



How food insecurity contributes to poor HIV health outcomes: Qualitative evidence from the San Francisco Bay Area



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ABSTRACT

Rationale: Food-insecure people living with HIV/AIDS (PLHIV) consistently exhibit worse clinical outcomes than their food-secure counterparts. This relationship is mediated in part through non-adherence to antiretroviral therapy (ART), sub-optimal engagement in HIV care, and poor mental health. An in-depth understanding of how these pathways operate in resource-rich settings, however, remains elusive. **Objective:** We aimed to understand the relationship between food insecurity and HIV health among low-income individuals in the San Francisco Bay Area using qualitative methods.

Methods: Semi-structured in-depth interviews were conducted with 34 low-income PLHIV receiving food assistance from a non-profit organization. Interviews explored experiences with food insecurity and its perceived effects on HIV-related health, mental health, and health behaviors including taking ART and attending clinics. Thematic content analysis of transcripts followed an integrative inductive-deductive approach.

Results: Food insecurity was reported to contribute to poor ART adherence and missing scheduled clinic visits through various mechanisms, including exacerbated ART side effects in the absence of food, physical feelings of hunger and fatigue, and HIV stigma at public free-meal sites. Food insecurity led to depressive symptoms among participants by producing physical feelings of hunger, aggravating pre-existing struggles with depression, and nurturing a chronic self-perception of social failure. Participants further explained how food insecurity, depression, and ART non-adherence could reinforce each other in complex interactions.

Conclusion: Our study demonstrates how food insecurity detrimentally shapes HIV health behavior and outcomes through complex and interacting mechanisms, acting via multiple socio-ecological levels of influence in this setting. The findings emphasize the need for broad, multisectoral approaches to tackling food insecurity among urban poor PLHIV in the United States.

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1. Introduction

Food insecurity is “the limited or uncertain availability of

nutritionally adequate, safe foods, or the inability to acquire personally acceptable food in socially acceptable ways” (Anema et al., 2009). This definition incorporates overlapping challenges, including insufficient quantity, poor quality, limited diversity, or compromised safety of food; inadequate access to food, leading to hunger or anxiety; and the need for socially unacceptable procurement of food, including begging, relying on charity, exchanging

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sex for food, stealing food, and other illicit activities (Anema et al., 2009). Food insecurity affects hundreds of millions of people globally, and remains a major challenge in many high-income countries. The United States is a prominent example: 48 million Americans (15.4% of the population) were food-insecure in 2014 (Coleman-Jensen et al., 2015).

The link between food insecurity and HIV/AIDS is well characterized. In this bidirectional relationship, the two impact each other by heightening vulnerability to and worsening the severity of each condition (Weiser et al., 2011). On the one hand, people living with HIV/AIDS (PLHIV) and their families are put at risk of food insecurity from the loss of labor, wages, assets, and productivity associated with HIV-related morbidity, stigma, and treatment costs (Weiser et al., 2011). At the same time, food insecurity increases the risk of both horizontal and vertical transmission, and food-insecure PLHIV consistently exhibit worse clinical outcomes than their food-secure counterparts (Weiser et al., 2015a).

1.1. Effects of food insecurity on HIV clinical outcomes

In resource-rich settings, food insecurity has been associated with higher viral loads (Feldman et al., 2015; Wang et al., 2011; Weiser et al., 2013), lower CD4 counts (Weiser et al., 2013), and HIV-related morbidity (Weiser et al., 2012) and mortality (Anema et al., 2013). Quantitative data suggest that food insecurity worsens patients' HIV-related health through three interrelated pathways—nutritional, behavioral, and mental health (Fig. 1) (Weiser et al., 2011, 2015a). While the nutritional pathway operates exclusively at the physiological level, with micro- and macronutrient deficiencies leading to immunologic decline and faster disease progression (Weiser et al., 2015a), the behavioral and mental health pathways represent biopsychosocial processes through which food insecurity contributes to poor HIV health. Extensive evidence from resource-rich as well as resource-poor settings shows that food-insecure PLHIV have poorer adherence to ART and are more likely to miss scheduled clinic visits than their food-secure counterparts (Singer et al., 2014; Young et al., 2014). Food insecurity has also been associated with depression (Anema et al.,

2011; Palar et al., 2015; Vogenthaler et al., 2011; Weiser et al., 2009) and increased alcohol and substance use (Anema et al., 2011; Weiser et al., 2009) among PLHIV in the United States and Canada, all of which are predictors of ART non-adherence (Chander et al., 2006; Uthman et al., 2014; Vagenas et al., 2015). Depression is additionally associated with poor immunologic outcomes independent of ART adherence (Evans et al., 2002; Ickovics et al., 2001).

