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Food Insecurity and Intimate Partner Violence Among HIV-Positive Individuals in Rural Kenya

Abigail M. Hatcher, PhD, MPhil[1,2], **Sheri D. Weiser, MD, MPH**[1], **Craig R. Cohen, MD, MPH**[3], **Jill Hagey, MD, MPH**[4], **Elly Weke, MA**[5], **Rachel Burger, MPH**[3], **Pauline Wekesa, BSc**[5], **Lila Sheira, MPH**[1], **Edward A. Frongillo, PhD**[6], **Elizabeth A. Bukusi, MBChB, MMed, MPH, PhD**[3,5,7]

[1]Division of HIV, Infectious Diseases, and Global Medicine, University of California, San Francisco, San Francisco, California; [2]Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa; [3]Department of Obstetrics, Gynecology and Reproductive Sciences, University of California San Francisco, San Francisco, California; [4]Department of Medicine, Duke University, Durham, North Carolina; [5]Center for Microbiology Research, Kenya Medical Research Institute, Nairobi, Kenya; [6]Department of Health Promotion, Education, and Behavior, University of South Carolina, Columbia, South Carolina; and [7]Departments of Global Health and Obstetrics and Gynecology, University of Washington, Seattle, Washington

Abstract

Introduction: Intimate partner violence and food insecurity are both structural drivers of HIV acquisition, care, and treatment, but little is known about how the two conditions intersect in the lives of those already living with HIV.

Methods: This study examined cross-sectional baseline data (collected January 2016–December 2017) from an ongoing trial in southwestern Kenya. Trained interviewers asked enrolled participants living with HIV aged 18–60 years about household food insecurity (using the Household Food Insecurity Access Scale), intimate partner violence (using an adapted WHO multi-country study instrument), and sociodemographics. Negative binomial regression was used to examine the association between food insecurity and partner violence victimization (among women) or perpetration (among men). This secondary analysis was analyzed in August 2019–March 2020.

Results: Of 720 participants, more than half of women reported experiencing intimate partner violence (57.6%) and most men reported perpetrating it (58.4%). Participants reporting any

Address correspondence to: Abigail M. Hatcher, PhD, Department of Medicine, Division of HIV, Infectious Diseases, and Global Medicine, University of California, San Francisco, 1001 Potrero Avenue, Building 100, Suite 335W, San Francisco CA 94110. hatchera@globalhealth.ucsf.edu.

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partner violence had higher Household Food Insecurity Access Scale scores (21.8) compared with those reporting no violence (21.3, p=0.02). Each categorical change in food insecurity (mild, moderate, severe) was associated with 41% increased risk of an additional intimate partner violence episode. In models controlling for relationship status, wealth, season of interview (lean versus not), and baseline physical health, each 1-point increase in food insecurity was associated with 6% higher risk of violence victimization among women and 4% greater risk of men perpetrating partner violence.

Conclusions: This study highlights the interconnected nature of intimate partner violence and food insecurity among women and men living with HIV. This relationship suggests that enhancing food security may be a useful intervention strategy to prevent intimate partner violence and improve HIV-related health outcomes.

INTRODUCTION

Syndemics are concurrent and mutually reinforcing social and health problems.[1,2] The syndemic conditions of food insecurity and intimate partner violence (IPV) are associated with HIV acquisition,[3–5] and poor health among HIV-positive populations.[6,7] In sub-Saharan Africa, all 3 conditions are higher than elsewhere globally.[8,9]

Food insecurity is associated with doubled odds of IPV victimization among women in the general population,[10–14] though quantitative work among HIV-positive women is limited. Qualitative research suggests IPV leads to food insecurity if it prompts HIV-positive women to leave violent partners and shoulder household financial needs alone.[15]

Among men in the general population, food insecurity is associated with higher odds of IPV perpetration.[16,17] Little is known about this association among HIV-positive men, though IPV perpetration and food insecurity are both linked to men's HIV risk.[5,18]

A theoretical framework underpins the relationship between food insecurity and IPV.[16] Men may re-exert control through violence if unable to meet provider roles (gender resource theory)[19,20] or deprivation could heighten acute stressors in the household (family stress theory)[21] and deplete men's ability to attain self-control (physiology of willpower).[22] A bidirectional relationship could exist if IPV exposure lowers economic earnings,[23] increases household financial burden due to injury or missing work,[24] or makes relationships unstable —lowering the ability of single-earner households to obtain sufficient food.

This study examines the association between food insecurity severity and IPV among HIV-positive individuals in rural Kenya using cross-sectional data from an ongoing trial.

