FOOD INSECURITY IN ABORIGINAL WOMEN LIVING WITH HIV/AIDS: EVIDENCE-INFORMED HEALTH PROMOTION INTERVENTIONS FOR FAMILY NURSE PRACTITIONER PRACTICE

by

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ABSTRACT

Food insecurity negatively affects HIV/AIDS populations. The purpose of this integrated literature review is to identify evidence-informed health promotion interventions to prevent and treat food insecurity amongst Aboriginal women living with HIV/AIDS in rural and remote British Columbia, Canada. A comprehensive literature search identified 31 pieces of literature for data analysis. The highest priority identified for family nurse practitioner practice was advocacy for healthy public policy: increase social assistance and the Family Bonus, expand the monthly nutritional supplement to include all with HIV/AIDS, and include remote Aboriginal communities in the Nutrition North Canada Program. The next identified priority was community action initiatives including: community hunter, gardening, and kitchen programs, as well as food banks. Finally, on the individual level, interventions included food insecurity assessment, nutritional counselling, micronutrient supplementation, and addressing depression and addictions. Through utilization of these interventions, family nurse practitioners will be enabled to effectively address food insecurity.

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CHAPTER ONE

Introduction

Food security is emerging as a significant topic within the health community. The definition of food security is "access by all people at all times to enough food for an active, healthy life and includes at a minimum: a) the ready availability of nutritionally adequate and safe foods, and b) the assured ability to acquire acceptable foods in socially acceptable ways" (Anderson, 1990, p. 1575). Food insecurity, then, occurs when, "the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain" (Anderson, 1990, p. 1575). Food security is a basic human right and an important social determinant of health (Mikkonen & Raphael, 2010). The social determinants of health are the living conditions and sociocultural circumstances that affect health such as food security, income, early childhood development, and housing: these factors can affect health measures such as life expectancy and chronic disease (Mikkonen & Raphael, 2010). Thus, food insecurity can negatively influence health, especially in marginalized populations.

As such, food security is increasingly discussed within the context of care of those with human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) (Anema, Vogenthaler, Frongillo, Kadiyala, & Weiser, 2009). HIV is a retrovirus that damages the body's immune system (Centre for Disease Control and Prevention [CDC], 2014). Infection with HIV can lead to AIDS; this is characterized by the presence of a weakened immune system as measured by lowered CD4 counts or the occurrence of opportunistic infections (CDC, 2014). Untreated, HIV may progress to AIDS in several years to one decade (CDC, 2014). However, with medications known as highly active

antiretroviral therapy (HAART), HIV-infected individuals can live decades before developing AIDS (CDC, 2014). HAART refers to a combination of at least three antiretroviral medications designed to suppress the replication of the HIV virus within the body (HIV Infosource, 2009).

The advent of HAART has led to declining rates of HIV infection globally (British Columbia Centre for Excellence in HIV/AIDS [BC-CfE], 2011; Joint United Nations Programme on HIV/AIDS [UNAIDS], 2012). Nevertheless, HIV/AIDS remains a significant problem for many. Worldwide, 34 million individuals were living with HIV/AIDS in 2011 (UNAIDS, 2012). Sub-Saharan Africa has the highest rates of HIV infection; 4.9% of the population are affected by HIV/AIDS (UNAIDS, 2012). In the United States of America (USA), an estimated 1, 148, 200 people were infected with HIV/AIDS at the end of 2009 (CDC, 2012). In Canada, 71, 300 people were estimated to be living with HIV/AIDS, with 3, 175 new cases at the end of 2011 (Public Health Agency of Canada [PHAC], 2012). From this data, it can be concluded that HIV/AIDS is a problem within resource-rich countries as well as resource-poor countries.

In fact, HIV/AIDS is a pandemic that is disproportionally associated with poverty even in resource-rich settings (Kalichman et al. 2010). Poverty contributes to inadequacies in the social determinants of health creating stigma, marginalization, and inability to meet basic needs: this increases vulnerability to HIV infection through increased risky behaviours such as exchange of sex for money, substance use, and decreased access to health care (Canadian AIDS Society, 2004; Kalichman et al., 2010). Poverty and HIV often coexist; thus, food insecurity has emerged as a significant topic in HIV/AIDS care. Food insecurity is a social determinant of health that has the potential to negatively affect the health of HIV/AIDS

individuals. In HIV/AIDS populations, food insecurity has been linked with nonadherence to HAART, depression, worsening immunological status, weight loss and wasting, and overall mortality (Anema et al., 2011; Campa et al., 2005; McMahon, Wanke, Elliott, Skinner & Tang, 2011; Weiser et al., 2008; Weiser et al., 2009b). Therefore, food insecurity is an important variable to consider in the care of HIV/AIDS populations affected by poverty.

The health of Aboriginal people (First Nations, Inuit, and Metis people) in Canada is negatively affected by disparities in the social determinants of health (Adelson, 2005). These socioeconomic disparities have increased the vulnerability of Aboriginal populations to higher rates of HIV/AIDS and food insecurity (Health Canada, 2007; PHAC, 2010b; Willows, Veugelers, Raine, & Kuhle, 2009). In particular, rural and remote Aboriginal communities experience high rates of food insecurity, ranging from 48-75% (Mercille, Receveur, & Potvin, 2012; Thompson et al., 2011). In addition to Aboriginal populations, women are more vulnerable to food insecurity due to their unpaid role as caregivers, lower wages, and domestic violence (Mikonnen & Raphael, 2010; Power, 2008). It is due to the breadth of these disparities that the population of interest for this project will be Aboriginal women living with HIV/AIDS and food insecurity in rural/remote BC communities.

Nurse practitioners are well situated to address food insecurity in Aboriginal populations affected by HIV/AIDS. In British Columbia (BC), family nurse practitioners (FNPs) autonomously provide primary care to all ages (College of Registered Nurses of British Columbia [CRNBC], 2010a). Tarlier and Browne (2011) contend that FNP practice is well equipped to address the health inequalities experienced by remote Aboriginal communities due to geographical location and social marginalization. FNP practice is guided by core competencies including professional role, responsibility, and accountability, health

assessment and diagnosis, therapeutic management, and health promotion and prevention of illness/injury (CRNBC, 2010a). The competency of health promotion will be prioritized in this project; although, all areas of FNP competency are necessary and will be utilized. The essence of promoting health is enabling individuals and populations to increase their ability to control and improve their health (World Health Organization [WHO], Health and Welfare Canada, & Canadian Public Health Association, 1986). Therefore, enabling Aboriginal women living with the health disparities of HIV/AIDS and food insecurity to improve their health through increasing food access and personal control over food supply is health promotion. For this reason, this project will use the *Ottawa Charter for Health Promotion* by the WHO et al. (1986) to apply a health promotion lens to the identification of food-insecurity interventions.

In order to identify effective initiatives and apply best practices, FNPs also utilize an evidence-informed practice approach. Evidence-informed practice utilizes research and practice knowledge of the best available quality to guide health practice, including health programming (U.S. Department of Health & Human Services [USDHHS], 2011b). Information in evidence-informed practice is applied with consideration of the culture and values of individuals and communities (USDHHS, 2011b). Thus, an integrative literature review will be conducted utilizing an evidence-informed approach.

The purpose of this integrated literature review is to identify evidence-informed health promotion interventions to prevent and treat food insecurity amongst Aboriginal women living with HIV/AIDS in rural and remote BC communities. As a prerequisite to identify effective interventions, it is necessary to examine the causes and consequences of food insecurity amongst Aboriginal women living with HIV/AIDS. Literature will be

selected and analyzed based on current interventions for food insecurity in HIV/AIDS, Aboriginal, women, and general populations, and interventions addressing the potential causes of food insecurity in HIV/AIDS. These food insecurity interventions will be primarily of use in FNP practice; however, other health professionals such as registered nurses, physicians, social workers, addictions and mental health counsellors, registered dietitians and other health care providers, and patient advocacy groups may also be able to utilize these interventions.

CHAPTER TWO

Background and Context

HIV/AIDS is a complex disease process which is influenced by many factors. In particular, food insecurity has negative health consequences in HIV/AIDS populations (Weiser et al., 2009b). As such, it is necessary to explore the background of HIV/AIDS and food insecurity to understand each concept. The potential causes of food insecurity in HIV/AIDS populations will be researched and discussed, as well as the resulting negative consequences of food insecurity. The research question utilized to guide this integrated literature review is: "What are the best evidence-informed health promotion interventions that FNPs may employ to prevent and treat food insecurity among Aboriginal women living with HIV/AIDS in rural and remote settings?" The rationale for choosing this specific population, setting, and audience of this project will be discussed. Finally, the significance of this topic to FNP practice will be clarified and the research question will be presented.

HIV/AIDS

HIV/AIDS is a retroviral infection that damages the immune system; specifically T-helper cells called CD4 lymphocytes are affected (Bennett, 2013). AIDS occurs when the immune system is impaired to the extent that opportunistic infections occur (Bennett, 2013). HIV/AIDS is monitored with CD4 counts and HIV-1 viral load to indicate disease progression and response to therapy (U.S. Department of Health & Human Services (USDHHS, 2011a). Mortality with HIV/AIDS has been dramatically decreased by the advent of HAART (BC-CfE, 2011; UNAIDS, 2012). However, a 95% adherence rate to HAART is necessary in order to achieve a high likelihood of viral suppression (Paterson et al., 2000). Even relatively high rates of HAART adherence (70 to 90%) are less likely to suppress the

HIV virus (Kitahata et al., 2004). Thus, HAART adherence is a critical factor in the care of HIV/AIDS populations.

However, food intake is an important issue for individuals considering HAART therapy. HAART may increase appetite and metabolic demand causing food-insecure individuals to decline HAART due to fear of increased hunger (Frega, Duffy, Rawat, & Grede, 2010). Also, some forms of HAART work better when taken with food. For example, darunavir, a protease inhibitor, increases 30% in bioavailability when taken with food (Busse & Penzak, 2007; Weiser et al., 2008). Side effects of both HIV infection and HAART, such as nausea and diarrhea, are lessened by adjusting food intake to frequent, appetizing meals: this may not be possible for those with food insecurity (de Pee & Semba, 2010). Hence, the lack of food may be a significant barrier to achieving viral suppression in a HIV/AIDS individual.

Food insecurity also contributes to wasting and weight loss in HIV/AIDS. The CDC defines the HIV-associated wasting syndrome as an involuntary loss of 10% or more body weight with chronic diarrhea or chronic weakness and fever (USDHHS, 2011a). Causes of wasting and weight loss in HIV/AIDS are complex, including hormonal controls, malabsorbtion, and decreased dietary intake (Carbonnel et al., 1997; Dudgeon et al., 2006; Hsu, Pencharz, Macallan, & Tompkins, 2005). Even on HAART, wasting and weight loss may occur with serious outcomes such as disease progression and increased mortality (Grinspoon & Mulligan, 2003). Also, metabolic rates rise in HIV/AIDS. Resting energy expenditure (REE) is increased 10% in untreated HIV/AIDS adults; this rise in REE is likely similar in those on HAART and maybe even higher with opportunistic infections (Hsu et al., 2005; Kosmiski, 2011). The increase in REE actually compounds the need for an adequate

dietary intake; without the necessary intake, weight loss and wasting will occur (Kominski, 2011). Although, dietary intake may be decreased in HIV/AIDS due to dysphagia, anorexia, nausea, and depression/anxiety, food insecurity remains an important contributing factor (Fahey & Flemmig, 1997; Issac et al., 2008; Reynolds & Neidig, 2002). Given the increased risk of wasting and weight loss with subsequent mortality, food insecurity warrants special attention in the context of HIV/AIDS care.

Food Insecurity

It is important that FNPs are aware of the varying levels of food insecurity. One may be categorised as being food secure, moderately food insecure, or severely food insecure (Health Canada, 2007). Moderate food insecurity correlates with a compromise in the quality or quantity of food, without a large drop in food intake; whereas, severe food insecurity involves a reduction in the quantity of food consumption, a change in eating patterns, and the sensation of hunger (Health Canada, 2007). Additionally, members of the same household may have different levels of food security. Individual food security may vary within a household due to the relative division of food per each person (Food and Agriculture Organization of the United Nations [FAO], 2008). As such, a mother may experience severe food insecurity with hunger, whereas her child may be moderately food insecure with a lower quality diet.

The causes of food insecurity are multifaceted. Health Canada (2007) found food insecurity was higher in households with low and low-middle incomes, single parent households led by women, and in less stable housing arrangements such as renting. Those on social assistance are particularly vulnerable to food insecurity. Social assistance is a safety net which provides funding for basic life necessities to those without an income; however,

60% of Canadian households on social assistance experienced food insecurity (Canadian Immigrant, 2011; Health Canada, 2007). Awareness of these risk factors can alert FNPs in practice to inquire regarding food insecurity.

Awareness of food insecurity is increasingly relevant because food insecurity is on the rise in resource-rich countries. In the USA, 12.6% of the population were food insecure in 2003 to 2005 (Nord & Hopwood, 2008). In Canada, 7.7% of households were food insecure: 5.1% were moderately insecure and 2.7% were severely food insecure in 2007 to 2008 (Health Canada, 2012). However, since the recession in 2008, food bank usage in Canada has risen 31%, indicating that food insecurity may have increased (Food Banks Canada, 2012). Rates of food insecurity are even higher within HIV/AIDS populations. Norman et al. (2005) found that 52% of the HIV/AIDS population on HAART in BC were food insecure. More recently, Anema et al. (2011) reported that 71% of the HIV/AIDS population on HAART in BC reported food insecurity. Clearly, resource-rich countries are affected by food insecurity and HIV/AIDS populations within these countries are affected to a larger extent.

Factors Associated with Food Insecurity in HIV/AIDS

The potential causes of food insecurity in HIV/AIDS populations are similar in some respects to the general population. A review of five cross-sectional studies revealed four factors associated with food insecurity in HIV/AIDS: low income, unstable housing and homelessness, depression, and addictions (Anema et al., 2011; Normen et al., 2005; Vogenthaler et al., 2010; Vogenthaler et al., 2011; Weiser et al., 2009a). Although the aim of cross-sectional research is not to explore causality, associations may be determined that suggest important areas of intervention to reduce food insecurity (Centre for Evidence Based

Medicine, 2013; Weiser et al., 2009a). Thus, although these associated factors may be the cause or the result of food insecurity, they will be explored as potential causes to identify areas of intervention for food insecurity.

Income. Income is significantly connected with food insecurity in HIV/AIDS populations. Normen et al. (2005) reported that low income was associated with a 3.78 times greater likelihood of food insecurity. Similarly, Anema et al. (2011) found that low annual income was associated with a 3.15 times greater likelihood of being food insecure. These results are not surprising considering income has a significant association with food insecurity in the general population (Health Canada, 2007). Income is also associated with food insecurity in a stepwise fashion; in other words, food insecurity increases as income decreases (Health Canada, 2007; Norman et al., 2005). However, even small increases in income were associated with lower food insecurity in low income HIV/AIDS populations (Vogenthaler et al., 2010). Therefore, FNP interventions that increase income for HIV/AIDS populations have the potential to decrease food insecurity, even in small amounts.

As such, awareness of income sources for HIV/AIDS populations is necessary. People with HIV/AIDS may rely on different income forms such as employment insurance sickness benefit, long-term disability benefits, and Canadian and Quebec pension plan disability benefit (Canadian HIV/AIDS Legal Network [CHALN], 2005). However, social assistance is often the main source of income for marginalized populations including intravenous drug users (IVDU) and Aboriginal populations (CHALN, 2005). Social assistance benefits are under the poverty line in all provinces and territories in Canada (CHALN, 2005). For example, in BC, a single woman under the age of 65 years would receive $235 as a monthly support allowance and $375 as a monthly shelter allowance

(Ministry of Social Development [MSD], 2013). A woman with one child receives somewhat more: $375.58 as a monthly support allowance and $570 as a monthly shelter allowance (MSD, 2013). As well, the Family Bonus is allotted per child in BC: this is a combination of the Canada Child Tax Benefit, National Child Benefit Supplement, and a base amount (Government of BC, n.d.). Overall, these amounts are still inadequate to meet basic needs. Thus, food insecurity interventions addressing income in this project will consider the adequacy of social assistance rates.

Homelessness and unstable housing. Homelessness and unstable housing are also associated with food insecurity in HIV/AIDS. Homelessness was the strongest predictor of food insecurity in a study by Vogenthaler et al. (2010). Likewise, Normen et al. (2005) found that unstable housing was associated with a 2.24 times greater likelihood of food insecurity in HIV/AIDS populations. Again, income is a factor because cost of housing contributes to homelessness. The Canada Mortgage and Housing Corporation (2012) notes core housing needs have increased from 2007 to 2009 due largely to lack of affordability. As cost of housing rises, low-income HIV/AIDS populations may use funding designated for food to pay for housing. Hanson (2011) reported that women could not afford sufficient food due to high housing costs. This dichotomy between paying for housing versus paying for food may lead to eventual loss of housing in low income HIV/AIDS populations. However, as housing is lost or becomes less adequate (i.e. shelters, hotels), the availability of kitchens to store food and cook low-cost meals decreases; this also increases vulnerability to food insecurity. Given the increased incidence of inadequate and unstable housing in Aboriginal communities as well as HIV/AIDS populations, housing is a key area for FNP interventions for food insecurity in this project (Ontario HIV Treatment Network Rapid Response Service, 2011).

