulk purchases.[12] Research into the shopping behaviours of those living in low-income communities also reflected these “real-life” barriers. Food-insecure participants were more likely to rely on others for transportation and travelled fewer shopping miles when compared to those who were food-secure.[72]

As fewer Canadians are making meals from scratch and many are increasingly reliant on highly processed foods,[71] the promotion of food skills (meal planning, food budgeting, food preparation) is important for all populations. However, the assumption that HRFI has poorer cooking and food preparation skills than food-secure households was not supported by primary[8] or synthesis research.[71] A review by Chenall[71] found respondents from low socio-economic groups reported greater preparation of meals from “scratch” and lower use of convenience foods compared to those from other socioeconomic status groups.

Lived experience research also highlighted how food budgeting and savvy shopping education did not help households improve their food security status. Despite employing various tactics, many respondents described having to resort to other coping strategies, such as delaying bill payments,[11,12,14,18,20] cancelling services[14] or going without food so their children could eat.[11–13,15,18,19]

Health and service providers should avoid making assumptions about the skill, knowledge, and attitudes towards healthy eating in HRFI. Research exploring perceptions of stakeholders who work with HRFI identified key discrepancies between program providers' views and those of participants in terms of their knowledge, skills and assistance needs.[16] A few researchers highlighted this critical issue. Graham[13] stated: "…the assumption that people do not make healthy choices due to knowledge deficits is problematic and renders people experiencing food insecurity as incompetent, rather than as active social agents responding pragmatically to a lack of resources."

Community Food Programs

Community food programs including community kitchens,[24] gardening,[32,33] farmers' market vouchers,[34–36] good food boxes[41] and grocery store gift cards[43] may marginally increase vegetable and fruit intake and/or variety. When community food programs were designed to give resource-constrained people nutritious food free of charge, they reported consuming the food, with the expected diet quality improvements. However, these improvements in diet were primarily while the participant was receiving the free food and it would be expected that post-program participation diet improvements are not typically sustained. Community food programs, particularly gardening, farmers' market vouchers and good food boxes may have attracted participants who already highly prioritized increasing their fruit and vegetable intake and these programs supported them in doing so.[41] Free medical or home-delivered meal programs appeared to improve recipients' overall diet quality or therapeutic diet adherence during program involvement.[44,46,47]

Research on community food programs rarely evaluated change in food insecurity status and when examined, measuring tools were not consistent between studies or lacked validation. When measured, some studies found that household food insecurity was minimally impacted by community food programs, and the sustainability of impact after the program ends was questionable.[25,26,33,34] These programs are known to have limited ability to address the economic insufficiency that leads to household food insecurity.[23] Research on free medical and home-delivered meals found improvements in participants' food insecurity status[44,46,47] as would be expected if participants receive enough free food regularly over a long period of time.

Participation in community food programs by HRFI households was often low.[8,27,28,37] Typical barriers identified by HRFI individuals for not participating in these types of programs often centred around issues relating to cost,[38–40] lack of time,[28,39] program fit,[28] awareness,[28,38] or transportation.[38,47]

Nutrition Education

The nutrition education interventions described in the literature vary. The delivery methods used to provide nutrition education included group education, individual counselling, print resources and online modules or computer programs. Group nutrition education approaches often integrated interactive activities into the program, such as cooking demonstrations, taste testing and grocery store tours.

Positive impacts on nutrition outcomes for HRFI were often reflected as changes in nutrition-related attitude and knowledge.[55,60] Interactive group nutrition education approaches[55,58,59] and interventions using tailored messages and/or "stages of change" and personalized approaches to education[51–53] reported small positive changes in nutrition-related behaviours, most often participant-reported improvements. The reported improvements in food intake, while minimal, included increased vegetable consumption,[53–55] increased fruit consumption,[53,55] increased consumption of healthy breakfast foods,[60] increased meatless-meal consumption[58,59] and reduced-fat consumption.[52] Educational programs on financial management related to food resources were not associated with improvements in household food insecurity status, despite reported improvements in individual skills, knowledge, and behaviours.[56,58,59,61]

> Like I think I need to have more in the area of fruit. We don't eat nearly as much fruit, but I can't afford the bloody fruit.[10]

Universal nutrition interventions may lead to unintended negative health impacts for HRFI, further contributing to the inequalities that exist between this population and the general public.[48] Researchers examining the role of diet quality within the health disparities experienced by HRFI have found that low-income individuals adhering to the Mediterranean diet did not experience the same cardiovascular benefits as higher-income individuals following the same diet.[73] Despite similar adherence to the dietary pattern, a gap was found in diet quality, such as the variety of produce consumed and the ability to consume fish more frequently. These differences in outcomes were related to both education levels and income. These findings demonstrated that even in the presence of healthful dietary patterns, diet-related disparities persisted among HRFI. The potential for nutrition education interventions to have differing effects by socioeconomic or food insecurity status is an issue that needs to be considered in nutrition education planning and implementation.

Policy

Canadian income-supplement based policy approaches (i.e. OAS, GIS, child benefits) were associated with reductions in the prevalence of HFI and demonstrate promise in addressing the underlying lack of income.[63–68] Research into government financial benefits to seniors link impacts on food insecurity prevalence to the predictability and stability of these benefits, in addition to the amount of income provided.[66] Researchers indicate the need to design policies that ensure predictability, stability[66] and continuity of these income supplements.[67] Indexing benefits to inflation is also recommended.[67] The strong relationship between inadequate income and household food insecurity suggests policies that improve the adequacy and stability of incomes for those who experience significant financial and material deprivation could be effective strategies.

> With my minimum wage and three children, I find it hard to manage buying food for everyone. So I feel happy even if I am able to feed them with anything.[15]

The limited research available exploring the impact of unconditional income supplements on specific health outcomes found that placing no conditions on income supplements was associated with positive results.[69] Examples of other Canadian research supporting a health impact of an unconditional approach include analysis of the 1974-79 Manitoba Basic Annual Income Experiment (MINCOME)[74] and the limited analysis completed on the Ontario Basic Income Guarantee pilot.[75]

Researchers found that political leaders when discussing food insecurity tended to focus on the negative impacts of food insecurity and address food insecurity with charitable food programs. Framing food insecurity as a hunger issue risks the suggestion of solutions and policy responses that lack coherence with current research.[76] They also found evidence that legislators have discussed food insecurity as a problem of inadequate income, indicating an opportunity for further dialogue with decision-makers around income-related interventions.[77] Canadian research supports policy increases the economic resources of low-income households, rather than food provision programs, as policy responses to reduce household food insecurity.[28,65–67,78]

Conclusion

This evidence review focused on research that reported on measured outcomes of food- and nutrition-related health and behaviours, overall health (where specific nutrition-related health data was not reported on) and household food insecurity status. The very different U.S. (food assistance programs) and Canadian (income transfers) policy responses to the issue of household food insecurity need to be acknowledged when reviewing and applying this body of research so that Canadian context-specific recommendations and next steps are developed.

Perspectives from Lived Experience

The largest barriers to healthy eating reported in lived experience research with HRFI are inadequate finances and barriers influenced by income insufficiencies such as food costs, inadequate kitchen equipment and facilities, transportation costs, and time pressures. These findings align with the overall body of evidence that supports addressing inadequate income.

> I have a family of six, with me and my husband and four children (sic) years old. We do not have a blender or a toaster and only have a few pots and pans at home.[15]

Of particular importance for providers to understand is that HRFI expresses the desire for quality food, regular/consistent food access, and the ability to participate in social practices related to food. HRFI also reports understanding the importance of healthy eating and do not have poorer food preparation, cooking skills, or nutrition knowledge than food-secure households. This finding was at odds with program provider views that HRFI does not possess adequate nutrition knowledge or aspire to a healthy pattern of eating. As with food-secure populations, HRFI has variances in their attitudes, knowledge, interest and skills, with younger age groups demonstrating lower overall knowledge and skills than older age cohorts.

Effectiveness of Strategies

Efforts to improve nutrition knowledge and dietary intake of HRFI populations reported in the literature focused on food-related skill-building, food preparation, gardening programs or nutrition education.

Community food programs and nutrition education classes that included the free provision of food were sometimes found to improve access, intake or variety of food consumed during the duration of the program. They also enhanced the enjoyment of cooking and eating, built confidence, and helped individuals develop social support networks. While these results are both positive and expected, they do not provide long-term solutions to food access or intake. Further, there are low participation rates in community food programs by HRFI and this population indicated the programs often do not meet their expressed needs. For those that do participate, there is little indication that these programs impact food insecurity status. When programs are designed as no-cost (free) and nutritionally tailored to the participant (e.g. free home-delivered meals for individuals with chronic health conditions), the expected nutritional and financial benefits of receiving ample amounts of individually tailored food, free of charge, regularly are found.

> You know, I am a very flexible and intelligent person. I know how to make substitutions and stuff. But if you don't have it, you know, you can't make something out of nothing.[12]

Nutrition education programs have an opportunity to positively impact nutrition-related behaviours, provided that they are client-centred, personalized, and emphasize participant knowledge and experience sharing. However, the research findings challenge the assumption that nutrition education strategies and activities, shown to be successful for food-secure households, will equally meet the needs of those who are food-insecure. In the absence of concurrent strategies addressing broader systemic influences, it is unclear whether the impact of the individual behaviour change obtained through nutrition education interventions leads to improvement in overall health outcomes. Nutrition education programs, including those with financial management components, have not been associated with an effect on food insecurity status.

Evidence from this review reinforces those policy decisions that yield positive changes to a household's economic circumstances are the most effective approaches to measurably impact household food insecurity. The strong Canadian policy research in this area calls for purposeful root cause strategies which address the lack of income that underlies this critical issue. Stability (permanency of the income), predictability (certainty of it being provided) and adequacy (sufficiency of the income) are important components that influence impact effectiveness. Canadian examples of these include the guaranteed income supplement for seniors and the Canada child benefit payment.

Recommendations and Implications for Practice

Reducing household food insecurity requires an income approach. These recommendations and implications for practice provide suggestions on how to best support households that are at risk of food insecurity and community stakeholders working with these populations.

Recommendations	Implications for Practice
Support the understanding that financial constraint is the key barrier to healthy eating and implementation of nutrition goals among households at risk for food insecurity Rationale: Research into the experiences of these households finds that financial constraints, not a lack of knowledge, food skills, or the desire to eat healthy, are the biggest influencers of food choices	• Ensure that strategies aimed at improving food insecurity address financial inadequacies • Ensure products are developed with the understanding that financial constraints are a key barrier to healthy eating (e.g. avoid messages that healthy eating is "easy" or "affordable") • Reduce income-related barriers to program participation (e.g. program fee, material costs, transportation, child care) • Work with community stakeholders to increase knowledge that financial constraint is the key barrier to healthy eating and plan programs with this understanding. Programs need to align with participant knowledge or expressed needs • Jointly develop nutrition goals with clients that consider household financial resources • Assist clients in accessing all available income supports (e.g. special diet funding, income tax filing, reduced transit fees, lower costs to participate in social and community events, reduced fees for recreation centres, no-fee bank accounts) • Provide perspective to multidisciplinary teams about how income inadequacy may create barriers to achieving desired outcomes and recommend avoiding the use of language such as "non-compliant," as change can be related to many factors beyond the control of the individual
Address the assumption that food insecurity is caused by a lack of nutrition knowledge or food skills Rationale: Households at risk for food insecurity report similar knowledge and skill levels as food-secure households	• Seek opportunities and develop NS products to support awareness among healthcare providers and community partners that food insecurity is not caused by a lack of nutrition knowledge or poor financial management skills (e.g. creation of 'Discussion Guides')

Recommendations	Implications for Practice
Address assumptions and beliefs that food insecurity status can be improved by nutrition education programs, including those that incorporate food-related financial management components Rationale: Food resource management education programs were not found to improve household food insecurity status	• Support community agencies in evaluating goals/objectives and outcomes of proposed or existing nutrition education programs
Incorporate tailored messages and personalized approaches into nutrition education Rationale: These approaches to education may lead to small, positive changes in nutrition behaviours	• Ensure that nutrition education: ○ Uses targeted messages with the flexibility to respond to the specific needs of the participants • Is developed in partnership with program participants/those with lived experience

Refute assumptions and beliefs that household food insecurity can be addressed by community food programs
Rationale:
The evidence does not indicate that community food programs provide households with protection from food insecurity
	• Work with community stakeholders to increase knowledge that:
	  ○ Household food insecurity cannot be eliminated by participation in food-based programs
	  ○ These programs seldom address participants' needs
	• Work with community stakeholders to explore how to best support clients who are food-insecure (e.g. increase access to income supports, this may include food programs that provide food as a proxy for income)

Challenge assumptions and beliefs about community food programs and nutrition-related health outcomes
Rationale:
Participation in community food programs do not result in a significant change in nutrition-related behaviours for individuals at risk of food insecurity beyond the obviously increased consumption of healthy foods that might be offered during the program
	• Support community agencies in evaluating goals/objectives and outcomes of proposed or existing community food programs
	• If community agencies choose to offer community food or meal programs, encourage:
	  ○ Free food provision
	  ○ Inclusion of healthy foods that participants state are unaffordable to increase their diet variety during program participation
	• Removal of participation barriers (e.g. transportation, delivery)

Recommendations	Implications for Practice
Support policy approaches that improve income (including a proxy for income) for household food insecurity Rationale: The evidence supports a policy approach that addresses income inadequacy	• Support policy work that addresses social determinants of health, particularly income inadequacy • Redirect discussions about food insecurity away from hunger and food-based solutions to income and health inequities solutions

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Appendix A. Search Planning Process and Criteria

Core Questions to Answer

1. What is the best approach (skill building, nutrition education, resources, etc.) for improving the nutritional health of households identified as food-insecure, low-income or living in poverty?
2. What is the effectiveness of programs or services for improving the nutritional health of households identified as food-insecure, low-income or living in poverty?
3. What is the best approach for improving the health equity of households identified as food-insecure, low-income or living in poverty?
4. What approaches do food-insecure, low-income, in poverty individuals report as being helpful for improving their nutritional status or dietary intake?

