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HIV/AIDS and Food Security in Resource Rich Settings

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Introduction

HIV is a devastating disease that affects more than 33 million people world-wide (1). Canada experiences high rates of HIV in vulnerable populations including men who have sex with men, people who inject drugs, marginalized Aboriginal^a Canadians, and women who now make up a significantly larger number and proportion of people living with HIV and AIDS (PLHA) than several decades ago (2). Prevalence has increased in recent years; approximately 65,000 Canadians had HIV in 2008 which represented a 14% increase from 2005. This is in part due to anti-retroviral therapy (ART) allowing more PLHA to live longer.

Good nutritional status is critically important for maintaining the health of PLHA (3), however many PLHA live in poverty and have difficulty accessing affordable, nutritious food. This review will explore the relationship between HIV, poverty and food security, discuss vulnerable populations that are especially impacted by both food insecurity and HIV, and highlight research and policy implications to improve the food security and nutritional health of PLHA.

Food Security

Food security is achieved when all people have the physical and economic means to access, at all times, sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (4). Conversely, food insecurity is

^a For this paper, Aboriginal refers to First Nations, Métis and Inuit peoples

Key Points

- Food security is a key determinant of health, and is achieved when all people have the physical and economic means to access, at all times, sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.
- Good nutritional status is critically important for immune function and maintaining the health of people living with HIV/AIDS (PLHA), however many PLHA live in poverty and have difficulty accessing affordable, nutritious food. The prevalence of food insecurity in PLHA in resource-rich settings (such as Canada) ranges from 49% to 71%.
- A vicious cycle can ensue where HIV/AIDS and food insecurity worsen the severity of each other through nutritional, mental health and behavioural pathways.
- Certain population groups are at greater risk of entering the HIV-food insecurity cycle including Aboriginal Canadians, women who are single parents and caring for dependent children or other family members, and elderly PLHA living in poverty.
- Appropriate community-based strategies to improve food access and upstream policy approaches to address inequities may have the most promising chance of decreasing transmission and improving nutritional, mental health and behavioural outcomes associated with HIV.

characterized by uncertain or limited availability of safe, nutritionally adequate food or the inability to obtain food in socially acceptable ways (5). In 1948 the United Nations recognized the right to food as a fundamental human right (6). Canada was a signatory to this and several other national and international agreements promoting the right to food (7). Despite these declarations of support and economic growth, food security has not been achieved in Canada. In 2004 almost 9% of Canadians (2.7 million people) were food insecure with 3% reporting severe food insecurity (where household members experienced physical hunger) (8). Almost 9 million Canadian used a food bank in 2010, a 9% increase over the previous year and a 19% increase since 2000 (9).

Food Security as a Determinant of Health

Health, more than the absence of disease, is a state of physical, mental and social well-being (10). One's health is determined by a variety of factors, of which individual behaviours and actions play only a small part (11). Determinants of health include income, social support, education, employment, individual biology, health services, gender, culture and both social and physical environments (12). Sufficient food, in quality and quantity, is a cornerstone of health; therefore food security is a key health determinant (13). In Canada, food security is determined primarily by income. People on a low, fixed income may run out of money for food because they have fixed expenses such as rent and utilities, making them vulnerable to poor nutritional health. Studies have shown that people with low income are less likely to get the nutrition required for good health (14, 15). Food insecure people are more likely to have nutrition-related chronic diseases such as heart disease, diabetes, and high blood pressure (16). Food insecurity can also lead to negative psycho-social outcomes including distress and depression (17, 18).

Nutrition and HIV/AIDS

It is well-established that a nutritious diet is essential for the development of a healthy, effective immune system (19-21). Malnutrition can increase the risk of developing infections, including HIV (22, 23). Good nutrition is essential for PLHA, and progression of HIV/AIDS is affected by nutritional health which has been shown to be a predictor of survival rate in adults (24, 25). PLHA with malnutrition have higher death rates than adequately nourished PLHA, even if they are receiving ART (26-28). Metabolic abnormalities may accompany HIV/AIDS, such as AIDS-related wasting syndrome characterized by sudden weight loss accompanied by diarrhea or chronic weakness and fever without a known cause, and lipodystrophy syndrome which includes dyslipidemia and insulin resistance (29). Effects of these can be exacerbated in situations of food insecurity (29, 30).

Poverty and HIV/AIDS

Poverty is a direct cause of food insecurity (13, 31). PLHA frequently live in poverty, which can be both a pre-existing condition and a consequence of HIV

(32-35). Contextual conditions of poverty which can increase transmission risk include homelessness, drug use, incarceration, street-involvement and sex work (36, 37). Individuals diagnosed with HIV can face significant barriers to establishing or maintaining economic security (33). These include psycho-social issues such as job loss, housing loss, stigma and discrimination, lack of social support and depression; and physical issues including fatigue, faster disease progression and co-morbidities (38-40).