METHODS

This was a secondary analysis of baseline data from the Shamba Maisha cluster RCT. Shamba Maisha is a multisectoral agricultural intervention including: (1) low-cost irrigation water pump, (2) group agricultural training, and (3) loan ($150) for seeds/fertilizers.[25,26]

Study Sample

Eight matched pairs of health facilities in southwestern Kenya were randomized to intervention (*n*=360) or control arms (*n*=362). Inclusion criteria were being on antiretroviral treatment, aged 18–60 years, with access to surface water. Included participants had moderate-to-severe food insecurity, assessed using the Household Food Insecurity Access Scale (HFIAS), and were willing to save a down payment applied toward the agricultural loan. Trained researchers led structured interviews (January 2016–December 2017) and abstracted clinical data from medical records.

Measures

This study assessed IPV through 4 self-reported items on lifetime physical or sexual violence (adapted from the WHO instrument[27]). Investigators examined IPV experienced by female participants and perpetrated by male participants. Frequency of each violent act was assessed on a Likert-type scale (0, *never*; 1, *once*; 2, *two or three times*; 3, *≥4 times*). The index was assessed as a dichotomous outcome (ever versus never) and continuous measure of IPV intensity (scores ranged from 0 to 12).

A HFIAS score assessed food insecurity as a continuous variable. Scores ranged from 11 to 36 and the scale had acceptable internal consistency (Cronbach's α=0.81). Scores were categorized as mild (<14), moderate (14–21), or severe (≥22) food insecurity.[28]

Sociodemographic covariates included: season of interview (lean versus not), age, marital status (married versus widowed/separated/single), number of children, education level, baseline CD4 count, and a wealth index.[29]

Statistical Analysis

These secondary analyses were not pre-registered (conducted August 2019–May 2020) and were led using Stata, version16. Bivariate analyses for normally distributed and categorical variables (*t*-test, chi-square test) and non-normally distributed variables (Wilcoxon) were conducted by IPV status.

The authors fitted negative binomial regressions by sex to account for participants with no experience of IPV (resulting in a large number of 0s). Negative binomial models assume each individual has their own Poisson distribution, thus allowing individuals to vary in propensity of reporting IPV. Authors adjusted for covariates of theoretical significance: season of interview, age, wealth index, marital status, education, and health status (CD4 count). Past research suggests the similar sociodemographic covariates predict IPV victimization and IPV perpetration,[30,31] so similar covariates were used in models for women and men. Analyses accounted for clustering by clinic using a sandwich estimator.

Written informed consent was obtained from study participants. Ethical approval for the study was granted by Kenya Medical Research Institute and University of California, San Francisco. As data are part of an ongoing trial, they are not yet publicly available.

RESULTS

Of 720 baseline participants, 396 (55.0%) were female. The mean HFIAS score was 21 for men and 22 for women (p=0.008), with 569 (78.9%) reporting severe food insecurity (Table 1).

A majority of women (57.6%) reported IPV victimization and a majority of men (58.4%) reported perpetrating IPV. Participants reporting any IPV had higher HFIAS scores (21.8) compared with those reporting no IPV (21.3, p=0.02), though this bivariate analysis was not significant by sex (men: p=0.07, women: p=0.05, data not shown). A scatterplot with fitted line (Figure 1) illustrates how HFIAS was associated with IPV perpetration (p=0.029) and victimization (p=0.002).

Each 1-point increase on HFIAS was associated with higher adjusted risk of IPV victimization among women (adjusted incident rate=1.06, 95% CI=1.01, 1.10) (Table 2). Among men, HFIAS was associated with greater risk of IPV perpetration (adjusted incident rate ratio=1.04, 95% CI=1.01, 1.07). Each change in food insecurity category (mild, moderate, severe) was associated with 41% increased risk of an additional IPV episode (95% CI=1.10, 1.82, p=0.007) (Appendix Table 1). Categorical interpretation did not reach statistical significance among women (p=0.068) or men (p=0.097).

DISCUSSION

In a sample of men and women living with HIV, food insecurity was independently associated with IPV. In this predominately food-insecure sample, increased severity of food insecurity was linearly associated with greater IPV intensity. Each change in food insecurity category (mild, moderate, severe) was associated with 41% increased risk of an additional IPV episode.

These findings are consistent with extant studies among the general population, where food insecurity is associated with between 2-fold and 6-fold increased odds of any IPV perpetration[16,17,32] or victimization.[33–36] This is the first analysis, to the authors' knowledge, to examine food insecurity and IPV among an HIV-positive cohort in sub-Saharan Africa. Further research may suggest these conditions in HIV-positive samples are unique from or similar to the general population.