Depression. The literature on HIV/AIDS populations also reveals a strong association between depression and food insecurity. Vogenthaler et al. (2011) found that HIV/AIDS individuals with food insufficiency were 2.73 times more likely to be depressed. Anema et al. (2011) found 67% of the HIV/AIDS population had depressive symptoms and were 2.34 times more likely to be food insecure. Similarly, Weiser et al. (2009a) found that food insecurity was linked to lowered mental health composite scores. Depression is also significant in Aboriginal communities: 30% of adults in on-reserve First Nations communities reported depressive moods and suicidal ideation (First Nations Information Governance Committee, 2005 as cited in Health Canada, 2009). FNP interventions targeting depression are relevant to Aboriginal HIV/AIDS populations with food insecurity.

Addictions. Finally, an important area of intervention for FNP practice is addressing the various addictions associated with food insecurity in the HIV/AIDS literature. Anema et al. (2011) found a 1.85 times greater likelihood of food insecurity in those who utilize illicit drugs and a 2.30 times greater likelihood of food insecurity in those who smoked tobacco. Norman et al. (2005) reported a 2.31 times greater likelihood of food insecurity in those who utilized injection drugs in their lifetime. Weiser et al. (2009a) also observed that crack cocaine use was associated with a 2.06 times greater likelihood of food insecurity. These addictions may lead to food insecurity in several ways. Crack cocaine addicts may lead a chaotic life which may impair the ability to obtain basic needs; also, the cost of drugs and cigarettes may further limit funds available for food leading to increased risk of food insecurity (Weiser et al., 2009a). Additionally, as a known anorectic, cocaine may contribute to wasting (Forester, Tucker, & Gorbach, 2005; Vicentic & Jones, 2007). This highlights the importance of addressing cocaine addictions, as well as general drug addictions and tobacco

use in food insecure HIV/AIDS populations. Additionally, the increased incidence of HIV transmission in Aboriginal populations attributable to IVDU suggests that addiction treatment within this project's population will be beneficial (PHAC, 2010b).

In summary, low income, unstable housing and homelessness, depression, and addictions were associated with food insecurity in HIV/AIDS populations. These factors also are relevant in Aboriginal populations. Although causality may not be determined, these associations provide important areas of entry point for the formation of food insecurity interventions in Aboriginal HIV/AIDS populations. As such, one area of project analysis will focus on interventions that address these potential causes of food insecurity in HIV/AIDS populations.

Consequences of Food Insecurity in HIV/AIDS

As previously mentioned, food insecurity can contribute to negative health consequences in HIV/AIDS populations. In particular, viral suppression and immune system recovery are reduced. McMahon et al. (2011) found that CD4 counts did not recover as substantially in food insecure individuals on HAART: overall CD4 counts were lower by 99.52 cells. However, McMahon et al. did not consider HAART nonadherence as a factor; although, nonadherence has been linked with food insecurity in studies by Wang et al. (2011) and Weiser et al. (2008). Wang et al. and Weiser et al. both found food insecurity was associated with lowered viral suppression; however, HAART nonadherence only partially explained this relationship. As further explanation, Wang et al. suggested that HAART decreased in bioavailability with lowered dietary intake. Overall, the previous studies indicate that food insecurity has a detrimental effect on the resilience of the immune system in HIV/AIDS; this is partially but not fully explained by HAART nonadherence.

Other serious outcomes of food insecurity in HIV/AIDS include wasting and mortality. Campa et al. (2005) reported an association between food insecurity and HIV-related wasting. Likewise, Anema et al. (2013) and Weiser et al. (2009b) reported a link between food insecurity and increased mortality. Anema et al. found that food insecure IVDU living with HIV/AIDS were almost twice as likely to die compared to those who were food secure. Weiser et al. further explored the impact of food insecurity on non-accidental mortality with consideration of low body mass index (BMI) as a modifying variable. Food insecurity combined with a low BMI was associated with a 1.9 times increased likelihood of mortality (Weiser et al., 2009b). However, no increase in mortality was reported in food secure populations with a low BMI whereas the food insecure population without a low BMI still displayed a trend toward mortality approaching statistical significance (Weiser et al., 2009b). This finding suggests that food security may lead to increased mortality through other mechanisms in addition to wasting.

Possible linkages between food insecurity and negative health outcomes in HIV/AIDS populations include HAART nonadherence, depression, addictions, and a lowered bioavailability of HAART (Weiser et al., 2009b). As well, micronutrient deficiencies may be a pathway between food insecurity and a weaker immune system response (McMahon et al., 2011). Food insecurity leads to malnutrition: this is a deficit, excess, or disproportional intake in either micronutrients or macronutrients (FAO, 2008). Macronutrients refer to fats, proteins, or carbohydrates and micronutrients refer to vitamins, minerals, antioxidants, and phytochemicals (Raiten, Mulligan, Papathakis, & Wanke, 2011; Tinnerello, 1999). Micronutrient deficiencies were found commonly amongst HIV/AIDS populations and the need for micronutrients seemed higher in this population (de Pee &

Semba, 2010). De Pee and Semba (2010) observed that deficiencies in micronutrients appeared to be associated with poor outcomes such as disease progression, increased transmission, and earlier mortality in HIV/AIDS populations. However, de Pee and Semba also discussed that it is difficult to isolate micronutrient deficiencies from other negative events occurring simultaneously such as opportunistic infections.

The associations between food insecurity and negative health outcomes in HIV/AIDS are clear, although the explanations for these associations are multifactorial. The literature calls for longitudinal research to establish causality between food insecurity and negative health outcomes (Vogenthaler et al., 2010; Vogenthaler et al., 2011; Wang et al., 2011; Weiser et al., 2009a; Weiser et al., 2009b). More research is needed to understand the biologic and social linkages between food insecurity and other socioeconomic variables such as illicit drug use and depression (Anema et al., 2011). Nevertheless, the identified pathways of HAART non-adherence, depression, addictions, decreased HAART bioavailability, and micronutrient deficiencies provide important points for intervention to prevent the negative outcomes associated with food insecurity.

Setting and Population

The recommendations of this project will be focused in order to be applicable to FNP practice in BC, Canada. BC was chosen as the setting because much of the available HIV/AIDS literature on the potential causes and consequences of food insecurity is set in BC with study populations recruited from the provincial HAART program (Anema et al., 2011; Anema et al., 2013; Normen et al., 2005; Weiser et al., 2009b). Canada is considered a resource-rich country, and the potential causes and consequences of HIV/AIDS in the previous section were explored within resource-rich settings. Thus, the causes and

consequences of food insecurity can be applied to this project's population of Aboriginal women living with HIV/AIDS in rural and remote BC with consideration of the unique contextual factors and population health needs.

Women populations. Women have a higher risk of food insecurity due to multiple factors. In general, women are more vulnerable to poverty due to their traditional roles of child rearing, housework, and caregiving which are largely unpaid in addition to lower workforce wages (Mikonnen & Raphael, 2010). In particular, women with children are more vulnerable to food insecurity, especially in single parent, female led households (Health Canada, 2007). Yet the presence of an intimate partner does not guarantee food security: women exposed to intimate partner violence and economic abuse are also at risk for food insecurity (Power, 2008). As well, women often skip meals and eat less preferred foods in order to ensure their children have enough to eat (Bove & Olsen, 2006; Hanson, 2011). Women often fulfill the roles of shopping and cooking for a household; therefore, improving food security by developing skills in women may improve the food security for an entire household. As such, women will be included in this project's population of interest.

Aboriginal populations. Food insecurity is also higher amongst Aboriginal people: 21% of Aboriginal households were food insecure in 2007-2008 (Health Canada, 2012). As well, in a seminal Canadian survey representing 98% of the population in 2004, rates of food insecurity among Aboriginal populations were 3.6 times higher than the national rate (Health Canada, 2007). This is partially explained by the higher prevalence of socioeconomic risk factors including low income, not owning one's own home, having three or more children, and being in lone-parent households; however, a 2.6 times higher risk of food-insecurity remained even after adjustment for socioeconomic variables (Willow et al., 2009). As such,

socioeconomic disparities only partially explain the increased food insecurity in Aboriginal populations. Importantly, cultural food security, including the acquisition, consumption, and sharing of traditional foods, has declined, due in part to the relocation to urban centres, increased access to store bought food, changing migratory patterns of animals, and increased cost of hunting (Dietitians of Canada, 2012; Powers, 2008). Lack of access to cultural foods may also explain the higher rates of Aboriginal food insecurity.

In addition to food insecurity, Aboriginal people also experience a higher rate of HIV. In Canada in 2008, incidence of HIV infection was 3.6 times higher in Aboriginal populations with IVDU as the primary mode of transmission (PHAC, 2010b). Furthermore, the age of HIV infection is younger in Aboriginal populations and HIV/AIDS affects Aboriginal women disproportionally: 49% of new HIV infections were among Aboriginal women as compared to 21% in non-Aboriginal women from 1998 to 2008 (PHAC, 2010a). The increased incidence of HIV/AIDS in Aboriginal populations is again attributed to the inequities in the social determinants of health such as income, housing, early childhood development including abuse, exposure to prison, and racism (Adelson, 2005; PHAC, 2010b). Aboriginal women, then, are more likely to contract HIV at a younger age and live with HIV/AIDS in a socioeconomically disadvantaged state. As such, they are the population of interest for this project.

In order to comprehend the overrepresentation of food insecurity and HIV/AIDS in Aboriginal people, it is important to understand the generational trauma that Aboriginal people have experienced (Bombay, Matheson, & Anisman, 2009). Trauma experienced at the collective level in one generation may be passed on to subsequent generations (Bombay et al., 2009). Childhood trauma can lead to poor coping strategies and poor mental health which

may compromise parenting skills and contribute to subsequent trauma to the next generation (Bombay et al., 2009). Important traumatic events that have occurred include loss of land, forced attendance in the residential school system, and the removal of many Aboriginal children into foster care (Bombay et al., 2009). The history of colonialism and residential school trauma has formed the poor socioeconomic conditions that now increase the vulnerability of the Aboriginal population to HIV/AIDS (PHAC, 2010b). Adelson (2005) indicates that there are social, political, economic, and cultural disparities in Aboriginal populations which combine to cause health disparities such as disease, disability, and early death. Thus, inequalities in the social determinants of health, including food insecurity, are relevant to the discussion of HIV/AIDS in the Aboriginal population.

Rural setting. Food insecurity is experienced differently in urban versus rural settings. To narrow the focus of this project, the setting will be rural and remote BC. HIV/AIDS is commonly assumed to be confined to urban populations (Varcoe & Dick, 2008). However, with the exception of Vancouver, parts of Northern Health, the Northwest and Northern Interior Health Service Delivery Areas, have the highest rates of new HIV infections in BC (BC Centre for Disease Control [BCCDC], 2012). This statistic does not distinguish between HIV/AIDS populations in northern urban centers such as Prince George, BC versus rural/remote communities. However, it is reasonable to presume there are Aboriginal HIV/AIDS populations also living in rural and remote areas of northern BC because Aboriginal populations often move between urban settings and their home communities (Northern Aboriginal HIV/AIDS Task Force, 2005). As such, a rural and remote Aboriginal HIV/AIDS population exists and will benefit from the interventions in this project.

Rural populations are defined by Statistics Canada (2011) as those who live outside of areas with populations of 1,000 or more: according to this definition, 14% of the BC population lived in rural areas. However, rural may be defined in multiple ways depending on the issue in question (du Plessis, Beshiri, Bollman, & Clemenson, 2001). This project seeks to address the needs of Aboriginal women that live in smaller centres in BC, even if the population is greater than 1,000. Thus, for this project, rural will be defined as "towns or municipalities outside the commuting zone of larger urban centres (with 10,000 or more population)" (du Plessis et al., 2001, p. 6). Also, remote communities will be defined as those more than 350 kilometers away from a service centre (or a city) with year-round road access (Skinner, Hanning, Desjardins, & Tsuji, 2013).

Health in rural and remote areas is an area of concern. Romanow (2002) reported that rural and remote populations have a lower health status than those in urban centres. Rural populations experience higher mortality rates which is often related to a higher risk of circulatory disease, injuries, and suicide (Canadian Institute for Health Information, 2006). This may be partially explained by limited access to health care professionals and facilities, and increased expenses related to healthcare travel (Romanow, 2002). The unique health challenges in rural and remote communities will be considered within this project.

As previously mentioned, food insecurity is prevalent in rural/remote communities (Thompson et al., 2011). Added dimensions of food insecurity in remote Aboriginal communities include: high cost of store-bought food, limited choice in healthy food, and varying quality of fresh food (Dietitians of Canada, 2012). Aboriginal communities are often marginalized economically and may not have adequate infrastructure for food processing and production; and, transport networks may be less available (Fieldhouse & Thompson, 2012).

Even in rural areas with road access, travelling to larger, cheaper supermarkets may be hindered by transportation barriers such as travel distance, lack of a vehicle, and cost of gasoline, vehicle repair, and vehicle registration (Bove & Olson, 2006; Mercille et al., 2012). The barriers of limited selection, high food prices, and limited transportation in rural and remote areas will be considered in the identification of food insecurity interventions.

Additionally, barriers to health programing in rural/remote communities must also be considered. These barriers were explored in women at risk for HIV/AIDS in rural BC by Varcoe and Dick (2008). Social programming may be unavailable or not appropriate to the needs of a rural population (Varcoe & Dick, 2008). Professional information may be leaked and assumptions are made about individuals who attend clinics, especially in regards to the stigmatized topics of mental health, HIV, and addictions (Varcoe & Dick, 2008). Lack of confidentiality and stigma may hinder efforts to form programs addressing food insecurity and HIV/AIDS: this will be considered in the formation of this project's interventions.

Nurse Practitioner Practice

The audience for this project will be FNPs working with Aboriginal women living with food insecurity and HIV/AIDS in rural/remote communities. In addition, other health care professionals may also derive benefit from this project's findings. FNP practice will be defined in order to exemplify to the various audiences how the interventions identified in this project fit within the scope of FNP practice. Nurse practitioners (NPs) are advanced practice nurses that are educated at the graduate level to autonomously provide essential health services (Canadian Nurses Association [CNA], 2010; CRNBC, 2010a). NP practice in BC is divided into three streams: family, adult, and pediatric (CRNBC, 2012). Family nurse practitioners (FNPs) deliver primary health care to all ages with a focus on the family as a

unit (CRNBC, 2012). As such, the family/household of Aboriginal women living with HIV/AIDS will be considered in this project's recommendations.

Due to the renewed interest in the NP role over the last two decades, all provinces and territories in Canada now have legislation that provides definition and legal parameters for the NP role (Dicenso et al., 2007; Tarlier & Browne, 2011). In BC, legislation of the NP role was passed in 2005; specifically, the Nurse (Registered) and Nurse Practitioner Regulation under the Health Professions Act governs NP practice (CRNBC, 2010b; Ministry of Health, n.d.; Salyers et al., 2012). Additionally, the College of Registered Nurses of British Columbia (CRNBC) regulates NP education, examination, and licensure of NP practice in BC (Salyers et al., 2012). The core competencies as outlined by the CRNBC provide the requirements for NP registration (2010a); thus, these competencies will also be utilized to identify food insecurity interventions appropriate to FNP practice. The NP core competencies will be further discussed in Chapter Three.

FNPs are health care providers who are well positioned to address food insecurity in Aboriginal women living with HIV/AIDS in rural and remote areas. In fact, the NP role has grown out of the legacy of outpost nursing which provided necessary health care to rural and remote areas (Dicenso et al., 2007; Tarlier & Browne, 2011). The provision of primary health care to underserved and marginalized populations is central to the values of NP practice (Tarlier & Browne, 2011). FNP education by the University of Northern British Columbia continues to support this value by focusing on educating graduate students to provide primary health care for rural and remote populations (Salyers et al., 2012). Thus, FNPs graduate with knowledge and resources to address the health needs of rural and remote

populations. As such, marginalized populations in rural and remote BC will benefit from increasing FNP knowledge and ability to treat food insecurity.

Research Question

As mentioned before, the purpose of this project is to identify evidence-informed health promotion interventions to prevent and treat food insecurity amongst Aboriginal women living with HIV/AIDS in rural and remote BC settings. Therefore, the research question utilized to guide this integrated literature review is: "What are the best evidence-informed health promotion interventions that FNPs may employ to prevent and treat food insecurity among Aboriginal women living with HIV/AIDS in rural and remote settings?" The rationale for addressing food insecurity in Aboriginal women with HIV/AIDS in rural and remote settings has already been discussed. The following Chapter will discuss the concept of health promotion, and the role of the Ottawa charter and NP competencies in identifying the most appropriate, applicable food-insecurity interventions for this project.

CHAPTER THREE

The Theoretical Framework

NP practice is grounded theoretically in the principles of primary health care: accessibility, public participation, health promotion, appropriate technology, and intersectoral collaboration (CNA, 2010; CRNBC, 2010a). Within primary health care, health promotion is identified as a key competency in NP practice. Health promotion is defined as, "the process of enabling people to increase control over, and to improve their health. To reach a state of complete physical, mental, and social well-being, an individual or group must be able to identify and realize aspirations, to satisfy needs, and to change or cope with the environment" (WHO et al., 1986, para 1). Health promotion is a process that enables people to better their own state of health, including the social determinants of health.