Food Insecurity and HIV/AIDS

The prevalence of food insecurity in PLHA in resource-rich settings (such as Canada) have been shown to range from 49% to 71% (41, 42). In one Canadian province, Normén and colleagues found that the prevalence of food insecurity in PLHA was five times that of the general population (43). Food insecurity is associated with higher HIV viral loads, lower CD4 cell counts and poorer treatment adherence (44, 45). Food insecurity paired with wasting and underweight significantly increases the risk of premature death (41). Food insecure individuals are more likely to live in poverty, engage in illicit drug use, smoke, be of Aboriginal descent, live with children, have lower levels of education, and be of young age (42, 43). Severe food insecurity has been correlated with elevated unprotected sex among HIV-seropositive injection drug users (37).

Food insecurity can be exacerbated by people's housing situation, in particular being homeless or under-housed (e.g. rooming house, stay temporarily with friends or family, no fixed address) (43, 45). A recent survey examining housing and PLHA in Winnipeg revealed that one third of the sample surveyed had lived in their current residence for less than five months, and a significant portion lived in shelters, rooming houses or hotels, or with friends/family. Respondents indicated that they frequently did not have access to working refrigerators or adequate food preparation facilities (46). Having adequate housing is an important prerequisite for food security. Even if charitable food sources are accessible to PLHA, through clinics or other venues, lack of adequate food storage and preparation facilities may preclude their use. PLHA who are homeless, frequently homeless, or depend on friends or relatives for temporary housing have little control over their food. At the same time,

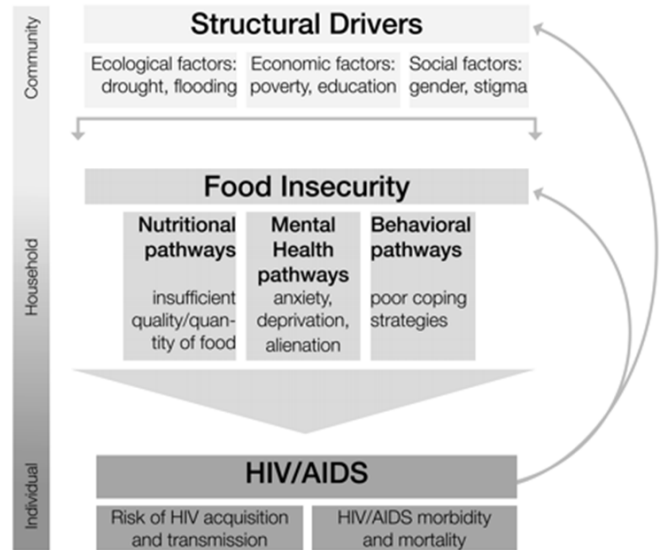
PLHA who are under-housed, such as living in hotels or rooming houses, may also have inadequate food facilities. For example, a “pocket suite” in a rooming house or hotel may only have a microwave oven available for “cooking”, precluding the use of all but canned and highly processed foods, which are typically low in nutrition (47).

Evidence also suggests PLHA can experience fatigue and weakness related to HIV and treatment, which precludes long journeys to large grocery stores where they can access affordable healthier foods, such as fruits, vegetables and fresh meat (47). Compromised health status paired with low income results in PLHA frequently using convenience stores, soup kitchens and food banks; however, the food obtained from these sources tends to be highly processed and of low nutritional quality (high in saturated fat, salt, sugar and cholesterol and low in fibre, calcium, vitamin A, fruits and vegetables) (48, 49). Food insecurity has also been identified as a barrier to accessing health care (44).

The Vicious Cycle of HIV/AIDS and Food Insecurity

The predisposing factors and consequences of food insecurity for PLHA noted above coalesce into what Weiser has conceptualized as a vicious cycle where food insecurity and HIV/AIDS are intertwined, heightening the vulnerability to, and worsening the severity of, each other (see Figure 1) (30). What this figure shows is that the relationship between HIV/AIDS and food insecurity operates in two directions, affecting and reinforcing each other through nutritional, mental health and behavioural pathways. Determinants of health (e.g. poverty, education, gender) operating at ecological, economic and social levels contextualize and reinforce this relationship. Poverty and lack of education can lead to inadequate food and nutrition, which in turn can lead to deficiencies affecting disease progression. This is worsened by poor mental health and poor coping strategies such as risky sexual practices that can increase transmission risk and worsen health outcomes (30). Other determinants operating at the ecological level include food access and pricing. This cycle can be further exacerbated by the presence of nutrition-related co-morbidities such as hypertension, type II diabetes and heart disease in PLHA (50, 51).

Figure 1. Cycle of HIV/AIDS and food insecurity



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Vulnerable Populations, HIV and Food Insecurity

Several population groups are at greater risk of entering the HIV-food insecurity cycle. These include Aboriginal Canadians (First Nations, Métis and Inuit) who overall have less favourable health than non-Aboriginal Canadians and experience greater vulnerability to HIV, with an infection rate 3.6 times higher than other Canadians (2). Aboriginal peoples account for 8.5% of PLHA and 12.5% of new infections, yet comprise 3.8% of the general Canadian population (2). Aboriginal peoples also have the highest rates of food insecurity in Canada (52). Thirty-three percent of Aboriginal households report food insecurity, with 14 % of these experiencing severe food insecurity (almost five-fold the rate in non-Aboriginal households) (8). This is due in large part to inequities in health determinants including greater rates of poverty, marginalization and racism, lower levels of education, and greater histories of homelessness and unstable housing (53). These inequities contribute significantly to the higher burden of HIV observed in Aboriginal Canadians (53).

