

National Collaborating Centre for Determinants of Health

Food Security Issues in a Public Health Context

Literature Review and Environmental Scan

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1.0 INTRODUCTION

Food and nutrition have been of interest to public health authorities for a long time. More recently, rising obesity levels and greater evidence linking diet with this and many chronic diseases have brought more focus to the issue. With the weakening of Canada's social safety net in the 1990s and the accompanying evidence of more people being unable to afford enough to eat, hunger and its related problems of poverty and social exclusion have also come to be seen as serious public health concerns. The term "food security" has been used, often with great variation in definitions, for decades to encompass a wide range of food-related issues and goals, including the key nutritional, symbolic, cultural, social and political roles played by food.

1.1 Purpose

The purpose of this review is to improve the understanding of the ways in which social determinants carry influence in areas of public health importance, and how public health policy and practice can address these influences. This literature review focuses on food insecurity among different age groups, and the social determinants of socioeconomic (SES) and ethno-racial status (ERS).

Food security exists at the household level when individuals have stable and sustained access, by socially acceptable means, to adequate amounts of safe and nutritious food for an active, healthy life. There can be great variation in the use of the term "food security" and its opposite, "food insecurity". A section below provides more information on the range of definitions.

Socioeconomic status is a complex concept consisting of two components, both of which can exert influences on health directly or through associated behaviours. One aspect includes resources, such as education, income and wealth, and the other includes status or rank, a function of relative positions in a hierarchy, such as social class (Krieger et al., 1997).

Ethno-racial status is defined in this paper as a social construction that indicates identification with a particular group, generally shares common ancestors. Members of the group share common cultural traits, such as language, religion, and dress, and are typically an identifiable minority.

The review will be guided by the following five research questions:

1. How prevalent is food insecurity among Canadians within different age groups, and how do different forms of food insecurity affect health within these different age groups?
2. What significant forms of food insecurity and associated health outcomes are most strongly associated with socioeconomic status and/or ethno-racial status in each of the different age groups?
3. What interventions have been implemented within Canada and other jurisdictions to address the impact of food insecurity on each age group's health through the most significant food security issues and associated health outcomes that are of importance to public health? Which of these have been shown to be effective? Are there some best practices among these policies and practices?

4. What public health policy strategies have been implemented within Canada and other jurisdictions to address these food security issues and concomitant health outcomes? Which have been shown to be effective? Are there some best practices among these policies and practices?
5. What are the gaps in policies, practices and knowledge? How much should public health focus on community as well as household food insecurity to reduce health inequalities associated with socioeconomic and ethno-racial status?

1.2 Methodology

The information gathering took the form of an academic literature review using online databases such as PubMed, ScholarsPortal, Sociological Abstracts and Google Scholar. We searched materials published in the last 15 years in peer-reviewed journals and grey literature. Keywords used in the database searches included the following:

“Food security”

AND each of: income, poverty, socioeconomic status, ethno-racial status, ethnicity, nutrition, health, indicators, health outcomes, child, adolescent, youth, adult, senior, elderly

“Food insecurity”

AND each of: income, poverty, socioeconomic status, ethno-racial status, ethnicity, nutrition, health, indicators, health outcomes, child, adolescent, youth, adult, senior, elderly

References cited in relevant articles were also reviewed. Extensive Internet searching was also done using the search terms identified above. Key contacts also suggested published and unpublished resources that did not appear in peer reviewed journals.

1.3 Definitions of Food Security

The term food security originated in international development literature in the 1960s and 1970s. Early definitions focused almost exclusively on the ability of a region or nation to assure an adequate food supply for its current and projected population. The concept has evolved since then and can be used with a focus on many different levels such as global, regional, national, community, household or individual. The latter levels of focus (community, household and individual) are most relevant to public health approaches to food security and, therefore, will be used in this report.

Most definitions of household food security (HFS) answer the following five questions about the distribution, production and consumption of food:

- 1) Who should get the food?
- 2) When?
- 3) How should food be obtained?
- 4) How much food?
- 5) What kind of food?

The answers to these questions reflect five common principles of current thinking around household food security:

- 1) Universality (all people should have food);

- 2) Stability (food should be available at all times, not just emergency access);
- 3) Dignity (food access should not be socially stigmatized, such as relying on food banks);
- 4) Quantity (enough food to lead a healthy active life); and,
- 5) Quality (the food should be safe, nutritious and culturally appropriate).

Much of the understanding of the concept of household food insecurity (HFI) originated with research among low-income women in upstate New York by Radimer and colleagues in the early 1990s. Radimer et al. (1992) identified that the experiences of household food insecurity can have four dimensions:

- Quantitative (not enough food);
- Qualitative (reliance on inexpensive non-nutritious food);
- Psychological (anxiety about food supply or stress associated with trying to meet daily food needs); and,
- Social (having to acquire food through socially unacceptable means such as charitable assistance, buying food on credit, and in some cases, stealing).

As household resources diminish, research shows a typical pattern of experiences (Hamelin et al., 1999; Kendall et al., 1996; Radimer et al., 1990). Anxiety about the household's food supply typically occurs first. This is followed by compromises in the quality and then quantity of parents' food intakes, possibly accompanied by a more general deterioration in the quality of the whole household's diet. Radimer et al. (1992) noted that children's eating patterns were rarely affected unless household resources became severely affected. Quantity of food was maintained at the expense of quality, and most adults ate less so that the children would not go hungry. Much of the work documenting this dynamic has been done with low-income households with children, rather than with the general population. Not all households may fit this pattern exactly. Food insecurity among seniors appears to begin with compromised diet quality, followed by food anxiety, socially unacceptable meals, use of emergency food strategies, and finally actual hunger (Wolfe et al., 1998).

The most recent evolution in food security thinking has been a shift towards community food security (CFS). The concept shares the same goals as the household focus but also acknowledges the importance of economic, environmental and social aspects of the food system¹. Rather than adding another component to the definition, community food security expands the thinking about quality. Proponents of CFS call for sustainable and local food systems that promote strong communities. Community food security work can include advocating for adequate incomes for consumers and producers, local and diverse food production, environmental sustainability, widespread access to healthy food and food-based community economic development and social cohesion. Some public health authorities in Canada have been leaders in advocating for a paradigm shift in food security thinking from the household to the community level (Ontario Public Health Association, 2002; Public Health Association of British Columbia, 2004).

¹ The term "food system" refers to the full range of food activities extending from production, processing, distribution, marketing, retail to consumption and disposal.