First Search

a) Keywords

Concept	Synonym
Food Insecurity	"food insecurity" [Keyword]; "food-insecure" [Keyword]; "household food insecurity" [Keyword]; "food-insecure household" [Keyword]; "food-insecure family" [Keyword]; "food-insecure families" [Keyword]; "household-level food insecurity" [Keyword]; "income-related food insecurity" [Keyword]; "income-level food insecurity" [keyword]
Rural or Remote Communities	"Northern Alberta" [Keyword]; "Remote Alberta" [Keyword]; "Remote locations" [Keyword]; "remote communit*" [keyword]; rural [Keyword]; "rural location" [Keyword]; "rural Alberta" [Keyword]; Rural [Keyword]; rural population [MeSH]
Cost/Cost Effectiveness	Cost* [Keyword]; costs and cost analysis [MeSH]; cost-effectiveness [Keyword]; cost-benefit analysis [MeSH]
Nutrition Education	"nutrition education" [Keyword]; "health education" [Keyword, MeSH]
Skill Building (teaching/training)	"skill building" [Keyword]; "skill enhancement" [Keyword]; "skill acquisition" [Keyword, CINAHL heading]; "skill mix" [Keyword, CINAHL heading]; "skill retention" [Keyword, CINAHL heading]; "competency assessment" [Keyword, MeSH]; teach* [Keyword]; teaching [MeSH]; training [Keyword]; training support [MeSH]; "capacity building" [Keyword, MeSH]
Health Communication[1]	"health communication" [Keyword, MeSH]; campaign [Keyword]; "mass media" [Keyword, MeSH]; "communications media" [CINAHL heading]; "social marketing" [Keyword, MeSH, CINAHL heading]; "social media" [Keyword, MeSH]; message [Keyword]; "health message" [Keyword]; "health education" [Keyword, MeSH, CINAHL heading]; "health marketing" [Keyword]; "health promotion" [Keyword, MeSH, CINAHL heading]; "social networks" [Keyword]; "resource guide*[keyword]; resource guides [MeSH]
Health Services/Community Programs/Social Support Programs	"health services" [Keyword, MeSH]; "community programs" [Keyword, MeSH]; "social support" [Keyword, MeSH]; "social support programs" [Keyword]
Community Gardens/Community Kitchens/Food Boxes	"community garden" [Keyword]; "community gardens" [Keyword]; "community kitchen" [Keyword]; "community kitchens" [Keyword]; "food box" [Keyword]; "food boxes" [Keyword]

Concept	Synonym
Vouchers	Voucher* [Keyword]; coupon* [keyword]; food assistance [MeSH]
Farmers Markets/Grocery Store Tour/Food Co-ops/Gleaning/Food Rescue/Food Hub/Food Bank/Procurement	"farmers market" [Keyword]; "farmers markets" [Keyword[; "grocery store tour" [Keyword]; "food co-op" [Keyword]; "food co-ops" [Keyword]; gleaning [Keyword]; "food rescue" [Keyword]; "food hub" [Keyword]; "food bank" [Keyword]; "food banks" [Keyword]
Nutritional Health/Health	nutrition [Keyword]; "nutritional status" [Keyword, MeSH]; "nutritional health" [Keyword]; health [MeSH]
Malnutrition	Malnutrition [Keyword, MeSH]
Healthy Eating Behaviour	"healthy eating" [Keyword]; food habits [MeSH]; "food habit" [Keyword]; "food habits" [Keyword, MeSH]]; "healthy diet" [Keyword]; "eating behavior" [Keyword]; "eating behaviour" [Keyword]; "eating behaviors" [Keyword]; "eating behaviours" [Keyword]
Health Literacy	"health literacy" [Keyword, MeSH]

[1]Several synonyms for health communication were included, but the more general keywords, such as intervention, strategy, forum, channel, etc were left out. These terms are often implied in the results, but using them as keywords would generate too many irrelevant hits.

b) Suggested Keyword Search Strings

1. ("food insecurity" OR "food-insecure" OR "household food insecurity" OR "food-insecure household" OR "food-insecure family" OR "food-insecure families" OR "household-level food insecurity" OR "income-level food insecurity" OR "income-related food insecurity") AND (cost* OR "cost analysis" OR cost-effectiveness OR "cost-benefit analysis") AND (nutrition OR "nutritional status" OR "nutritional health" OR malnutrition OR health OR "healthy eating" OR "food habits" OR "food habit" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours" OR "health literacy")

2. ("food insecurity" OR "food-insecure" OR "household food insecurity" OR "food-insecure household" OR "food-insecure family" OR "food-insecure families" OR "household-level food insecurity" OR "income-level food insecurity" OR "income-related food insecurity") AND ("Northern Alberta" OR "Remote Alberta" OR "Remote locations" OR "remote communit*" OR rural OR "rural location" OR "rural Alberta" OR "rural population") AND (nutrition OR "nutritional status" OR "nutritional health" OR malnutrition OR health OR "healthy eating" OR "food habits" OR "food habit" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours" OR "health literacy")

3. ("food insecurity" OR "food-insecure" OR "household food insecurity" OR "food-insecure household" OR "food-insecure family" OR "food-insecure families" OR "household-level food insecurity" OR "income-level food insecurity" OR "income-related food insecurity") AND ("skill building" OR "skill enhancement" OR "skill acquisition" OR "skill mix" OR "skill retention" OR "competency assessment" OR teach* OR training OR "training support" OR "capacity building") AND (nutrition OR "nutritional status" OR "nutritional health" OR malnutrition OR health OR "healthy eating" OR "food habits" OR "food habit" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours" OR "health literacy")

4. (“food insecurity” OR “food-insecure” OR “household food insecurity” OR “food-insecure household” OR “food-insecure family” OR “food-insecure families” OR “household-level food insecurity” OR “income-level food insecurity” OR “income-related food insecurity”) AND (“nutrition education” OR “health education” OR “health literacy”) AND (nutrition OR “nutritional status” OR “nutritional health” OR malnutrition OR health OR “healthy eating” OR “food habits” OR “food habit” OR “healthy diet” OR “eating behavior” OR “eating behaviour” OR “eating behaviors” OR “eating behaviours” OR “health literacy”)
5. (“food insecurity” OR “food-insecure” OR “household food insecurity” OR “food-insecure household” OR “food-insecure family” OR “food-insecure families” OR “household-level food insecurity” OR “income-level food insecurity” OR “income-related food insecurity”) AND (“health services” OR “community program” OR “community programs” OR “social support” OR “social support program” OR “social support programs”) AND (nutrition OR “nutritional status” OR “nutritional health” OR malnutrition OR health OR “healthy eating” OR “food habits” OR “food habit” OR “healthy diet” OR “eating behavior” OR “eating behaviour” OR “eating behaviors” OR “eating behaviours” OR “health literacy”)
6. (“food insecurity” OR “food-insecure” OR “household food insecurity” OR “food-insecure household” OR “food-insecure family” OR “food-insecure families” OR “household-level food insecurity” OR “income-level food insecurity” OR “income-related food insecurity”) AND (“community garden” OR “community gardens” OR “community kitchen” OR “community kitchens” OR “food box” OR “food boxes”) AND (nutrition OR “nutritional status” OR “nutritional health” OR malnutrition OR health OR “healthy eating” OR “food habits” OR “food habit” OR “healthy diet” OR “eating behavior” OR “eating behaviour” OR “eating behaviors” OR “eating behaviours” OR “health literacy”)
7. (“food insecurity” OR “food-insecure” OR “household food insecurity” OR “food-insecure household” OR “food-insecure family” OR “food-insecure families” OR “household-level food insecurity” OR “income-level food insecurity” OR “income-related food insecurity”) AND (“health communication” OR campaign OR “mass media” OR “communications media” OR “social marketing” OR “social media” OR message OR “health message” OR “health marketing” OR “health promotion” OR “social networks” OR “resource guide” OR “resource guides”) AND (nutrition OR “nutritional status” OR “nutritional health” OR malnutrition OR health OR “healthy eating” OR “food habits” OR “food habit” OR “healthy diet” OR “eating behavior” OR “eating behaviour” OR “eating behaviors” OR “eating behaviours” OR “health literacy”)
8. (“food insecurity” OR “food-insecure” OR “household food insecurity” OR “food-insecure household” OR “food-insecure family” OR “food-insecure families” OR “household-level food insecurity” OR “income-level food insecurity” OR “income-related food insecurity”) AND (voucher* OR coupon* OR “food assistance”) AND (nutrition OR “nutritional status” OR “nutritional health” OR malnutrition OR health OR “healthy eating” OR “food habits” OR “food habit” OR “healthy diet” OR “eating behavior” OR “eating behaviour” OR “eating behaviors” OR “eating behaviours” OR “health literacy”)
9. (“food insecurity” OR “food-insecure” OR “household food insecurity” OR “food-insecure household” OR “food-insecure family” OR “food-insecure families” OR “household-level food

insecurity" OR "income-level food insecurity" OR "income-related food insecurity") AND ("farmers market" OR "farmers markets" OR "grocery store tour" OR "food co-op" OR "food co-ops" OR gleaning OR "food rescue" OR "food hub" OR "food bank" OR "food banks") AND (nutrition OR "nutritional status" OR "nutritional health" OR malnutrition OR health OR "healthy eating" OR "food habits" OR "food habit" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours" OR "health literacy")

Second Search

a) Keywords

Concept	Synonym
Food insecurity Low-income Poverty	"food insecurity" [Keyword]; "food-insecure" [Keyword]; "household food insecurity" [Keyword]; "food-insecure household" [Keyword]; "food-insecure family" [Keyword]; "food-insecure families" [Keyword]; "household-level food insecurity" [Keyword]; "income-related food insecurity" [Keyword]; "income-level food insecurity" [keyword]; "low-income" [keyword]; "poverty" [keyword]
Grocery shopping	"Grocery shopping" [Keyword]; "food purchas*" [Keyword]; "grocery store tours" [Keyword]; "food choices" [Keyword]; "fast food" [Keyword]; "grocery purchases"; "food purchasing behaviour"; "food shopping"
Budgeting	"budgeting"[Keyword]; "budget*"[Keyword]; "saving money" [Keyword]; "financial literacy" ; "money management"; "financial planning"
Health equity	"Health equity" [Keyword]; "health equality"; "health equalities"; "equity"
Food literacy	"food skills" [Keyword]; "cook*" [Keyword]; "food preparation" [Keyword]; "label reading" [Keyword]; "food values" [Keyword]; "food beliefs" [Keyword]; "food attitudes" [Keyword]; "food knowledge" [Keyword]; "food preparation"; "cooking skills"; nutrition knowledge
Nutritional health/health	nutrition [Keyword]; "nutritional status" [Keyword, MeSH]; "nutritional health" [Keyword]; health [MeSH]
Healthy eating behaviour	"healthy eating" [Keyword]; food habits [MeSH]; "food habit" [Keyword]; "food habits" [Keyword, MeSH]]; "healthy diet" [Keyword]; "eating behavior" [Keyword]; "eating behaviour" [Keyword]; "eating behaviors" [Keyword]; "eating behaviours" [Keyword]

b) Suggested Keyword Search Strings

1. ("food insecurity" OR "food-insecure" OR "household food insecurity" OR "food-insecure household" OR "food-insecure family" OR "food-insecure families" OR "household-level food insecurity" OR "income-level food insecurity" OR "income-related food insecurity" OR "low-income" OR "poverty") AND (grocery shopping including mesh terms) AND (nutrition OR "nutritional status" OR "nutritional health" OR malnutrition OR health OR "healthy eating" OR "food habits" OR "food habit" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours" OR "health literacy")

2. ("food insecurity" OR "food-insecure" OR "household food insecurity" OR "food-insecure household" OR "food-insecure family" OR "food-insecure families" OR "household-level food insecurity" OR "income-level food insecurity" OR "income-related food insecurity" OR "low-income" OR "poverty") AND ("budgeting include mesh terms) AND (nutrition OR "nutritional status" OR "nutritional health" OR malnutrition OR health OR "healthy eating" OR "food

habits" OR "food habit" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours" OR "health literacy")

3. ("food insecurity" OR "food-insecure" OR "household food insecurity" OR "food-insecure household" OR "food-insecure family" OR "food-insecure families" OR "household-level food insecurity" OR "income-level food insecurity" OR "income-related food insecurity" OR "low-income" OR "poverty") AND ("health equity"include mesh terms) AND (nutrition OR "nutritional status" OR "nutritional health" OR malnutrition OR health OR "healthy eating" OR "food habits" OR "food habit" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours" OR "health literacy")
4. ("food insecurity" OR "food-insecure" OR "household food insecurity" OR "food-insecure household" OR "food-insecure family" OR "food-insecure families" OR "household-level food insecurity" OR "income-level food insecurity" OR "income-related food insecurity" OR "low-income" OR "poverty") AND ("food literacy" include mesh terms) AND (nutrition OR "nutritional status" OR "nutritional health" OR malnutrition OR health OR "healthy eating" OR "food habits" OR "food habit" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours" OR "health literacy")

Third Search

a) Keywords

Concept	Synonym
Low-income Poverty Socioeconomic Class Inequity Inequality Vulnerable populations	"low-income" [Keyword]; "poverty" [keyword]
Health equity	"Health equity" [Keyword]; "health equality"; "equity"
Intervention	Intervention, Best Practice, Strategy, Program, Services, Counselling, Counseling
Health Healthy diet Eating Nutrition	"healthy diet" [Keyword, MeSH]; "dietary intake" [Keyword]; "healthy eating" [Keyword]; "health"; "eating behaviour*"; "eating behavior*"

b) Suggested Keyword Search Strings

1. ("low socioeconomic status" OR "low socioeconomic class" OR "vulnerable populations" OR "low-income" OR "poverty") AND ("intervention" OR "service*" OR "best practice" OR "counselling" OR "counseling" OR "program" OR strategy) AND ("nutritional status" OR "nutritional health" OR "health" OR "healthy eating" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours")
2. ("health equity" OR "health equality" OR "equity") AND ("intervention" OR "service*" OR "best practice" OR "counselling" OR "counseling" OR "program" OR strategy) AND ("nutritional status" OR "nutritional health" OR "health" OR "healthy eating" OR "healthy diet" OR "eating behavior" OR "eating behaviour" OR "eating behaviors" OR "eating behaviours")

Databases Searched

MEDLINE, PubMed, PubMed Central/NLM Gateway, EMBASE, CINAHL, Cochrane Library, ERIC, Communication Abstracts, Communication and Mass Media Complete, Education Research Complete, Evidence-Based Medicine Reviews, PsycINFO, Psychology & Behavioral, Sciences Collection, Scopus, Social Work Abstracts, Psychology & Behavioral Sciences Collection, SocINDEX with Full Text and Web of Science.