Health promotion is one of four categories of the NP core competencies: professional role; responsibility; and accountability, health assessment and diagnosis, therapeutic management, and health promotion and prevention of illness and injury (CRNBC, 2010a). NP core competencies have been developed to ensure entry-level NPs possess appropriate and safe skills for practice, to review NP education programs, and to design NP testing (CRNBC, 2010a). A full discussion of the entry-level competencies for NP practice may be found in *Competencies Required for Nurse Practitioners in British Columbia* by the CRNBC (2010a). To ensure relevance to FNP practice, the CRNBC conducted a revision process in 2009-2010; this included obtaining perspectives from practicing FNPs. Thus, NP core competencies have been developed to reflect the practice of current FNPs.

In order to address food insecurity, FNPs will need to utilize all four categories of NP core competency. Patients must first be assessed for food insecurity and diagnosed. The

individual causes of food insecurity may require therapeutic management competencies such as pharmacotherapy for depression. Research and leadership competencies are required to generate knowledge and develop appropriate food insecurity resources. Finally, health promotion is a key NP competency applied in the identification of food insecurity interventions. As previously discussed, food is a resource for health, and assisting this project's population to increase food access is a form of health promotion. Therefore, in this project, a health promotion lens will be applied to the identification of food insecurity interventions for Aboriginal women living with HIV/AIDS in rural/remote BC.

Specifically, *The Ottawa Charter for Health Promotion* by the WHO et al. (1986) will be used. Methods employed in health promotion include advocating, enabling, and mediating; these methods may be used to support equitable access to the social determinants of health (WHO et al., 1986). Advocacy for health is aimed at political, economic, social, environmental, and cultural factors which affect health (WHO et al., 1986). Enabling populations includes improving access to resources and education, as well as increasing control over health choices (WHO et al., 1986). Mediating involves reconciling differences between competing aspects of society towards the goal of healthier policies, products, and environments (WHO et al., 1986).

Advocating, enabling, and mediating are employed in five health promotion strategies as indicated by *The Ottawa Charter for Health Promotion* (WHO et al., 1986).

1. Building healthy public policy addresses health, income, and social policy changes that promote greater equity.
2. Creating supportive environments promotes the development of safe and enjoyable technology, work environments, energy production, and urbanization.

3. Strengthening community action involves the empowerment of communities to take ownership, make decisions, and plan strategies to further their health.
4. Developing personal skills involves providing information, education, and supporting the development of life skills on a personal level.
5. Reorienting health services involves the redirection of the health sector towards the provision of health promotion services, in addition to clinical and curative services.

These health promotion strategies provide the theoretical framework upon which the interventions for addressing food insecurity in this project will be founded.

Health promotion principles will also support this project's interventions. The concept of empowerment will be utilized: this is, "enabling individuals and communities to assume more power over the personal, socioeconomic, and environmental factors that affect their health" (Rootman et al., 2001, p. 4). Also, the health promotion principles of participation, equity, intersectoral collaboration, and sustainability will be considered in the identification of food insecurity interventions (Rootman et al., 2001). Finally, health promotion strategies utilize a multi-strategy approach (Rootman et al., 2001). For example, health promotion strategies are delivered at different levels of society, including the personal level, the social or community level, and the structural level (Jackson et al., 2006). Similarly, FNP practice takes place at the individual level, but also at a community and population level (CRNBC, 2010a). Employing multiple health promotion strategies at all three levels is more effective (Jackson et al., 2006). Therefore, this project will identify food-insecurity interventions on all three levels.

This project will utilize the five health promotion strategies of building healthy public policy, strengthening community action, creating supportive environments, developing

personal skills, and reorienting health services to provide the framework for proposed food insecurity interventions in Aboriginal women living with HIV/AIDS. Underlying principles of health promotion will be incorporated including empowerment, participation, equity, intersectoral collaboration, a multi-strategy approach, and sustainability (Rootman et al., 2001). Most importantly, the interventions will fit within the NP core competencies, so as to ensure the relevance of the proposed food insecurity interventions to the scope of FNP practice. Interventions will be evidence-informed; this aspect is applied through appraisal of the evidence in the literature analysis in Chapter Five and application of this evidence with consideration of the values and culture of Aboriginal women living with HIV/AIDS in rural/remote BC. The next Chapter describes the approach to the literature search and analysis.

CHAPTER FOUR

Approach to the Project

A systematic approach to the literature search was applied in order to address the research question, "What are the best evidence-informed health promotion interventions that FNPs may employ to prevent and treat food insecurity among Aboriginal women living with HIV/AIDS in rural and remote settings?" Key terms selected at the beginning of the research process included: human immunodeficiency virus, HIV, acquired immunodeficiency syndrome, AIDS, food security, and food insecurity. As the research question was refined, more key terms were added. See Table 1 on p. 31 for a summary of key terms utilized.

Electronic databases were selected according to the hierarchy of pre-processed information (Fyfe, 2013). The following databases were searched with key terms: National Guidelines Clearinghouse, Clinical Practice Guidelines and Protocols in BC, Cochrane Reviews, Evidenced Based Nursing, MEDLINE (OVID), MEDLINE with full text, and CINAHL with full text. A series of internet searches were conducted and grey literature websites were reviewed and/or literature was retrieved from: the Saskatchewan Ministry of Health, Health Canada, the Public Health Agency of Canada, the World Health Organization, Food and Agriculture Organization of the United Nations, Food Secure Canada, Food Secure Saskatchewan, BC Food Security Gateway, Saskatchewan Ministry of Social Services, British Columbia Centre for Excellence in HIV/AIDS, BC Ministry of Social Development and Social Innovation, Ministry of Health: BC Guidelines, Canadian HIV/AIDS Legal Network, Canada Mortgage and Housing Corporation, Dietitians of Canada, the Positive Living Society of British Columbia, and AIDS Saskatoon. Please refer to Appendix A on p. 89 for the literature search review, numbers of hits, and articles retained.

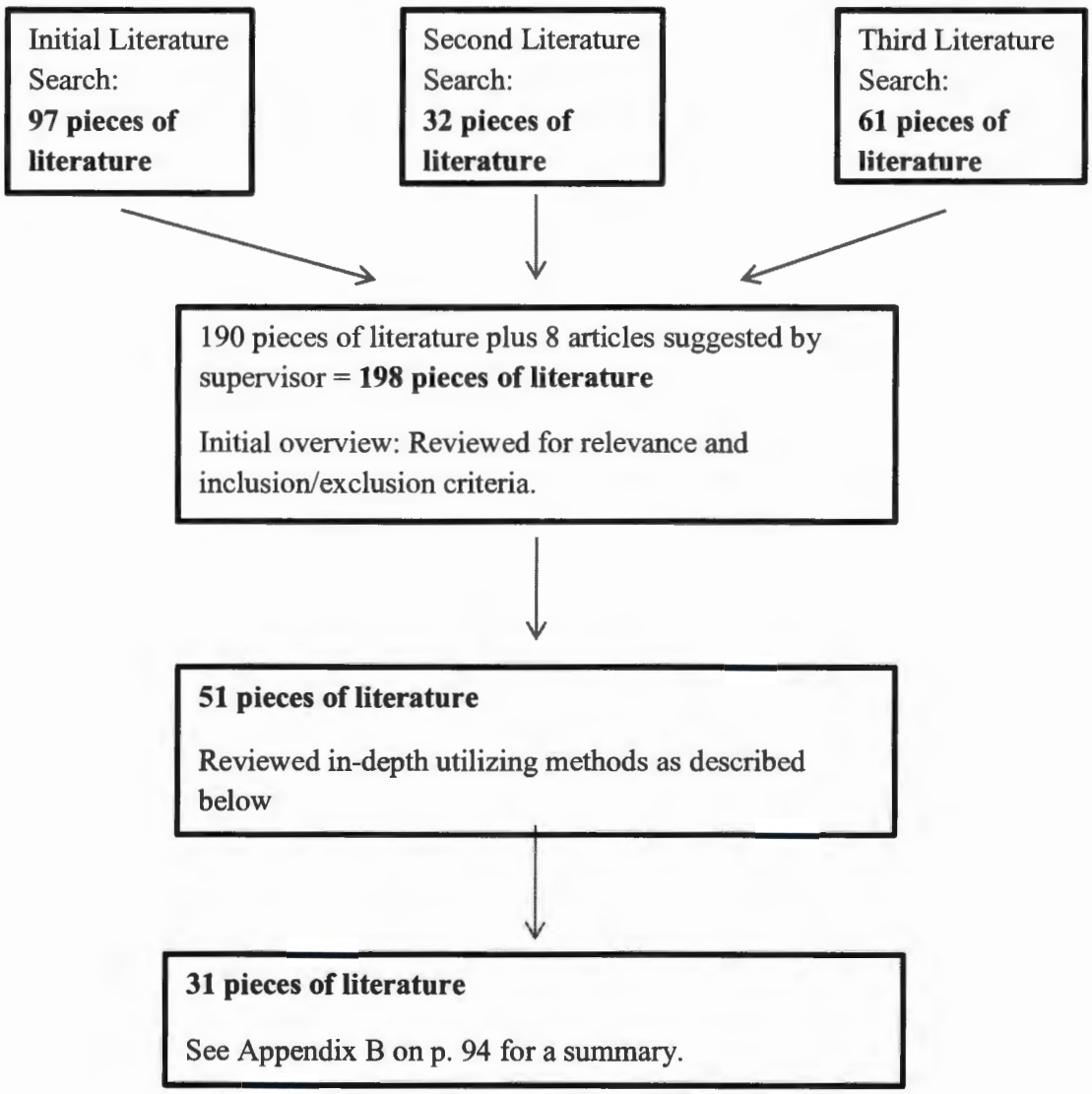
The literature search for this project occurred in three installments. The initial literature search retrieved literature on food insecurity interventions in resource-poor HIV/AIDS populations, and literature on the causes and consequences of food insecurity in resource-rich HIV/AIDS populations. Literature on food insecurity interventions in resource-rich HIV/AIDS populations was not found. Next, a second literature search retrieved literature on food insecurity interventions in women and Aboriginal populations, as well as NP and health promotion literature. A preliminary search for intervention literature on the potential causes of HIV/AIDS food insecurity was performed. After further consideration, a third literature review was completed, focusing on food insecurity interventions in the general population and interventions addressing the potential causes of food insecurity in HIV/AIDS. See Figure 1 on p. 29 for a search strategy summary.

Inclusion and exclusion criteria were also applied. Inclusion criteria were as follows: individual studies, systematic reviews, clinical practice guidelines, and governmental/agency publications on interventions pertaining to food insecurity in HIV/AIDS, Aboriginal, women, and general populations in a resource-rich Canadian and USA settings. However, literature on food insecurity interventions in resource-poor HIV/AIDS populations was also included, due to the lack of literature set in resource-rich settings. Finally, intervention literature was included on the potential causes of food insecurity in HIV/AIDS populations: low income, homelessness and unstable housing, depression, and addictions.

Exclusion criteria left out the populations of HIV infected children and pregnant women and the subject of HIV transmission. Literature set in resource-poor areas was largely excluded except as previously described. Literature in non-English languages and over 10 years old was also excluded. Editorial and opinion papers were largely excluded as lower

forms of evidence; however, exceptions were made for key expert opinions on food insecurity and addictions. Food insecurity literature that did not discuss interventions was excluded from the literature analysis, though utilized in the introduction and background. Literature solely focused on healthy eating was excluded; because, no specific information was provided on the treatment of food insecurity.

Figure 1 Literature Search Strategy



As outlined in Cronin, Ryan, and Coughlan (2008), an initial overview of the literature was performed, applying inclusion and exclusion criteria. Fifty-one pieces of literature were selected for in-depth analysis, and were grouped according to themes. Critical appraisal of the quantitative and qualitative data was guided by the process outlined by Burns and Grove (2009). Comprehension, comparison, analysis, and evaluation of quantitative literature were performed, including consideration of statistical conclusion validity, internal validity, and external validity (Burns & Grove, 2009). Qualitative literature was analysed for descriptive vividness, methodological congruence, analytical preciseness, theoretical connectedness, and heuristic relevance (Burns & Grove, 2009). Systematic reviews were analyzed utilizing the appraisal tool set forth by the Public Health Resource Unit (2006). Clinical practical guidelines (CPGs) were examined utilizing a rapid evaluation tool that was developed from information by Slutsky (2005). Non-research literature including governmental reports, agency reports, and two review articles was analyzed for purpose, credibility, quality, content, coherence, recommendations, key thoughts, and strength and weaknesses as outlined by Cronin et al. (2008). The level of evidence was considered according to the level of evidence pyramid by Evidence-Based Nursing (2006).

Thirteen pieces of literature were subsequently found to fit with the exclusion criteria, due to date of publication greater than ten years old, lack of food insecurity interventions, and as lower forms of evidence (editorial). One descriptive review was excluded for lack of relevance to the rural/remote setting. Six quantitative studies were excluded due to major threats to internal, external, and statistical conclusion validity, as well as failure to obtain ethical approval combined with financial coercion in one study. Thirty one pieces of literature were retained in which the strengths outweighed weaknesses: these will be

analyzed in Chapter Five. See Appendix B on p. 94 for a summary of literature included in this integrative literature review.

Table 1 *Key Terms*

Disease	**Food Insecurity**	**Nurse Practitioners/ Population**	**Framework**	**Interventions**
HIV[MeSH], AIDS , Acquired Immunodeficiency Syndrome [MeSH], Human Immunodeficiency Virus.	Food Insecurity, Food Security, Food Supply [MeSH].	Nurse Practitioners, Aboriginal, First Nation, First Nations People, Indians, (North American), Native Americans, Women, Rural Population [MeSH].	Ottawa Charter, Evidenced Based Practice, Health Promotion Theory.	Nutritional Support, Supplementary Feeding, Food Assistance, Dietary Supplements, Food Supplementation, Initiative, Strategy, Strategies, Counselling, Nutritional Counselling, Depression, Employment, Unemployment, Social Support, Livelihood Programs, Intervention, Intervention Studies[MeSH], Treatment, Therapy, Cocaine-Related Disorders [MeSH].

CHAPTER FIVE

Findings

The purpose of this integrated literature review is to identify evidence-informed health promotion interventions to prevent and treat food insecurity in Aboriginal women living with HIV/AIDS in rural and remote BC settings. Thirty-one pieces of literature were included in the final literature analysis including 18 studies, six government/agency reports, three systematic reviews, two CPGs, and two review articles: see Appendix B on p. 94. The literature was appraised utilizing methods as outlined in Chapter Four. Pertinent strengths and major weaknesses of the literature are discussed. However, strengths and weaknesses that did not affect the inclusion or relative importance of the literature are not discussed.

Themes were developed based on levels of personal, community, and structural interventions in accordance with a health promotion approach. Other themes that emerged included: NP assessment and knowledge of food insecurity, food assistance in resource-poor HIV/AIDS populations, and food insecurity interventions in rural/remote Aboriginal communities. Also, literature was reviewed on interventions addressing the potential cause of food insecurity in HIV/AIDS: depression and addictions were reviewed in the personal interventions and income and housing were analyzed within the structural interventions.

The literature was analyzed for applicability to Aboriginal women living with HIV/AIDS and food insecurity in rural/remote BC. The literature on food assistance was set in resource-poor settings such as Haiti, where poverty, natural disasters, and political instability increase vulnerability to food insecurity (Ivers, Chang, Jerome, & Freedberg, 2010). In comparison, rural/remote BC Aboriginal communities may have a different social environment and relatively more resources. However, rural/remote Aboriginal communities

can be economically marginalized with high rates of food insecurity: this is similar to some extent to resource-poor settings (Fieldhouse & Thompson, 2012; Thompson et al., 2011). Thus, the results may be applied to this project's population with caution. Also, much of the literature has researched food insecurity in the urban setting. Interventions employed in urban settings can be adapted to the rural settings with consideration of the additional food security barriers such as transportation and availability of social programs. Application of food insecurity to this project's population will be discussed in depth in Chapter Six.

Studies were analyzed for methods of food insecurity assessment. Many studies used food security surveys such as the Radimer/Cornell survey and the Household Food Insecurity Access Scale (HFIAS). These have been validated in the literature through comparison of survey results to other measures of food insecurity (Coates, Swindale, & Balinsky 2007; Kendall, Olson, & Frongillo, 1995). The HFSSM was tested per a Rasch model to ensure that this survey actually measured food security (Health Canada, 2007). The Radimer/Cornell survey, HFIAS, and HFSSM used the following four characteristics to define food insecurity: decreased food quality and quantity, anxiety regarding food access, and shame in methods of food acquisition (Coates et al., 2007; Health Canada, 2007; Radimer, 1990 as cited in Kendall et al., 1995). Several studies did not utilize a food security survey; but, these characteristics were used to identify and discuss food insecurity. For example, Engler-Stringer and Berenbaum (2007) discussed food quality, quantity, anxiety, and dignity regarding food access in their qualitative study. Carney et al. (2012) failed to identify the food security survey that was used which is a weakness; however, they did discuss recognized aspects of food security such as anxiety regarding food supply. Literature that utilized these four characteristics to assess food insecurity was considered valid.