1.4 Prevalence of Household Food Insecurity in Canada

The way that food insecurity is measured at the household level can vary widely from one survey to another. The variation in survey tools can cause confusion when household food insecurity rates are publicized because the measure used is not always reported. The most commonly used tool comes from the U.S. Department of Agriculture which annually asks questions of the U.S. population via the Food Security Survey Module. For a household to qualify as food insecure with this tool, a respondent must affirm a minimum of three responses regardless of whether there are children in the home. The least severe possible experiences that a respondent would have to report to have his/her household classified as *food insecure without hunger* are the following:

The following experiences were sometimes or always true for my/our household in the last 12 months.

- I/We worried whether my/our food would run out before I/we got money to buy more;
- The food that I/we bought just didn't last, and I/we didn't have money to get more; and,
- I/we couldn't afford to eat balanced meals.

The rate of food insecurity (including experiences of hunger and less severe experiences of dietary compromise) among households across Canada has been reported at 9-14% in various surveys. The 2004 Canadian Community Health Survey found that 9.2% of all households reported food insecurity. Hunger, the most severe manifestation of food insecurity, is uncommon, relative to other experiences. The rate of hunger among households in the general population was 2.9% in 2004. Households with young children (under six years) report higher HFI (13.0%). Female lone parent households consistently report the highest rate (24.9%). Food insecurity was very low (4.9%) among households reporting pension or seniors benefits in 2004 (Statistics Canada, 2007). This is similar to the prevalence reported among households with individuals aged 55+ in 1998/99 (5.4%) (Rainville & Brink, 2001).

2.0 FOOD INSECURITY AND LOW SOCIOECONOMIC STATUS HOUSEHOLDS

Income has consistently been found to be the best predictor of household food insecurity. Other components of SES such as education have not been shown to be highly correlated. Low-income households have a much higher rate of food insecurity compared to those in higher income brackets. Among the lowest income group in 2004, 48.3% qualified as food insecure (Statistics Canada, 2007). Measures of household food insecurity are essentially measures of the manifestations of acute financial insecurity on diet. Food insecurity may indicate a more extreme level of material deprivation than that identified by conventional measures of low income. Tarasuk (2004) states that, as such, indicators of household food insecurity may be functioning as markers of the population subgroup who reside at the extreme end of the poverty-wealth spectrum.

To a lesser extent middle income households also report indicators of food insecurity. Episodes of food insecurity at higher income levels can result from sudden changes in a household such as loss of employment, illnesses, unexpected expenses or family break up. However, measures of annual income are static and not very sensitive to these types of changes. This means that the correlation between official poverty statistics and household food insecurity

is not as straightforward as one might first think. For example, a U.S. analysis shows that only about half of the variance in state food insecurity rates is associated with differences in poverty rates (Nord, Jemison & Bickel, 1999). In the state of Oregon, for example, the poverty rate in 2005 was at the national average yet it had been ranked with the nation's highest level of household food insecurity with hunger in four of the previous six years. The complexity stems from the fact that dietary compromises do not automatically occur amid material deprivation. There are a number of intervening factors that can restrict the resources available to a household that are not captured by income statistics. Changes in the cost of other essentials or in subsidies for these necessities, such as housing, utilities, transportation or childcare, will not be reflected in household income, but hunger rates are likely to rise if these essentials become more expensive. Poverty rates also tell nothing about the effect of non-monetary assistance such as eating meals at a relative's home nor the availability and access to direct food assistance (food banks, school feeding programs, field gleaning programs) on the prevalence of food insecurity.

3.0 FOOD INSECURITY AND ETHNO-RACIAL STATUS

No Canadian data are available showing that ethno-racial status is significantly associated with household food insecurity independent of income. However, food insecurity rates are higher among many of these groups because of the higher levels of poverty. Statistics Canada food security surveys do not collect information on ethno-racial status. However, other Canadian sources have shown that individuals of Aboriginal status have a 60% increased risk of hunger compared to non-Aboriginals (McIntyre, 2004). This statistic applies only to off-reserve Aboriginals because telephone surveys do not include on reserve families. Aboriginal peoples comprise 3.3% of the Canadian population and 73% live off-reserve in large and medium size cities (Statistics Canada, Census 2001).

U.S. national surveys show a large gap in food insecurity by ethno-racial status. Nationally, 8.2% White (non-Hispanic) households reported food insecurity compared to 17.9% for Hispanic and 22.4% among Black (non-Hispanic) households in 2005 (Nord et al., 2006). The prevalence of very low food security among Black low-income households was higher than low income in general (Nord, 2007).

Several surveys have shown that recent immigrant status is associated with slightly higher prevalence of food insecurity. In 2004, 14.8% of recent immigrant households qualified compared to 9.1% of all non-immigrant households (Statistics Canada). However, there is no further information available to determine the overlap of immigrant status with ethno-racial status.

3.1 Significant Impacts on Health

Individuals from food insecure households are at increased risk for poor nutritional status and negative health outcomes. Food insecurity and food insufficiency (a closely related condition) have been shown to be associated with poorer diets in adults (Dixon et al., 2001; Tarasuk, 2001), lower intakes of several nutrients for adults (Dixon et al., 2001), health status of adults with diabetes (Nelson et al., 2001), poor self-rated general health status and lower scores on physical and mental health scales for adults (Stuff et al., 2004), poorer cognitive, academic, and

psychosocial development of children (Alaimo et al., 2001), depression among women (Heflin, 2005), and obesity and weight gain, primarily among women (Wilde & Peterman, 2006). The majority of studies examining the nutritional and health consequences of household food insecurity have focused on younger adult women and children.

4.0 YOUNGER CHILDREN

Research into the health implications of household or individual food insecurity for early years populations in developed countries, especially Canada, is limited. A 2003 Toronto survey found associations between households with food insecure children (5.8% of respondents) and poor child health status, as reported by the parent, parental depression and exclusive breastfeeding for less than six months. The analysis did not control for household income.

Research, conducted primarily in the U.S., has found associations between households classified as food insecure and the health of young children in those homes. Specific associations include poor child health status (as reported by parent/caregiver), iron deficiency, iron deficiency anemia, more frequent hospitalizations, stomach aches and headaches and lower physical function (including problems with walking, running, doing chores and low energy levels) (Alaimo et al., 2001; Casey et al., 2005; Cook et al., 2004; Skalicky et al., 2001). Recent analyses of a study of nearly 21,000 U.S. kindergarten-aged children found a negative association between food insecurity and child social interaction skills and emotional state, as rated by parents and teachers, even after controlling for many variables, including income (Stormer & Harrison, 2003). A longitudinal analysis of the same data set found that, independent of income, food insecurity among kindergarten children predicted impaired academic performance in reading and math for boys and girls and a decline in social skills among boys, when followed to grade three. This analysis used a much lower than normal threshold for classifying households as food insecure (Jyoti et al., 2005). Hunger or food insufficiency among older children (6-12 year olds) has also been shown to predict anxiety, aggression, psychosocial dysfunction and difficulty getting along with other children. These outcomes persisted after controlling for confounding factors, including low income (Alaimo et al., 2001; Kleinman et al., 1998; Murphy et al., 1998). The link between HFI and measures of increased bodyweight among children is not clear. Some research has found a correlation (Casey et al., 2006; Dubois et al., 2006) and other studies have not (Martin & Ferris, 2007). Still other research shows gender differences whereby girls are more vulnerable to excess weight amid HFI and the opposite is true for boys (McIntyre, Walsh & Connor, 2001).