Women, particularly those who are single parents and caring for dependent children or other family members, may be particularly at risk of entering the HIV-food insecurity cycle. More than one quarter of new cases of HIV in Canada are women (2).

According to Statistics Canada, in 2009 21% of female lone-parent families lived in poverty; three times the rate in 2-parent families with children (54). HIV positive lone-parent women living in poverty may face increased risk of food insecurity through both poverty and their disease status. While studies of HIV positive mothers in resource-rich settings and their experience of food insecurity are lacking, other studies show that food insecure mothers often forego eating to ensure their children have sufficient food, in times of restricted food access (17, 55). This can lead to worsened psychosocial and physical health outcomes (18).

The population of elderly PLHA in Canada is growing, and this group may face additional risks and challenges to maintaining food security. Canada's elderly poverty rate has been increasing since the mid-1990's, and has reached approximately 6% as of 2008 (56). In the same year, 12.4% (2,644) of all reported AIDS cases occurred in people 50 years of age or older, a 50% increase over nine years, with the majority of cases being males. The proportion of annual positive HIV test reports among those aged 50 years and older increased from 10.6% in 1999 to 15.3% in 2008 (57). The rate of food insecurity in Canadian seniors is 4%, however this is speculated to be an underestimation (16). HIV positive seniors living in poverty may face additional barriers to food security presented by their disease state such as isolation, illness and mobility issues.

Promising Interventions and Future Research Recommendations

Given the potential for food insecurity and poor nutritional status to undermine health achievement through ART, understanding the nutrition vulnerability of PLHA and promoting food security should be a priority for programs/policy and research. There is, however, little research on the food security status of PLHA in Canada or effective interventions to alleviate their food insecurity. Nonetheless, strategies to improve food security as proposed for vulnerable populations are likely to be promising. These include federal policy responses to ensure more equitable income distribution; community-based responses to food security (e.g. community kitchens/gardens, food skills workshops, food-buying cooperatives); and nutritious and welcoming community-based feeding programs (58,

59). Adequate housing has been shown to improve health outcomes of PLHA, and policies to ensure equitable access should be implemented (60).

Future research should focus on the epidemiology of food insecurity in PLHA including the potentially vulnerable populations outlined above, along with food consumption patterns, food access strategies, the impact of housing situation on food security, the meaning of food in the context of HIV, and how HIV and other co-morbidities affect food security. Other research could further examine linkages between food insecurity and risk behaviours (needle sharing, sexual risk-taking), identify barriers to seeking and adhering to treatment and care, and evaluate food security interventions (44). Research should also be conducted to identify promising intervention approaches that can be implemented across affected populations to improving HIV treatment outcomes via food security (30). Finally, knowledge development and exchange should be undertaken to communicate promising strategies to PLHA, program planners and decision makers.

Conclusion

Food insecurity is increasingly recognized as a major determinant of health for persons living with HIV/AIDS in resource-rich settings such as Canada. The cycle of poverty, HIV, food insecurity and nutrition-related co-morbidities present unique challenges to realizing the full health potential of PLHA. This review points toward a holistic approach to prevention, care, treatment and future research in order to minimize the detrimental effects of food insecurity on HIV/AIDS. Nonetheless, there is clear evidence that improving food security is a key prerequisite for overall health that should be a right of all citizens, including those with HIV/AIDS. Appropriate community-based strategies to improve food access and upstream approaches to address inequities may have the most promising chance of decreasing transmission and improving nutritional, mental health and behavioural outcomes associated with HIV (30, 58, 59).

NCCID Comments

According to the World Health Organization, "the social determinants of health are the conditions in which people are born, grow, live, work and age, including the health system." These factors have

substantial impact on one's ability to acquire, maintain and recover health. This article provides a vivid example of how food, one of the most basic necessities of life and an important health determinant, is intimately linked with the progression of HIV and the maintenance of health in PLHA; and how food insecurity can plunge PLHA into a vicious cycle of worsened health outcome which in turn increases PLHA's vulnerability to malnutrition. As public health practitioners who deal with communicable disease issues in clients with complex life conditions, we know that we must treat the disease as well as address the underlying issues. The recognition that it is important to include a perspective on social determinants of health in public health programming is often difficult to accomplish in practical terms. Addressing social determinants of health in a meaningful way is generally beyond the power and purview of public health. The key lies in strategic partnerships with organizations that have the mandate and resources to address some of the basic needs of our clients. In the case of food insecurity among PLHA, public health practitioners could inquire about the clients' food situation and direct them to local community-based organizations that offer nutritious meals or food banks. Similarly, synergistic linkage with community housing programs would enhance public health services provided to underhoused clients. Although such community-based organizations may only be a short-term solution, they are a small step in the right direction toward addressing a complex problem that requires complex solutions.

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