Food insecurity is associated with worse HIV clinical outcomes among women in the United States: Findings from the Women’s Intergenerational HIV Study


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Background:

Introduction

Food insecurity: limited or uncertain availability of nutritionally adequate, foods or inability to acquire food in socially acceptable ways. 1

Affects half of HIV-infected patients in the U.S.1

Disproportionately affects women and women-headed households.1

Food insecurity associated with higher HIV viral load and lower CD4 counts in populations comprised mostly of men.2,3

Adherence proposed as potential mediator between food insecurity and worse HIV clinical outcomes.5

No domestic studies of food insecurity and HIV treatment outcomes specifically among women, none are national.6

Project Aims

1. Examine association between food insecurity and HIV clinical outcomes in cross-sectional sample from the Women’s Intergenerational HIV Study (WHIS), national sample of HIV-infected women

2. Investigate adherence as potential mediator between food insecurity and HIV clinical outcomes

Methods

Sample: Cross-sectional study of 1,304 women throughout U.S as part of Women’s Intergenerational HIV Study (WHIS), national longitudinal study of HIV-infected women5

Primary Independent Variable: food insecurity measured using the Household Food Security Survey Module, previously validated in several countries including U.S.

Primary outcomes: continuous HIV-viral load and continuous CD4+ count

Covariates: Demographics, socioeconomic controls, clinical controls, substance use

Mediator: Adherence <95% using a visual analog scale

Analysis: For viral load outcome, used Tobit regression analysis, natural log transformed

For CD4 outcome, used multivariable linear regression.

Covariates included with bivariate p<0.15.

For mediation analysis, created alternate model including adherence; measured change in coefficient to determine strength of adherence

Results and Outcomes

Table 1: Characteristics of WHIS participants, n=1,304

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD)</td>
<td>48.6 (8.7)</td>
</tr>
<tr>
<td>Race/ethnicity: African-American, %</td>
<td>65.7</td>
</tr>
<tr>
<td>Hispanic, %</td>
<td>16.4</td>
</tr>
<tr>
<td>Other, %</td>
<td>3.4</td>
</tr>
<tr>
<td>Less than $500 savings, %</td>
<td>78.2</td>
</tr>
<tr>
<td>Having child dependents, %</td>
<td>34.9</td>
</tr>
<tr>
<td>Any governmental or non-governmental food aid, %</td>
<td>20.0</td>
</tr>
<tr>
<td>Any illicit drug use in last 6 mths, %</td>
<td>23.4</td>
</tr>
<tr>
<td>Current alcohol use, %</td>
<td>43.6</td>
</tr>
<tr>
<td>Time on ART (years), mean (SD)</td>
<td>9.5 (6.0)</td>
</tr>
<tr>
<td>Underweight, BMI &lt; 18.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Overweight/obese, BMI ≥ 25</td>
<td>72.4</td>
</tr>
<tr>
<td>Current non-adherence (&lt;95% of doses), %</td>
<td>17.1</td>
</tr>
<tr>
<td>Undetectable viral load, %</td>
<td>58.4</td>
</tr>
<tr>
<td>Food insecurity, %</td>
<td>41.9</td>
</tr>
</tbody>
</table>

Food insecurity associated with 2.1 times higher HIV-1 viral load (95% CI: 1.1-4.1)

Path through adherence accounted for 75.3% of the association between food insecurity and HIV-1 viral load

Food insecurity associated with a 43.4 lower mean CD4+ count (83.1 – 3.6)

Adherence accounted for 23.3% of the association

Discussion

Prior research demonstrates higher HIV-1 viral loads and lower CD4+ counts associated with worse health outcomes

First to show adherence as mediator for CD4+ count; prior studies show food security to be highly predictive of ART adherence.

Builds on research that suggests women may prioritize their children’s health over their own.

Implications

Further study needed to elucidate the pathways between food insecurity and HIV outcomes

Assessment of food insecurity could assist programs seeking to bolster ART adherence and improve HIV outcomes

Comprehensive HIV care that integrates food insecurity interventions may have significant impacts on health of populations living with HIV

Literature Cited


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