Food Insecurity Assessment and Knowledge in FNP Practice

As discussed, an important first step is assessment of food insecurity in Aboriginal women living with HIV/AIDS. Specifically, food security surveys may be utilized. One food security survey considered was the HFSSM developed by Health Canada (2007) for the Canadian Community Health Survey. Strengths of the HFSSM include development and testing in Aboriginal populations; however, this survey has only been utilized in a research setting. Also, the HFSSM is composed of 18 questions; as such, the HFSSM has the potential to increase time burden. Time burden is an important factor in the clinical setting. A cross-sectional study by Hoisington, Braverman, Hargunani, Adams, and Alto (2012) explored assessment of food security among NPs and physicians: only 12% frequently asked about household food sufficiency. Monitoring for nutritional food quality was hindered by lack of time ($p<0.01$); however, Hoisington et al. found that 88% of the study population were willing to utilize a single question food security screen.

To decrease time burden, Young, Jeganathan, Houtzager, Di Guilmi, and Purnomo (2009) conducted a cross-sectional study to validate the use of a two question food security survey in the clinical setting among HIV/AIDS populations. The two questions were selected from a six question clinical food security survey by Blumberg, Bialostosky, Hamilton, and Briefel (1999). The two questions survey is as follows:

1. The food I/we bought just didn't last, and I/we didn't have money to get more (Never/Sometimes/Often True).
2. I/we couldn't afford to eat balanced meals (Never/Sometimes/Often True).

A positive answer to either question indicates food insecurity. Young et al applied both surveys simultaneously and found a strong correlation (0.895) between the two surveys

($p<0.0001$). This two question food security survey had a sensitivity of 100% (95% CI: 75-100), a specificity of 78% (95% CI: 61-90), and a negative predictive value of 100% (95% CI: 88 -100) (Young et al., 2009). Thus, Young et al. concluded that the two item survey was a valid and reliable tool for screening for food security among HIV populations in the clinical setting; although, the survey does require further validation in a larger population and false positives are possible. The use of the two question survey in FNP practice is preferable as it would decrease time demand compared to an 18-item survey.

Another barrier to food security assessment was lack of food security knowledge ($p<0.01$) amongst physicians and NPs in Portland, Oregon in a cross-sectional study by Hoisington et al. (2012). Similarly, only 33% of NPs agreed or strongly agreed to have food security knowledge in a cross-sectional survey by Tscholl and Holben amongst NPs in rural and urban Ohio, USA (2006). Overall, the low level of food security knowledge displays a significant gap in NP knowledge; although, information on FNP practice in rural/remote BC would be more applicable to this project. Tscholl and Holben suggest food security education for NPs could be incorporated in academic settings. As well, Tscholl and Holben suggest NPs could create a list of local food assistance programs to aid food insecure individuals encountered in the office (Tscholl & Holben, 2006). Although, Tscholl and Holben did assess NP practices such as referral to dietitians and social work, they did not specify if these practices were exclusively for food insecurity. Exploration of the NP perspective on food insecurity interventions would have strengthened the results of this study.

Food Assistance: A Food Insecurity Intervention in HIV/AIDS

To begin the discussion on food insecurity interventions, interventions employed within HIV/AIDS populations will be explored. The following studies are chosen to evaluate

the impact of food assistance in reducing food insecurity and resulting negative consequences in HIV/AIDS populations. Due to the lack of research on food insecurity interventions in HIV/AIDS populations in resource-rich settings, literature in resource-poor settings was included. Food assistance may refer to the use of food banks, food hampers, feeding programs, and emergency food assistance which are generally short-term measures to relieve hunger (Dietitians of Canada, 2007 as cited in the Public Health Nutritionists of Saskatchewan Working Group, 2010). The principles of empowerment and collective involvement are not inherent in the food assistance process. Additionally, food assistance cannot fully eliminate food insecurity as food assistance may not be regarded as socially acceptable manner of obtaining food (Anderson, 1990).

Benefits with food assistance in food insecure HIV/AIDS populations were evident. A prospective observational cohort study by Ivers et al. (2010) in adults with HIV/AIDS in Haiti found food assistance was associated with improved food security at six and twelve months ($p<0.0001$, $p=0.011$ respectively). This result indicates that food assistance can be effective in improving food security in HIV/AIDS populations. However, threats to internal validity were present in Ivers et al.: 105 participants out of 600 were excluded from analysis at six months due to active TB which contributes to weight loss; as well, as pregnancy and incomplete surveys. Only eight patients had changed over to the active treatment group at six months; however, this number increased to 129 at twelve months due to seasonal increases in food insecurity (Ivers et al., 2010). Nonetheless, this threat to internal validity was addressed in the statistical analysis and the data at twelve months was similar to data at six months. Thus, the six month results from Ivers et al. will be utilized in this project with caution.

Ivers et al. (2010) also found that BMI had decreased in both groups but significantly less so in those receiving food assistance at six months ($p=0.02$). Van Oosterhout et al. (2010) found BMI was actually increased in food insecure HIV/AIDS populations supplemented with ready-to-use fortified spread or a corn-soy blend in comparison with a historical control group. This result indicates that food supplementation can improve BMI in wasted HIV/AIDS patients. There was no significant difference between CD4 counts or BMI between groups in van Oosterhout et al. Nevertheless, there was a nonsignificant trend to higher mortality and severe health events in the food supplementation group; thus, van Oosterhout et al. concluded that food supplementation in early antiretroviral therapy may not lessen early mortality and severe morbidity in wasted adults. As well, the supplements were discontinued at 14 weeks, and no significant difference in BMI persisted at 26 weeks. Thus, food assistance must be sustained in order to produce benefit.

Another important aspect of food assistance is consideration of household food needs. Van Oosterhout et al. (2010) only provided food assistance to the HIV/AIDS individual; thus, food sharing may have altered the results. Conversely, Ivers et al. (2010) provided rations for 3 family members. Similarly, Sztam et al. (2013) provided standardized food assistance amounts for 5 family members in their pilot study on the feasibility, safety, effectiveness, and sustainability of utilizing a locally produced food supplement; however, addressing the family as a unit was a challenge. Addressing household food needs may be problematic; however, it is necessary in order ensure sufficient food is provided to the affected HIV/AIDS individual, especially for women in single-parent households.

Overall, there are challenges in implementing a food assistance program in HIV/AIDS populations. In Sztam et al. (2013), food was distributed through the clinic in

food baskets every month; however, HIV disclosure was a major challenge. In order to minimize HIV disclosure, food was distributed in unmarked bags. The risk for HIV disclosure highlights the need for a broad safety net which is not HIV exclusive but covers HIV-vulnerable populations that are food insecure and may be at risk for or have HIV/AIDS (Frega et al., 2010). Stigma and lack of confidentiality may also hinder the effectiveness of HIV specific programs addressing food insecurity in rural settings (Varcoe & Dick, 2008). Thus, in rural and remote settings, food assistance programming may be aimed at general, low-income, food insecure populations thereby addressing food insecurity in food insecure HIV/AIDS in a nonspecific manner. This approach will be further discussed in Chapter Six.

Community Interventions for Food Insecurity

Another key area of food insecurity interventions are community level food initiatives. This section presents the results of community interventions studies that have been employed in resource-rich countries within the general population. Community level food insecurity interventions found in the literature included community kitchens, gardens, and good food box programs (hampers of subsidized fruits and vegetables) (Loopstra & Tarasuk, 2013). These community food initiatives reflect the health promotion strategy of strengthening community action. Subthemes analyzed in the literature included psychosocial benefits, food security benefits, low participation rates, and reasons for nonparticipation.

Psychosocial benefits are associated with community food insecurity interventions. In a position paper for the *Dietitians of Canada,* Power (2005) recommended utilizing community food programing with the understanding that the greatest benefits would be social and psychological. This agrees with the results of a systematic review by Iacovou, Pattieson, Truby, and Palmermo (2013) which found that community kitchens increase

dignity, self-reliance, and social support. Like Iacovou et al., Engler-Stringer and Berenbaum (2007) found participants experienced greater dignity in community kitchens in their qualitative study on the effect of community kitchens on food security. The presence of increased self-worth and control as evidenced by increased dignity and self-reliance indicates that community kitchens have the capacity to empower participants. In addition, Iacovou et al. found that community kitchens support the health care principle of participation.

Also, food security is increased with community initiatives. A home gardening project supported by community meetings found worrying about running out of food dropped from 31% to 3% ($p=0.006$) in a cross-sectional/qualitative study by Carney et al. (2012). However, no statistical difference in those experiencing hunger was detected. This indicates gardening initiatives may decrease moderate food insecurity but not severe food insecurity. Also, Carney et al. was conducted in a warm climate among families with a history of gardening experience; this may have supported the findings of this study.

Community kitchens also showed some food security benefit. Iacovou et al. (2013) concluded that community kitchens may be able to ameliorate some aspects of food insecurity, although further high quality research was needed. Hamelin, Mercier, and Bédard (2011) conducted a qualitative/cross-sectional study exploring characteristics of food insecure households that do and do not participate in community food programs, including community kitchens. Hamelin et al. found community food programs increased skills of meal planning (45% vs. 8%) and comparative shopping (61% vs. 25%). This agrees with Engler-Stringer and Berenbaum (2007) who found community kitchens participants who cooked 5 or more meals/month reported greater savings, ability to make food last, and a greater variety in diet such as vegetables and meats. However, Engler-Stringer and Berenbaum

reported that participants still had anxiety over obtaining adequate food supply; this indicates the persistence of food insecurity despite community kitchen participation.

As well, Engler-Stringer and Berenbaum (2007) only interviewed long term community kitchen participants; thus, the results do not apply to program dropouts and nonparticipants. Much of the literature questioned the utility of community programing in decreasing food insecurity for everyone with food insecurity, especially the most vulnerable (Hamelin et al., 2011; Kirkpatrick & Tarasuk, 2009; Loopstra & Tarasuk, 2013). In their cross-sectional study, Kirkpatrick and Tarasuk (2009) contacted an entire subpopulation of 12 census tracts (low-income families with children who were tenants) with a 62% participation rate. This increases the internal and external validity and the results are applicable to the general food insecurity population. Despite an overall rate of 65% food insecurity, the authors found only 4.1% of the population used the food bank regularly. Also, rates of usage for community kitchens and gardens were low in both moderate food insecurity (5.0%, 2.8% respectively) and severe food insecurity (6.7%, 3.0% respectively); although, delaying bill and rent payment were common (Kirkpatrick & Tarasuk, 2009). This agrees with the results of a follow up study by Loopstra and Tarasuk (2013): only 3.2% of the population participated in community gardens, 4.3% in community kitchens, and 1.1% in the good food box program. These results indicate that only a small percentage of the food insecure population receives benefit from community food initiatives.

It is important to consider the barriers to participation in community food initiatives. Reasons to not participate were accessibility issues (e.g., unaware of program existence, unaware how to participate, program not located in the neighborhood, and program eligibility, capacity, and cost) and lack of fit (e.g., time, needs, interests, and health). As well,

people reported dislike of working together with strangers or neighbors they did not get along with (Loopstra & Tarasuk, 2013). The themes in Loopstra and Tarasuk (2013) agree with Hamelin et al. (2011) who found reasons for nonparticipation were: time constraints, accessibility, dislike of group participation, no need or less need than others, embarrassment, or physical constraints. Thus, the research indicates that community food programs do not fully meet the needs of the food insecure population. Although some barriers could be addressed such as accessibility, others are more difficult to accommodate such as dislike of group participation.

Overall, community food initiatives, such as community kitchens and gardens, have some evidence to support their use in food-insecure populations; however, less evidence that all who are food insecure will benefit. Engler-Stringer and Berenbaum (2007) and Iacovou et al. (2013) both recommended that long term solutions are required for income-related food insecurity. Kirkpatrick and Tarasuk (2009) conclude that public health professionals have a responsibility to advocate for policy reforms that increase food access in low income households. In the study conducted by Hamelin et al. (2011), 75% of both participating and non-participating households felt more income would address their food insecurity, 31% listed employment, and 22% named housing. From this information, it is evident that although FNPs may utilize community food initiatives in Aboriginal women with food insecurity and HIV/AIDS, advocacy for policy changes is necessary to reduce the underlying causes of food insecurity including low income.

Policy Interventions for Food Insecurity

This section presents the structural level interventions for food insecurity employed in resource-rich countries within the general population. Income was a strong determinant of

food security in HIV/AIDS and general populations; and, homelessness and unstable housing were associated with food insecurity in HIV/AIDS populations (Anema et al., 2011; Health Canada, 2007; Normen et al., 2005; Vogenthaler et al., 2010). Thus, income and housing policies were reviewed. The health promotion intervention of building healthy public policy is exemplified in the following literature reviews. Current and proposed food insecurity policies are analyzed, as well as routes of advocacy for food security policy.

Income policies can have a large impact on food insecurity. In a BC government report on income-related food insecurity, Kerstetter and Goldberg (2007) provided a detailed analysis of financial measures to increase income for various populations. A major recommendation was to increase social assistance by 50%: this would ensure women without children had adequate resources for food (Kerstetter & Goldberg, 2007). This agrees with Power (2005) who also suggested increasing social assistance due to the decline in the social safety net in Canada since the 1990s. In addition to this recommendation, Kerstetter and Goldberg suggested that the combination of the federal Canada Child Tax Benefit (CCTB) base with the National Child Benefit Supplement (NCBS) into a $5000/child/year supplement would ensure that women living with children could meet their financial needs. These recommendations, although logical, require application to reveal their actual utility in reducing food insecurity. Power and Kerstetter and Goldberg also recommended increasing minimum wage. This has been applied: minimum wage in BC increased to $10.25 in 2012 (Ministry of Jobs, Tourism and Skills Training, 2011).

Housing is another area of policy with potential to impact food insecurity. Power (2005) recommended advocacy for affordable housing to increase food security. In a cross-sectional study in urban Toronto, Kirkpatrick and Tarasuk (2011) found families renting at

market prices were 2.87 times more likely to be food insecure if rent was 30% or more of their income (95% CI: 1.19–6.90). Subsidized housing usually costs 30% or less of total income. However, subsidized housing was not significantly associated with lower food security; although, a trend toward lower odds of food insecurity was reported (Kirkpatrick & Tarasuk, 2011). Conversely, Kirkpatrick and Tarasuk did find those with subsidized housing were half as likely to be food insecure compared with households waiting for subsidized housing (95% CI: 0.30–0.86); this indicates housing subsidies can reduce food insecurity in vulnerable populations. Kirkpatrick and Tarasuk conclude that the high food insecurity rates (69%) among subsidized households indicate that after-shelter income must still be adequate to meet needs. This study would have been strengthened by stratification of food insecurity as moderate versus severe; thus, subtle increases in food security may have been evident.

It is important to review existing policies that may ameliorate some aspects of food insecurity. One subtheme evident in this discussion is narrow eligibility criteria. Existing policies are designed to aid only the most disadvantaged. For example, BC provides a monthly nutritional supplement to those affected by a chronic, progressive disease with wasting; $165/month for dietary items and $40/month for vitamins (MSD, 2003, 2010). However, the purpose is to reduce immediate danger of death; thus , two of the following must be present: malnutrition, underweight status, significant loss of weight or muscle mass, deterioration of neurological status or a vital organ, and moderate to severe suppression of the immune system (MSD, 2003). In addition, the client must be classified as a person with disabilities and receive disability assistance (MSD, 2003). These narrow eligibility criteria prevent access by much of the food insecure HIV/AIDS population. In contrast, the Ministry of Social Services (MSS) in Saskatchewan offers a food allowance to everyone living with

HIV/AIDS (MSS, 2013). Likewise, it would be beneficial for the BC government to extend the monthly nutritional supplement to apply to everyone living with HIV/AIDS. This outlines an important area of advocacy which will be further explored in the Chapter Six.

Another significant policy with narrow eligibility criteria is the Nutrition North Canada (NNC) program (Government of Canada [GC], 2013a). The federal government presently will subsidize certain groceries to remote northern communities through the NNC program, such as fresh fruits and vegetables, milk, cheese, meat, and commercially processed traditional foods (such as caribou) (GC, 2013a). However, eligible communities cannot have year round surface transport such as railway, road, or water access; as well, they must have qualified for Food Mail, the previous program version (GC, 2013b). Presently, no BC communities are subsidized. Perhaps, this is because no BC communities are exclusively fly-in; even isolated communities like Klemtu and Hartley Bay have water access. Any communities with water access who were not previously part of Food Mail would not be eligible (C. Brillinger, NNC Policy Analyst, personal communication, November 6, 2013). One area of advocacy can be to expand the NNC criteria to include remote BC communities.

Methods of advocacy for policies to decrease food insecurity are needed. Power (2005) recommends working in coalitions to advocate for policies to reduce poverty. Another method of advocacy is conducting research that would support policy changes to the social safety net (Power, 2005). Media interventions can also raise awareness and influence policy makers. Rock, McIntyre, Persaud, and Thomas (2011) provided a descriptive case study on a media intervention: intended messages were that poverty is a public health issues, many Canadians are food insecure, and mainstream society is often unaware of food security. Although public responses reflected these themes, unintended messages also emerged

including: poor nutrition results from personal deficits, and a sense of social entitlement is a problem (Rock et al., 2011). Policy makers also may express different perspectives on food security: the Albertan provincial government indicated the food security is a personal responsibility and not a public health issue (Rock et al., 2011). Thus, opposition is present to addressing food insecurity as a population health issue.