1.2. The socio-ecological model of HIV health behavior

These quantitative associations support the design of interventions and policies aimed at addressing food insecurity to improve HIV clinical outcomes. Doing so, however, requires a deeper understanding of how such associations arise in different populations, in order that interventions are optimally tailored to the underlying causal processes shaped by patients' complex needs and broader social contexts. While qualitative research is the best approach for obtaining such an understanding, few qualitative studies have investigated the relationship between food insecurity and HIV health. Importantly, no such studies have been conducted in high-income countries, where the mechanisms may be different compared with resource-poor settings. It has been theorized that HIV health behaviors are influenced by factors operating across individual, interpersonal/network, community, institutional/health system, and structural levels, which interact both within and between these levels to shape patterns of health behavior (Kaufman et al., 2014). This socio-ecological model includes diverse factors such as motivation, emotions, knowledge/information, and reactions to stress (individual level), social networks and social capital (interpersonal/network level), stigma and cultural norms (community level), culturally and structurally competent health-care providers and appropriate services (institutional/health system level), and structural factors such as poverty and food insecurity. Here we aimed to understand how food insecurity exerts its influence on HIV-related health behaviors and outcomes across the different levels of the socio-ecological model by studying a population of low-income PLHIV in San Francisco and Alameda County, California.

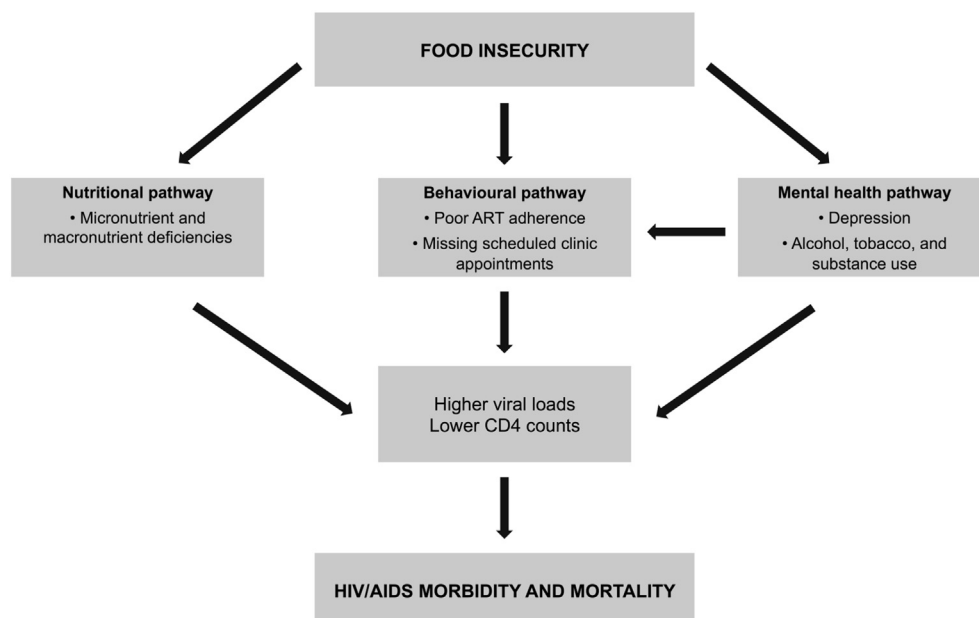


Fig. 1. Effects of food insecurity on HIV/AIDS morbidity and mortality. Adapted from Weiser et al. *Am J Clin Nutr* 2011.

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