Grey literature sites searched included: Dietitians of Canada (including Practice-based Evidence in Nutrition® [PEN]), Online Dietitians Database, Health Evidence, Turning Research into Practice (TRIP), OpenDOAR, Health Sciences Online (HSO), OAISter, Public Health Agency of Canada (PHAC), Health Canada, Canadian Institute for Health Information (CIHI), Canadian Institutes of Health Research (CIHR), National Institutes of Health (NIH), PROOF (Research to Identify Policy Options to Reduce Food Insecurity).

Appendix B. Inclusion/Exclusion Criteria

Component	Inclusion Criteria	Exclusion Criteria
Language	English	Non-English
Publication Date	1995 to 2018 (printed or on-line)	Prior to 1995
Population	Populations described as living in conditions of poverty, low-income or food insecurity	Populations at low risk for household food insecurity (e.g. high income)
Geography	Western, higher-income countries (previously termed developed countries). Included: Canada, U.S., European countries (e.g. U.K., Italy, Germany, Holland, etc), Australia, New Zealand, Scandinavian countries (e.g. Denmark, Norway, Sweden, Finland)	Low-income and middle-income countries
Outcomes measured	Articles that either: 1) Report on the lived experiences of individuals or households or care providers working with these populations related to food knowledge, skills, behaviour and acquisition 2) Evaluate change in the nutritional health (e.g. dietary intake, knowledge, beliefs, behaviours related to nutrition) or food security status outcomes as a result of a policy, strategy, program or project. 3) Describe the facilitators and barriers of participating in the measured strategy	• Articles that describe the impact of food insecurity on health but do not measure outcomes of a policy, strategy, program or project. E.g. Articles describing prevalence data, trends and impacts of food insecurity on health • Articles that postulate/recommend a strategy that is unrelated to the outcomes the article actually measures • Universal and targeted school meal and/or snack programs excluded due to Nutrition Services evidence reviews completed on the topic • Emergency food provision (e.g. food banks, soup kitchens) due to primary focus on food provision • Programs specific to the U.S. food assistance approach to household food insecurity [e.g. U.S. National Food Assistance Programs such as National School Lunch Breakfast or snack program, Women Infant and Children (WIC), Supplemental Nutrition Assistance Program (SNAP)]
Study Type	• Articles published in a peer-reviewed journal. Qualitative or mixed methods articles that report on food-related knowledge, attitude and behaviours of populations identified as food-insecure, low-income or living in poverty • Quantitative articles that include a method to compare the impact of a policy/strategy/ program/project (e.g. randomized control trial, cohort, quasi-experimental design, cross-sectional-analytic, etc)	Narratives, opinion papers, conference proceedings, books, magazine articles, poster presentations

Appendix C. Article Summary Tables

CA = Critical Approach

Lived Experience	
Buck-McFadyen, E. V. (2015). Rural food insecurity: When cooking skills, homegrown food, and perseverance aren't enough to feed a family. *Canadian Journal of Public Health / Revue Canadienne De Santé Publique, 106*(3), e14-e146. doi:10.17269/CJPH.106.4837	**CA:** None **Study Design:** Qualitative - Semi-structured interviews **Country:** Canada **Participants:** 7 mothers living with food insecurity in rural southern Ontario **Description:** Semi-structured interviews were used to explore the experiences of rural families dealing with food insecurity, as well as strategies used to stretch their limited resources. **Outcome:** Participants described stress related to living with food insecurity as well as a sense of shame at having to access social assistance. Strategies used to stretch resources included cooking from scratch, growing produce, stocking up on sale items, hunting and fishing, using leftovers, paying half-bills, and going without prescription medications. Many participants also described going without food so that their children could eat first. Although social cohesion and resource sharing (food, money, transportation) were benefits of rural living, participants also reported barriers, such as limited employment opportunities, a lack of public transportation, and difficulty navigating social supports.
Dachner, N., Ricciuto, L., Kirkpatrick, S. I., & Tarasuk, V. (2010). Food purchasing and food insecurity among low-income families in Toronto. *Canadian Journal of Dietetic Practice and Research, 71*(3), e5-e56. doi:10.3148/71.3.2010.e50	**CA:** None **Study Design:** Qualitative – In-depth interviews **Country:** Canada **Participants**: 485 families residing in high-poverty Toronto neighbourhoods **Description: I**nterviewer-administered surveys were conducted to understand the factors underlying food-purchasing decisions. Food insecurity status was assessed using questions from the Canadian Household Food Security Survey Module (HFSSM), using a 30-day time-frame. **Outcome:** 22% of households had been severely food-insecure while 10% had been moderately food-insecure in the previous 30 days. Though preference, quality, and health were considered in food purchasing decisions, price was the biggest factor, especially as the severity of food insecurity increased. Paying rent was often the priority, while food costs and bill payments were seen as more flexible. Respondents engaged in thrifty food shopping practices, such as shopping at discount supermarkets, taking advantage of flyers and sales, budgeting and sticking to a shopping list, comparison shopping, purchasing cheaper cuts of meat, and buying in bulk. At home, respondents reported cooking from scratch, getting creative with leftovers, using fillers (i.e. potatoes, noodles) to stretch meals, and using canned foods.
Dave, J. M., Thompson, D. I., Svendsen-Sanchez, A., & Cullen, K. W. (2017). Perspectives on barriers to eating healthy among food pantry clients. *Health Equity, 1*(1), 28-34. doi:10.1089/heq.2016.0009	**CA:** None **Study Design:** Qualitative – Focus Groups; Interviews **Country:** USA **Participants:** 54 adults with at least one child, accessing food pantries in Houston **Description:** Participants completed a paper survey, which included demographics, the 6-item USDA HFSSM, a food bank usage questionnaire, and a home food availability checklist. Height and weight were also measured and BMI was calculated. Semi-structured interviews were then conducted to explore perceived barriers to healthy eating as well as beliefs about topics, such as obesity and chronic disease. **Outcome:** All participants reported being food-insecure with 60% reporting very low food security. Most participants wanted to eat healthy and were concerned about obesity and chronic diseases for themselves and their families. Reported barriers to healthy eating included financial uncertainty, cost of healthy food, rationing food within the family, lack of time, transportation, inadequate

Lived Experience	
	kitchen equipment, nutrition knowledge and skills, and a lack of a social support network. Most parents, especially mothers, sacrificed their own intake when food was scarce. Most participants used a combination of stores, discount coupons, and sales to obtain food. Although older participants reported having the knowledge and skills to cook fresh food, most of the younger participants reported otherwise.
Dowler, E. (1997). Budgeting for food on a low-income in the UK: The case of lone-parent families. *Food Policy, 22*(5), 405-17. doi:10.1016/S0306-9192(97)00031-6	**CA:** Weak **Study Design:** Qualitative – Review **Country:** UK **Participants:** 9 articles **Description:** 9 articles were reviewed for strategies lone-parent families use to manage tight budgets in relation to food expenditures. Most studies used face-to-face interviews. The majority used a semi-structured questionnaire, but some included open-ended questions. The findings were both quantitative and qualitative. **Outcome:** The difficulty in standardizing a definition of "good budgeting" in research was discussed. Many studies reported that food was seen as one of the most important expenditures, sometimes even above rent. Despite a desire for fresh, healthy food, price ultimately governed food choices, and shopping for food was described as a negative experience for many. A number of strategies were used to reduce food costs, such as shopping at discount stores, relying on sale items, using cooperatives, buying only food the family was sure to eat, and relying on cheap convenience foods. Bulk buying was sometimes used, but it was also noted to be limited by lack of income or avoided as a way to moderate household intake. Lack of transportation to stores was noted to force those on low-income to shop at small, more expensive, nearby stores. When cash was needed for other expenditures, food costs could be reduced by relying on stocked items or by eating with friends or family. Women in particular would reduce their own consumption to spare their children. The main factors differentiating nutritional outcomes were poor material circumstances, rather than personal beliefs and skills. Although respondents who shopped at discount stores had worse nutritional outcomes, this was also correlated with the lowest incomes. Respondents who identified looking for "fresh, healthy food" or "value for money" had better nutritional outcomes when controlled for income.
Eikenberry, N., & Smith, C. (2004). Healthful eating: Perceptions, motivations, barriers, and promoters in low-income Minnesota communities. *Journal of the American Dietetic Association, 104*(7), 1158-61. doi:10.1016/j.jada.2004.04.023	**CA:** Weak **Study Design:** Qualitative – Self-administered survey **Country:** USA **Participants:** 796 low-income households from 2 rural / 2 urban low-income communities in Minnesota **Description:** Studied how various segments of the population define healthy food, and identified motivations, barriers, and promoters of healthful eating using a self-administered survey. The survey was developed based on literature review and focus groups, reviewed by experts for face validity, and pilot tested with representative sample from each of the four communities. **Outcome:** Fruits and vegetables were the most commonly identified "healthy food" among all participants. "Health" was the most frequently reported motivator for healthy eating. "Time", "cost", and "money situation" were the most commonly cited barriers, though "taste" and "picky" were also frequently identified. Although half of the top 16 promoters/enablers of healthy eating were federal or local food assistance programs, "family" and "how I was raised" were the most commonly reported. Food shelf, food stamps, and gardens were also commonly reported promoters.
Graham, R., Stolte, O., Hodgetts, D., & Chamberlain, K. (2018). Nutritionism and	**CA:** None **Study Design:** Qualitative – Observations, formal interviews, casual conversations **Country:** New Zealand **Participants:** Households attending a weekly charitable meal

Lived Experience	
the construction of 'poor choices' in families facing food insecurity. *Journal of Health Psychology, 23*(14), 1863-71. doi:10.1177/1359105316669879	**Description:** The everyday experiences of families facing food insecurity were examined through informal observations and conversations with staff and participants at a weekly charitable meal over 12 months, as well as photo-elicitation interviews, shop-along excursions, and two sit-down conversations with five of the households. **Outcome:** Participants described the experiences of growing up and living with food insecurity, strategies used to stretch their resources, and the impact food insecurity had on their lives. Participants were noted to buy inexpensive items that required minimal cooking and inexpensive fillers, such as pasta, that would bulk up meals. One participant reported difficulty accessing food stores and had to rely on foods from the local convenience store. Difficult choices between necessities were described. For example, having to choose between buying food and heating the house. Many participants described going hungry to allow more for their children. Some participants reported relying on charities, such as community meals and free packed lunches, as well as food from friends or family, to stretch their limited resources. The strain of food insecurity was also noted to cause tensions within the family and social isolation.
Hamelin, A., Mercier, C., & Bédard, A. (2008). Perception of needs and responses in food security: Divergence between households and stakeholders. *Public Health Nutrition, 11*(12), 1389-96. doi:10.1017/S1368980008003406	**CA:** None **Study Design:** Qualitative - Semi-structured interviews **Country:** Canada **Participants:** 55 food-insecure households and 59 stakeholders who worked directly with food-insecure clients or programs that supported food insecurity activities (i.e. community workers, managers, donor agencies) in Quebec **Description:** Semi-structured interviews were used to compare responses of food-insecure households and stakeholders at describing the needs of food-insecure households and their perspectives on the community programs. A sociodemographic questionnaire as well as three questions about food insecurity from the Canadian Community Health Survey were also included. **Outcome:** 100% of the households had food insecurity. Both households and stakeholders identified adequate food and diet quality as highly important; however, households were more likely to emphasize the need for quality food, regular access, and a food situation that would permit them to assume their social roles, whereas stakeholders were more likely to report that the main priority was a basic quantity of food. Though both groups identified adequate financial resources as essential to food security, 51% of the stakeholders believed that individuals with food insecurity lacked the desire, skill, or knowledge to eat healthy, while this was only identified by 5% of the food-insecure participants. 56% of the program providers compared to 24% of participants perceived a need for services such as food donations and collective kitchens**.** Despite many stakeholders assuming their programs were meeting participant needs, many households attending the programs reported otherwise.
Hoisington, A., Shultz, J. A., & Butkus, S. (2002). Coping strategies and nutrition education needs among food pantry users. *Journal of Nutrition Education and Behavior, 34*(6), 326-33. doi:10.1016/S1499-4046(06)60115-2	**CA:** Moderate **Study Design:** Qualitative - Focus groups **Country:** USA **Participants:** 90 food bank users with children from 9 locations within Washington State **Description:** Studied barriers to obtaining food, strategies for coping with food insecurity, and nutrition education needs through focus groups. Discussion guide for focus group created by research firm and pilot tested in a women's group affiliated with one of the food banks. A written questionnaire included demographics, as well as the 6-item USDA HFSSM. **Outcome:** Participants were concerned about nutrition and wanted to purchase and eat healthy foods; however, numerous participants expressed that it was difficult to consider nutrition when the family was hungry. Some participants reported having to make a choice between food and other needed supplies or services, and adults often reported cutting back to ensure their children