The most commonly cited Canadian data on children's food insecurity come from the National Longitudinal Survey of Children and Youth (NLSCY). McIntyre et al. (2000) found an association between child hunger and reported poor child health, poor maternal health and mother's activity limitation. The NLSCY only identified cases of the most severe form of food insecurity among children and youth and the analysis did not adjust for income.

Regional Canadian data also confirm the link between poorer child health status and indicators of household food insecurity. An association was found between Toronto households with food insecure children (aged 0-6 years) and reported poor health status of the child (Toronto Public Health, 2006). Young children in northern Ontario with excellent or very good health, as

reported by a parent or caregiver, were more likely to be in a food secure household (Northern Ontario Perinatal and Child Health Survey Consortium, 2003).

An important note about the research on children is that in most cases there is no evidence that the diet of children has been compromised. For a household to qualify as food insecure, changes in a child's diet need not be reported. In fact, many authors have documented the extent to which parents will deprive themselves of food in times of diminished resources to spare their children, with younger children being more protected than older children (Badun et al., 1995; Cristofar & Basiotis, 1992; Hamelin et al., 1999; McIntyre, Glanville, Raine, et al., 2003).

Although the diets of children living in food insecure homes may not be optimal, some evidence suggests that they are not significantly different from what is consumed by children in food secure homes. Statistics Canada data show that household income is not as closely associated with differences in the diets of children or youth as it is for adults (Garriguet, 2006). This is an important observation in developing an understanding of the pathways by which HFI influences child health.

Research to date does provide some evidence for a link between child hunger or residence in a food insecure household and a number of specific health outcomes. However, the research is not sufficient to establish causation. It is unclear how and when household food insecurity acts as a cause, effect or both to influence health. Outcomes could be caused by food insecurity itself, experienced as dietary compromises, but other conditions, such as psychological stress, physical and emotional impairment, experienced by household members on whom children rely may also contribute by creating an environment that does not promote optimal child growth and development.

5.0 ADULTS AND ADOLESCENTS

Research has found associations between HFI and self-reported poor health status among adults and youth. The 1994 NLSCY found that parents in families that reported child hunger were more likely to rate their own health poorly and to report having at least one chronic health condition when compared to parents in families who did not report child hunger (McIntyre et al., 2000). Toronto women using food banks who reported food insecurity with hunger in the previous 12 months were about twice as likely to report their health as fair, poor or very poor, as well as longstanding health conditions or activity limitations (Tarasuk, 2001).

While a connection to poor health is well established in the literature, there is comparatively less research on the psychological and social implications of HFI. The psychological stress associated with food insecurity on an ongoing basis may increase the risk of depression, particularly for lone parent mothers who are more likely to report poorer mental health than married or partnered mothers. Lone parent, unemployed mothers are twice as likely to report a high level of distress compared with other groups. Lone parent mothers in general, regardless of employment status, are more likely to report high personal and chronic stress (Maclean et al., 2003). Canadian and U.S.-based research shows that parents in food insecure homes can be at increased vulnerability to feelings of anxiety, loss of control, family dysfunction, and psychological impairment. All of this is accompanied by a preoccupation with acquiring food or

resources for food by engaging in socially stigmatized activities such as using food banks, borrowing money, selling possessions or stealing (McIntyre, Glanville, Raine et al., 2003; Tarasuk & Maclean, 1990).

The stigma associated with food bank use has been recognized for a long time as a deterrent to their use by some hungry people. Food insecure parents of young children surveyed by the Regina Qu'Appelle Health Region reported that the strategies they often used to feed their children, such as using food banks or borrowing money or food, "made them feel bad, embarrassed, guilty or depressed". Many of the parents interviewed reported that for this reason it was often difficult to approach family or friends or to use services such as a food bank (Berenbaum & Misskey, 2003).

Feelings of shame or embarrassment about not being able to afford food can promote a feeling of isolation from one's neighbours and the community at large. Feeling this kind of isolation can further exacerbate the struggle to meet basic food needs by causing people to limit non-monetary means of acquiring food, such as asking friends or neighbours for help. In other words, people who are hungry and feel that they lack friends or neighbours to support them, or are reticent to approach them, are less likely to seek out these alternative resource strategies. Martin et al. (2004) found evidence that the absence of a social network, including the trust, information, and cooperation associated with these informal resources, is associated with household food insecurity. Interviews of 330 low-income households in Hartford, Connecticut found that households with social capital (defined as the "glue" of civic networks that links people with their communities, often typified by a sense of trust and reciprocity among neighbours, or participation in social or civic organizations) are less than half as likely to be food insecure, even when controlling for socioeconomic status. Tarasuk (2001) also found that women seeking charitable food assistance in Toronto were almost six times more likely to report feeling isolated and alone if they also reported food insecurity with hunger over the previous 12 months.

The effect of limiting social interaction or socially isolating individuals poses a risk, not only to individuals and households, but to society at large. Compromises in diet quantity or quality can contribute to reduced learning in children and adults as well as a loss of productivity such as absenteeism at work. Hamelin et al. (2002) reported intensified feelings of exclusion and powerlessness among food insecure families in Quebec. Some respondents felt strongly that disorganized eating patterns and fewer meals eaten together as a family eroded the transfer of knowledge among family members and hindered a sense of warmth and friendliness. Many mentioned that disrupted household dynamics decreased participation in social life as well. The societal impact of household food insecurity should, therefore, not be narrowly viewed as the increased health care costs associated with poor health consequences. Research suggests that the inability of households to meet basic food needs limits the optimal functioning of communities and society at large.

6.0 SENIORS

Many factors are associated with nutritional and health status in seniors compared to younger age groups. Not only the aging process, but also health, psychological, social and economic factors,

are closely related to nutritional and health status in elderly persons (Jung Sun Lee & Frongillo, 2001). Chronic diseases common among seniors such as hypertension, diabetes and coronary heart disease can be prevented or treated by a healthful diet. Food insecurity; therefore, can exacerbate existing conditions among seniors. Little Canadian research was found on the impact of HFI on this population. In the U.S., Rose and Oliveira (1997) found that food-insufficient elderly individuals had lower intakes of eight nutrients including total calories and calcium. Roe (1990) and Vailas et al. (1998) found that food insecure seniors were more likely to have lower body weight and overall quality of life.