Food Insecurity Interventions in Rural and Remote Aboriginal Communities

It is particularly important to explore how community and policy interventions will apply in rural and remote Aboriginal communities. High rates of food insecurity exist in rural and remote Aboriginal communities. An average rate of 75% food insecurity was found in 14 rural and remote Manitoban First Nation communities in the cross-sectional/qualitative study by Thompson et al. (2011). Likewise, Skinner et al. (2013) reported a 75% food insecurity rate in their cross-sectional/qualitative study exploring coping strategies and suggestions for food insecurity interventions in a remote First Nation community in Ontario. Rural communities experience added barriers to food acquisition including high cost of groceries, limited quality and selection of food, and limited transportation to obtain food (Dietitians of Canada, 2012; Fieldhouse & Thompson, 2012). Also, decreased cultural food acquisition contributes to food insecurity in rural and remote Aboriginal communities (Power, 2008). The following paragraphs discuss food insecurity interventions in rural and remote Aboriginal communities.

As in the general public, food security policies were directed at income and cost. Skinner et al. (2013) reported 80% of community members suggested subsidizing high grocery prices, increasing social assistance, and reducing grocery freight costs. Thompson et al. (2011) reported that subsidies for freezers were well received through a provincially

funded food initiative, although sustainability of funding was an issue. Income and cost remain relevant to food security in rural and remote Aboriginal communities.

However, a major theme in the literature was regaining food sovereignty in Aboriginal communities (Skinner et al., 2013; Thompson et al., 2011). Food sovereignty is defined as "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems" ("Declaration of Nyeleni," 2007, para 3). Traditional foods (game, fish, and berries) were reported as important to diet but the high cost of hunting and changing environmental patterns were prohibitive (Skinner et al., 2013). Also, food sharing was highly utilized (63%) by the community. An initiative that combined the values of traditional food and food sharing was a community hunting program: local hunters were employed year round and distributed the food for free (Thompson et al., 2011). This hunting program was significantly associated with the lowest rate of community food insecurity ($p<0.001$); however, this study did not adequately control for extraneous variables in the statistical analysis. Thus, this result may be utilized with caution. However, Skinner et al. (2013) also recommended paying local hunters to acquire and distribute traditional foods for free as a food insecurity initiative.

Other community initiatives utilized and well received in Aboriginal communities were community gardens and local food buying clubs; and, the use of food banks was suggested though not presently utilized (Skinner et al., 2013; Thompson et al., 2011). The 3 year Produce Availability Initiative found 14 out of 17 remote BC First Nation Communities were partially or fully successful in establishing community gardens; and, increased access to fruits and vegetables was reported (O'Brian & Richardson, 2012). However, unlike Carney

et al. (2012), growing conditions and lack of gardening experience were barriers to success, as was lack of community engagement and band support, and cost of shipping materials (O'Brian & Richardson, 2012). Measures to increase the success of Aboriginal community gardens include community engagement, building capacity through education, and long term support. However, funding for the 3 year Produce Availability Initiative finished in 2012.

Personal Interventions for Food Insecurity

Food insecurity interventions that may be employed on a personal level are addressed in this section. Literature on nutritional counselling, micronutrient deficiencies, depression and addictions was reviewed. Depression and addiction interventions are included as these conditions are associated with food insecurity in HIV/AIDS populations (Anema et al., 2011; Normen et al., 2005; Vogenthaler et al., 2011; Weisner et al., 2009a). Health promotion strategies utilized on a personal level include the development of personal skills; this increases an individual's control over their health through education and development of life skills (Jackson et al., 2006; WHO et al., 1986). This section discusses interventions that may be employed directly by FNPs or indirectly through referral to appropriate disciplines.

Nutritional counselling. Nutritional counselling can be employed as a food insecurity intervention. Tscholl and Holben (2006) observed that NPs counselled patients on food safety, food purchasing, label reading of nutritional food content, and meal planning. Thus, NP scope includes some aspects of nutritional counselling. Also, dietitians provide in-depth nutritional counselling and are an important source of referral for FNPs. Eicher-Miller et al. (2009) found that nutritional counselling was associated with improvements in food security ($p=0.03$) and food sufficiency ($p=0.04$) in their randomized control trial (RCT) among low-income women. The nutritional counselling was intensive: five 1 hour sessions were

delivered within client's homes (Eicher-Miller et al., 2009). However, the improvement in food security observed by Eicher-Miller et al. was a positive change of only 0.37 on a 6-point scale in comparison to the control group. Thus, nutritional counselling, though beneficial, may not produce robust results. Nevertheless, as some benefit is evident, nutritional counselling is one food insecurity intervention that may be utilized.

Micronutrient and macronutrient supplementation in food insecurity. Micronutrient and macronutrient deficits are related to food insecurity (FAO, 2008). Micronutrient deficiencies are a potential pathway between food insecurity and negative outcomes in HIV/AIDS populations (de Pee & Semba, 2010; McMahon et al., 2011). As such, micronutrient and macronutrient supplementation has been utilized in malnourished HIV/AIDS populations (Grobler, Siegfried, Visser, Mahlungulu, & Volmink, 2013; WHO, 2003). The following paragraphs discuss the utility of micronutrient and macronutrient supplementation in HIV/AIDS populations.

Macronutrient requirements are increased in HIV/AIDS populations. A technical consultation by the WHO (2003) and the follow-up workgroup by Raiten et al. (2011) both recommended that energy intake ought to increase to 110% in asymptomatic people living with HIV/AIDS. Likewise, the WHO and Raiten et al. agreed that the recommended diet in HIV/AIDS populations is balanced in carbohydrates, fats, and protein as usually suggested for healthy adults. Also, nutritional supplements have been utilized in HIV/AIDS individuals. Grobler et al. (2013) conducted a Cochrane systematic review on 14 studies of macronutrient interventions in HIV/AIDS populations set in resource-rich countries. Meta-analysis of 3 studies in adults revealed that administration of a balanced nutritional supplement resulted in an increase in mean daily caloric intake by 394 calories (95% CI: 225-562) and an increase

in protein intake by 23 grams/daily (95% CI: 13-34) (Grobler et al., 2013). No significant association to increased body weight, fat mass, fat-free mass, CD4 counts, or lowered viral load were detected (Grobler et al., 2013). As well, Grobler et al. did not consider food insecurity as a variable. Food insecure populations would likely prefer actual food over nutritional supplements to increase caloric and protein intake. Therefore, unless medical reasons such as dysphagia are present, it does not appear beneficial to routinely provide nutritional supplements to food insecure HIV/AIDS populations.

Likewise, micronutrient supplementation is often utilized in HIV/AIDS populations. The WHO (2003) recommends that micronutrient requirements at recommended daily allowance (RDA) levels are best achieved through a balanced diet; higher dosing of various micronutrients may result in harm. However, in the presence of insufficient dietary intake, both the WHO and Raiten et al. (2011) recommended that micronutrient supplementation may be provided in the amount of one RDA or one routine multivitamin. This agreed with the findings by Irlam, Visser, Rollins, and Siegfried (2010) in a Cochrane systematic review on the effects of micronutrient supplements on morbidity/mortality in HIV/AIDS populations. Irlam et al. recommended no change to the WHO recommendations: if possible, HIV/AIDS individuals should intake a diet with adequate 'Individual Nutrient Intake Level' (INL98) levels. INL98 levels are the same as the RDA; both are nutrient intake levels that meet 98% of the population's needs (King, Vorster, & Tome, 2007). Irlam et al. recommended micronutrients be replaced through supplementation at one to two INL98 levels in circumstances where micronutrient deficiencies were common. Thus, micronutrient supplementation would be useful in food insecure HIV/AIDS populations.

Depression interventions in HIV/AIDS populations. Two studies were retained for evaluation of depression interventions in HIV/AIDS. The review article by Adams et al. (2012) discussed the theory used to design an upcoming study on depression and HAART adherence. Pharmacotherapy options were reviewed by two independent psychiatrists experienced in HIV care; this adds credibility to the recommendations. Every medication in Adams et al. was also reviewed for drug-to-drug interactions with HAART, and only those of low risk of interactions were selected. The antidepressant therapy that was recommended included: citalopram, escitalopram, sertraline, mirtazapine, bupropion, venlafaxine, and duloxetine: these may be initiated at normal starting doses (Adams et al. 2012). This agrees with the cross-sectional study on current depression treatments utilized in AIDS psychiatry by Freudenreich et al. (2010). Freudenreich et al. also found first line choices for antidepressants were escitalopram and citalopram and top second line choices respectively were sertraline, mirtazapine, bupropion, venlafaxine, and duloxetine; again, potential for drug-to-drug interactions with HARRT were considered. Third line treatments considered usually inappropriate were amitriptyline, fluvoxamine, and monoamine oxidase inhibitors (Freudenreich et al., 2010). Although the research of Freudenreich et al. is based on expert consensus which is a lower form of evidence, and internal validity was threatened by a low response rate of 39%, a reasonable evidence base is provided for antidepressant therapy in HIV/AIDS.

Psychotherapy in depression treatment is also essential. All forms of psychotherapy were considered valid in Freudenreich et al. (2010): cognitive-behavioural therapy (CBT), interpersonal therapy, psychodynamic therapy, expressive-supportive therapy, psychoeducation, and bereavement-orientated therapy. First line treatments were expressive-

supportive methods and psychoeducation. However, Adams et al. (2012) neglected to include psychotherapy treatment in their depression treatment algorithm.

Addiction interventions in HIV/AIDS populations. Two CPGs and one study were evaluated for interventions for addictions in HIV/AIDS. In the CPG by the BC-CfE (2011), screening for addiction is recommended in all HIV/AIDS patients at baseline and then annually or quarterly in those with a substance abuse history. Generally, primary care providers can provide options for addictions treatment including: abstinence, reduction in substance use, and strategies for safer use (BC-CfE, 2011). The BC-CfE recommends primary care providers become familiar with addiction services in their areas; although, in rural areas, treatment programs and support services may be limited.

Treatment and support services are also important in cocaine addiction. In a summary of an *International AIDS Society* presentation regarding addiction in HIV/AIDS population, Fiellin (2004) recommended psychosocial treatments as the main treatment for cocaine addiction, including drug counselling and contingency management. As well, CBT and supportive-expressive therapy were effective in reducing cocaine use (Crits-Cristoph et al., 1999 as cited in Fiellin, 2004). The strength of this article lies with the author's expertise and the credibility of the *International AIDS Society*. Psychosocial therapies were also beneficial in a RCT by Meade et al. (2010) examining the effect of a group intervention combining CBT with cognitive theory of stress and coping and a sexual abuse framework on the use of alcohol, cocaine, and marijuana in women and homosexual men with HIV/AIDS. Aboriginal women with HIV/AIDS may also be more likely to have experienced sexual violence; thus, this intervention is relevant in this population (Ship & Norton, 2002). Meade et al. found a

significant decrease in any cocaine use over time in the intervention group (p=0.001). As such, psychosocial therapies will be considered for this project's population with addictions.

Cigarette smoking is another addiction in HIV/AIDS to be addressed. A CPG by the New York State Department of Health (NYSDH) (2008) was selected for review because smoking cessation interventions specific to HIV/AIDS populations were analyzed. However, as in general populations, smoking cessation in HIV/AIDS individuals involves a combination of pharmacotherapy and counselling (NYSDH, 2008). Counselling includes assessing readiness to quit and setting a date, education on nicotine withdrawal, and referral to counselling services (NYSDH, 2008). Pharmacotherapy for nicotine addiction is recommended: nicotine replacement therapy, verenicline, and bupropion are first line choices (NYSDH, 2008). One weakness of this CPG is the lack of information on drug-to-drug interactions with HAART. However, no known drug interactions exist between HAART and nicotine replacement therapy or verenicline (Drach et al., 2010). Bupropion is considered low risk of interactions with HAART; although, drug-to-drug interactions with efavirenz, lopinavir/ritonavir, and tipranavir are possible (Adams et al., 2012; HIV Insite, 2014).

In conclusion, this chapter discussed literature on food insecurity interventions in various populations. First, NP knowledge and screening practices regarding food insecurity were discussed. Next, the role of food assistance in resource-poor HIV/AIDS populations was examined. Then, the utility of community and structural level interventions for food insecurity were discussed. Additionally, rural and remote Aboriginal food insecurity interventions were analyzed. Finally, food insecurity interventions employed at a personal level were examined. Chapter Six will discuss the priority interventions for food insecurity that are applicable to Aboriginal women living with HIV/AIDS in rural and remote BC.

CHAPTER SIX

Discussion

The previous chapter explored food insecurity interventions utilized within various populations and settings that may be useful in reducing food insecurity in Aboriginal women living with HIV/AIDS in rural/remote BC. This chapter will summarize and recommend food insecurity interventions that are applicable to this project's population and setting. As well, the relevance of these interventions in FNP practice will be discussed. The health promotion strategies of reorienting health services, building health public policy, strengthening community action, creating supportive environments, and developing personal skills as outlined by WHO et al. (1986) will be utilized to apply a health promotion lens to the food insecurity interventions.

Overall, there is a notable lack of research evaluating food-insecurity interventions in resource-rich, HIV/AIDS populations. Although, the available literature in resource-rich settings reported on the prevalence, correlates, and negative outcomes of food insecurity in HIV/AIDS populations, the authors stated that research on food insecurity interventions is needed (Norman et al., 2005; Weiser et al., 2009a; Weiser et al., 2009b). FNPs can contribute to this body of intervention literature by conducting research on food insecurity interventions within their practice. As Power (2005) suggests, research may be performed collaboratively, thus, reducing time burden while still fulfilling this important core competency. The BC-CfE conducts research on various topics in HIV/AIDS in BC: it is possible that FNPs may use this resource to connect with other researchers interested in food insecurity (BC-CfE, 2014).

In the following section, many interventions are suggested that are applied to the general low-income population at risk for food insecurity. In many cases, this is due to the

risk of HIV disclosure with programming specific to HIV populations (Sztam et al., 2013). Particularly in rural settings, confidentiality regarding HIV status is of paramount importance (Varcoe & Dick, 2008). The revelation of a HIV positive status may expose an individual to gossip, social exclusion, and possibly violence. As well, it is difficult to design a community program to target Aboriginal women with HIV/AIDS in rural/remote BC settings as the actual number of individuals in each community may be small. As such, interventions are suggested that are inclusive of Aboriginal women with HIV/AIDS in rural/remote BC, though not specific to them in some instances (Frega et al., 2010). In addition, the general food insecure population may also receive benefit.

Policy Interventions to Address Food Insecurity

FNPs can work with other stakeholders and primary care providers to build healthy public policy to support food security in rural and remote populations living with HIV/AIDS though advocacy (WHO et al., 1986). However, Oden, Price, Alteneder, Boardley, and Ubokudom (2000) note that nurse practitioners tend to be active in adjusting public policy that affects FNP practice but less active in promoting policy changes that benefit the general population. It is possible that FNPs are not aware of concrete methods of advocacy due to lack of experience and knowledge of communication routes with policy makers. Thus, a recommendation for reorienting health services is to include education for FNPs on methods of advocacy at the population level. As well, knowledge on how to become involved in advocacy for food insecurity is needed.

FNPs may employ several methods in order to advocate for the following policy changes. FNPs can write letters to the provincial and federal government, outlining the negative effects of food insecurity on health and the inadequacy of the social safety net in

providing the prerequisites for health, including food. However, as reported by Rock et al. (2011), policy makers may have opposition to addressing food insecurity as a public health issue. In light of this, diplomacy and evidence are essential elements of advocacy. Importantly, FNPs can increase the impact of advocacy by collaborating with other parties concerned with poverty reduction (Power, 2005). Potentially interested parties could include dietitians, social workers, and nongovernmental organizations such as Raise the Rates (n.d), a coalition in BC addressing poverty and homelessness through advocacy.

Other forms of advocacy include media interventions and research. As exemplified by Rock et al. (2011), FNPs can participate in media advocacy to raise public awareness of food insecurity and influence policy makers in collaboration with other interested parties. Some examples would include newspaper articles, letters to the editor, radio broadcasts, internet videos, and television broadcasts including news interviews and special commercial broadcasts. If possible, involvement of members of rural and remote Aboriginal communities would increase the relevance and impact of media interventions. As well, FNPs can utilize the core competency of research to explore the adequacy of the social safety net and subsequent effect on health (CRNBC, 2010a; Power, 2005). The research may then be utilized to advocate for healthy public policy changes.

Due to the strong association between low income and food insecurity in HIV/AIDS populations (Normen et al., 2005), it is evident that the highest priority in building public policy for this project's population is addressing low income. Specifically, increasing social assistance will ameliorate some of the financial barriers to food security experienced by Aboriginal women living in rural/remote BC including inadequate social assistance rates, high food prices, and high hunting costs (Kerstetter & Goldberg, 2007; Skinner et al., 2013).