Lived Experience	
	had enough. Coping strategies included buying sale items, reducing or eliminating expensive ingredients, substituting cheaper ingredients and fillers, using coupons, eating left overs, buying and cooking in bulk, and freezing for later use. Many also looked for atypical sources, such as emergency foods, shared meals, trading labor for food, or trading food to increase variety. In one rural location, domestic food production (canning or preserving, hunting and fishing, raising meat, food gathering and foraging) activities were critical. Other coping strategies included sharing duties and taking turns with family members, preparing meals ahead of time, or choosing foods that were quick and easy to prepare. Barriers to coping strategies included inability to use food stamps at discount stores, inability to afford newspapers to obtain coupons, lack of storage space, picky eaters in the family, and time constraints juggling work, school, or both. Time and emotional constraints led many households to rely on highly processed convenience foods that were appetizing and quick to prepare. Out of seven predetermined options, the top choice selected for nutrition education was "shopping and stretching food dollars".
Huisken, A., Orr, S. K., & Tarasuk, V. (2016). Adults' food skills and use of gardens are not associated with household food insecurity in canada. *Canadian Journal of Public Health / Revue Canadienne De Santé Publique, 107*(6), 526.	**CA:** None **Study Design:** Quantitative - Cross-sectional survey **Country:** Canada **Participants:** 10 000 respondents **Description:** Analysis of data from the 2012 and 2013 Canadian Community Health Survey. **Outcome:** Only 25% of adults in food-insecure households reported using a home or community garden for food compared with 43.5% of those in food-secure households. Gardening was not shown to be protective against household food insecurity.
Law, I. R., Ward, P. R., & Coveney, J. (2011). Food insecurity in south australian single parents: An assessment of the livelihoods framework approach. *Critical Public Health, 21*(4), 455-69. doi:10.1080/09581596.2011.619963	**CA:** None **Study Design:** Qualitative - Semi-structured interviews **Country:** Australia **Participants:** 8 low-income lone parent families **Description:** Semi-structured interviews were used to study the skills, strategies, and resources participants used to attain or strive for food security. **Outcome:** Participants described the various lifestyle demands of supporting children alone, including extensive demands on time, resources spent on childcare, limited income, and the challenges of balancing work, necessities of daily living, and parenting. Respondents consistently reported income as the dominant, and usually the only factor that limited food purchases. Despite this, they discussed pride in thriftiness and the value they placed on providing healthy and nutritious food for their families, and the importance of fruits and vegetables and eating a balanced diet was reported. Friends and family bringing homegrown food, like eggs or vegetables, as well as amicable relationships with store owners, was reported to facilitate food access. All respondents reported sufficient access to nearby supermarkets and depended on cars for transportation. Storage and freezer space were generally adequate and were seen as a crucial to buy bulk and freeze meals to reduce cost and waste. Though some had gardens and fruit trees, these seemed to contribute minimally to their diets. Respondents identified knowledge and skills that enabled them to improve their food security, such as bargain hunting, evaluating "specials", and knowing stores in the area. Many respondents were limited by their health, such as having difficulty shopping, lifting large or bulk items, and dietary restrictions. For others, particularly working parents, time was a large barrier.

Lived Experience	
Lombe, M., Nebbitt, V. E., Sinha, A., & Reynolds, A. (2016). Examining effects of food insecurity and food choices on health outcomes in households in poverty. *Social Work in Health Care, 55*(6), 440-60. doi:10.1080/00981389.2015.1133469	**CA:** Weak **Study Design:** Quantitative - cross-sectional survey **Country:** USA **Participants:** 2171 low-income households who were participating in SNAP **Description:** Data from 2007-2008 National Health and Nutrition Examination Survey (NHANES) was used to determine whether household food insecurity (10-item USDA HFSSM), SNAP participation, and access to informal supports, such as food banks, was associated with health risk among low-income adults participating in SNAP. Diet-related health risk (self-reported hypertension, diabetes, and body mass index) and malaise (physical health, mental health, and anxiety) was combined to create an overall health risk score. The impact of nutrition knowledge, via reported use of MyPyramid, on health risk was also examined. Food insecurity was categorized into "food-secure" or "food-insecure" (low and very low food security). **Outcome:** While nutrition knowledge about MyPyramid was associated with improved health risk in food-secure households, this effect was not seen in food-insecure households. Use of informal food supports, such as food banks, was associated with increased malaise.
Lovelace, S., & Rabiee-Khan, F. (2015). Food choices made by low-income households when feeding their pre-school children: A qualitative study. *Maternal & Child Nutrition, 11*(4), 870-81. doi:10.1111/mcn.12028	**CA:** None **Study Design:** Qualitative - Semi-structured interviews **Country:** UK **Participants:** 11 low-income mothers of preschool-aged children **Description:** A semi-structured interview was used to explore the socio-economic, cultural, and environmental influences behind food choices mothers made when feeding their preschool children. The interview questions were piloted and modified before being used in the study. **Outcome:** All parents expressed wanting to feed their child a healthy diet. They reported getting information from professionals, family members, and using their own personal knowledge. All mothers introduced solid food before 6 months, usually because they felt the baby was hungry. Most fed their children commercial baby foods, assuming that they were nutritionally balanced if marketed to children. Some were not aware that they could offer table foods and all but one thought that commercial food was cheaper. Most parents gave juice, either because they felt it was healthy or because they were concerned about low water intake. All parents were aware that children should eat fruits and vegetables and low salt; however, further probing revealed that parents weren't always aware of how to read labels and choose these types of foods. Though many believed they were offering nutritious meals, further details indicated that most were high fat, high salt, low-nutrient foods. Similarly, despite reporting cooking from scratch, most meant adding jarred sauce to raw ingredients. Although Healthy Start vouchers were reported to increase fruit and vegetable intake, many were not claiming them due to difficulties obtaining them. All families lived within 2 miles of a major supermarket, so difficulty accessing shops was not an issue. The cost of food, particularly fresh vegetables, was reported as a barrier and many economized by using frozen.

Lived Experience	
McLaughlin, C., Tarasuk, V., & Kreiger, N. (2003). An examination of at-home food preparation activity among low-income, food-insecure women. *Journal of the American Dietetic Association, 103*(11), 1506-12. doi:10.1016/S0002 [doi]	**CA:** Moderate **Study Design:** Qualitative – In-person interviews **Country:** Canada **Participants:** 153 women with a child under 15 using charitable food assistance programs in Toronto **Description:** A secondary analysis of 1996 – 1997 data, obtained from three 24-hour recalls and interviewer-administered questionnaires, was used to examine the relationship between food preparation, food and nutrient intake, diet quality, and 30-day household food security status. Household food security status for the previous 12 months and previous 30 days was determined from the Canadian HFSSM. Complexity of food preparation was calculated using an internally validated regression equation. Food preparation from scratch was defined as a home-prepared dish that included multiple ingredients and used one or more standard cooking techniques. **Outcome:** During the three days of observation, 97% consumed foods prepared from scratch at least once and 57% did so for all three days. Both the frequency and complexity of at-home food preparation were positively related to women's energy and nutrient intakes and their consumption of all food groups. The intakes of women in households with food insecurity with hunger reflected less complex food preparation, but no less preparation from scratch, than women with food insecurity without hunger evident.
Sim, S. M., Glanville, N. T., & McIntyre, L. (2011). Food management behaviours: In food-insecure, lone mother-led families. *Canadian Journal of Dietetic Practice and Research : A Publication of Dietitians of Canada = Revue Canadienne De La Pratique Et De La Recherche En Dietetique : Une Publication Des Dietetistes Du Canada, 72*(3), 123-9. doi:10.3148/72.3.2011.123	**CA:** Moderate **Study Design:** Qualitative – Semi-structured Interviews **Country:** Canada **Participants:** 24 low-income, food-insecure lone mothers in Atlantic Canada **Description:** The household food management behaviours and the relationships between these behaviours and diet quality were examined using data from the Hungry Mothers of Barely Fed Children study. This included Dietitian-administered surveys, 24-hour recalls, and ethnographic, semi-structured interviews. The Radimer/Cornell questionnaire was modified to categorize households into mild, moderate, or severe food insecurity. Healthy Plate Scores were determined using data from the 24 hour recalls of supper meals. Thematic analysis was used to identify five distinct food management behaviours, which were then used to assign a family behaviour score (FBS). **Outcome:** The primary source of income for 92% of the sample was social assistance. All families relied on no-cost food from sources such as food banks, friends and family members, hunting and gardening, and food vouchers. The Family Behaviour Score (FBS) was strongly positively correlated with the average family Healthy Plate Score (HPS). The HPS score was higher in families where food management behaviours included authoritative, healthism, and planning behaviours. Authoritative behaviour was associated with improved average HPS of mothers and older children, but not younger children. Families experiencing severe food insecurity were more likely to have a structured management behaviour. This was defined as having formal structure and routines surrounding eating practices (i.e. place and time of eating are pre-determined).
Stevens, C. A. (2010). Exploring food insecurity among young mothers (15-24 years). Journal for Specialists in Pediatric Nursing: JSPN, 15(2), 163-71.	**CA:** Moderate **Study Design:** Qualitative - Semi-structured interviews **Country:** USA **Participants:** 21 young mothers (15–24 years) who were the household head **Description:** Studied the experience of food insecurity of young mothers and identified strategies used to manage food-insecure periods through semi-structured interviews. Food Insecurity status was assessed using the 30 day, 18-item USDA FSSM. Cognitive interviews were conducted to assess comprehension of the survey questions.

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doi://dx.doi.org/10.1111/j.1744-6155.2010.00235.x	**Outcome:** 76% reported food insecurity, 23% reported marginal food insecurity. The four factors that participants identified as contributing to food insecurity was income, affordable food sources, housing, and transportation. All reported that healthy food for their children was their most important issue and experiencing food insufficiency so their children could eat. Many made choices between food and bills and described a balancing act to address the issues of food and housing. Many reported getting food from extended family and network, and 11 reported they ran out of food because they shared with other poor family members. Reported difficulty accessing affordable food stores and participants with a car reported driving to lower cost food stores. All were aware of obesity and health risks, but noted that the price of food dictated their choices. Many used multiple strategies to address food insecurity during the month, such as planning ahead and buying food with a long shelf-life, budgeting, using food banks, and accessing external federal sources and family members to supplement incomes. Many indicated embarrassment and feelings of judgement when accessing aid agencies. All participants had trouble understanding and responding to the food security survey. Those with the lowest food security reported unstable housing and moved frequently
Tarasuk, V. S. (2001). Household food insecurity with hunger is associated with women's food intakes, health and household circumstances. The Journal of nutrition, 131(10), 2670-2676.	**CA:** None **Study Design:** Qualitative - In-person interviews **Country:** Canada **Participants:** 153 women with a child under 15, from 21 emergency food hamper programs in Toronto **Description:** 3 interviewer-administered 24-hour recalls and 3 separate questionnaires were conducted with each woman to analyze the relationship between household food insecurity with hunger and food intake, self-reported health, social isolation, and social support. The circumstances precipitating acute food shortages and actions taken in response were also explored. Food insecurity was assessed using the Core HFSSM (excluded question on weight loss). **Outcome:** Women reporting food insecurity with hunger reported lower intakes of vegetables & fruit and meat & alternatives than those in households with no hunger evident. Women with long-standing health conditions or an activity-limiting condition were 2 – 3 times more likely to have reported food insecurity with hunger. 64% reported feeling isolated and alone most of the time and this was positively associated with moderate or severe hunger. The circumstances that women identified as precipitating acute food shortages included acute or chronically inadequate income, the need to meet additional, unusual expenditures, and the need to pay for other services or accumulated debts. Women who reported delaying bill payments, giving up services, selling or pawning possessions, or sending children to a friend or relatives home for a meal, were more likely to report household food insecurity with hunger.
Walker, R. E., & Kawachi, I. (2012). Use of concept mapping to explore the influence of food security on food buying practices. *Journal of the Academy of Nutrition and Dietetics, 112*(5), 711-7. doi:10.1016/j.jand.2011.12.020 [doi]	**CA:** Moderate **Study Design:** Qualitative - Concept mapping approach **Country:** USA **Participants:** 26 food-secure and 41 food-insecure participants **Description:** Examined the perceptions and preferences driving food purchasing behaviors of households with food security vs food insecurity using a mixed methods approach including 3 concept mapping sessions in each of four different communities. **Outcome:** Participants identified 163 unique factors that hindered healthy eating, which were then grouped into 8 clusters: time factors, health consciousness, personal decisions, special occasions, crime and safety, budget considerations, shopping concerns, and corner convenience. Average cluster ratings were similar between participants with food security and food insecurity; however, participants with food security rated "corner convenience" and "personal decisions" as more important and "time factors" and "crime"

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	as less important to hindering healthy eating, compared to those who were food-insecure. Average cluster ratings were almost identical for “shopping concerns”, “budget considerations”, and “special occasions”. When asked to rank their importance, three of the clusters were ranked the same between groups – “corner convenience” was ranked highest, “shopping concern” was ranked fourth, and “crime and safety” was ranked last.