While food insecurity is closely connected to inadequate income for younger populations, food insecurity among seniors can also be caused by functional limitations that prevent them from shopping or being able to prepare healthy meals. In addition, many medications that older adults take for chronic conditions are not supposed to be taken on an empty stomach, impacting food insecure seniors. Specific dietary restrictions for those with chronic conditions are also more difficult to follow (Wallace et al., 2007).

Low-income elderly households can experience substantial seasonal differences in the incidence of severe food insecurity in many regions that have high winter heating costs and high summer cooling costs. In the U.S., in high heating states, the odds of severe food insecurity were 43% lower in the summer (Nord & Kantor, 2006).

6.1 Conclusions

There is strong evidence of links between measures of household food insecurity and a range of health, developmental and educational outcomes for children and health outcomes for older age groups. The weight of evidence, including data on prevalence, suggests that children are the age group that is most vulnerable to poor outcomes. The evidence also suggests that the impact of HFI on parents and older siblings may be a pathway for its influence on younger children. Therefore, both children and parents are justifiably an important focus for public health food security interventions.

7.0 INTERVENTIONS OF IMPORTANCE TO PUBLIC HEALTH

Food security exists at the household level when individuals have stable and sustained access, by socially acceptable means, to adequate amounts of safe and nutritious food for an active, healthy life. There can be great variation in the use of the term “food security” and its opposite, “food insecurity”. More recently, community food security (CFS) began receiving more attention from public health. The concept shares the same goals as the household focus but also acknowledges the importance of economic, environmental and social aspects of the food system. For the purposes of this review, food security at the household level will be the primary focus.

7.1 Purpose

This paper provides an overview of findings on best practices and policies in public health that address the social determinants of socioeconomic (SES) and ethno-racial status (ERS) as they relate to food insecurity. This review will describe a range of policies, practices and interventions relevant to public health administration that address the vulnerabilities of children

and families in general, as well as those targeting families of Aboriginal status as well. It will also make conclusions about gaps in solutions to address the issue in Canada and identify structural barriers.

7.2 Summary of Research

The preceding literature review found strong evidence of links between measures of household food insecurity (HFI) and a range of health, developmental and educational outcomes for children and health outcomes for older age groups. The weight of evidence, including data on prevalence, suggests that children are an age group that is particularly vulnerable to poor health outcomes associated with HFI. The evidence also suggests that the impact of HFI on parents and older siblings may be a pathway for its influence on children. Therefore, both children and parents are justifiably an important focus for public health food security interventions.

The evidence suggests that low income is the single greatest predictor of food insecurity. Other characteristics highly correlated with low income, such as Aboriginal status, are also strongly predictive. Little research is available to show that ethno-racial status, independent of income, is a strong predictor of HFI. Income represents only one type of household resource that protects against HFI. Non-monetary resources such as a sense of social inclusion are also protective. Therefore, the research suggests that resource deprivation, understood as a lack of financial and/or social resources, is the most important influence on the duration and severity of HFI.

7.3 Review of Interventions to Address the Influence of Resource Deprivation on Household Food Security

National and local approaches to reduce hunger and household individual food insecurity have evolved, sparked in part by a perception of growing hunger in the 1980s. The scan presented in this section covers the most significant approaches for public health with a focus on households with children, and those of Aboriginal status. The scan will also focus on approaches that increase household food supplies, financial resources (directly or indirectly) or augment social resources (connecting to neighbours, the community, addressing social isolation).

Authors have classified food security interventions in a number of ways. Perhaps the most commonly used framework is the Food Security Continuum, which describes a strategic path of interventions towards achieving food security (Toronto Food Policy Council, 1995). The continuum categorizes actions into three groups: efficiency, transition (also called participation or substitution) and redesign.

Efficiency strategies are essentially stopgap measures to address immediate need, but are not intended as long-term solutions. These strategies are the fastest to implement and generally take the form of charitable responses to hunger (such as food banks) or minor modifications to social assistance delivery. Transition strategies focus on the development of a parallel practice or process in opposition to one that has been shown to be inadequate. This stage focuses on capacity building among individuals and the community as a whole, emphasizing the ultimate goal of food security. Redesign strategies are based on a rethinking of the roots of the problem and of the solutions to address it. These strategies can take longer to implement and demand

fundamental changes, but they address multiple concerns in an integrated fashion. Individuals or organizations need not confine themselves to one stage along the path. It is also true that not all interventions can be easily classified as fitting only one of the three stages. Some strategies blend efficiency and transitional components. Nevertheless, several public health authorities have found the continuum a useful tool in developing food security work (Chinook Kids Food Security Coalition, 2004; Ontario Public Health Association, 2002; Public Health Association of British Columbia, 2004).

7.4 Efficiency Strategies

An ad hoc range of independently-run local initiatives have primarily taken the lead for addressing food insecurity in Canada in recent decades. Many of these strategies have been efficiency-focused. The most publicized of these approaches has been direct food assistance through food banks and other charitable food programs. While few programs cater specifically to families with children, they are consistently overrepresented: in 2007, 38.7 % of food bank clients nationally were children. Food banks have a precarious existence, being dependent on food donations from the public and the food industry, and the work of volunteers to stay in business. Much of the debate over the inappropriateness of food banks as a response to hunger has focused on their connection to government social assistance cutbacks and the social stigma associated with food bank use. Food banks were initially established as only a temporary measure during the 1980s. Since then emergency charitable food assistance programs have become legitimized in Canada as the primary response to hunger. Research has shown that even the small amount of supplies given out by food banks (often three days worth, with a limit of one visit per month) are insufficient to fully meet the needs of those seeking assistance (Tarasuk & Eakin, 2003). The promotion of food banks as a solution to HFI also creates a false assumption that the price of food is too high in Canada. In fact, the price of food, relative to average income, is lower in Canada than in almost every developed country (Economic Research Service, 2002). The issue, therefore, is not the price of food but the low income available to many households.

Many public health funded or supported programs in Canada offer direct food assistance in the form of food coupons. Public Health Nurses working in the Healthy Babies, Healthy Children program give out emergency grocery certificates to clients, but the amount is usually quite small (\$5-10). Some Canada Prenatal Nutrition Programs (CPNP) also offer food certificates, small meals and a take home bag of groceries (staples such as milk, bread and eggs) each week at the program.

The U.S. Federal Government devotes a large amount of money to efficiency-based food programs for low-income children. The largest child-focused program is the National School Lunch Program (NLSP). It aims to provide nutritious lunches and the opportunity to practice skills learned in classroom nutrition education. It also offers after school snacks in sites that meet eligibility requirements. All children in eligible schools may participate. Critics of the program have argued that a lack of regulation has resulted in the program subsidizing the sale of fast food to America's school children (Food Research and Action Center, 2006). In spite of quality concerns, studies have found that students who participated in the program were twice as likely to consume milk or other dairy products, almost twice as likely to consume vegetables, and one and a half times as likely to consume fruits or fruit juices at lunch compared with students who

brought lunch from home. Students who did not participate in the NSLP were almost three times as likely to consume foods high in sugar and/or sodium compared to students who did participate (McConnell, 1996).