However, Aboriginal women living with children will require additional financial resources to meet their requirements: Kerstetter and Goldberg (2007) recommended combining the CCTB with the NCBS into a $5000/child/year benefit. However, this amount may need to increase due to inflation. In BC, the CCTB and NCBS are combined with a base amount to form the Family Bonus (Government of BC, n.d.). FNPs can advocate at the BC provincial government level to increase the base amount so that the Family Bonus is increased to at least $5000/child/year with additional increases as inflation necessitates. This intervention will support Aboriginal mothers with HIV/AIDS to feed both their children and themselves.

The monthly nutritional supplement could also be expanded to include all HIV/AIDS individuals in BC. This is an important policy change as it is specific to Aboriginal women with HIV/AIDS. In order to achieve this, FNPs can advocate at the BC government level utilizing the previously discussed methods of letter writing, participating in coalitions, etc. Importantly, FNPs can highlight the negative effects of food insecurity in HIV/AIDS, even in those who are not underweight (Weiser et al., 2009b). However, in rural and remote areas, the monthly nutritional supplement may be noticed by fellow community members who distribute government funding. To avoid disclosure of HIV status, the monthly nutritional supplement could be hidden within the monthly support allowance of social assistance.

Another policy that could be expanded is the Nutrition North Canada Program (NNCP). Subsidized grocery prices for healthy food choices would enable Aboriginal women with HIV/AIDS in remote settings to purchase healthier food in greater quantities. Presently, no remote Aboriginal communities in BC are eligible, despite considerable distance from larger centers and poor transportation routes for food shipping (O'Brian & Richardson, 2012). Therefore, FNPs can advocate for the inclusion of remote BC Aboriginal

communities that are isolated despite accessibility by ferry or logging roads. The FNP could employ direct communication such as letters and phone calls with the NNCP, conveying the food insecurity rates, the relative cost of food, and the degree of isolation in remote BC communities. However, the Government of Canada (2012) reported a fixed budget for this program and is considering decreasing eligibility. This is problematic as it is important that health promotion initiatives are sustainable. Nevertheless, advocacy for the inclusion of remote BC communities in the Nutrition North Canada Program is recommended.

Housing is the final area of potential public policy change. The scope of this project does not allow for exploration of all the factors contributing to unstable housing and homelessness in HIV/AIDS populations. However, cost of housing was addressed as income and housing are closely related. Subsidized housing could decrease food insecurity in vulnerable populations, though after-shelter income must still be adequate (Kirkpatrick & Tarasuk, 2011). In Aboriginal communities on reserve, housing is under control of the band (Kerstetter & Goldberg, 2007). Thus, in Aboriginal communities, FNPs can advocate for adequate, affordable housing at the community level, at community meetings, and in discussion with community leaders. FNPs are well positioned to observe the effect of inadequate housing on health; this information can be used to advocate for housing. Again, working collaboratively with concerned community members and other housing advocates would be helpful in addressing this substantial topic.

Community Interventions to Address Food Insecurity

Community food security initiatives are the next priority for intervention, following policy interventions. FNP are educated on community assessment and development; and thus, are well situated to participate in community health promotion initiatives through

leadership and collaboration with communities (CRNBC, 2010a; UNBC, 2013). However, a key concept of strengthening community action in the *Ottawa Charter* is that communities should have ownership of the initiatives enacted within them (WHO et al., 1986). It is the empowerment of communities to control their own health that is the backbone of strengthening community action (WHO et al., 1986). Therefore, in the following suggestions for community initiatives, it is important to realize that the FNP may play the role of facilitator and perhaps catalyst for community initiatives; however, initiatives must be based on genuine community interest and need in order to be successful.

The *Ottawa Charter* also discusses the importance of creating environments that support health (WHO et al., 1986). The mobilization of communities to address food insecurity contributes to building awareness and support of food insecurity within the community. Thus, the employment of community food initiatives may create a social environment supportive of food security. In addition to the social environment, the physical environment influences food security within a community. In rural and remote Aboriginal communities, the changing environmental patterns were prohibitive to the acquisition of traditional foods (Dietitians of Canada, 2012; Skinner et al., 2013). The environment can be altered by global changes as well as local industry initiatives such as dams and mines. Through the preservation and restoration of land, physical environments will support food access for rural/remote Aboriginal communities. While FNPs are unlikely to lead environmental initiatives, collaboration with the community by attendance of community meetings and support of community-led initiatives is important.

The feasibility of community initiatives must be considered. Fuertes, Pasarín, Borrell, Artazcoz, and Díez (2012) outline a process that may be applied in FNP practice to design,

implement and evaluate community action projects. First, alliances with key stakeholders are made and a working group is formed. Second, a needs and asset assessment of the community is conducted. Finally, planning, implementing, and evaluating the community intervention is conducted, based on consensus on objectives/priorities, a literature review of effective interventions, and available resources. In keeping with community ownership, each step by Fuertes et al. ought to involve the active participation of community members.

Participation in community food initiatives after implementation is also crucial. A number of studies found that although community interventions were able to increase food availability, the rates of participation by food insecure populations were low (Engler-Stringer & Berenbaum, 2007; Hamelin et al., 2011; Iacovou et al., 2013; Loopstra & Tarasuk, 2013). Aboriginal women living with HIV/AIDS in rural and remote settings may have multiple barriers to participation in food initiatives such as health constraints, childcare responsibilities, depression, and addictions. Strategies to encourage participation can be based on the barriers indicated by the needs/assets assessment. Some strategies may include the provision of transportation and childcare, low or no participation fees, and addressing depression and addictions in the clinic setting.

The highest prioritized community food insecurity intervention is community gardens due to acceptability and demonstrated feasibility in rural/remote BC Aboriginal communities (O'Brian & Richardson, 2012; Thompson et al., 2011). Community gardens can increase access to fruits and vegetables which are often less available in rural/remote communities. However, lack of participation may be a barrier to Aboriginal women with HIV/AIDS. To overcome this barrier, participating members can be encouraged to share produce with

vulnerable community members such as elders and single mothers. This may increase access for Aboriginal women with HIV/AIDS who may not participate in the gardening process.

Also, lack of community engagement, growing conditions, and lack of gardening experience were barriers to the success of community garden initiatives in rural/remote BC (O'Brian & Richardson, 2012). Community engagement can be supported by a community garden coordinator, displaying garden produce at community events, involving youth, and inviting people to harvest the product (O'Brian & Richardson, 2012). Although vandalism and stealing of food is possible, a sense of community ownership and pride may prevent these activities to some extent. Growing conditions can be addressed by shipping in soil, composting, planting at the start of the short, growing season, and building greenhouses if necessary (O'Brian & Richardson, 2012). Finally, local or remote gardening experts could be recruited in order to address lack of gardening experience (O'Brian & Richardson, 2012).

Community ownership and engagement can also be supported in gardening initiatives developed according to the process by Fuertes et al. (2012). First, key stakeholders could be recruited such as community members, gardening experts, food security advocates including teachers and FNPs, community leaders, and government officials. Second a needs and asset assessment could be undertaken. Finally, priorities and objectives could be set collectively. At this point, community preference to garden at home with community support or in a collective setting may be determined. Available gardening resources could be pooled. Funding could be obtained from the provincial health authority, local government, and community organizations; of note, health authorities dedicate a portion of their budget to improving food security (M. Yandel, personal communication, November 18, 2013). Finally, the gardening initiative could be evaluated.

Another community food initiative that has been tested and well received in Aboriginal communities is the formation of a community hunter program, in which community members are employed by the band to hunt for traditional foods and provide the same free of charge to the community (Thompson et al., 2011). In Nelson House, Manitoba, a community hunter program provided food for 1,500 of 2,500 members, with prioritization of elders, those with illness, and single parents (Thompson et al., 2011). As well, food insecurity was significantly lower in this community, although this result must be used with caution due failure to control for extraneous variables in the study design by Thompson et al. (2011). In this strategy, communities are empowered and participate in food acquisition to meet their needs. Traditional food access would be increased. Also, limited effort is required from recipients of the food; therefore, even Aboriginal women living with HIV/AIDS who have social/health vulnerabilities could benefit from this initiative.

However, significant funding for a community hunter program would be required from the band or government. In the Nelson House hunter program, funding was provided as compensation for the damage to land caused by flooding by the Manitoba Hydro dam project (Nisichawayasihk Cree Nation, n.d.; Thompson et al., 2011). In BC, advocacy for funding could be applied at the provincial/federal government level. However, it is possible that this program may be seen as a hierarchical replacement for traditional group hunting activities. Many Aboriginal communities already hunt together and distribute the food to the entire community. As well, distribution of foods may be preferential, excluding stigmatized populations such as those living with HIV/AIDS. Discussion of these issues with key community members and a needs/assets assessment is necessary to establish the feasibility and acceptability of this intervention in rural/remote BC Aboriginal communities.

Community kitchens were also considered for their utility among Aboriginal women with HIV/AIDS in rural/remote BC. Community kitchens were able to increase food security in urban Canada; however, community kitchens were not suggested or tested in rural/remote Aboriginal communities in the literature (Engler-Stringer & Berenbaum, 2007; Hamelin et al., 2011; Skinner et al., 2013). Community kitchens also rely on purchasing food in bulk at cheaper prices; this is less feasible in rural/remote communities. To overcome this barrier, community kitchens could obtain bulk food orders by ferry or plane, as suggested by Skinner et al. (2013). Considerable time and effort is required of participants in community kitchens; this may be less possible for women living with HIV/AIDS due to health concerns, childcare responsibilities, depression, addictions, or other competing agendas. On the other hand, Aboriginal women with HIV/AIDS would benefit from the social support provided by community kitchens (Iacovou et al., 2013). In order to reach this vulnerable population, participant fees could be kept to a minimum or waived. The provision of childcare and transportation may also increase participation. Community kitchens are recommended as long as the community needs and assets assessment support this initiative.

Food banks also may be useful to reduce food insecurity in this project's population (Ivers et al., 2010; Skinner et al., 2013). Participation required to acquire food by Aboriginal women with HIV/AIDS would be minimal and could be encouraged by strategies such as individual appointment times to ensure privacy. The food bank could target the general, low-income populations vulnerable to HIV/AIDS and food insecurity such as single mothers (Frega et al., 2010). In the literature, food assistance was provided by healthcare institutions; however, food assistance could be provided through community action initiatives. However, food banks largely rely on donated food, usually obtained from households with extra

resources. Rural and remote Aboriginal communities were reported as having high food insecurity rates of 75% (Skinner et al., 2013; Thompson et al., 2011). As such, the population who could donate to such an initiative is small. Nevertheless, it is possible that funding for food bank supplies could be obtained through advocacy. A meeting of key stakeholders and a needs/assets assessment can be conducted to establish the feasibility of this initiative.

Personal Interventions to Address Food Insecurity

The last level for food insecurity interventions take place on the personal level: these include assessment for food insecurity, nutritional counselling, and addressing depression, addictions, and micronutrient deficiencies. The health promotion strategy of developing personal skills is employed in nutritional counselling, and addressing depression and addiction (WHO et al., 1986). At this level, FNPs can also employ therapeutic management competencies such as counselling and provision of pharmacotherapy (CRNBC, 2010a).

First, assessment for food insecurity is necessary. Assessment of food insecurity in FNP practice may be hindered by lack of food security knowledge; therefore, an important recommendation for reorienting health services is to integrate material on food insecurity in FNP education (Hoisington et al., 2012; Tscholl & Holben, 2006). As well, FNPs with food security knowledge can exercise their leadership competencies and educate their colleagues (CRNBC, 2010a). Assessment of food insecurity among this project's population in the clinic setting can be accomplished by using the two question food security survey by Young et al. (2009). However, false positives are possible with this tool; thus, clarification of positive responses is indicated. Also, this two question screen does not provide stratification of food insecurity. It is recommended that the HFSSM by Health Canada (2007) be used as a take home survey for patients diagnosed with food insecurity (See Appendices C & D, p. 98,

102). The HFSSM will then provide a food insecurity level for the present and also to provide a basis for comparison and evaluation in the future, without necessitating clinic time.

Importantly, FNPs can also assess for physical and diagnostic indicators associated with food insecurity. Hoisington et al. (2012) utilized anemia as well as underweight or overweight status as indicators of food insecurity. Weight can be measured at every visit in HIV/AIDS patients to monitor for wasting, especially in food insecure populations (BC-CfE, 2011). FNPs can monitor for anemia by asking about syncopal and presyncopal episodes, observing color of nailbeds and oral mucosa, checking for low blood pressure, and ordering a complete blood count. As micronutrient deficiencies are common, it is prudent to consider monitoring of Vitamin B12 levels and electrolytes. In addition, FNPs can prescribe a daily multivitamin with one RDA essential micronutrients to food insecure Aboriginal women living with HIV/AIDS (CRNBC, 2012; Irlam et al., 2010; Raiten et al., 2011; WHO, 2003). FNPs can discuss patient preference to take a multivitamin or alternatives, such as improving micronutrient intake through access to food assistance and increase in traditional foods.

To make referrals to food assistance, it is recommended that the FNP keep an updated list of local food assistance sources to share with patients (Tscholl & Holben, 2006). However, food assistance programs may not be available in rural/remote communities. As well, Aboriginal women may remain food insecure despite use of food assistance. As such, additional forms of assistance may be well received. FNPs can assist eligible HIV/AIDS individuals to apply for the monthly nutritional supplement. Eligibility criteria are available online, and if further assistance is needed, the Positive Living Society of BC (n.d.) is available to provide counsel on filling in the application forms (see Appendix E, p. 103). This is a form of advocacy on the personal level that can increase access to food.

Improved access to food is vital, given the association between HAART nonadherence and food insecurity (Wang et al., 2011; Weiser et al., 2008). Therefore, it is important for the FNP to assess for HAART adherence in Aboriginal women living with food insecurity. Those on HAART can be counselled on the importance of taking some forms of HAART, such as protease inhibitors, with food, thereby increasing the effectiveness of HAART (Busse & Penzak, 2007). As well, the cumulative effect of this project's interventions is to decrease food insecurity; and thus, also potentially increase HAART adherence in this project's target population.

Additionally, counselling on nutrition can develop personal skills to decrease food insecurity. Aboriginal women with HIV/AIDS are empowered with knowledge and skills to address their food needs. Helpful topics that FNPs can discuss in the office setting include food purchasing, label reading of nutrient content, and meal planning (Tscholl & Holben, 2006). If possible, one to one counselling in patient's homes or clinic kitchens may be employed by FNPs or trained community health representatives (Eicher-Miller et al., 2009). However, in rural and remote communities, high grocery prices and limited selection of food choices may hinder ability to utilize the acquired knowledge. Referral to a dietician would be preferable; but, registered dietitians are not currently covered under BC's medical service plan unless part of hospital program or medical practice group (H. Asfaw, personal communication, October 28, 2013). Travel distance is another barrier in rural/remote communities. Aboriginal women living in rural/remote communities could access the dietitian call-in line or direct email link to a dietitian available at Healthlink BC (n.d.) (See Appendix E, p. 103). However, these communication forms are less in-depth and lack the personal relationship that may be valued by Aboriginal women. Alternatively, FNPs in

rural/remote settings could consider obtaining additional training on nutritional counselling, thus, filling this resource gap.

Another key area of intervention is addressing depression in this project's population. Depression treatment can take the form of developing personal skills in Aboriginal women with HIV/AIDS to cope with financial stressors, apply their energy to shop and cook within a budget, and participate in community food security initiatives. FNPs are well equipped to manage depression in this project's population. Depression in adults can be independently managed in FNP practice (CRNBC, 2011). No specific tool for screening for depression in HIV/AIDS populations was found. However, HIV/AIDS does not alter the signs and symptoms of depression, although, some symptoms such as lowered energy may be attributable to either HIV/AIDS or depression. Thus, a standardized depression screening tool such as the Patient Health Questionnaire (PHQ9) can be utilized (MHS, 2004). As well, the FNP should screen for other psychiatric comorbidities such as anxiety, bipolar disorder, schizophrenia, post-traumatic disorder, and secondary dementia (Freudenreich et al., 2010; Dingwall, 2009). FNPs can also conduct a neurologic exam and diagnostic tests such as complete blood count, thyroid stimulating hormone, electrolytes, and blood glucose to rule out differential diagnoses (Klostranec & Kolin, 2012).

Next, it is recommended to prescribe pharmacotherapy as needed for depressed HIV/AIDS patients. FNPs may prescribe antidepressants without limitations (CRNBC, 2012). The recommended choices for this project's population are citalopram/escitalopram as first line therapies, and sertraline, mirtazapine, bupropion, venlafaxine and duloxetine as second line therapies (Adams et al., 2012; Freudenreich et al., 2010). Changing to a second-line therapy may be considered if no benefit is achieved after eight to twelve weeks (Adams

et al., 2012; Freudenreich et al., 2010). As well, it is important to have regular follow: every two to four weeks is recommended (Adams et al., 2012; Freudenreich et al., 2010). As in general populations, pharmacotherapy should be prescribed with consideration of concurrent comorbidities and medications, potential side effects, and patient preference.

As well, Aboriginal women living with HIV/AIDS and depression can be referred for psychotherapy. Preferred psychotherapies for this project's population are CBT, expressive-supportive therapy, and psychoeducation (Freudenreich et al., 2010). FNPs can obtain additional training and provide CBT in office. This supports the ongoing relationship between patient-provider and avoids delays in treatment. The FNP can also refer to a psychologist, psychiatrist, or mental health counsellor based on patient condition and preference. Availability of mental health services in rural/remote BC will be discussed together with addiction services, as these services are often combined.