Community Food Programs: Community Kitchens and Cooking	
Engler-Stringer, R., & Berenbaum, S. (2005). Collective kitchens in canada: A review of the literature. *Canadian Journal of Dietetic Practice and Research : A Publication of Dietitians of Canada = Revue Canadienne De La Pratique Et De La Recherche En Dietetique : Une Publication Des Dietetistes Du Canada, 66*(4), 246-51. doi:10.3148/66.4.2005.246	**CA:** Weak **Study Design:** Qualitative - Literature review **Country:** Canada **Participants:** 6 studies with adult participants- most were low-income **Description:** 6 qualitative studies. All collected data through interviews and questionnaires. Only one of the investigations measured pre- and post-intervention changes (and without a control group). **Outcome:** The included studies did not show evidence that collective kitchens alleviate experiences of food insecurity. The major outcomes reported after participating in collective kitchens were: social support, seen as less stigmatizing than food banks, increased self-esteem and self-confidence, no change to poverty.
Iacovou, M., Pattieson, D. C., Truby, H., & Palermo, C. (2012). Social health and nutrition impacts of community kitchens: A systematic review. *Public Health Nutrition, 16*(3), 535-543. doi:10.1017/S1368980012002753	**CA:** Moderate **Study Design:** Qualitative - Systematic review **Country:** 8 Canada, 1 Australia, 1 Scotland **Participants:** Low-income **Description:** 10 studies reviewed. All were qualitative research except for one cross-sectional questionnaire and one mixed-methods investigation. **Outcome:** Collective kitchens may be an effective strategy to improve participants cooking skills, social interactions and nutritional intake. Studies reported participants of CK improved their intake of nutritious food, had a greater variety in their intake of food increased the diversity of fruit and vegetables purchased and reported eating fast-food less often. Other benefits participants reported gaining from CK programs were increased enjoyment in cooking and eating, improved shopping skills, cooking skills and confidence and improved food budgeting skills. Participants also expressed realizing that others had similar hardships making them feel less alone.
Kirkpatrick, S. I., & Tarasuk, V. (2009). Food insecurity and participation in community food	**CA:** None **Study Design:** Quantitative - Cross-sectional survey **Country:** Canada **Participants:** 484 low-income families from Toronto

Community Food Programs: Community Kitchens and Cooking	
programs among low-income toronto families. *Canadian Journal of Public Health / Revue Canadienne De Santé Publique, 100*(2), 135-9. doi:10.1007/BF0340552	**Description:** Surveyed 484 low-income families residing in rental properties within high poverty neighbourhoods to determine if there was a relationship between household food insecurity and participation in collective kitchens and strategies employed in response to food shortages among a sample of low-income families. **Outcome:** One in 20 families used a community kitchen. Two-thirds of the families were food-insecure. Less than 12% of the food-insecure households had joined a collective kitchen during the previous 12 months despite adequate opportunity and access to this type of program within their neighborhoods. There was no indication that use of food banks or food programs impacted household food insecurity status.
Loopstra, R., & Tarasuk, V. (2013). Perspectives on community gardens, community kitchens and the good food box program in a community-based sample of low-income families. *Canadian Journal of Public Health / Revue Canadienne De Santé Publique, 104*(1), 55.	**CA:** Strong **Study Design:** Qualitative - Interviews **Country:** Canada **Participants:** 371 low-income/food-insecure families participating in community food programs in Toronto **Description:** A follow-up study one year after the baseline study, families were interviewed a second time and were asked to provide their reasons for not participating in community gardens, community kitchens, or the Good Food Box program. Responses were analyzed by inductive content analysis. **Outcome:** Less than 5% of study participants had been involved in a collective kitchen over the previous year, due to a lack of time to participate, inconvenient locations and a poor fit with their interests and needs.
Roncarolo, F., Bisset, S., & Potvin, L. (2016). Short-term effects of traditional and alternative community interventions to address food insecurity. *PloS One, 11*(3), e0150250. doi:10.1371/journal.pone.0150250 [doi]	**CA:** Weak **Study Design:** Quantitative - Longitudinal multilevel study **Country:** Canada **Participants:** 450 adults in Montreal who accessed food support programs **Description:** Evaluated the short-term impact of different interventions, including Collective kitchens, on food security status. **Outcome:** Alternative food programs, including Collective kitchens, did not alleviate or reduce household food insecurity.
Tarasuk V, Reynolds R. A qualitative study of community kitchens as a response to income-related food insecurity. J Can Diet Assoc. 1999 ; 60(1):11-6.	**CA:** Strong **Study Design:** Quantitative - Open-ended, exploratory study **Country:** Canada **Participants:** 14 low-income CK participants and 6 facilitators from 6 kitchens in Toronto **Description:** Purpose was to identify generic issues that might inform future thinking about community kitchens as a response to income-related food insecurity. Participant interviews explored experiences of and reasons for participating in CK and importance of specific aspects of CK in relationship to other household food needs/concerns. Facilitator interviews focused on program organization and perceptions of strengths/limitations of CKs. **Outcome:** All kitchens created social experience, which helped reduce isolation, lend themselves to sharing of ideas/information, or provide social/personal support. In kitchens where food was partially or completely subsidized financial benefits accrued directly from the receipt of free or reduced cost food which offset some of the household's food costs- this minimally augmented

Community Food Programs: Community Kitchens and Cooking	
	household/food resources. Even when programs are completely subsidized the limited scale of operations means that the material benefits of participation are likely to be minimal. The amount of food any one participant would take home from a program was likely less than 5% of a families food needs for the month.

Community Food Programs: Gardening	
Carney, P. A., Hamada, J. L., Rdesinski, R., Sprager, L., Nichols, K. R., Liu, B. Y., . . . Shannon, J. (2012). Impact of a community gardening project on vegetable intake, food security and family relationships: A community-based participatory research study. *Journal of Community Health, 37*(4), 874-81.	**CA:** Weak **Study Design:** Qualitative - Community-based participatory research project **Country:** USA **Participants:** 42 families **Description:** Conducted a community-based research project that aimed to increase vegetable intake and decrease household food insecurity by providing free garden materials (tools, seeds, soil) and education to Hispanic farm families in a rural community in Oregon who were interested in starting and sustaining organic home gardens. **Outcome:** There was a significant increase in the number of participants who reported that both adults and children were consuming vegetables 'several times per day' during the harvest season. In addition, significantly fewer households were worried about running out of food at this specific point in time. The researchers did not use validated tools to assess dietary intake or food security status and they only examined these variables during the month of harvest. At the end of the study, participants requested ongoing, free support around garden care, pest control, access to tools and soil preparation in order to keep their gardens abundant in future. Participants reported decreased fear of running out of food; 94% reported gardening helped the health of their family, including physical health, economic, and mental health/well-being.
Draper, C., & Freedman, D. (2010). Review and analysis of the benefits, purposes, and motivations associated with community gardening in the united states. *Journal of Community Practice*, 18(4), 458-92. doi:10.1080/10705422.2010.519682	**CA:** Weak **Study Design:** Qualitative - Review **Country:** USA **Participants:** youth and adults, low and high income populations **Description:** Conducted a thematic analysis of 55 studies to uncover the motivations and benefits of participation in a community garden in the United States. Most of the literature focused on youth and only one-fourth of the studies mentioned food security. None officially measured changes in household food insecurity status. **Outcome:** Overall, most researchers claimed that gardening participation leads to increased consumption of vegetables, improved mental and social health and greater food security. However, none of the studies in the review performed rigorous or long-term evaluation of these particular outcomes within diverse populations across different settings.
Gray, L., Guzman, P., Glowa, K. M., & Drevno, A. G. (2014). Can home gardens scale up into movements for social change? the role of home gardens in providing food security and community	**CA:** Weak **Study Design:** Quantitative and Qualitative Mix **Country:** USA **Participants:** 95 families participating in a home garden program in San Jose **Description:** Conducted a mix of observational analysis, interviews, focus groups and surveys the families, who sustained participation in a program that provides free materials, education and garden construction to low-income, working poor and unemployed residents of San Jose who wish to grow organic vegetables in their backyards. Initial program goals focused on food

Community Food Programs: Gardening	
change in san jose, california. *Local Environment, 19*(2), 187-203. doi:10.1080/13549839.2013.792048	access and improved health and eating habits. Definition of home garden: A home garden refers to a small portion of land managed by a single household on owned, rented or borrowed property that is located in close proximity to the primary residence. **Outcome:** Approximately 57% of survey respondents indicated they had saved more than $480 on produce expenditures in the last 12 months, though this was not measured and did not account for the time and cost of maintaining a garden. 93% of gardeners agreed that their households had increased vegetable intake, though no food intake was quantified. Authors found a positive trend in garden-related physical activity for participants and home gardening strengthened family dynamics as families spent time together gardening, harvesting and preparing food. The authors outlined several program difficulties, including heavy administrative burden and volunteer burnout, and high rates of participant withdrawal due to lack of transportation and childcare, conflict between work and education schedules, moving to new locations and eviction from rental dwellings. Participants also expressed little connection to the type of information being covered in the nutrition class they preferred healthy cooking or a culturally appropriate food-centric approach.
Guitart, D., Pickering, C., & Byrne, J. (2012). Past results and future directions in urban community gardens research. *Urban Forestry & Urban Greening, 11*(4), 364-73. doi:10.1016/j.ufug.2012.06.007	**CA:** Moderate **Study Design:** Quantitative - Review **Country:** Multiple, majority USA **Participants:** 87 articles on Community gardens **Description:** Examined 87 pieces of original research to elucidate motivations, limitations and benefits of gardening. Definition of Community gardens provided: A community garden is a shared space where people grow vegetables and sometimes fruit. **Outcome:** The most effectively measured outcomes of gardens are increased social inclusion and support. Outcomes, such as food security status or vegetable & fruit consumption were rarely evaluated through validated tools. Motivations for participating included access to fresh food, cultural or spiritual practices, to save money, to socialize, for education and to improve health.
Huisken, A., Orr, S. K., & Tarasuk, V. (2016). Adults' food skills and use of gardens are not associated with household food insecurity in canada. *Canadian Journal of Public Health / Revue Canadienne De Santé Publique, 107*(6), 526. doi:10.17269/CJPH.107.5692	**CA:** None **Study Design:** Quantitative - Cross-sectional survey **Country:** Canada **Participants:** 10 000 respondents **Description:** Analysis of data from the 2012 and 2013 Canadian Community Health Survey. **Outcome:** Only 25% of adults in food-insecure households reported using a home or community garden for food compared with 43.5% of those in food-secure households. Gardening was not shown to be protective against household food insecurity.
Kirkpatrick, S. I., & Tarasuk, V. (2009). Food insecurity and participation in community food programs among low-	**CA:** None **Study Design:** Quantitative - Cross-sectional survey **Country:** Canada **Participants:** 484 low-income families from high poverty neighbourhoods in Toronto

Community Food Programs: Gardening	
income toronto families. *Canadian Journal of Public Health / Revue Canadienne De Santé Publique, 100*(2), 135-9. doi:10.1007/BF03405523	**Description:** Surveyed families residing in rental properties within high poverty neighbourhoods in Toronto to determine if there was a relationship between household food insecurity and participation in community food programs. **Outcome:** Less than 6% of the food-insecure households had joined a community garden during the previous 12 months.
Loopstra, R., & Tarasuk, V. (2013). Perspectives on community gardens, community kitchens and the good food box program in a community-based sample of low-income families. *Canadian Journal of Public Health / Revue Canadienne De Santé Publique, 104*(1), 55.	**CA:** Strong **Study Design:** Qualitative - Interview **Country:** Canada **Participants:** 371 low-income/food-insecure families participating in community food programs in Toronto **Description:** A follow-up study one year after the baseline study, families were interviewed a second time and were asked to provide their reasons for not participating in community gardens, community kitchens, or the Good Food Box program. Responses were analyzed by inductive content analysis. **Outcome:** Less than 3.2% of study participants had been involved in a community garden over the previous year, due to a lack of time to participate, inconvenient locations, and a poor fit with their interests and needs.
McCormack, L. A., Laska, M. N., Larson, N. I., & Story, M. (2010). Review of the nutritional implications of farmers' markets and community gardens: A call for evaluation and research efforts. *Journal of the American Dietetic Association, 110*(3), 399-408. doi:10.1016/j.jada.2009.11.023	**CA:** Weak **Study Design:** Qualitative - Review **Country:** USA **Participants:** 16 studies participants were not limited to low-income populations **Description:** Reviewed 16 studies on the health impacts of participation in farmers' market programs or community gardens within adult populations in the United States. **Outcome:** Six of the 16 studies reported that participation in a farmers' market program or a community garden was associated with greater intake of fruits and vegetables. An additional three studies found an association with increased intake of vegetables but not fruit.
Roncarolo, F., Bisset, S., & Potvin, L. (2016). Short-term effects of traditional and alternative community interventions to address food insecurity. *PloS One, 11*(3), e0150250. doi:10.1371/journal.pone.0150250 [doi]	**CA:** Weak **Study Design:** Quantitative - Longitudinal multilevel study **Country:** Canada **Participants:** 450 adults in Montreal **Description:** Evaluated the short-term impact of different interventions on the food security status of 450 adults in Montreal who access food support programs. **Outcome:** Alternative approaches (collective kitchens/community gardens) did not successfully alleviate or reduce household food insecurity.

Community Food Programs: Farmers' Market	
Cotter, E. W., Teixeira, C., Bontrager, A., Horton, K., & Soriano, D. (2017). Low-income adults' perceptions of farmers' markets and community-supported agriculture programmes. *Public Health Nutrition*, 20(8), 1452-60. doi:10.1017/S1368980017000088	**CA:** Moderate **Study Design:** Qualitative - Focus groups **Country:** USA **Participants:** 28 low-income urban individuals living close to farmers' markets in Washington, DC **Description:** Objective was to better understand low-income adults' attitudes towards participating in farmers' markets, community-supported agriculture (CSA) and nutrition education programming. 4 focus groups were held with a convenience sample of 28 low-income, urban community members who lived in close proximity to local farmers' markets with a planned CSA component that accepted Federal benefits like SNAP. Focus groups facilitated to understand participation and perceptions of farmers markets. **Outcome:** Many participants believed farmers' markets offered higher quality products and had shopped at these outlets when they could pay with federal food subsidies. Most participants identified higher costs, lack of culturally appropriate foods and inconvenient transportation as primary deterrents to attending markets on a regular basis.
Dailey, A. B., Hess, A., Horton, C., Constantian, E., Monani, S., Wargo, B., . . . Gaskin, K. (2015). Healthy options: A community-based program to address food insecurity. *Journal of Prevention & Intervention in the Community,* 43(2), 83-94. doi:10.1080/10852352.2015.973248	**CA**: Weak **Study Design**: Qualitative and Quantitative Mix – Surveys and Photovoice research **Country:** USA **Participants:** 33 food-insecure families not eligible for food assistance benefits in rural Pennsylvania **Description:** Four-month farmers' market voucher intervention where participants received $40.00/month in farmers market vouchers between June – Sept to purchase items from the market. The program placed no restrictions on what participants could purchase. In addition to the primary voucher component, multiple supplementary activities were also available, called the Healthy Options program. Activities included interactive gardening and cooking classes, cooking demonstrations, speaking with a registered dietitian at the farmers' markets, tours of local farms, introductory classes on starting a food-related business, health fairs, and market days with planned activities for children. Participants of the Healthy Options program were also invited to take part in a Photovoice project. Participants took pictures that communicated their lived experience, to elicit insights about experiencing food insecurity. The impact was evaluated using pre and post surveys, including what they bought at the market, fruit and vegetable consumption, their experience with the program and farmers market, future interest in shopping at farmers markets and how often they experienced worry or stress about having enough money to buy nutritious meals in the past 12 months. **Outcome:** During the market season, nearly 88% of respondents indicated the vouchers made it easier to afford fresh produce and more than 80% tried new fruits and vegetables. 55% of the families reported increasing the number of fruit and vegetables consumed per day, 80% reported trying fruits and vegetables that were new to them because of the program and 88% agreed that the program made fruits and vegetables more affordable. Two-thirds of the total vouchers (67%) was spent on fruits and vegetables (19% to meat, 12% to baked goods and 2% towards other items available). Participants were asked in the pre and post surveys how often in the past 12 months they experienced worry or stress about having enough money to buy nutritious meals. • At the pre-survey more than 80% indicated they were stressed, and on the post-survey 43% reported more stress, 26% reported less stress and 30% reported no change. While more than 80% of respondents felt the farmers' markets provided social connection and helped improve food quality and variety, 40% also reported that they would never shop at these venues without vouchers.