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides at-risk pregnant, postpartum, and breastfeeding women and infants and children under the age of five years from families with low incomes with vouchers for the purchase of nutritious supplemental food, referrals to health care professionals, and nutrition education. Research by the U.S. Department of Agriculture has shown that WIC participation significantly improves children's intakes of iron, folate, and vitamin B-6 (Oliviera & Gundersen, 2000). Other benefits have been documented such as reduced low birth weight, prevention of overweight in children and improvements in the growth of at risk infants and children (Basiotis, Kramer-LeBlanc & Kennedy). A Toronto Public Health (TPH) review found an association between WIC participation and accelerated growth in weight and length/height, as well as lower rates of iron deficiency anemia when WIC participants were compared to a control group. However, the TPH review identified methodological difficulties in a number of the studies and concluded that the impact of WIC on growth and anemia rates was inconclusive (Toronto Public Health, 2003). No research was found to suggest that any of the efficiency programs cited above influenced the prevalence of household food insecurity over time.

While efficiency strategies serve a purpose to meet immediate need, critics point to their inability to address the root causes of food insecurity. Some also argue that the very existence of these strategies, especially the entrenchment of food banks in Canada, acts as a public stopgap measure, making it easier for governments to avoid implementing effective food security measures (Riches, 1997). Actions and recommendations related to children's food security by Canadian health organizations show a decreased interest in pursuing only efficiency-based measures or, alternatively, a move towards deemphasizing these approaches in favour of broader systemic advocacy work.

7.5 Transitional Strategies

The evolution in food security thinking from the household to community level has resulted in an expansion in community-based responses that focus on capacity building and skill development. Community food security strategies include community kitchens (groups meet regularly to cook healthy meals), food skills workshops, community gardens, alternative food distribution systems such as food buying co-ops, field gleaning (collecting leftover crops from farmers' fields) and community-supported agriculture (community members pledge to support a farm with a financial commitment in exchange for sharing in the harvest). Community-based responses to food insecurity have been formulated as an alternative to the charitable model, providing healthier, better-quality food and preserving participants' dignity by requiring their participation, time, and often some investment of financial resources (Power, 2005).

At the provincial level, British Columbia has been the most active in food security work in recent years. The government's Community Food Action Initiative aims to increase food security at the population level with a focus on vulnerable populations, including children and low-income parents. Programs typically teach food skills, link households with other community initiatives

and provide some direct food assistance. The 'Colts Connect in the Kitchen' program in Richmond provides cooking demonstrations for young parents with take-home meals and facilitates access to a community kitchen. The 'Kidsafe Cooking Fun for Families' project teaches cooking and nutrition to low income families in Vancouver through a community kitchen program at several locations. It also offers nutrition, food safety workshops and community gardening (Ministry of Health Services, British Columbia, 2005).

The Public Health Association of British Columbia encourages all health units to develop regional strategies for food security that are incorporated into regional health plans (Public Health Association of British Columbia, 2004). The Association recommends the following steps in developing such a strategy:

- Establish a food security team that works closely with decision makers;
- Assess food security needs in your jurisdiction;
- Develop a food security action plan with deliverables;
- Develop a food security policy for the jurisdiction; and,
- Support local food security groups.

Some of the best examples of transitional programming focused on Aboriginal populations are also taking place in the B.C. Community Food Action Initiative. Vancouver Coastal Health has established the Aboriginal Health Initiative Program. The program includes community kitchens that focus on communal cooking and sharing meals with a focus on nutritious foods, traditional foods procurement and harvesting, and community gardens that provide education and training on traditional and modern food growing. Aboriginal food security committees have been developed to provide capacity building in areas of traditional food gathering techniques and procuring of foods.

The federally funded Canada Prenatal Nutrition Program offers a First Nations and Inuit Component. The program targets pregnant women and women with infants up to 12 months of age living on-reserve and in Inuit communities. Community health and social service providers deliver the program with support from dietitians, nutritionists, lactation consultants, and others. The overall goal is to improve maternal and infant nutritional health. There are supports related to nutrition education, maternal nourishment (provision of healthy snacks, food coupons, food vouchers) and breastfeeding promotion.

There is relatively little peer-reviewed research available on the effectiveness of transitional strategies in addressing HFI. Community kitchens have been shown to enhance coping skills and provide valuable social support. It is unlikely that the programs could significantly address food security issues rooted in chronic poverty (Engler-Stringer & Berenbaum, 2007; Tarasuk & Reynolds, 1999). Research has shown that participation in community gardens provides numerous health benefits, including improved access to food, improved nutrition, increased physical activity and improved mental health. Community gardens are also seen by participants as promoting social health and community cohesion (Wakefield et al., 2007). No research was found linking community gardens with specific measures of household food security. In Kamloops, British Columbia, where a wide range of community-based food security activities are employed, the local food-bank director credits these programs with a 32% drop in demand at

the community's food bank from 1999-2003 (Dietitians of Canada, 2003). More research is warranted to clarify the contribution of these transition type strategies in reducing HFI.

A study by Vozoris and Tarasuk (2003) found the ability of prenatal and child nutrition programs in Toronto to alleviate household food insecurity to be minimal. While the goal of these programs is not to solve the food insecurity problems of participants, Vozoris and Tarasuk (2003) argued that the limited contribution these programs make to household circumstances must constrain their ability to affect participants' nutritional health and wellbeing. The authors also state: "It could be argued that this criticism is misplaced because the programs are designed to address objectives other than food security, but their success in achieving these will surely be hampered if program participants are locked in daily struggles to meet their food needs".

Two public health authorities in Saskatchewan and Alberta have conducted qualitative research on food security among families with young children. The Regina Qu'Appelle Health Unit and the Chinook Region Health Unit of Southern Alberta each interviewed food insecure families and local support service providers. Not surprisingly, the recommendations made by both reports focused on improving the social and economic conditions of parents. Both health regions identified the need for improved levels of government social assistance, increasing community awareness of food and nutrition programs, promoting breastfeeding, and better access to childcare, transportation and housing (Berenbaum & Misskey, 2003; Chinook Kids Food Security Coalition, 2004).

7.6 Redesign Strategies

Redesign (radical restructuring) strategies are based on a rethinking of the roots of the problem of food insecurity and developing the solutions to fundamental causes. Although redesign strategies take longer to implement and demand fundamental changes in the use of human and physical resources, they address multiple concerns in an integrated fashion. Redesign strategies are unlikely to be undertaken until stages one and two strategies have been attempted and found wanting, due to the incremental nature of most policy and program development (TFPC, 1995).