Addressing addictions is another way to support food security in Aboriginal women living with HIV/AIDS, although research is needed to establish the utility of treating addictions to decrease food insecurity. FNPs are well situated to address substance use disorders independently in practice (CRNBC, 2011). Screening for addictions in this project's population is recommended at baseline, then annually or every 3 months if risk factors exist (BC-CfE, 2011). Standard screening tools or lifestyle questions may be utilized as addictions do not present differently in HIV/AIDS. FNPs can also provide counselling to Aboriginal women living with HIV/AIDS and addictions. Importantly, referral to treatment programs and support services is also recommended: psychotherapy specific to cocaine users includes CBT, expressive-supportive therapy, contingency management, and stress and coping management (BC-CfE, 2011; Fiellin, 2004; Meade et al., 2010).

However, accessibility to mental health and addiction services in rural and remote BC can be limited. In rural communities, FNPs may be able to utilize local counselling centres. For example, in Fort St. James and Dease Lake, there are community mental health and addiction centres which provide assessment, counselling, and referral (Northern Health, n.d.). In remote BC communities, services are often minimal; although, local counselling services may be available (Island Health, 2013). FNPs can use the search engine available at the Healthlink BC website to find mental health and addiction services specific to each community (See Appendix E, p.103). In remote BC communities, telephone counselling services can be useful. The Here to Help program provides telephone counselling on mental health and substance issues and the Bounce Back program provides telephone counselling with a workbook and DVD to adults with mild to moderate depression (See Appendix E, p.103) (Canadian Mental Health Association, 2012; Healthlink BC, 2013). In-patient treatment for addictions is often located in urban centres; for example, acute withdrawal services for the Northern Health authority are located in Prince George (Northern Health, n.d). Also, the Heartwood Centre for Women in Vancouver, BC offers in-patient treatment specific to women with addictions (BC Mental Health and Addiction Services, 2012).

Smoking cessation is another important addiction intervention in food insecure, Aboriginal women living with HIV/AIDS. FNPs can begin by assessing for readiness to quit in Aboriginal women with HIV/AIDS and food insecurity (NYSDH, 2008). FNPs can also provide smoking cessation counselling and pharmacotherapy: first line pharmacotherapy includes nicotine replacement therapy, verenicline, and bupropion (CRNBC, 2011; NYSDH, 2008). Prescription smoking cessation medications can be covered under the BC Smoking Cessation Program (See Appendix E, p. 103) (MHS, 2012). Additionally, in BC, Quitnow

(2013) offers free phone counselling (see Appendix E, p. 103); this resource may be more accessible to Aboriginal women living in rural and remote BC communities.

At this point, this chapter has discussed the available evidence for food insecurity interventions on the structural, community, and personal health promotion levels for Aboriginal women living with HIV/AIDS in rural/remote BC communities. Gaps in the available literature were mentioned and will be further discussed in Chapter Seven. Interventions were identified that may be utilized in Aboriginal women living with HIV/AIDS in rural/remote BC based on the best available evidence with consideration of health promotion strategies and NP core competencies. See Appendix F on p. 104 for a summary of key interventions in this project to treat food insecurity in Aboriginal women living with HIV/AIDS in rural and remote BC settings. Resources available to help accomplish these interventions were also identified (See Appendix E. on p. 111). Finally, evaluation of the proposed food insecurity interventions will be discussed next.

Evaluation

An important concept to include in this project is that of evaluation in order to ensure interventions are measurable. The model by The Health Communication Unit (THCU) (2007) for evaluating health promotion programs will be used to guide evaluation. In this project, multiple interventions for food insecurity have been proposed. FNPs may choose a different combination of interventions based on the needs of their patients and community. The following recommendations provide some concrete methods of evaluation for FNPs to consider, depending on selected interventions. Importantly, the needs and perspectives of key stakeholders such as funders, community leaders, members, and participants should also be incorporated in the evaluative process (THCU, 2007).

There are many types of evaluation. This project will focus on outcome evaluation: this is the evaluation of the short-term and long-term results of applied interventions (THCU, 2007). First, it is important to identify the goal of the interventions (THCU, 2007). In this project, the overarching goal was to prevent/treat food insecurity in Aboriginal women living with HIV/AIDS in rural/remote BC. Next, outcome objectives are developed: these are measurable and specific outcomes that contribute to the accomplishment of the goal (THCU, 2007). Finally, measurable indicators are developed to identify the extent to which each objective has been obtained and methods for evaluation are chosen (THCU, 2007).

In this project, different outcome objectives may be formed depending on selected interventions. The following are examples of short and long term objectives that may be applied. The short-term outcome objectives are derived from the five health promotion strategies by the *Ottawa Charter*: build healthy public policy, strengthen community action, create supportive environments, develop personal skills, and reorient health services (WHO et al., 1986). The long term objective is based on the goal of this project. See Table 2 on p. 70 for a summary.

Table 2 *Short and Long-Term Objectives for Outcome Evaluation*

	Outcome Objectives	**Measurable Indicator**	**Evaluation Method**
Short-Term	The monthly nutritional supplement will be available to all patients living with HIV/AIDS in BC.	Change in public policy.	Observation for same policy to be changed.
	Community members will express good to excellent community engagement in community food initiatives.	Aids and barriers to community engagement.	Focus group of 8-12 key stakeholders including community members, leaders, and participants of community initiatives.
	Community members will express good to excellent support of food insecurity within their communities.	Aids and barriers to supportive community environment for food security.	Focus group of 8-12 key stakeholders including community members, leaders, and participants of community initiatives.

	Participants of personal/community food security initiatives will express good to excellent ability to address food insecurity through shopping, cooking, and gardening skills.	Perceived benefit of shopping, cooking, and gardening lessons in food insecurity management.	Pre/post-test of participants in nutritional counselling, community kitchens, and community gardens.
	The FNP will screen 80% of their patient population with HIV/AIDS for food insecurity.	Percentage of HIV/AIDS individuals screened.	Self-assessment of practice.
Long-Term	Aboriginal women living with HIV/AIDS and food insecurity in rural/remote BC will report a decrease in food insecurity status.	Change in food security status.	Take-home HFSSM survey at diagnoses of food insecurity and 1 year later (See Appendices C and D, p. 98, 102).

Note. Adapted from "Evaluating Health Promotion Programs" by The Health Communication Unit, 2007.

Descriptive evaluation methods were selected as these methods require less time and resources; specifically, focus groups and surveys require moderate resources to conduct (THCU, 2007). The use of the HFSSM at diagnoses and one year later also provides a concrete measurement of food insecurity to assess the overall effectiveness in achieving lowered food insecurity. The HFSSM may be used without restriction in the public domain (N. Armstrong, personal communication, October 25, 2013). After the chosen evaluation methods have been conducted, the data is then processed and analyzed (THCU, 2007). The data is disseminated to stakeholders such as funders, community leaders, program staff, and participants to keep stakeholders informed and establish buy-in for upcoming modifications to intervention delivery (THCU, 2007). Finally, the results of the evaluation are utilized to identify and prioritize changes to the health promotion program (THCU, 2007). This concludes the evaluative process.

CHAPTER SEVEN

Summary and Conclusion

Food insecurity has a detrimental effect on the health of individuals living with HIV/AIDS. Aboriginal women have multiple vulnerabilities to food insecurity and HIV/AIDS; thus, it is important to address food insecurity in this population. As such, FNP practice needs to expand to consistently recognize, prevent, and treat food insecurity. Rural and remote settings complicate the experience of food insecurity; thus, this project has utilized the available evidence in a literature review to formulate FNP interventions applicable in rural and remote settings.

This project analyzed a range of previous literature to answer the question "What are the best evidence-informed health promotion interventions that FNPs may employ to prevent and treat food insecurity among Aboriginal women living with HIV/AIDS in rural and remote settings?" The highest priority was given to advocacy for healthy public policy as this may be the most effective form of intervention. The next priority was community action initiatives. FNPs are well prepared to participate in community initiatives. Finally, food insecurity interventions were suggested on the personal level: these are readily delivered by FNPs within the office setting or through referral. See Appendix F on p. 104 for a summary of this project's food insecurity interventions.

Gaps in FNP food security knowledge and preparedness to engage in advocacy were identified. This provides an important area for revision of FNP education. Food insecurity knowledge and screening practices could be incorporated into FNP curriculum. Additionally, practical methods of advocacy could be taught and utilized in student assignments, such as writing letters to government agencies advocating for policy changes. In these ways, FNP

education will support recognition of food security and the ability to address the public policies that affect food security.

This project was also limited to some extent by the following gaps in the research including limited availability of literature specific to the project's population. No literature was found on food insecurity interventions in resource-rich HIV/AIDS populations. As well, no literature was found that examined the effect of treating depression and addictions on food insecurity. Finally, no literature was found that examined the effectiveness of housing interventions, community kitchens, or food banks in reducing food insecurity in rural and remote Aboriginal communities. FNPs may utilize these gaps in the literature as opportunity for research in the future. Thus, more evidence may be generated to strengthen food-insecurity interventions and FNP practice will benefit by participation in research.

In conclusion, this project has provided insight into food insecurity among Aboriginal women living with HIV/AIDS in rural and remote settings. FNP practice is strengthened by this knowledge and food insecure Aboriginal women with HIV/AIDS in rural and remote BC will receive benefit. In the future, it is hoped that further research will guide food insecurity interventions in HIV/AIDS populations in resource-rich countries. The inequality of living with food insecurity amongst the affluence of a resource-rich nation can be frustrating. Hanson (2011) provides the thoughts of one food insecure woman:

> There's 'living pay cheque to pay cheque' but I think with women it's hand to mouth because I know I never make it to the next pay cheque and I don't go anywhere. I don't eat at restaurants, I don't treat myself to anything. I buy second hand clothes. I do all the things you have to do and I don't know how many times a week I'm making baking powder biscuits or making bannock to fill up (p. 31).

Nurse practitioners need to address food insecurity with compassion and understanding of the frustrations and limitations experienced by Aboriginal women with HIV/AIDS.

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APPENDIX A

Literature Search Record

Date	Database	Dates/ Edition	Keywords	Number of Hits	Selected & Reviewed
September 28, 2012	Ovid MEDLINE(R)	1946-present	HIV[MeSH] *OR* AIDS *OR* Acquired Immunodeficiency Syndrome [MeSH] *OR* Human Immunodeficiency Virus *AND* Food Insecurity *OR* Food Security	145	62
September 28, 2012	CINAHL with Full Text	1982-present	HIV[MeSH] *OR* AIDS *OR* Acquired Immunodeficiency Syndrome [MeSH] *OR* Human Immunodeficiency Virus *AND* Food Insecurity *OR* Food Security	58	6
October 4, 2012	National Guideline Clearinghouse		HIV[MeSH] *OR* AIDS *OR* Acquired Immunodeficiency Syndrome [MeSH] *OR* Human Immunodeficiency Virus *AND* Food Insecurity *OR* Food Security	358 Limited by age (19-44 years old).	1
October 4, 2012	Ministry of Health – BC Guidelines	2012	Handsearched Individual Guidelines	N/A	None
October 4, 2012	British Columbia Center for Excellence in HIV/AIDS	1992	Handsearched & Utilized Search Terms: Food Insecurity, Food Security	12 & 13	2
October 13, 2012	Cochrane Reviews		HIV[MeSH] *OR* AIDS *OR* Acquired Immunodeficiency Syndrome [MeSH] *OR* Human Immunodeficiency Virus *AND* Food Insecurity *OR* Food	12	1

			Security		
October 13, 2012	World Health Organization	2012	HIV & Food Insecurity	Over 1000, not focused.	Plan: Read key documents on food insecurity and find pertinent WHO literature from the references.
December 3, 2012	Evidence-Based Nursing	1998-2005	Food Insecurity	94	1
December 17, 2012	Public Health Agency of Canada	2012	HIV	4	4
December 17, 2012	MEDLINE with Full Text	1965-Present	Retrieved literature found by hand-searching other references.	N/A	3
December 18, 2012	Health Canada	2012	Handsearched for Food Insecurity	N/A	6
December 18, 2012	Food Secure Saskatchewan	2012	Handsearched	N/A	5
December 18, 2012	Canada Mortgage and Housing Corporation	1996-2012	Handsearched	N/A	1
December 18, 2012	Food Secure Canada	2012	Handsearched	N/A	1
December 18, 2012	Food & Agriculture Organization of the United Nations	2012	Handsearched	N/A	2
January 31, 2012	Saskatchewan Ministry of Social Services	2013	Handsearched	N/A	2
March 2, 2013	MEDLINE with Full Text	1965-Present	Women *AND* Food Insecurity *OR* Food Security *OR* Food Supply *AND* HIV[MeSH] *OR* AIDS *OR* Acquired Immunodeficiency Syndrome [MeSH] *OR* Human Immunodeficiency	1	None

			Virus *AND* Intervention *OR* Initiative *OR* Strategy *OR* Strategies *OR* Counselling *OR* Nutritional Counselling		
March 2, 2013	MEDLINE with Full Text	1965-Present	Women *AND* Food Insecurity *OR* Food Security *OR* Food Supply *AND* Intervention *OR* Initiative *OR* Strategy *OR* Strategies *OR* Counselling *OR* Nutritional Counselling	3	1
March 2, 2013	MEDLINE with Full Text	1965-Present	Women *AND* Food Insecurity *OR* Food Security *OR* Food Supply *AND* Nutritional Support *OR* Supplementary Feeding *OR* Food Assistance *OR* Dietary Supplements *OR* Food Supplementation	1	None
March 2, 2013	MEDLINE with Full Text	1965-Present	Women *AND* Nutritional Support *OR* Supplementary Feeding *OR* Food Assistance *OR* Dietary Supplements *OR* Food Supplementation	22	1
March 2, 2013	MEDLINE with Full Text	1965-Present	Women *AND* Food Insecurity *OR* Food Security *OR* Food Supply *AND* Social Support *OR* Livelihood Programs	1	1
March 2, 2013	MEDLINE with Full Text	1965-Present	Aboriginal *OR* First Nation *OR* First nations People *OR* Indians, North American *AND* Food Insecurity *OR* Food Security *OR* Food Supply	32	3
March 2, 2013	MEDLINE with Full Text	1965-Present	Aboriginal *OR* First Nation *OR* First nations People *OR* Indians, North American *AND* Nutritional Support *OR* Supplementary Feeding *OR* Food Assistance *OR*	23	None

			Dietary Supplements *OR* Food Supplementation		
March 2, 2013	CINAHL with Full Text	1982-present	Women *AND* Food Insecurity *OR* Food Security *OR* Food Supply	10	None
March 2, 2013	CINAHL with Full Text	1982-present	Aboriginal *OR* First Nations people *OR* Native Americans *AND* Food Insecurity *OR* Food Security *OR* Food Supply	26	None
March 2, 2013	MEDLINE with Full Text	1965-Present	Nurse Practitioners *AND* Food Supply *OR* Food Insecurity *OR* Food Security	2	2
March 2, 2013	CINAHL with Full Text	1982-present	Nurse Practitioners *AND* Food Supply *OR* Food Insecurity *OR* Food Security	0	None
March 3, 2013	MEDLINE with Full Text	1965-Present	Ottawa Charter	192	5
March 30, 2013	MEDLINE with Full Text	1965-Present	HIV *AND* Employment *AND* Unemployment	57	1
April 27, 2013	Dietitians of Canada	2013	Food Insecurity	5	1
May 20, 2013	MEDLINE with Full Text	1965-Present	Depression [MeSH] *AND* HIV[MeSH]	24	None
May 20, 2013	MEDLINE with Full Text	1965-Present	Depression [MeSH] *AND* Acquired Immunodeficiency Syndrome	184	2
May 23, 2013	MEDLINE with Full Text	1965-Present	Employment *AND* HIV *AND* Food Supply [MeSH]	1, 777	2
August 5, 2013	MEDLINE with Full Text	1965-Present	Nurse Practitioners *AND* Women *OR* Aboriginal *OR* First Nations	76	1
August 5, 2013	MEDLINE with Full Text	1965-Present	Nurse Practitioners	135 Limited by history	3
August 13, 2013	MEDLINE with Full Text	1965-Present	Nurse Practitioners *AND* Evidenced based practice	3	1
August 24, 2013	MEDLINE with Full Text	1965-Present	Health Promotion Theory	29	8