Community Food Programs: Farmers' Market	
Freedman, D. A., Vaudrin, N., Schneider, C., Trapl, E., Ohri-Vachaspati, P., Taggart, M., . . . Flocke, S. (2016). Systematic review of factors influencing farmers' market use overall and among low-income populations. *Journal of the Academy of Nutrition and Dietetics*, 116(7), 1136-55. doi:10.1016/j.jand.2016.02.010	**CA:** Moderate **Study Design**: Qualitative - Systematic Review **Country:** USA **Participants**: 49 articles with both low-income and not low-income populations **Description**: Summarized research to identify how personal, economic, social, geographic and service-based facilitators and barriers impact the use of farmers' markets among general and low-income populations. **Outcome:** Overall, low-income customers perceived the food at markets to be fresher and more nutritious, yet they described the following common barriers: cost, cash-only transactions, inconvenient locations and hours of operation, lack of ethnic diversity, feeling unwelcome and an overall mismatch for regular food shopping routines.
McCormack, L. A., Laska, M. N., Larson, N. I., & Story, M. (2010). Review of the nutritional implications of farmers' markets and community gardens: A call for evaluation and research efforts. *Journal of the American Dietetic Association*, 110(3), 399-408. doi:10.1016/j.jada.2009.11.023	**CA**: Weak **Study Design:** Qualitative - Review article **Country**: USA **Participants**: 4 research articles with both low-income and not low-income populations **Description**: Reviewed four cross-sectional studies on the health impacts of gardens within adult populations in the United States. Farmers' markets definition - recurrent markets at fixed locations where farm products are sold by farmers directly to consumers but consumers have no involvement in growing the food. **Outcome:** 6 of 16 studies reported participation in farmer's market program or community garden was associated with greater intake of fruits and vegetables. An additional 3 found increased intake of vegetables. Studies reporting on attitudes/beliefs reported participants returned or planned to return after coupons were used. Quality was also perceived as higher than grocery stores. Food insecurity was measured in one study, which reported FI status did not differ between low-income participants participating in Farmer's Market Nutrition Program and those who did not.
Minaker, L. M., Raine, K. D., Fisher, P., Thompson, M. E., Van Loon, J., & Frank, L. D. (2014). Food purchasing from farmers' markets and community-supported agriculture is associated with reduced weight and better diets in a population-based sample. *Journal of Hunger & Environmental Nutrition*, 9(4), 485-97.	**CA:** None **Study Design:** Quantitative - Cross-sectional survey **Country:** Ontario **Participants:** Random sample of 2228 households in Waterloo **Description**: examined the relationship between patronage at farmers' markets and adults' self-reported health indicators, such as frequency of fruit and vegetable consumption, BMI and diet quality. **Outcome:** 12% of low-income households reported attending a farmers' market at least twice per month compared to more than 40% of middle- and high-income households. Low-income respondents were significantly less likely to identify 'buying local' as a motivation to shop at a farmers' market. The authors did not report on associations between farmers' market participation and health outcomes specific to low-income households, but they did identify a slight positive link with frequency of fruit and vegetable consumption and a negative link with BMI for the broader sample of respondents.

Community Food Programs: Farmers' Market	
Olsho, L. E., Payne, G. H., Walker, D. K., Baronberg, S., Jernigan, J., & Abrami, A. (2015). Impacts of a farmers' market incentive programme on fruit and vegetable access, purchase and consumption. *Public Health Nutrition,* 18(15), 2712-21. doi:10.1017/S1368980015001056	**CA:** None **Study Design:** Qualitative and Quantitative Mix – Cross-sectional survey and quasi- experimental analysis **Country:** USA **Participants:** 2287 New York city farmers market shoppers (635 SNAP participants) **Description:** Assessed the effectiveness of the Health Bucks program to increase access and awareness of farmers' markets, and increase purchase and consumption of fruits and vegetables. Health Bucks (HB) can only be used to purchase fruits and vegetables at the farmers market. The researchers: 1) performed a multi-site shopper survey to compare self-reported fruit and vegetable consumption between HB participants and non-participants, 2) asked shoppers about market purchases that day, and access to and consumption of fruits and vegetables from farmers' markets and other sources, 3) conducted a random telephone survey of low-income neighborhoods to explore experience with the incentive program and fruit and vegetables consumption, 4) examined 24-hour diet recall data for fruit and vegetable consumption during several years of a city-wide telephone survey to identify differences before and after the implementation of the incentive program. The evaluation used (i) an on-site point-of-purchase survey of farmers' market shoppers; and (ii) a random-digit-dial telephone survey of residents in neighbourhoods where the program operated. Researchers did a quasi-experimental analysis that examined differential time trends in consumption before and after program introduction using secondary Community Health Survey (CHS) data. **Outcome:** HB participants reported more frequent purchases of fruit and vegetables at farmers' markets. Although HB respondents reported greater fruit and vegetable consumption, when compared to data from the community health survey this increase was not substantiated and instead showed lower overall intakes compared to non-participants who generally had higher incomes.
Young, C. R., Aquilante, J. L., Solomon, S., Colby, L., Kawinzi, M. A., Uy, N., & Mallya, G. (2013). Improving fruit and vegetable consumption among low-income customers at farmers markets: Philly food bucks, philadelphia, pennsylvania, 2011. *Preventing Chronic Disease,* 10, E166. doi:10.5888/pcd10.120356	**CA:** None **Study Design:** Quantitative - Cross sectional survey **Country:** USA **Participants:** 662 individuals at 22 farmers' markets in low-income areas of Philadelphia. **Description:** Conducted face-to-face interviews with a convenience sample of 662 shoppers. Fruit and vegetable consumption was assessed based on one question at a single point in time during the local harvest season. **Outcome:** Program participants were more likely than non-participants to report increased fruit and vegetable intake and experimentation with an unfamiliar fruit or vegetable since they began attending farmers' markets.

Community Food Programs: Food Boxes and CSA	
Cotter, E. W., Teixeira, C., Bontrager, A., Horton, K., & Soriano, D. (2017). Low-income adults' perceptions of farmers' markets and community-supported agriculture programmes. *Public Health Nutrition, 20*(8), 1452-60. doi:10.1017/S1368980017000088	**CA:** Moderate **Study Design:** Qualitative - Focus groups **Country:** USA **Participants:** 28 low-income individuals in Washington, DC **Description:** Objective was to better understand low-income adults' attitudes towards participating in farmers' markets, community-supported agriculture (CSA) and nutrition education programming. 4 focus groups were held with a convenience sample of 28 low-income, urban community members who lived in close proximity to local farmers' markets with a planned CSA component that accepted Federal benefits like SNAP. Questions were asked about their perceptions of and participation in CSA's. **Outcome:** No participants had participated in CSA's and they had limited awareness about these programs and their availability. When explained, participants identified concerns about not knowing ahead of time what would be in the boxes and concern about food being wasted due to food preferences if they could not know the contents ahead of time.
Hanson, K. L., Kolodinsky, J., Wang, W., Morgan, E. H., Pitts, S. B. J., Ammerman, A. S., . . . Seguin, R. A. (2017). Adults and children in low-income households that participate in cost-offset community supported agriculture have high fruit and vegetable consumption. *Nutrients, 9*(7), 726. doi:10.3390/nu9070726	**CA:** Weak **Study Design:** Quantitative **-** Longitudinal survey **Country:** USA **Participants:** 41 low-income households with children 2 – 12 years old in Vermont **Description:** Examined fruit and vegetable intake (FVI) in low-income households that participated in a cost-offset (CO), or 50% subsidized, community-supported agriculture (CSA) program. CSA customers paid farms upfront for a share of the harvest, and received produce weekly throughout the growing season. Conducted a survey to assess fruit and vegetable intake and household food insecurity status. The following winter, only 23 (56%) of the original households responded to the follow-up survey which posed the exact same questions as the summer survey. **Outcome:** Half of the respondents reported moderate or severe food insecurity (during the previous month) and this did not change between summer and winter seasons. Participants indicated that more than 80% of children and adults in their households consumed the recommended number of vegetable servings per day and this rate remained stable from summer to winter. CSA participants and their children reported total fruit and vegetable intake greater than US average and more often met recommendations for vegetable consumption than the US population
Loopstra, R., & Tarasuk, V. (2013). Perspectives on community gardens, community kitchens and the good food box program in a community-based sample of low-income families. *Canadian Journal of Public Health / Revue Canadienne De Santé Publique, 104*(1), 55.	**CA:** Strong **Study Design:** Qualitative - Interviews **Country:** Canada **Participants:** 371 low-income/food-insecure families participating in community food programs in Toronto **Description:** A follow-up study one year after the baseline study, families were interviewed a second time and were asked to provide their reasons for not participating in community gardens, community kitchens, or the Good Food Box program. Responses were analyzed by inductive content analysis. **Outcome:** At follow-up, only 12 families had participated in a community garden, 16 in a community kitchen, and 4 in the Good Food Box program. Two common themes summarized the reasons families gave for not participating in programs: 1) programs not accessible, and 2) lack of program fit. Specific reasons expressed for not participating included: did not know what program was, lacked knowledge about how/where to participate, location not in neighborhood, lack of fit (interest, needs, time), inability to choose what was in the good food boxes, program fees, not fitting eligibility criteria, and programs being at capacity. The author concluded that these findings suggest that these types of programs may not be effective ways to reach low-income families.

Community Food Programs: Food Boxes and CSA	
Miewald, C., Holben, D., & Hall, P. (2012). Role of a food box program in fruit and vegetable consumption and food security. *Canadian Journal of Dietetic Practice & Research, 73*(2), 59-65.	**CA:** Weak **Study Design:** Quantitative - Cohort analysis **Country:** Canada **Participants:** 316 individuals in British Columbia's Fraser Region **Description:** Definition- A food box program is a food distribution program that provides a variety of fresh produce at affordable prices to those who otherwise may be unable to access them because of cost or other barriers. Research examined whether participation in a food box program has a positive effect on fruit and vegetable consumption and food security. Compared the fruit and vegetable intake and household food security status of food box program participants and non-participants at two different points in time over an 8-month period **Outcome:** Those who were actively participating in the food box reported an insignificant yet slightly higher intake of fruit and vegetables per day. Those who never participated or who discontinued participation in the food box reported higher prevalence of household food insecurity. Nearly 50% had dropped out of the program when they were surveyed about eight months later and most cited inconvenience and cost as the major barriers.
Minaker, L. M., Raine, K. D., Fisher, P., Thompson, M. E., Van Loon, J., & Frank, L. D. (2014). Food purchasing from farmers' markets and community-supported agriculture is associated with reduced weight and better diets in a population-based sample. *Journal of Hunger & Environmental Nutrition, 9*(4), 485-97.	**CA:** None **Study Design:** Quantitative - Cross-sectional survey **Country:** Canada **Participants:** 2228 households in Waterloo, Ontario **Description:** Conducted a cross-sectional survey of a random sample of 2228 households that examined the relationship between participation in community-supported agriculture (CSA) and adults' self-reported health indicators, such as frequency of fruit and vegetable consumption, BMI and diet quality. **Outcome:** Only 1% of low-income households reported usage of a CSA at least twice per month and they rarely identified 'buying local' as a key motivation for participation. The authors did not report on any specific association between CSA participation and health outcomes for low-income households, but they did identify a slight positive link with diet quality and frequency of fruit and vegetable consumption plus a negative link with BMI for the broader sample of respondents.
Smith, C., Parnell, W. R., Brown, R. C., & Gray, A. R. (2013). Providing additional money to food-insecure households and its effect on food expenditure: A randomized controlled trial. *Public Health Nutrition, 16*(8), 1507-15.	**CA:** Moderate **Study Design:** Quantitative - Parallel randomized control trial **Country:** New Zealand **Participants:** 151 food-insecure households with children **Description:** Investigated how households spent unconditional cash transfers (~ $17 average per week) in the form of grocery store vouchers over a 4-week period. The experimental households had the freedom to spend the vouchers on both food and non-food items sold in the grocery store of their choice. **Outcome:** The voucher group spent more per week on food during the intervention phase compared with the control group. Intervention participants increased their spending on food compared to baseline expenditures, and they dedicated an average of 90% of the free vouchers to food and beverage items. There were no significant changes in the types of foods the intervention group chose to purchase during the short time they received extra money.

Community Food Programs: Food Boxes and CSA	
Weerts, S. E., & Amoran, A. (2011). Pass the fruits and vegetables! A community-university-industry partnership promotes weight loss in african american women. *Health Promotion Practice, 12*(2), 252-60.	**CA:** Weak **Study Design:** Qualitative and Quantitative Mix – Randomized control trial **Country:** USA **Participants:** 9 low-income African-American women n = 4 control; n = 5 experimental **Description:** Studied whether three months of brief nutrition counselling and free grocery store gift cards had an impact on weight loss and fruit and vegetable consumption. Participants were randomly assigned to experimental or control groups. Each received $40 supermarket gift cards and brief health education monthly for 3 months. The experimental group was instructed to buy fresh produce only, whereas the control group could buy any groceries. **Outcome:** By the third month, both groups had increased their intake of fresh fruit and vegetables, but the experimental participants consumed significantly more than the controls. When asked to describe the benefits of having the $40 gift cards, those with families said that having the cards helped the entire family eat more healthy foods. Participants indicated that they did not feel embarrassed when using the gift cards because grocery store employees were not aware of why or how they had obtained this support.