The most prominent food security interventions that fit the redesign category are those aimed at addressing poverty by increasing household income and tackling the high cost of other expenses. Virtually all organizations focused on the problem of household food insecurity in Canada identify some form of poverty reduction as a key priority. Direct income strategies typically focus on higher minimum wages, minimum income thresholds, higher social assistance benefits, nutrition allowances and the National Child Benefit. Complementary strategies to address the cost of living look at increasing access to safe and affordable housing and high quality childcare.

Food bank organizers call for a comprehensive poverty reduction plans with measurements, timetables, and a system of outcome-based targets, including a focus on five areas: children, the working poor, people with disabilities, immigrants and housing (Daily Bread Food Bank, 2007). The Dietitians of Canada (DC) conclude that poverty levels must be reduced to improve the food security of individuals and households and overall population health in Canada. DC strongly encourages dietitians to educate themselves about the issues and processes to achieve food security through social change, to use empowering strategies in community-based food

programming, to conduct and apply research, and to participate in coalitions that advocate to create the conditions in which all Canadians can achieve food security (Power, 2005).

Although poverty reduction is a key tool in addressing household food insecurity, it should be noted that poverty rates and indicators of food insecurity are not synonymous. The correlation between poverty rates and measures of household food insecurity may not be as strong as one might expect. In the U.S., only about half of the variance in state food insecurity rates is associated with differences in poverty rates (Nord, Jemison & Bickel, 1999). In the state of Oregon, for example, the poverty rate is at the national average yet it has been ranked with the highest level of household food insecurity and hunger in four of the last six years (Edwards & Weber, 2003). The complexity stems from the fact that dietary compromises do not automatically occur amid material deprivation. There are a number of intervening factors that can restrict the resources available to a household that are not captured by income statistics. Changes in the cost of other essentials or in subsidies for these necessities, such as housing, utilities, transportation or childcare, will not be reflected in household income, but hunger rates are likely to rise if these essentials become more expensive. Poverty rates also tell nothing about the effect of in-kind assistance (eating meals at a friend's/relative's house) and availability and access to direct food assistance (food banks, school feeding programs, field gleaning programs) on the prevalence of hunger.

Evidence from other countries and other population groups, however, does show a strong correlation between efforts to reduce poverty and lower prevalence of food insecurity. For example, in Sweden, Finland and Denmark, child poverty levels are below 5% and food insecurity, as indicated by household surveys is very low (UNICEF, 2007). Food banks and direct food assistance programs are virtually non-existent in those countries.

The addition of income supports for Canadian seniors has had a similar effect on food insecurity. The prevalence of food insecurity was very low (4.9%) among households reporting pension or seniors benefits in 2004 compared to the general population (9.2%) (Statistics Canada, 2007). The poverty rate among Canadian seniors in 1998 was 59% before taxes and transfers but fell to 8% after applying a combination of universal fixed payments, negative income tax, and earnings-related income payments.

Some evidence also shows that relatively small changes in income can have a big impact on food security status. An analysis comparing child hunger data from the 1994 and 1996 cycles of the National Longitudinal Survey of Children and Youth (NLSCY) showed that the prevalence of households across Canada reporting child hunger was almost the same as in the previous survey (1.4% in 1994 and 1.6% in 1996). Although the same households were surveyed in 1996, it was almost entirely different households that reported hunger in 1996 compared to 1994. Only 22.4% of hungry households from 1994 retained that status in 1996. Among households that fell into the hunger state in 1996 (having not reported child hunger in 1994), mean annual household income was reduced by \$2,690 (McIntyre et al., 2001). In other words, a decrease in income of approximately \$224/month was enough to push previously non-hungry households into the hunger state. While income may not have been the only factor associated with the reporting of child hunger, an extreme form of household food insecurity, it does suggest that modest increases in income may have a strong protective effect on food security status.

Leading public health authorities in the area of food security have also consistently emphasized the need to facilitate networks and linkages among community groups, provincial organizations and government ministries. An approach that has gained interest across Canada and the U.S. is the formation of local or regional food policy councils (FPCs). FPCs are vehicles that champion redesign strategies by bringing together stakeholders from diverse food-related sectors to examine the food system and develop strategies to improve it. There are no governments in North America that have a ministry of food, so food-related matters are addressed by a wide range of departments and agencies. Food policy councils attempt to break down those silos. The diversity of perspectives they bring together can be successful at educating officials and the public, shaping public policy, improving coordination between existing programs, and starting new initiatives. In North America there are now no less than 60 food policy councils. While there are no examples of FPCs focuses specifically on children or Aboriginal issues, councils in Toronto, Vancouver and Kamloops have facilitated the implementation of many related food initiatives such as children's gardens, school nutrition programs and local food procurement.

The discussion of food insecurity often is understood as a question of urban hunger. Most families dealing with food issues are, in fact, in large urban centers in Canada. The high cost of housing, low income and the inaccessibility of quality food retail outlets can interact to create experiences of food insecurity. However, in developing an action plan to address food insecurity in Canada, decision makers should keep in mind that, although adequate income would allow urban families to purchase a sufficient quantity of food, it would not guarantee the quality of food available to them, nor would it address the livelihoods of those employed in the food production and processing industries.

Comprehensive food policies are not just concerned with urban consumers, but also food sector employees. The cheap food policy that has been pursued in most Western nations for most of the twentieth century has a major impact on these workers. Born in a time when food scarcity was a legitimate concern, the assumption has been that the public good would be best served by maximizing food production. Over time, this has led to an overabundance of food at the national level resulting in low commodity prices. Canada now has some of the least expensive food of any country in the world. For most small to mid sized family farms, and those working in the food processing sector, this has led to ever decreasing wages relative to other fields of employment. Wages for food processing workers have been declining in comparison to all other industries. From 1997 to 2001, the gap between the average pay for food processors compared to all industries increased from 3% to 14%. It is an industry that also relies heavily on new immigrants who have a difficult time finding suitable employment (City of Toronto Economic Development, 2004). The low wages paid to food sector employees is a significant contributor to the low price of food. However, the low price of food, a benefit for many lower income Canadians, actually promotes HFI for thousands who earn a living growing and processing our food.

7.7 Conclusion

There is not a great deal of literature showing the mix of strategies and degree of changes needed to significantly impact food insecurity among households with children or Aboriginal status. There are also a number of gaps in the research, such as:

- the threshold of frequency, duration and severity of household food insecurity that must be reached before children are likely to suffer serious long-term health outcomes;
- the health implications of chronic mild food insecurity versus infrequent hunger; and,
- how accurately household food insecurity reflects the actual experiences of younger children given that information is collected from parents/caregivers.