August 27, 2013	MEDLINE with Full Text	1965-Present	Depression [MeSH] *AND* Acquired Immunodeficiency Syndrome *OR* HIV [MeSH] *AND* Intervention *OR* Treatment *OR* Therapy	100	7
August 29, 2013	MEDLINE with Full Text	1965-Present	Food Insecurity *OR* Food Security *OR* Food Supply *AND* Intervention Studies [MeSH] *OR* Intervention *OR* Strategy *OR* Strategies *OR* Initiative	855 Limited by date (2000-2013).	29
August 30, 2013	Cochrane Reviews		Food Insecurity *OR* Food Security *OR* Food Supply	79	3
August 30, 2013	Cochrane Reviews		Retrieved literature found by hand-searching other references.	N/A	1
August 30, 2013	CINAHL with Full Text	1982-present	Food Insecurity *OR* Food Security *OR* Food Supply *AND* Intervention Studies [MESH] *OR* Intervention *OR* Strategy *OR* Strategies *OR* Initiative	230	10
September 10, 2013	MEDLINE with Full Text	1965-Present	Cocaine-Related Disorders [MeSH] *AND* HIV[MeSH] *OR* AIDS *OR* Acquired Immunodeficiency Syndrome [MeSH] *OR* Human Immunodeficiency Virus	168	3
September, 2013	MEDLINE with Full Text	1965-Present	Retrieved literature found by hand-searching other references.	N/A	2
October 7, 2013	MEDLINE with Full Text	1965-Present	Food Insecurity *AND* Rural Population [MeSH]	80	3
October 21, 2013	Google Canada		Smoking Cessation in HIV	2,390,000	1
October 26, 2013	Google Canada		Selection of a Clinical Screening Tool for Food Security	3,880,000	1
November 12, 2013	Google Canada		Community Gardens BC Remote Communities	136,000	1

APPENDIX B

Summary of Literature Retained for Data Analysis

Author/Date	Title	Population & Setting	Literature Type
Adams et al., 2012	Treating depression within the HIV "medical home": A guided algorithm for antidepressant management by HIV clinicians.	Targeted at adults with HIV/AIDS and depression	Review article
BC-CfE, 2011	Primary care guidelines for the management of HIV/AIDS in British Columbia.	Developed for health care professionals providing primary HIV care in BC	CPG
Carney et al., 2012	Impact of a community gardening project on vegetable intake, food security and family relationships: A community-based participatory research study.	42 Hispanic families in rural Oregon, USA	Mixed method study (qualitative/cross-sectional)
Eicher-Miller, 2009	The effect of Food Stamp Nutrition Education on the food insecurity of low-income women participants.	219 low income women living in Indiana, USA	Randomized control trial
Engler-Stringer & Berenbaum, 2007	Exploring food security with collective kitchens participants in three Canadian cities.	21 community kitchens in Saskatoon, Montreal, and Toronto	Qualitative study
Fiellin, 2004	Substance use of disorders in HIV-infected patients: Impact and new treatment strategies.	Summary of a presentation at the *International AIDS Society*	Review article
Freudenreich et al., 2010	Psychiatric treatment of persons with HIV/AIDS: An HIV-psychiatry consensus survey of current practices.	62 members of the *Organization of AIDS Society*, no specific setting.	Cross-sectional study

Grobler et al., 2013	Nutritional interventions for reducing morbidity and mortality in people with HIV.	14 studies in adults/children with HIV/AIDS in resource-rich countries	Cochrane systematic review
Hamelin et al., 2011	Needs for food security from the standpoint of Canadian households participating and not participating in community food programmes.	55 food insecure households in urban Quebec	Mixed method study (qualitative/cross-sectional)
Health Canada, 2007	Canadian community health survey, Cycle 2.2, Nutrition (2004): Income-related household food security in Canada.	Prepared for Health Canada, including 35, 107 citizens in 10 Canadian provinces	Government report
Hoisington et al., 2012	Healthcare providers' attention to food insecurity in households with children.	186 NPs and physicians in Ohio, USA	Cross-sectional study
Iacovou et al., 2013	Social health and nutrition impacts of community kitchens: A systematic review.	10 studies, 8 set in Canada, 1 in Australia, and 1 in Scotland	Systematic review
Irlam et al., 2010	Micronutrient supplementation in children and adults with HIV infection.	30 studies in adults and children with HIV/AIDS living in resource-rich and resource-poor countries	Cochrane systematic review
Ivers et al., 2010	Food assistance is associated with improved body mass index, food security and attendance at clinic in an HIV program in central Haiti: A prospective observational cohort study.	600 adults living with HIV/AIDS in Haiti.	Prospective observational cohort study
Kerstetter & Goldberg, 2007	A review of policy options for increasing food security and income security in British Columbia: A discussion paper.	Prepared for the Provincial Health Services Authority in BC	Government report

Kirkpatrick & Tarasuk, 2009	Food insecurity and participation in community food programs among low-income Toronto families.	484 low-income households in Toronto, Canada	Cross-sectional study
Kirkpatrick & Tarasuk, 2011	Housing circumstances are associated with household food access among low-income urban families.	473 low-income households in Toronto, Canada	Cross-sectional study
Loopstra & Tarasuk, 2013	Perspectives on community gardens, community kitchens and the Good Food Box program in a community-based sample of low-income families.	371 low-income households in Toronto, Canada	Mixed method study (qualitative/cross-sectional)
Meade et al., 2010	Reductions in alcohol and cocaine use following a group coping intervention for HIV-positive adults with childhood sexual abuse histories.	247 women and homosexual men living with HIV/AIDS in New York City, NY	Randomized control study
NYSDH, 2008	Smoking cessation in HIV-infected patients.	Developed for HIV-infected smokers	CPG
O'Brian & Richardson, 2012	Produce availability in remote communities initiative: Final report on projects and evaluation.	Prepared for the Ministry of Health, BC/Set in 24 remote, BC communities	Government report
Power, 2005	Individual and household food insecurity in Canada: Position of Dietitians of Canada.	Prepared for the Dieticians of Canada	Agency report
Raiten et al., 2011	Executive summary-nutritional care of HIV-infected adolescents and adults, including pregnant and lactating women: What do we know, what can we do, and where do we go from here?.	Prepared for the WHO	Agency report
Rock et al., 2011	A media advocacy intervention linking health disparities and food insecurity.	Responses from anonymous internet posts, letters to the editor, news, and websites.	Descriptive case study

Skinner et al., 2013	Giving voice to food insecurity in a remote indigenous community in subarctic Ontario, Canada: Traditional ways, ways to cope, ways forward.	First Nation adults living in a remote northern Ontario community	Qualitative study
Sztam et al., 2013	Rationale and design of a study using a standardized locally procured macronutrient supplement as adjunctive therapy to HIV treatment in Kenya.	Adults initiating ART in Kenya.	Prospective, comparative pilot study
Thompson et al., 2011	Is community economic development putting food on the table? Food sovereignty in Northern Manitoba's Aboriginal communities.	14 northern Manitoban First Nation communities	Mixed method study (qualitative/cross-sectional)
Tscholl & Holben, 2006	Knowledge and practices of Ohio nurse practitioners regarding food access of patients.	283 nurse practitioners in Ohio, USA	Cross-sectional survey
van Oosterhout et al., 2010	The benefit of supplementary feeding for wasted Malawian adults initiating ART.	HIV/AIDS adults living in urban Malawi	Observational cohort study
WHO, 2003	Nutrient requirements for people living with HIV/AIDS.	Prepared for the WHO	Agency report
Young et al., 2009	A valid two-item food security questionnaire for screening HIV-1 infected patients in a clinical setting.	49 adults with HIV/AIDS in Sydney, Australia	Cross-sectional study

APPENDIX C

Household Food Security Survey Module (HFSSM)

The following questions are about the food situation in your household in the past 12 months.

Question 1. Which of the following statements best describes the food eaten in your household in the past 12 months?

1. You and other household members always had enough of the kinds of food you wanted to eat.
2. You and other household members had enough to eat, but not always the kinds of food you wanted.
3. Sometimes you and other household members did not have enough to eat.
4. Often you and other household members didn't have enough to eat.

STAGE 1: Questions 2–6

The next questions are used to describe the food situation for a household. Please tell me if the statement was often true, sometimes true, or never true for you and other household members in the past 12 months.

Question 2. The first statement is: you and other household members worried that food would run out before you got money to buy more.
Was that often true, sometimes true, or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

Question 3. The food that you and other household members bought just didn't last and there wasn't any money to get more.
Was that often true, sometimes true, or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

Question 4. You and other household members couldn't afford to eat balanced meals.
In the past 12 months, was that often true, sometimes true, or never true?
1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

If you have children under 18 in household, answer questions 5, 6, & 7, otherwise go to Question 8

Question 5. You or other adults in your household relied on only a few kinds of low-cost food to feed the children because you were running out of money to buy food.
Was that often true, sometimes true, or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

Question 6. You or other adults in your household couldn't feed the children a balanced meal, because you couldn't afford it.
Was that often true, sometimes true, or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

STAGE 2: Questions 7-11

Question 7. The children were not eating enough because you or other adults in your household just couldn't afford enough food. Was that often, sometimes or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

Question 8. In the past 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?

1. Yes
2. No (Go to Q9)
– Don't know / refuse to answer

Question 8b. How often did this happen?

1. Almost every month
2. Some months but not every month
3. Only 1 or 2 months
– Don't know / refuse to answer

Question 9. In the past 12 months, did you (personally) ever eat less than you felt you should because there wasn't enough money to buy food?

1. Yes
2. No
– Don't know / refuse to answer

Question 10. In the past 12 months, were you (personally) ever hungry but didn't eat because you couldn't afford enough food?

1. Yes
2. No
– Don't know / refuse to answer

Question 11. In the past 12 months, did you (personally) lose weight because you didn't have enough money for food?

1. Yes
2. No
– Don't know / refuse to answer

STAGE 3: Questions 12–16

Question 12. In the past 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?

1. Yes
2. No
– Don't know / refuse to answer

Question 12b. How often did this happen?
1. Almost every month
2. Some months but not every month
3. Only 1 or 2 months
– Don't know / refuse to answer

Questions 13-16 are for households with children under the age of 18.

Question 13. In the past 12 months, did you or other adults in your household ever cut the size of any of the children's meals because there wasn't enough money for food?

1. Yes
2. No
– Don't know / refuse to answer

Question 14. In the past 12 months, did any of the children ever skip meals because there wasn't enough money for food?

1. Yes
2. No
– Don't know / refuse to answer

Question 14b. How often did this happen?
1. Almost every month
2. Some months but not every month
3. Only 1 or 2 months
– Don't know / refuse to answer

Question 15. In the past 12 months, were any of the children ever hungry but you just couldn't afford more food?

1. Yes
2. No
– Don't know / refuse to answer

Question 16. In the past 12 months, did any of the children ever not eat for a whole day because there wasn't enough money for food?

1. Yes
2. No
– Don't know / refuse to answer

End of Survey

Note: Adapted from "Canadian Community Health Survey, Cycle 2.2, Nutrition (2004): Income-Related Household Food Security in Canada," by Health Canada, 2007.

APPENDIX D

Scoring the HFSSM

Positive responses are indicated by the answers:

- Yes
- Often
- Sometimes
- Almost every month
- Some months but not every month

There are 10 questions pertaining to adults include: Question 2, 3, 4, 8, 8b, 9, 10, 11, 12, 12b.

There are 8 questions pertaining to children including: Questions 5, 6, 7, 13, 14, 14b, 15, 16.

Question 1 is considered a food sufficiency question and is not scored.

Table D1 *Food Security Status based on HFSSM*

Food Security Status	**Adult Status: 10 Questions**	**Children Status: 8 Questions**
Food Secure	0-1 positive responses	0-1 positive responses
Moderate Food Insecurity	2-5 positive responses	2-4 positive responses
Severe Food Insecurity	6 or more positive responses	5 or more positive responses

Note: Adapted from "Canadian Community Health Survey, Cycle 2.2, Nutrition (2004): Income-Related Household Food Security in Canada," by Health Canada, 2007.

APPENDIX E

Resource Information

Service	Contact Information
BC Smoking Cessation Program	1) Website: http://www.health.gov.bc.ca/pharmacare/stop-smoking/
Bounce Back	1) Toll-free Phone Number: 1 (866) 639-0522 2) Website: http://www.cmha.bc.ca/how-we-can-help/adults/bounceback/practitioners
Healthlink BC	1) "Find Services" search engine available at http://www.healthlinkbc.ca/
Here to Help	1) Phone Number: (604) 669-7600 2) Toll Free Phone Number: 1 (800) 661-2121 3) E-mail: orders@heretohelp.bc.ca 4) Website: http://www.heretohelp.bc.ca
Monthly Nutritional Supplement	1) Application Form (Sample): http://www.sdsi.gov.bc.ca/forms/pdf/HR2847.pdf 2) Website: http://www.gov.bc.ca/meia/online_resource/health_supplements_and_programs/mns/ 3) Positive Living Society of British Columbia: http://www.positivelivingbc.org/
Quitnow	1) Phone Number: 1 (877) 455-2233 2) Website: http://www.quitnow.ca/my-quit-centre/overview#phone-support
Registered Dietitians in BC	5) Dial – A –Dietitian: 811 6) Email-A-Dietitian: http://www.healthlinkbc.ca/healthyeating/emaildietitian.html

APPENDIX F

Recommendations for Food Insecurity Interventions

Health Promotion Strategy	**Level of Health Promotion**	**Food Insecurity Intervention**	**NP Core Competency**
Reorient Health Services.	Personal	Assess for food insecurity with two question survey by Young et al. (2009): 1. The food I/we bought just didn't last, and I/we didn't have money to get more (Never/Sometimes/Often True). 2. I/we couldn't afford to eat balanced meals (Never/Sometimes/Often True) (p. 63).	Health Assessment and Diagnosis.
	Personal	Use the HFSSM as a take-home survey at time of food insecurity diagnoses and 1 year later (p. 63).	Health Assessment and Diagnosis.
	Personal	Assess weight every visit. Assess for signs and symptoms of anemia Assess for HAART adherence (p. 64,65).	Health Assessment and Diagnosis.
	Structural	Lead/collaborate on research on food insecurity interventions and effect of social safety net on health (p. 55).	Research, Leadership, Collaboration.
	Structural	Include education on methods of advocacy at the population level in FNP education (p. 54).	Leadership.
	Structural	Provide education on concept of food insecurity in FNP education. FNPs with food security knowledge may educate their colleagues (p. 63).	Leadership.
	Personal	Consider prescription of one daily multivitamin with one RDA of essential micronutrients (p. 64).	Therapeutic Management.
	Personal	Promote/assist with application for Monthly Nutritional Supplement (p. 64).	Health Promotion.
	Personal	Provide patient with local food assistance information (p. 64).	Health Promotion.
Build Healthy Public Policy.	Structural	Advocate for increased social assistance (p. 55).	Health Promotion, Leadership, Collaboration.
	Structural	Advocate for increase of the Family Bonus in BC to at least $5000/child/year, with increases with inflation (p. 56).	Health Promotion, Leadership, Collaboration.

	Structural	Advocate for expansion of the Monthly Nutritional Supplement to include all HIV/AIDS individuals in BC (p. 56).	Health Promotion, Leadership, Collaboration.
	Structural	Advocate for inclusion of rural and remote BC communities in the Nutrition North Canada Program (p. 56).	Health Promotion, Leadership, Collaboration.
	Structural	Advocate in the local community for adequate, affordable housing (p. 57).	Health Promotion, Leadership, Collaboration.
Strengthen Community Action.	Community	Consider development of a community garden program (p. 59).	Health Promotion, Leadership, Collaboration.
	Community	Consider development of a community hunter program (p. 61).	Health Promotion, Leadership, Collaboration.
	Community	Consider development of a community kitchen program (p. 62).	Health Promotion, Leadership, Collaboration.
	Community	Consider development of a community food bank (p. 62).	Health Promotion, Leadership, Collaboration.
Create Supportive Environments.	Community	Create supportive community environment through community action initiatives (p. 58).	Health Promotion, Leadership, Collaboration.
	Community	Create supportive environment for traditional food acquisition through support community-led initiatives protecting waters and land (p. 58).	Health Promotion, Collaboration.
Develop Personal Skills.	Nutritional Counselling		
	Personal	1) Provide nutritional counselling for HIV/AIDS and food insecurity (p. 65).	Therapeutic Management.
	Personal	2) Refer to registered dietitian for nutritional counselling on food insecurity (p. 65).	Therapeutic Management, Referral.

	Address Depression		
	Personal	1) Screen for depression (p. 66).	Health Assessment and Diagnosis.
	Personal	1) Provide pharmacotherapy: Frist-Line: Escitalopram, Citalopram. Second-Line: Sertraline, mirtazapine, bupropion, venlafaxine, and duloxetine (p.66).	Therapeutic Management.
	Personal	1) Provide CBT for depression (p. 67).	Therapeutic Management.
	Personal	2) Refer for psychotherapy: CBT, expressive-supportive therapy, and psychoeducation are preferred. Also Here to Help & Bounce Back programs (See Appendix E, p. 103) (p. 68).	Therapeutic Management, Referral.
	Address Addictions		
	Personal	1) Screen for addictions at baseline and annually/every 3 months if risk factors (p. 67).	Health Assessment and Diagnosis.
	Personal	2) Counsel patients, CBT may be utilized (p. 67).	Therapeutic Management.
	Personal	3) Refer to treatment programs and support services (p. 68).	Therapeutic Management, Referral.
	Personal	4) Refer to Here to Help (See Appendix E, p. 103) (p. 68).	Therapeutic Management, Referral
	Smoking Cessation		
	Personal	1) Screen for readiness and barriers to quit (p. 68).	Health Assessment and Diagnosis.
	Personal	2) Council on quit dates and symptoms of nicotine withdrawal (p. 68).	Therapeutic Management.
	Personal	3) Consider pharmacotherapy including nicotine replacement therapy, verenicline, and bupropion (p. 68).	Therapeutic Management.
	Personal	4) Refer for counselling; Consider referral to Quitnow (p. 68).	Therapeutic Management, Referral.