Community Food Programs: Free Home-Delivered and Medically-Tailored Meals	
Berkowitz, S. A., Delahanty, L. M., Terranova, J., Steiner, B., Ruazol, M. P., Singh, R., Wexler, D. J. (2019). Medically tailored meal delivery for diabetes patients with food insecurity: A randomized cross-over trial. *Journal of General Internal Medicine, 34*(3), 396-404.	**CA:** Weak **Study Design:** Quantitative - Randomized crossover trial **Country:** USA **Participants:** 29 adults with HbA1C > 8.0%) **Description:** Examined whether 12 weeks of free home delivery of freshly prepared, medically-tailored meals improved the diet quality of food-insecure clients. **Outcome:** Statistically significant improvement in participants' self-reported diet quality scores while they received free food delivery. They reported increased consumption of vegetables, fruit, whole grains, sea food and plant protein. Participants reported large reductions in household food insecurity with 42% reporting food insecurity during "on meal" vs 62% reporting HFI during "off meal" periods.
Frongillo, E. A., & Wolfe, W. S. (2010). Impact of participation in home-delivered meals on nutrient intake, dietary patterns, and food insecurity of older persons in new york state. *Journal of Nutrition for the Elderly, 29*(3), 293-310. doi:10.1080/01639366.2010.499094	**CA:** Weak **Study Design:** Quantitative - Quasi-experimental longitudinal assessment **Country:** USA **Participants:** 171 participants from Upstate New York **Description:** Studied the impact of the Older Americans Act Home-Delivered Meals (HDM) nutrition program on the food security status at 6 months and 12 months post-intervention. The HDM provides a free, hot meal every weekday to eligible individuals who are socially isolated, homebound, in poor health or limited by functional impairments or low-income. No data collected for 98 of the original 171 participants who withdrew from the study by 6 months, and the additional 13 participants who exited by 12 months. The majority of these individuals left because they no longer needed or wanted the service. **Outcome:** The severity of household food insecurity was not measured. The overall HFI rate decreased by 42% at 6-months and by 53% in the remaining 12-month sample. Those receiving HDM improved dietary patterns and nutrition intake significantly more than those not receiving HDM. This included intakes of fruit and vegetable variety, vegetable servings, and some vitamins/minerals.

Community Food Programs: Free Home-Delivered and Medically-Tailored Meals	
Palar, K., Napoles, T., Hufstedler, L., Seligman, H., Hecht, F., Madsen, K., . . . Weiser, S. (2017). Comprehensive and medically appropriate food support is associated with improved HIV and diabetes health. *Journal of Urban Health, 94*(1), 87-99. doi:10.1007/s11524-016-0129-7	**CA:** Weak **Study Design:** Quantitative – Cohort (pre/post study) **Country:** USA **Participants:** 52 individuals with food insecurity and diabetes and/or HIV **Description:** Studied the impact of a 6-month initiative where participants could pick up free meals and snacks every week that met 100% of their energy and nutrient requirements based on Mediterranean diet guidelines. The researchers selectively enrolled individuals with HIV who had a history of high service adherence (more than 75%) and greater housing stability, stronger social support and lower life chaos. They also recruited new clients with type 2 diabetes who had received no prior services and then transitioned them to a comprehensive nutrition intervention. **Outcome:** Participants reporting severe food insecurity decreased from nearly 60% to 11.5% during the intervention period and participants who identified as food-secure increased from approximately 10% to nearly 60%. The mean frequency of reported fruit and vegetable consumption increased from 1.85 times per day to 2.34 times per day and participants reported less depressive symptoms, greater ability to afford prescriptions and reduced hospitalizations. Individuals with diabetes experienced a marginal decrease in serum hemoglobin A1C. Common barriers identified were: picking up the free food, illness, inconvenient hours of operation, competing appointment schedules and lack of transportation.

Nutrition Education	
Au, L. E., Whaley, S., Rosen, N. J., Meza, M., & Ritchie, L. D. (2016). Online and in-person nutrition education improves breakfast knowledge, attitudes, and behaviors: A randomized trial of participants in the special supplemental nutrition program for women, infants, and children. *Journal of the Academy of Nutrition and Dietetics, 116*(3), 490-500. doi:10.1016/j.jand.2015.10.012	**CA:** Moderate **Study Design:** Quantitative - Randomized control trial **Country:** USA **Participants:** 590 mothers with young children attending WIC clinics **Description:** Compared the effectiveness of online and in-person nutrition education on changes in knowledge, attitudes, and behaviors related to breakfast eating. 359 randomized to in-person education and 231 for online education. No specific program for low-income/food-insecure and non-validated questionnaires were used. **Outcome:** Changes in knowledge between pretest and follow-up at 2 to 4 months were similar between groups. Both groups reported reductions in barriers to eating breakfast due to time constraints, not having enough foods at home, and difficulty with preparation. Increases in the frequency of eating breakfast were greater for both the parent and child in the online group compared with the in-person group during the same time points
Auslander, W., Haire-Joshu, D., Houston, C., Rhee, C., & Williams, J. H.	**CA:** Strong **Study Design:** Quantitative - Randomized control trial **Country:** USA **Participants:** 294 low-income African-American women at risk for T2D (aged 25-55)

Nutrition Education	
(2002). A controlled evaluation of staging dietary patterns to reduce the risk of diabetes in african-american women. *Diabetes Care, 25*(5), 809-14. doi:10.2337/diacare.25.5.809	**Description:** A community- based dietary change program, the Eat Well, Live Well Nutrition Program (EWLW) where six group sessions and six individual sessions led by peer educator interventions, were tailored to participants' readiness to make changes in their diet. The variables assessed were energy intake, dietary knowledge, label-reading, attitudes about diet and health, dietary patterns and fat. . The program was not specifically designed for low-income/food-insecure populations. **Outcome:** The treatment group had greater readiness to change, knowledge of fat in diet and label reading, higher scores post and follow-up, and less fat intake patterns post and follow-up. There was no differences between dietary attitudes The actual percent of calories from fat for the treatment group was reduced from 35.9% at pretest to 32% at posttest and at follow-up, versus no change for the control group.
Ball, K., McNaughton, S. A., Le, H. N., Abbott, G., Stephens, L. D., & Crawford, D. A. (2016). ShopSmart 4 health: Results of a randomized controlled trial of a behavioral intervention promoting fruit and vegetable consumption among socioeconomically disadvantaged women. *The American Journal of Clinical Nutrition, 104*(2), 436-445.	**CA:** Moderate **Study Design:** Quantitative - Randomized control trial **Country:** Australia **Participants:** 248 low-income women who were primary household shoppers **Description:** A 3-month pre-intervention phase where participants' supermarket sales were retrieved electronically. This was followed by a 6 month intervention where 124 intervention group participants received a set of 8 educational and skill building newsletters/behaviour change packages and a dietitian-led grocery store tour. Supermarket sales data and fruit and vegetable purchases were monitored for a 6 month follow up period. During the 12 month study period, purchasing data was collected via the use of a grocery store membership card, which was free for participants. **Outcome:** There was no change in vegetable or fruit purchasing although vegetable consumption increased by half a serving per day from baseline for intervention participants, and this group was found to consume an additional .28 servings per day at the 6 month follow up. There was no intervention effect on fruit consumption.
Bull, E. R., Dombrowski, S. U., McCleary, N., & Johnston, M. (2014). Are interventions for low-income groups effective in changing healthy eating, physical activity and smoking behaviours? A systematic review and meta-analysis. *BMJ Open, 4*(11), e006046. doi:10.1136/bmjopen-2014-006046	**CA:** Strong **Study Design:** Quantitative - Systematic review **Country:** USA predominantly **Participants:** 17 000 low-income individuals **Description:** 7 studies tested solely dietary intervention, 5 tested diet and physical activity, 1 tested diet and smoking, 3 studies had multiple intervention arms. This yielded 16 interventions for dietary meta-analysis **Outcome:** At post -intervention, effects were positive but small for diet. Studies reporting follow-up results suggested that effects were maintained over time for diet. Small effects were equivalent to intervention groups eating just under half a portion of fruits/vegetables greater than the control group per day, which was a smaller effect than found in reviews that did not target low-income participants.
Caspi, C. E., Caspi, C. E., Davey, C., Friebur, R., &	**CA:** Weak **Study Design:** Quantitative - Cohort pre and post survey (no control group) **Country:** USA **Participants:** 63 adults using the food bank

Nutrition Education	
Nanney, M. S. (2017). Results of a pilot intervention in food shelves to improve healthy eating and cooking skills among adults experiencing food insecurity. *Journal of Hunger & Environmental Nutrition, 12*(1), 77-88. doi:10.1080/19320248.2015.1095146	**Description:** Determined if a combination of nutrition education, cooking skills training and free healthy ingredients would improve participants' diet quality scores and food preparation abilities. They applied a pre- and post-comparison survey design with no control group. **Outcome:** Both self-rated diet quality and cooking competence scores improved moderately over the six-week trial, but participants could not sustain the increases in diet quality within the first month post-intervention. Increased cooking skills were sustained at 30 day follow up.
Collins, C. E., Dewar, D. L., Schumacher, T. L., Finn, T., Morgan, P. J., & Lubans, D. R. (2014). 12 month changes in dietary intake of adolescent girls attending schools in low-income communities following the NEAT girls cluster randomized controlled trial. *Appetite, 73*, 147-155. doi:10.1016/j.appet.2013.11.003	**CA:** Moderate **Study Design:** Quantitative - Randomized controlled trial **Country:** Australia **Participants:** 330 low-income female students aged 12-14 **Description:** Students were recruited from 12 public secondary schools. The intervention targeted individual and intrapersonal level constructs through three nutrition workshops at school, parent newsletters, and regular text messaging encouraging healthy eating behaviours. **Outcome:** No significant changes were found. The intervention resulted in small non-significant reductions in BMI and body fat but no impact on physical activity. The percentage of energy from high calorie snack foods was over 44% in both groups at baseline and this remained unchanged at 12 months. Trend suggested more of intervention group had improved water and reduced sugar sweetened beverage intake.
Dollahite, J., Olson, C., & Scott-Pierce, M. (2003). The impact of nutrition education on food insecurity among low-income participants in EFNEP. *Family and Consumer Sciences Research Journal, 32*(2), 127-39. doi:10.1177/1077727X03032002003	**CA:** Moderate **Study Design:** Quantitative - Cohort (pre-test – post-test comparison group design) **Country:** USA **Participants:** 16 146 Expanded Food and Nutrition Program (EFNEP) in New York State **Description:** Expanded Food and Nutrition Education Program using *Eating Right is Basic-Enhanced* curriculum. The goal was to improve nutrition, food resource management, and food safety practices. Eight educational classes were led on a weekly-basis by para-professionals and included preparing recipes and food tasting. Participants were assessed for changes in diet quality, food safety, food security, and food resource management. Food security was measured by the question "How often do you run out of food before the end of the month?" **Outcome:** Both graduates of the program and those who terminated participation, from pre- to post- education assessment reported running out of food less often at end of month ($p < 0.05$). Multiple regression analysis indicated the food insecurity score decreased significantly more in the group of participants who graduated from the program ($p < 0.001$).
Dollahite, J. S., Pijai, E. I., Scott-Pierce, M., Parker,	**CA:** Weak **Study Design:** Quantitative - Randomized control trial **Country:** USA **Participants:** 168 parents from low-income schools (85 intervention, 83 control)

Nutrition Education	
C., & Trochim, W. (2014). A randomized controlled trial of a community-based nutrition education program for low-income parents. *Journal of Nutrition Education and Behavior, 46*(2), 102-9. doi:10.1016/j.jneb.2013.09.004	**Description:** Expanded Food and Nutrition Education Program using *Eating Right is Basic-Enhanced* curriculum. The goal was to improve nutrition, food resource management, and food safety practices. Participants were assigned to immediate education (IE) or delayed education (DE) groups. Data was collected at time of enrollment (T1), 8 weeks later (T2- between the two interventions), and at 16 weeks when the study ended (T3). The eight educational classes were led on a weekly-basis by para-professionals and included preparing recipes and food tasting. Participants were assessed for changes in diet quality, food safety, food security, and food resource management. **Outcome:** Both the immediate education and delayed education groups had significant difference in behaviour (diet quality, food safety, and food resource management) immediately following completion of the intervention. Both groups had slight improvements in food security between T1 and T2, but improvements were found to be insignificant between T2 and T3.
Flynn, M. M., & Schiff, A. (2011). Research brief: Food insecurity is decreased by adopting a plant-based, olive oil diet. *Journal of Hunger & Environmental Nutrition, 6*(4), 506-12. doi:10.1080/19320248.2011.62572	**CA:** Weak **Study Design:** Quantitative - Cohort (pre/post) **Country:** USA **Participants:** 113 low-income adults **Description:** Conducted two studies with a total of 113 low-income participants to investigate whether a 6-week, plant-based cooking demonstration had a positive impact on weight loss, fruit and vegetable consumption and food security status at 6 months post-intervention. **Outcome:** Approximately 45% reported eating more fruit and 78% reported eating more vegetables compared to their perceived consumption at baseline; however, this was not quantified. Using an American interpretation of the Household Food Security Survey Module (HFSSM), individuals who experienced food insecurity at 6 months post-intervention decreased from 22 to 15 in the first study and from 30 to 21 in the second study. Using the Canadian translation of the responses to the HFSSM some of the food-insecure participants had shifted from severe to moderate food insecurity while nearly all remained marginally food-insecure at minimum. The authors attributed this FI reduction to a 55% average decrease in expenditures on meat, poultry and seafood. However, participants also received additional support in the form of free food, cash incentives and government supplementary benefits during the study.
Flynn, M. M., Reinert, S., & Schiff, A. R. (2013). A six-week cooking program of plant-based recipes improves food security, body weight, and food purchases for food pantry clients. *Journal of Hunger & Environmental Nutrition, 8*(1), 73-84. doi:10.1080/19320248.2012.758066	**CA:** Weak **Study Design:** Quantitative - Cohort (pre- and post-test comparison group design) **Country:** USA **Participants:** 86 users of food pantries or low-income housing with 63 completing the protocol **Description:** Study objective was to improve food purchasing behavior (more vegetables and plant based protein foods and less meat) and decrease food expenditures using a 6 week cooking program. Raising the Bar on Nutrition protocol was used. Study and assessments were divided into three time periods: baseline (4 weeks before cooking classes), 6 weeks of cooking classes, and the end of 6 months of follow up, where participants and study staff would meet once per month. At the cooking class participants observed preparation of plant-based recipes using olive oil and tasted the food. They also received nutrition education and were provided with a bag of groceries for making the recipes at home. During the entire study period, grocery purchasing was measured through receipts and electronic monitoring via store card. **Outcome:** Reported meatless meals per week increased significantly. 78% self-reported eating more vegetables at 6 months follow up and 44% reported eating more fruit. 67% reported recipes were easier to prepare than typical used recipes and 76% reporting they took less time to prepare. Mean food insecurity status reduced at follow up compared to baseline, but the authors did not attribute the change to meatless meal consumption.