The research has clearly established that inadequate income is the primary driver of food insecurity for any household. Measures of low income are consistently shown to be the leading predictor of household food insecurity in population level surveys. Groups that are especially vulnerable to poverty are consistently found to report high levels of food insecurity as well, including lone mothers and those of Aboriginal status. Ensuring that low-income families have enough money for an adequate supply of safe and nutritious food, as well as other essentials including housing, transportation and clothing, is a fundamental requirement to reduce HFI.

Although increased income is likely to result in better nutrition for children, not all disadvantaged families possess sufficient knowledge or skills to make appropriate nutrition choices. As a complementary approach to broader redesign strategies, it may be useful to integrate transitional programming that supports these key food skills.

Evidence suggests that an overall plan to address the social determinants of socioeconomic and ethno-racial status as they relate to household food insecurity should focus primarily on redesign strategies to improve income, encourage collaboration among diverse groups within the food system that typically operate in silos, and actions to transform the food system to provide fair wages and social justice for eaters as well as for those earning a living from it.

The evidence suggests that low income is the single greatest predictor of food insecurity. Other characteristics highly correlated with low income are also strongly predictive, such as female lone parent households and Aboriginal status. Little research is available to show that ethno-racial status, independent of income, is a strong predictor of HFI. Income represents only one type of household resource that is protective against HFI. Non-monetary resources such as a sense of social inclusion are also protective. Therefore, the research suggests that resource deprivation, understood as a lack of financial and/or social resources, is the most important influence on the duration and severity of HFI.

8.0 BIBLIOGRAPHY

Alaimo, K., Olsen, C., & Frongillo, E. (2001). Food insufficiency and American school-aged children's cognitive, academic, and psychosocial development. *Pediatrics*. Vol. 108:44-53.

Badun, C., Evers, S. & Hooper, M. (1995). Food security and nutritional concerns of parents in an economically disadvantaged community. *Journal of the Canadian Dietetic Association*. Vol. 56(2):75-80.

Berenbaum, S. & Misskey, E. (2003). *Voices on Food Insecurity: Issues, Challenges and Coping Strategies of Vulnerable Families with Young Children in Regina*. University of Saskatchewan and Regina Qu'Appelle Health Region.

Casey, P.H., Simpson, P.M., Gossett, J.M., Bogle, M.L., Champagne, C.M., Connell, C., Harsha, D., McCabe-Sellers, B., Robbins, J.M., Stuff, J.E. & Weber, J. (2006). The association of child and household food insecurity with childhood overweight status. *Pediatrics*. Vol. 118(5):e1406-13.

Casey, P.H., Szeto, K.L., Robbins, J.M., Stuff, J.E., Connell, C., Gossett, J.M. & Simpson, P.M. (2005). Child health-related quality of life and household food security. *Arch. Pediatr. Adolesc. Med.* Vol. 159(1):51-6.

Cook, J.T., Frank, D.A., Berkowitz, C., Black, M.M., Casey, P.H., Cutts, D.B., et al. (2004). Food insecurity is associated with adverse health outcomes among human infants and toddlers. *J. Nutr.* Vol.134(6):1432-38.

Cristofar, S.P. & Basiotis, P.P. (1992). Dietary intakes and selected characteristics of women ages 19-50 years and their children ages 1-5 years by reported perception of food sufficiency. *Journal of Nutrition Education*. Vol.24(2):53-58.

Dietitians of Canada (2005). *Individual and Household Food Insecurity in Canada: Position of Dietitians of Canada*.

Dixon, L., Winkleby, M. & Radimer, K. (2001). Dietary intakes and serum nutrients differ between adults from food-insufficient and food-sufficient families: Third National Health and Nutrition Examination Survey, 1988-94. *J Nutr.* Vol. 131:1232-46.

Dubois, L., Farmer, A., Girard, M. & Porcherie, M. (2006). Family food insufficiency is related to overweight among preschoolers. *Soc Sci Med.* Vol. 63(6):1503-16.

Engler-Stringer, R. & Berenbaum, S. (2007). Exploring food security with collective kitchens participants in three Canadian cities. *Qual Health Res.* Vol. 17(1): 75-84.

- Garriguet, D. (2006). *Overview of Canadians' Eating Habits. Nutrition: Findings from the Canadian Community Health Survey*. Statistics Canada Research Paper. No.82-620-MIE — No. 2.
- Hamelin, A.M., Habicht, J.P. & Beaudry, M. (1999). Food insecurity: Consequences for the household and broader social implications. *J. Nutr.* Vol. 129: 525S-528S.
- Hamelin, A., Beaudry, M. & Habicht, J. (2002). Characterization of household food insecurity in Quebec: Food and feelings. *Social Science & Medicine*, Vol. 54(1): 119-32.
- Heflin, C., Siefert, K. & Williams, D. (2005). Food insufficiency and women's mental health: findings from a 3-year panel of welfare recipients. *Soc Sci Med.* Vol. 61:1971-82.
- Jung Sun Lee, J.S. & Frongillo Jr., E.A. (2001). Nutritional and health consequences are associated with food insecurity among U.S. Elderly Persons. *J Nutr.* Vol. 131(5): 1503-1509.
- Jyoti, D.F., Frongillo, E.A. & Jones, S.J. (2005). Food insecurity affects school children's academic performance, weight gain, and social skills. *J. Nutr.* Dec., Vol.135(12):2831-9.
- Kendall, A., Olson, C.M. & Frongillo, E.A., Jr. (1996). Relationship of hunger and food insecurity to food availability and consumption. *Journal of the American Dietetic Association.* Vol. 96:1019-1024.
- Kleinman, R.E., Murphy, J.M., Little, M., Pagano, M., Wehler, C.A., Regal, K., & Jellinek, M.S. (1998). Hunger in children in the United States: Potential behavioral and emotional correlates. *Pediatrics* Vol. 101(1): E3.
- Krieger, N., Williams, D.R. & Moss, N.E. (1997). Measuring social class in US public health research: concepts, methodologies, and guidelines. *Annual Rev Public Health.* Vol. 18:341-378.
- Martin, K.S., Rogers, B.L., Cook, J.T. & Joseph, H.M. (2004). Social capital is associated with decreased risk of hunger. *Soc Sci Med.* Vol. 58(12): 2645-54.
- Martin, K.S. & Ferris, A.M. (2007). Food insecurity and gender are risk factors for obesity. *Journal of Nutrition Education and Behavior.* Vol. 39: 31-6.
- McIntyre, L. (2004). Food insecurity. In D. Raphael (Ed.) (2004), *Social Determinants of Health: Canadian Perspectives* (Chapter 12). Toronto: Canadian Scholars' Press Inc.
- McIntyre, L., Connor, S.K. & Warren, J. (2000). Child hunger in Canada: Results of the 1994 National Longitudinal Survey of Children and Youth. *Canadian Medical Association Journal.* Vol. 163(8): 961-5.
- McIntyre, L., Glanville, N.T., Raine, K.D., Dayle, J.B., Anderson, B. & Battaglia, N. (2003). Do low-income lone mothers compromise their nutrition to feed their children? *Canadian Medical Association Journal.* Vol. 168(6): 686–691.