More than half of women (58%) reported experiencing IPV, which is higher than among HIV-positive women in Uganda (44%).[37] Among men, 58% reported IPV perpetration, which is higher than among HIV-positive men in Vietnam (38%).[38] High IPV exposure has clinical implications, as it leads to incident HIV infection,[3] lowers women's antiretroviral treatment adherence and viral control,[6] and has health effects for men themselves.[39]

These findings suggest that even when programs are unable to fully ameliorate food insecurity, slight improvements around food may be accompanied by safer relationships. Adding food security programming to clinical care could reach HIV-positive patients who experience or perpetrate IPV. By focusing on food security as an "upstream determinant" of health, programs may ultimately reduce IPV and improve HIV-related health.

Limitations

There are several limitations of this analysis. The small sample limits analysis of variables as categorical. Cross-sectional data limit causal conclusions, in particular given timing of past-month food insecurity and lifetime IPV. The study controlled for potential seasonality of food security by including season of interview as a covariate, but this does not fully ameliorate the temporality of food reporting. Self-reported measures for food insecurity or IPV may be limited by social desirability bias. Asking about women's experience and men's perpetration of IPV precludes exploring bidirectional relationship violence. Though the measure of IPV asks behaviorally-specific items, there are noted limitations to IPV measures,[40] and the 4-item scale was not validated.

CONCLUSIONS

This report highlights the interconnected nature of IPV and food insecurity in an HIV-positive sample in Kenya. High prevalence of IPV in this region, alongside the declines in adherence and HIV-related health associated with IPV[6,41] and food insecurity,[7] make this a crucial intersection for future work. Enhancing food security may be a useful intervention strategy to address nutrition, IPV, and HIV going forward.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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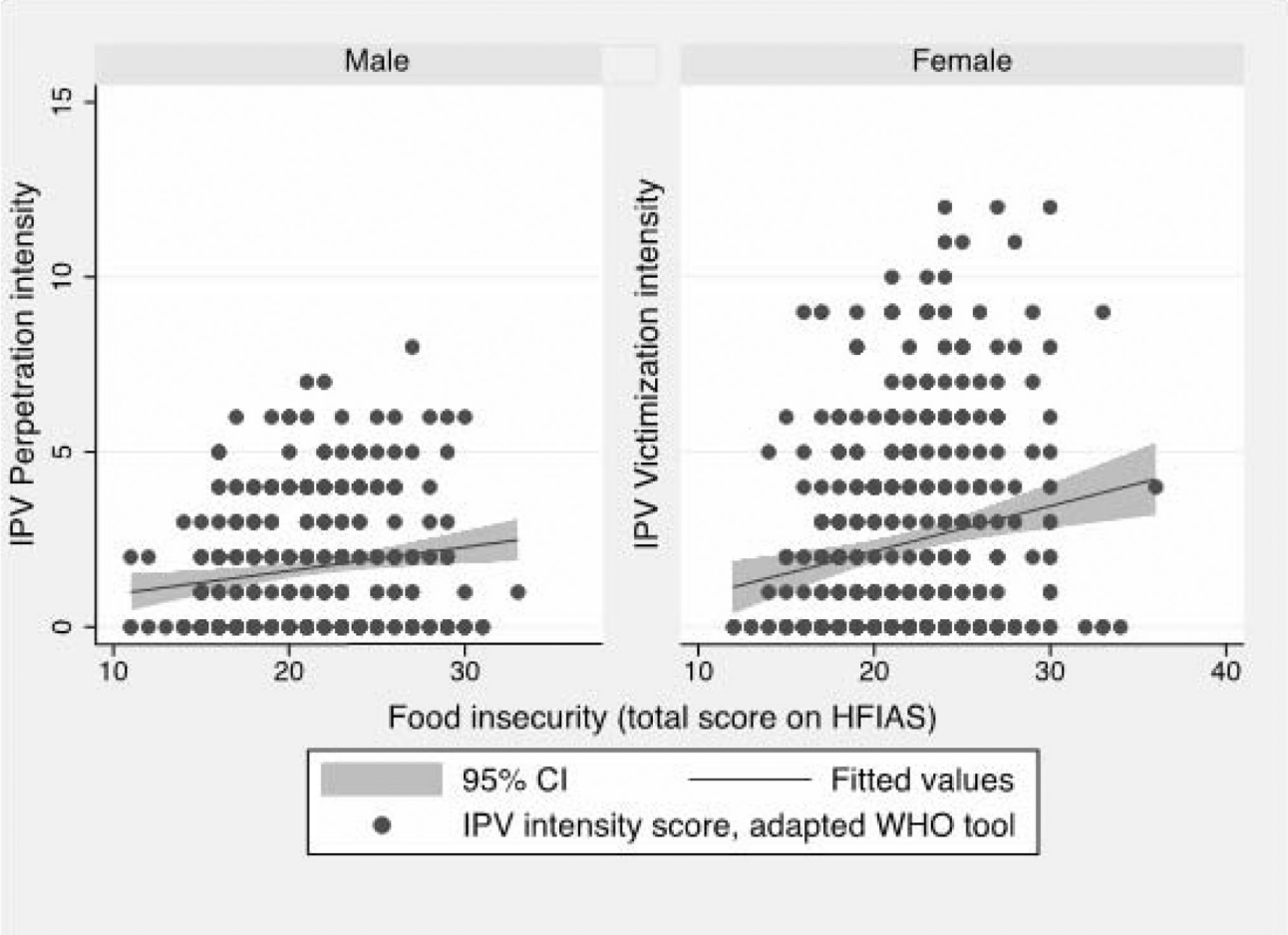