Nutrition Education	
Lohse, B., Belue, R., Smith, S., Wambolt, P., & Cunningham-Sabo, L. (2015). About eating: An online program with evidence of increased food resource management skills for low-income women. *Journal of Nutrition Education and Behavior, 47*(3), 26-72.e1. doi:10.1016/j.jneb.2015.01.006	**CA:** Moderate **Study Design:** Quantitative - Randomized control trial **Country:** USA **Participants:** 303 low-income women recruited from low-income venues and SNAP participation lists **Description:** The study looked to produce and evaluate a web-based, self-directed, interactive program called About Eating (AE). AE is based on the Satter model of eating competence and included 6 lessons that could be viewed in any order and interactive activities that were tailored to participants' responses. The control group was directed to a government nutrition information site. Outcomes assessed were food security, food resource management skills, and eating competence. **Outcome:** Intervention participants less often ran out of food before the end of the month and reported increased confidence in managing money, using nutrition facts table, using a food budget, and planning foods to include all food groups. The control group improved in tracking food-related expenses and planning meals to include all food groups. These improvements were only found in food-secure AE participants, not for food-insecure participants. Food-insecure AE participants reported worse or unchanged behaviours. There were no significant differences in behaviour between food-secure and food-insecure control participants.
Oldroyd, J., Burns, C., Lucas, P., Haikerwal, A., & Waters, E. (2008). The effectiveness of nutrition interventions on dietary outcomes by relative social disadvantage: A systematic review. *Journal of Epidemiology and Community Health, 62*(7), 573-9.	**CA:** Strong **Study Design:** Quantitative - Systematic review **Country:** Australia **Participants:** 6 studies-total (4 in educational settings, 2 primary care settings) **Description:** Studied if nutrition interventions widen dietary inequalities across SES groups and studied interventions that promote healthy eating. **Outcome:** Positive effects were found to be generally lower in low SES participants in the studies, yet there were often still some small benefits for the lower SES groups, including increased vegetable and fruit consumption.
O'Loughlin, J. L., Paradis, G., Gray-Donald, K., & Renaud, L. (1999). The impact of a community-based heart disease prevention program in a low-income, inner-city neighborhood. *American Journal of Public Health, 89*(12), 1819-26. doi:10.2105/AJPH.89.12.1819.	**CA:** None **Study Design:** Quantitative - Longitudinal cross-sectional survey **Country:** Canada **Participants:** 819 individuals from a low-income, inner city neighborhood in Montreal **Description:** Community-wide cardiovascular disease prevention program where the intervention components were adapted to meet local needs, which included needs analysis through focus groups and interviews, small-scale pilot testing, implementation evaluations, awareness and participation surveys, and intervention evaluations. Nutrition interventions included heart healthy recipe contest, nutrition education workshops, menu-labeling in local restaurants, point-of-choice nutrition education campaign in grocery stores, print educations distributed via mail, and the development and distribution of heart-health videos. **Outcome:** The programs had low participation and there were no community-wide improvements in the prevalence of cardiovascular disease risk factors. High fat food and "junk" food consumption did not decline over the 5-year follow-up period.
Rustad, C., & Smith, C. (2013). Nutrition knowledge and associated	**CA:** Weak **Study Design:** Quantitative - Cohort (pretest-posttest comparison group design) **Country:** USA **Participants:** 118 ethnically diverse, low-income women 23–45 years of age

Nutrition Education	
behavior changes in a holistic, short-term nutrition education intervention with low-income women. *Journal of Nutrition Education and Behavior, 45*(6), 490-8. doi:10.1016/j.jneb.2013.06.009	**Description:** This study included three interactive nutrition education sessions. The main education topics included health benefits of all food groups, identification of healthful foods, monthly budgeting techniques, grocery shopping/label reading, healthy cooking techniques, gardening how to grow herbs and vegetables and energy balance. Main outcome measures were an increase nutrition and health knowledge and change nutrition health behaviors. **Outcome:** Responses to 7 of the 11 questions in knowledge changed pre- to post intervention, with women increasing agreement to knowledge statements about sodium in processed foods, diet and cancer, nutrient- and calorie-dense foods, interpreting nutrition labels, using herbs and spices, and doing physical activity. Responses to 9 of 11 questions on behavior, improved including increasing vegetable consumption, using herbs and spices in cooking, reading nutrition labels, doing physical activity with children, and preparing healthy meals at home for family. Reductions of salt, sugar, and fat were found.
Steptoe, A., Perkins-Porras, L., McKay, C., Rink, E., Hilton, S., & Cappuccio, F. P. (2003). Behavioural counselling to increase consumption of fruit and vegetables in low-income adults: Randomised trial. *Bmj, 326*(7394), 855-8. doi:10.1136/bmj.326.7394.855	**CA:** Weak **Study Design:** Quantitative - Randomized control trial **Country:** England **Participants:** 271 low-income adults without serious illness **Description:** 136 participants in behavioural counselling group (intervention) and 135 in nutrition education group. Measured the effect of behaviour counseling on consumption of vegetables and fruit compared with providing education that focused on the importance of consuming vegetables and fruit. Frequency questionnaires, DINE instrument measuring fat and fibre, blood pressure, plasma biomarkers (beta carotene, alpha tocopherol, ascorbic acid) and 24 hour urine samples to determine potassium excretion were used to measure intervention effect. **Outcome:** Vegetable and fruit consumption increased in both groups, from a baseline mean of 3.6, but was greatest in the intervention group receiving behavioural counselling (mean difference 0.62 portions). Beta carotene and alpha tocopherol increased in both groups, but both had no changes in ascorbic acid or potassium excretion. Beta carotene increased most in the behavioural intervention group. The results were found to be the similar when the analysis was completed on just the lowest income participants (n= 177).

Policy	
Brownell, M. D., Chartier, M. J., Nickel, N. C., Chateau, D., Martens, P. J., Sarkar, J., . . . Katz, A. (2016). Unconditional prenatal income supplement and birth outcomes. *Pediatrics, 137*(6), e20152992. doi:10.1542/peds.2015-2992	**CA:** Moderate **Study Design:** Quantitative - quasi-experimental retrospective cohort **Country:** Canada **Participants:** 10 738 low-income pregnant women from Manitoba **Description:** Evaluated the impact of an unconditional, prenatal financial benefit on the birth and health outcomes over an 8-year period (2003 – 2010). The cash benefit increased recipients' total monthly social assistance income by nearly 10% and required no mandatory participation in programming or community food supports. The comparator group consisted of 3 853 low-income, pregnant women who were also eligible to receive the benefit, but did not apply for reasons that are unknown. **Outcome:** Participation in the benefit program was associated with increases in breastfeeding initiation, and large for gestational age births, and reductions in low birth weight (21% ↓), preterm births (17.5% ↓), and a shorter length of hospital stay for infants born vaginally.
Emery, J. C. H., Fleisch, V. C., & McIntyre, L. (2013). Legislated changes to federal pension income in canada will adversely affect low-income seniors' health. *Preventive Medicine, 57*(6), 963-966. doi:10.1016/j.ypmed.2013.09.004	**CA:** None **Study Design:** Quantitative - analytical theoretical framework **Country:** Canada **Participants:** Low-income CCHS survey respondents who were over 60 years of age **Description:** The researchers analyzed data from the 2007 to 2008 CCHS to compare food security status between two groups of low-income (<$20,000 CAD) unattached seniors. The cohort of seniors aged 60 to 64 years were ineligible for public pension benefits (and those aged 65 to 69 years were age-eligible for public pension benefits). Public pension benefits included Old Age Security (OAS) and Guaranteed Income Supplement (GIS) for low-income seniors. **Outcome:** Seniors' benefits through federal public pension plans were the main source of income for nearly 80% of the seniors in the 65 to 69 year old group. Receipt of senior's benefits coincided with a 50% reduction in self-reported household food insecurity prevalence rates (11.6% for low-income seniors ≥ 65 years versus 22.8% for low-income seniors <65 years). • A clear correlation exists between being in the older (65-69 years) age group, equivalent to receiving public pension benefits, and lower prevalence of food insecurity for low-income seniors
Emery, J., Fleisch, V. C., & McIntyre, L. (2013). How a guaranteed annual income could put food banks out of business. *The School of Public Policy Publications (SPPP), 6*(37), 1-21. doi:10.11575/sppp.v6i0.42452	**CA:** None **Study Design:** Quantitative - analytical theoretical framework **Country:** Canada **Participants:** CCHS survey respondents over 55 years of age **Description:** CCHS data (2009 – 2010) was used to compare self-reported food insecurity, mental health and physical health between two groups of low-income, unattached adults: those who were age-ineligible for OAS & GIS (55-59 years, 60-64 years) and those age-eligible for OAS & GIS (65 – 69 years, 70 – 74 years). **Outcome:** 34% of respondents aged 55 – 59 and 27% of respondents aged 60 – 64 reported household food insecurity, whereas only 14% of those aged 65 – 69 and 12% of those aged 70 – 74 identified as food-insecure. Seniors benefits provided similar protection from food insecurity as regular income from employment. 55% of respondents aged 55 – 64 reported fair/poor health, while only 34% of 65 – 69 year olds ranked their health this way. About 37% of 55 – 59 year olds and 29% of 60 – 64 year olds ranked their mental health as fair/poor. Only 17% of respondents aged 65 – 69 and 13% aged 70 – 74 felt they had fair or poor mental health.
Ionescu-Ittu, R., Glymour, M. M., & Kaufman, J. S.	**CA:** None **Study Design:** Quantitative - Regressive analysis **Country:** Canada **Participants:** CCHS survey respondents

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(2015). A difference-in-differences approach to estimate the effect of income-supplementation on food insecurity. *Preventive Medicine, 70*, 108-16. doi:10.1016/j.ypmed.2014.11.017	**Description:** Examined the impact of the taxable Universal Child Care Benefit (UCCB) on self-reported prevalence of household food insecurity by performing a difference-in-difference analysis of several years of the Canadian Community Health Survey. From 2006 to 2014, the UCCB provided eligible Canadian households $100 per month for each dependent who was younger than six years old. This study compared household food insecurity rates before and after the 2006 UCCB implementation for "experimental" households who had at least one child five years or younger and "control" households who had no children five years or younger but at least one child aged six to 11 years. Families with children younger than six years were more likely to have similar incomes and child-related expenses with families who had children aged six to 11 than with families who had no children or children 12 years and older. **Outcome:** Once the researchers accounted for potential confounders, there were no significant differences in income and household food insecurity between the experimental and the control groups prior to the initiation of the UCCB policy. After implementation, the UCCB led to an approximate 25% decrease in the prevalence of self-reported food insecurity among families with children younger than 6 years old. In addition, the impact of the UCCB appeared greatest for low-income and lone-parent households.
Li N, Dachner N, Tarasuk V. The impact of changes in social policies on household food insecurity in British Columbia, 2005–2012. Preventive medicine. 2016 Dec 31; 93:151-8.	**CA:** None **Study Design:** Quantitative - Logistic regression analysis **Country:** Canada **Participants:** CCHS survey respondents British Columbia **Description:** Analyzed CCHS data from 2005 to 2012 to determine whether British Columbia's increase in social assistance benefits and initiation of a rental assistance program impacted self-reported rates of household food insecurity among the target populations of these two benefits. **Outcome:** The rental subsidy did not affect any measures of food insecurity status. However, there was an increase in the number of households reporting food security or marginal food insecurity immediately following the increment in social assistance rates. There was no change in the number of recipients who reported severe food insecurity. The prevalence of household food insecurity returned to 2005 levels by 2012.
Loopstra, R., Dachner, N., & Tarasuk, V. (2015). An exploration of the unprecedented decline in the prevalence of household food insecurity in newfoundland and labrador, 2007-2012. *Canadian Public Policy / Analyse De Politiques, 41*(3), 191-206. doi:10.3138/cpp.2014-080	**CA:** None **Study Design:** Quantitative - Exploratory analysis **Country:** Canada **Participants:** CCHS survey respondents **Description:** Analyzed CCHS data from 2007 to 2012 to test the hypothesis that the 2006 poverty reduction strategy in Newfoundland and Labrador (NL) could explain the observed downward trend in household food insecurity (HFI), from 15.7% in 2007 to 10.6% in 2011. **Outcome:** The NL decrease in HFI was in part attributed to more households having higher income in 2009 – 2012 compared to 2007. A dramatic decline of HFI was found among social assistance recipients, with prevalence reducing from 59.9% in 2007 to 33.5% in 2012. Households receiving income from social assistance represented the largest fraction of food-insecure households in the province in 2007, but one of the smallest fractions by 2012. The data was too crude to make conclusions about what changed the food insecurity vulnerability of social assistance recipients.
Mcintyre, L., Dutton, D. J., Kwok, C., & Emery, J. C. H. (2016). Reduction of food insecurity among low-	**CA:** None **Study Design:** Quantitative - Cross-sectional **Country:** Canada **Participants:** 8019 CCHS survey respondents

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income canadian seniors as a likely impact of a guaranteed annual income. *Canadian Public Policy, 42*(3), 274-86. doi:10.3138/cpp.2015-069	**Description:** Examined whether publicly-funded seniors' pensions can prevent unattached, non-widowed, age-eligible Canadians from experiencing income-related food insecurity. The researchers analyzed CCHS data from 2007 to 2013 to compare variations in food security status between near-seniors and seniors aged 55 to 64 and 65 and older, respectively. **Outcome:** Overall, the cohort of age-eligible respondents (age 65 and older) experienced food insecurity at half the rate of the nearly-eligible cohort (age 55-64 years). This statistic remained steady after controlling for sex, housing status and education attainment.