- McIntyre, L., Walsh, G. & Connor, S.K. (2001). *A Follow-up Study of Child Hunger in Canada*. Applied Research Branch, Strategic Policy, Human Resources Development Canada.
- Murphy, J.M., Wehler, C.A., Pagano, M.E., Little, M., Kleinman, R.E., & Jellinek, M.S. (1998). Relationship between hunger and psychosocial functioning in low-income American children. *Journal of the American Academy of Child & Adolescent Psychiatry*. Vol. 37(2): 163-170.
- Nelson, K., Cunningham, W., Andersen, R., Harrison, G. & Gelberg, L. (2001). Is food insufficiency associated with health status and health care utilization among adults with diabetes? *J Gen Intern Med*. Vol. 16:404-11.
- Nord, M. (2007). *Characteristics of Low-Income Households with Very Low Food Security*. United States Department of Agriculture, Economic Research Service. Economic Information Bulletin Number 25.
- Nord, M., Andrews, M. & Carlson, S. (2006). *Household Food Security in the United States, 2005*. United States Department of Agriculture. Economic Research Service. Report Number 29.
- Nord, M., Jemison, K., & Bickel, G. (1999). *The Prevalence of Food Insecurity and Hunger, by State, 1996-98*. Economic Research Service, U.S. Department of Agriculture. Food Assistance and Nutrition Research Report No. 2.
- Nord, M. & Kantor, L.S. (2006). Seasonal variation in food insecurity is associated with heating and cooling costs among low-income elderly Americans. *J Nutr*. Vol. 136(11): 2939-44.
- Northern Ontario Perinatal and Child Health Survey Consortium (2003). *Nutrition in Northern Ontario. A Perinatal and Child Health Survey Strategies Initiative*.
- Dietitians of Canada (2003). *The cost of eating in BC: low-income families are more desperate than ever*. Dietitians of Canada B.C. Region and Community Nutritionists Council of B.C.
- Ontario Public Health Association (2002). *A Systemic Approach to Community Food Security: A Role for Public Health*. Toronto, Ontario.
- Public Health Association of British Columbia (2004). *Making the Connection – Food Security and Public Health*.
- Radimer, K.L., Olson, C.M. & Campbell, C.C. (1990). Development of indicators to assess hunger. *J. Nutr*. Vol. 120(S11): 1544-8.
- Radimer, K.L., Olson, C.M., Greene, J.C., Campbell, C.C. & Habicht, J-P. (1992). Understanding hunger and developing indicators to assess it in women and children. *Journal of Nutrition Education*. Vol. 24(1): 36S-45S.

- Rainville, B. & Brink, S. (2001). *Food Security in Canada, 1998-1999*. Applied Research Branch, Strategic Policy, Human Resources Development Canada.
- Roe, D.A. (1990). In-home nutritional assessment of inner city elderly. *J. Nutr.* 120 (suppl. 11): 1538S-1543S.
- Rose, D. & Oliveira, V. (1997). Nutrient intakes of individuals from food-insufficient households in the United States. *American Journal of Public Health*. Vol. 87(12): 1956-1961.
- Skalicky, A.M., Frank, D.A., Meyers, A.F., Adams, W.G., & Cook, J.T. (2001). Is food security associated with iron deficiency? Paper presented in poster symposium on nutritional issues in underserved populations (abstract #2668), Pediatric Academic Society Annual Meeting, Baltimore, MD.
- Statistics Canada (2007). *Income-Related Household Food Security in Canada*. Canadian Community Health Survey: Cycle 2.2, Nutrition 2004.
- Stormer, A. & Harrison, G.G. (2003). *Does Household Food Security Affect Cognitive and Social Development of Kindergartners?* Institute for Research on Poverty: Discussion Paper No. 1276-03. Madison, WI.
- Stuff, J., Casey, P., Szeto, K., Gossett, J., Robbins, J., Simpson, P., Connell, C. & Bogle, M. (2004). Household food insecurity is associated with adult health status. *J Nutr.* Vol. 134:2330-35.
- Tarasuk, V. (2001). Household food insecurity with hunger is associated with women's food intakes, health, and household circumstances. *J Nutr.* Vol. 131:2670-76.
- Tarasuk, V., Beaton, G. H., Geduld, J., & Hilditch, S. (1998). *Nutritional Vulnerability and Food Insecurity among Women in Families using Food Banks*. National Health Research and Development Program project report no. 6606-5609-201.
- Tarasuk, V. & Eakin, J.M. (2003). Charitable food assistance as symbolic gesture: An ethnographic study of food banks in Ontario. *Social Science & Medicine*. Vol. 56(7): 1505-15.
- Tarasuk, V. & Maclean, H. (1990). The food problems of low-income single mothers: An ethnographic study. *Canadian Home Economics Journal*. Vol. 40: 76-82.
- Tarasuk, V. & Reynolds, R. (1999). A Qualitative Study of Community Kitchens as a Response to Income-Related Food Insecurity. *Can J Diet Pract Res*. Vol. 60(1):11-16.
- Toronto Food Policy Council (1995). *Reducing Urban Hunger in Ontario: Policy Responses to Support the Transition from Food Charity to Local Food Security*.
- Toronto Public Health (2006). *Food Security: Implications for the Early Years*. Toronto, Ontario: Toronto Public Health.

Vailas, L.I., Nitzke, S.A., Becker, M. & Gast, J. (1998). Risk indicators for malnutrition are associated inversely with quality of life for participants in meal programs for older adults. *J. Am. Diet. Assoc.* Vol. 98: 548-553.

Vozoris, N. & Tarasuk, V. (2003). Household food insufficiency is associated with poorer health. *J. Nutr.* Vol.133(1):120-126.

Wakefield, S., Yeudall, F., Taron, C., Reynolds, J. & Skinner, A. (2007). Growing urban health: community gardening in South-East Toronto. *Health Promot Int.* Vol. 22(2): 92-101.

Wallace, S.P., Molina, L.C. & Jhavar, M. (2007). Falls, disability and food insecurity present challenges to healthy aging. *Policy Brief UCLA Cent Health Policy Res.* May, (PB2007-5):1- 12.

Wilde, P. & Peterman, J. (2006). Individual weight change is associated with household food security status. *J Nutr.* Vol. 136:1395-400.

Wolfe, W.S., Olson, C.M., Kendall, A. & Frongillo, E.A. Jr. (1998). Hunger and food insecurity in the elderly: its nature and measurement. *J Aging Health.* Vol. 10(3):327-50.