Figure 1.
Scatterplot and fitted line of food insecurity and IPV intensity, by sex. IPV, intimate partner violence.

Table 1.

Descriptive Data and Bivariate Associations of Sociodemographics and IPV, by sex (n=720)

	Total	IPV experience among women			IPV perpetration by men		
Sociodemographics	**Median (IQR) or n (%)**	**None**	**Ever IPV**	***p*-value**	**None**	**Ever IPV**	***P*-value**
Age (years)	40 (34–47)	43.3	42.3	0.53	38.5	37.9	0.38
Children (number)	4 (2–5)	3.5	3.7	0.29	4.1	4.3	0.80
Primary school education (vs not)	415 (57.6%)	52.1%	47.6%	0.38	64.9%	70.2%	0.32
Widowed, separated, or single (vs married)	198 (27.5%)	46.1%	37.9%	0.10	14.2%	8.0%	0.07
Polygynous marriage	173 (29.5%)	21.1%	35.9%	0.01	30.6%	27.3%	0.53
Lowest wealth quintile	142 (19.5%)	18.9%	24.1%	0.54	23.5%	14.0%	0.13
Baseline CD4 (count)	560 (397–745)	636	649	0.68	506	512	0.86
Interview season (lean vs not)	165 (22.8%)	22.8%	22.5%	0.95	17.9%	27.1%	0.05

IPV, intimate partner violence.

Table 2.

Unadjusted and Adjusted Negative Binomial Regressions of IPV, by Sex (n=720)

	Bivariate associations		Model 1: IPV experience among women (n=396)		Model 2: IPV perpetration by men (n=324)	
Variable	**IRR (95% CI)**	***p*-value**	**aIRR (95% CI)**	***p*-value**	**aIRR (95% CI)**	***p*-value**
Food insecurity	1.06 (1.02, 1.09)	**<0.001**	**1.06 (1.01, 1.10)**	**0.012**	**1.04 (1.01, 1.07)**	**0.043**
Sociodemographics						
Age (years)	0.99 (0.98, 1.01)	0.521	0.99 (0.97, 1.01)	0.350	0.99 (0.98, 1.02)	0.616
Children	1.01 (0.67, 1.04)	0.615	0.99 (0.93, 1.05)	0.340	1.01 (0.95, 1.06)	0.819
Primary school education	0.87 (0.75, 1.02)	0.095	0.78 (0.61, 1.04)	0.097	1.17 (0.98, 1.63)	0.171
Wealth index quintiles	0.95 (0.86, 1.05)	0.306	0.91 (0.83, 1.04)	0.537	1.02 (0.92, 1.07)	0.632
Widowed, separated, or single	0.99 (0.80, 1.19)	0.834	0.98 (0.68–1.45)	0.891	0.80 (0.43, 1.47)	0.475
Polygynous household	1.18 (0.97, 1.44)	0.079	**1.41 (1.15, 1.72)**	**0.001**	0.99 (0.60, 1.39)	0.946
Baseline CD4	1.00 (1.00, 1.00)	0.188	1.00 (1.00, 1.00)	0.589	1.00 (1.00, 1.00)	0.594
Interview Season (lean vs not)	1.24 (0.90, 1.72)	0.184	0.08 (0.59, 1.24)	0.412	1.34 (0.96, 1.86)	0.085

Note: Boldface indicates statistical significance ($p<0.05$).

IRR, incident risk ratio; aIRR, adjusted incident risk ratio; IPV, intimate partner violence.